U. S. Navy Aeromedical Reference and Waiver Guide

April 19, 2016

INDEX

1.0 AVIATION PHYSICAL STANDARDS

1.1 Introduction
1.2 General Requirements
1.3 Purpose of this Guide
1.4 Classes of Aviation Personnel
1.5 Class I Standards
1.6 Student Naval Aviator Applicant (SNA) Standards
1.7 Designated Naval Flight Officer (NFO) Standards
1.8 Applicant Student Naval Flight Officer Standards
1.9 Designated Standards for:
Naval Flight Surgeon
Naval Aeromedical Physician Assistant
Naval Aerospace Physiologist
Naval Aerospace Experimental Psychologist
Naval Aerospace Optometrist
1.10 Applicant Standards for:
Naval Flight Surgeon
Naval Aeromedical Physician Assistant
Naval Aerospace Physiologist
Naval Aerospace Experimental Psychologist
Naval Aerospace Optometrist
1.11 Designated and Applicant Naval Aircrew (Fixed-Wing) Standards
1.12 Designated and Applicant Naval Aircrew (Rotary-Wing) Standards
1.13 Designated and Applicant Aerospace Physiology Technician Standards
1.14 Class III Personnel Non-disqualifying Conditions
1.15 Designated and Applicant Air Traffic Controller Standards
Military and Department of the Navy Civilians
1.16 Critical Flight Deck Operators Standards
Director, Spotter, Checker
Non-Pilot Landing Safety Operator
Helicopter Control Officer
Other Personnel Designated by the Unit Commander
1.17 Non-Critical Flight Deck Personnel Standards
1.18 Personnel who Maintain Aviator Night Vision Systems Standards
1.19 Selected Passengers, Project Specialists, Other Personnel
1.20 Naval Aviation Water Survival Training Instructors (NAWSTI) and Rescue Swimmer School Training Programs Standards
1.21 Class IV Personnel: Applicant Active Duty and DON/DOD-GS Unmanned Aircraft Systems (UAS) Operator Standards [Air Vehicle Operators (AVO), Sensor Operators (SO), Mission Payload Operators (MPO) and Unmanned Aircraft Systems Commanders (UAC)]
1.22 Applicant Checklist
1.23 Designated Checklist

2.0 WAIVERS FOR PHYSICAL STANDARDS

2.1 Introduction
2.2 General Requirements
2.3 Granting Authority
2.4 Requesting Authority
2.5 Routing of Waiver Requests
2.6 Waiver Submission Requirements
2.7 Waiver Continuation
2.8 Aeromedical Clearance

2.9 Local Board of Flight Surgeons
2.10 Special Board of Flight Surgeons
2.11 Senior Board of Flight Surgeons
2.12 Aeromedical Summary
2.13 How to Submit a Waiver Request
2.14 How to Check on the Status of a Waiver Request

3.0 CARDIOLOGY
3.1 Aortic Insufficiency
3.2 Aortic Stenosis
3.3 Mitral Regurgitation
3.4 Mitral Stenosis
3.5 Mitral Valve Prolapse
3.6 Valvular Conditions (Other)
3.7 Arrhythmias (PAC/PVC/Other)
3.8 Atrial Fibrillation (AFIB)
3.9 Atrial Flutter (AF)
3.10 Atrial Septal Defects (ASD)/Patent Foramen Ovale
3.11 Atrioventricular Conduction Disturbances
3.12 Coronary Artery Disease (CAD)
3.13 Hyperlipidemia
3.14 Hypertension
3.15 Hypertrophic Cardiomyopathy
3.16 Intraventricular Conduction Abnormalities
3.17 Left Ventricular Hypertrophy
3.18 Pericarditis
3.19 Pre-Excitation Syndromes
3.20 Sinus Bradycardia
3.21 Sinus Tachycardia
3.22 Supraventricular Tachycardia
3.23 Thrombophilia/Venous Thrombosis/Pulmonary Embolism
3.24 Ventricular Tachycardia
3.25 Raynaud's Phenomenon
3.26 Prolonged QT Interval and Long QT Syndrome

4.0 DERMATOLOGY
4.1 Acne
4.2 Dermatitis
4.3 Dermatophytosis of the Nail
4.4 Psoriasis

5.0 ENDOCRINOLOGY
5.1 Diabetes Mellitus
5.1.1 Dysglycemia
5.2 Gout
5.3 Hyperthyroidism
5.4 Hypothyroidism
5.5 Male Hypogonadism
5.6 Pituitary Tumors

6.0 EAR NOSE AND THROAT
6.1 Allergic/Vasomotor Rhinitis
Allergic Rhinitis Worksheet
6.2 Chronic Sinusitis, Sinus Surgery
6.3 Nasal/Sinus Polyps

6.4 Disorders of the Salivary Glands
6.5 Hearing Loss/Stapedectomy (or Stapedotomy)
6.6 Meniere's Disease/Vertigo
6.7 Cholesteatoma
6.8 Vestibular Schwannoma/Acoustic Neuroma
6.9 Oval/Round Window Fistula
6.10 Surgical Procedures that do not require a Waiver

7.0 GASTROENTEROLOGY
7.1 Eosinophilic Esophagitis (EoE)/PPI-Responsive Esophageal Eosinophilia (PPI-Ree)
7.2 Crohn's Disease
7.3 Diverticular Disease (Diverticulitis)
7.4 Cholelithiasis and Cholecystitis
7.5 Gastritis, Duodenitis
7.6 Gilbert's Syndrome
7.7 Viral Hepatitis
7.8 Irritable Bowel Syndrome
7.9 Peptic Ulcer Disease
7.10 Gastroesophageal Reflux Disease (GERD) & Hiatal Hernia
7.11 Ulcerative Colitis

8.0 HEMATOLOGY
8.1 Anemia
8.2 Hemochromatosis
8.3 Sickle Cell Disease/Trait
8.4 Splenectomy
8.5 Thalassemias

9.0 MALIGNANCIES
9.1 General Information
9.2 Bladder Cancer
9.3 Breast Cancer
9.4 Cervical Cancer
9.5 Colorectal Carcinoma
9.6 Other Gastrointestinal Tumors
9.7 Hodgkin's Disease
9.8 Kidney Tumors
9.9 Laryngeal Cancer
9.10 Leukemia
9.11 Lung Cancer
9.12 Malignant Melanoma
9.13 Neurological Tumors
9.14 Non-Hodgkins Lymphoma
9.15 Oral Cavity Cancer
9.16 Ovarian Tumors
9.17 Pituitary Tumors
9.18 Plasma Cell Dyscrasias
9.19 Prostate Cancer
9.20 Skin Cancer (Non-Melanoma)
9.21 Testicular Tumors
9.22 Thyroid Carcinoma
9.23 Uterine Cancer

10.0 NEUROLOGY
10.1 Cranial Neuralgia

10.2 Decompression Sickness
10.3 Epilepsy/Seizure
10.4 Guillain-Barre Syndrome (Acute Inflammatory Demyelinating Polyneuropathy – AIDP)
10.5 Headaches and Migraine (including Headache Algorithm)
10.6 Multiple Sclerosis
10.7 Peripheral Neuropathy
10.8 Subarachnoid Hemorrhage (SAH)
10.9 Syncope
10.10 Sleep Disorders
10.11 Obstructive Sleep Apnea
10.12 Transient Ischemic Attack (TIA)
10.13 Traumatic Brain Injury – Minor
10.14 Traumatic Brain Injury – Mild
10.15 Traumatic Brain Injury – Moderate
10.16 Traumatic Brain Injury – Severe
10.17 Traumatic Brain Injury – Permanently Disqualified
10.18 Summary: Aeromedical Disposition of Traumatic Brain Injuries

11.0 OBSTETRICS AND GYNECOLOGY
11.1 Chronic Pelvic Pain
11.2 Dysplasia (Revised June 2014)
11.3 Endometriosis
11.4 Hormonal Replacement Therapy and Contraception
11.5 Pelvic Inflammatory Disease
11.6 Pregnancy

12.0 OPHTHALMOLOGY
12.1 Cataract
12.2 Color Vision Abnormalities
12.3 Decreased Visual Acuity
12.4 Defective Depth Perception
12.5 History of Strabismus Surgery
12.6 Excessive Phorias
12.7 Retinal Detachment
12.8 Glaucoma and Ocular Hypertension
12.9 Keratoconus
12.10 Optic Disc Drusen
12.11 Retinal Vascular Occlusion
12.12 Uveitis
12.13 Pterygium
12.14 Ocular Motility Worksheet
12.15 Corneal Refractive Surgery (PRK/LASIK)
12.15A LASIK in Designated Aviators Study
12.15B LASIK in Student Aviators Study
12.16 Naval Aviation Contact Lens Policy
12.17 Allergic Conjunctivitis
12.18 Central Serous Retinopathy
12.19 Pigment Dispersion Syndrome
12.20 Peripheral Retinal Degeneration and Retinal Hole

13.0 ORTHOPEDICS
13.1 Abnormal Spinal Curvature
13.2 Ankylosing Spondylitis
13.3 Chronic Backache
13.4 Intervertebral Disc Disease

13.5.1 Knees: Ligament
13.5.2 Knees: Meniscal Injuries
13.6 Orthopedic Hardware, Retained
13.7 Shoulder Dislocation
13.8 Spinal Fractures
13.9 Spondylolysis
13.10 Spondyloisthesis

14.0 PSYCHIATRY

14.1 Neurodevelopmental Disorders (e.g., Specific Learning Disorder, Attention Deficit/Hyperactivity Disorder)
14.2 Schizophrenia Spectrum and Other Psychotic Disorders
14.3 Bipolar and Related Disorders
14.4 Depressive Disorders
14.5 Anxiety Disorders
14.6 Obsessive-Compulsive Disorder and Related Disorders
14.7 Trauma- and Stressor-Related Disorders
14.8 Somatic Symptom and Related Disorders
14.9 Feeding and Eating Disorders
14.10 Sleep/Wake Disorders
14.11 Sexual Dysfunctions and Paraphilias
14.12 Disruptive, Impulse-Control, and Conduct Disorders
14.13 Substance-Related and Addictive Disorders
14.14 Personality Disorders
14.15 Other Conditions That May Be a Focus of Clinical Attention

15.0 RESPIRATORY

15.1 Asthma
15.2 Chronic Obstructive Pulmonary Disease
15.3 Pneumothorax
15.4 Sarcoidosis

16.0 UROLOGY

16.1 Congenital Abnormalities of the Kidneys
16.2 Hematuria
16.3 Prostatitis
16.4 Benign Prostatic Hypertrophy
16.5 Reiter's Disease
16.6 Renal Stones
16.7 Proteinuria

17.0 MISCELLANEOUS CONDITIONS

17.1 Allergic Reactions to Insects
17.2 Breast Implants and Surgery
17.3 Heat Exhaustion/Stroke
17.3A Rhabdomyolysis
17.4 Human Immunodeficiency Virus (HIV) Infection
17.4.1 Truvada® Pre-exposure Prophylaxis (PREP) to Prevent HIV Infection
17.5 Lyme Disease
17.6 Motion Sickness/Air Sickness
17.7 Bone Marrow Donation
17.8 Malaria
17.9 Urticaria, Angioedema & Anaphylasis
17.10 Reactive Arthritis, Conjunctivitis, Urethritis

18.0 MEDICATIONS

18.1 NATOPS on Medication
18.2 Anti-Microbial
- Anti-Bacterials
  - Anti-malarials
  - Fluoroquinolones
  - Macrolides
  - Penicillins
  - Sulfonamides
  - Tetracyclines
- Anti Fungal medications
  - Grisofulvin
  - Itraconazole (Sporanox)
  - Terbinafine (Lamisil)
- Anti-Viral Medications
  - Acyclovir, Valacyclovir
  - Oseltamivir (Tamiflu),
  - Zanamivir (Relenza)

18.3 Anti-Hyperlipidemics
  - Ezetemibia (zetia)
- Fibric Acids
  - Fenofibrate (tricor); Gemfibrozil (lopid)
  - Niacin
- Resins
  - Cholestyramine
- Statins
  - Pravastatin
  - Simvastatin
  - Lovastatin
  - Atorvastatin

18.4 Anti-Hypertensives
- ACE Inhibitors
- Angiotensin Receptor Blockers
- Anti-Adrenergic Agents
  - Doxazosin
  - Prazosin
- Beta Blockers
- Calcium Channel Blockers
  - Amilodipine
  - Nifedipine
- Combination Agents
- Thiazide Diuretics
  - Hydrochlorthiazide

18.5 Immunizations
- Vaccine Adverse Event Reporting System (VAERS)
- Anthrax, Cholera, Diphtheria-tetanus, Hepatitis A/B
- Influenza (injectable, Flumist)
- Japanese Encephalitis, Measles/Mumps/Rubella (MMR)
- Meningococcal, Plague, Pneumovax (PPV23)
- Polio, Small Pox, Typhoid/Oral Typhoid
- Yellow Fever

18.6 Miscellaneous Medications
- Allopurinol
- Antihistamine (Sedating, Non-Sedating)
- Clomiphene

Contraceptives
Decongestants
Finesteride
H2 Blockers
Inhaled Steroids
Isoretinoin
Levothyroxine
Lindane
Mesalamine
Minoxidil
Nedocromil
Nasal Steroids
Nicroette Gum, Nicotine Trandermal System
Non-Steroidal Anti-Inflammatory Drugs
Phosphodiesterase Inhibitors
Probenicid
Proton Pump Inhibitors
Sucralfate
Sulfasalazine
Tamoxifen
Topical Compounds

19.0 NUTRITIONAL AND ERGOGENIC SUPPLEMENTS

19.1 Aircrew Guidance and Policy
19.2 General Dietary Supplementation Guidelines
19.3 Flight Surgeon, Aviation Medical Examiner and Aeromedical Physician Assistant Responsibilities
19.4 Dietary Supplement Policy
19.5 Class C Supplement List by Effect
19.6 General Guidance for newly Developed Dietary Substances
19.7 Additional Resources
19.8 Printed Resources

1.0 AVIATION PHYSICAL STANDARDS

Last Revised: April 2016 Last Reviewed: April 2016

1.1 INTRODUCTION

Aviation physical standards are developed to ensure the most qualified personnel are accepted and retained by Naval Aviation. Standards differ significantly between applicants and designated personnel and among the different classes of flight duties. Applicant standards are the most rigorous to ensure that the Navy is investing in a candidate that is capable of completing training and remaining a designated Naval aviator in a physically demanding environment. Medical attrites adversely affect manning requirements, fiscal resources, and the member's personal and career development. Designated aviators must meet standards to ensure they and their crew remain safe and able to complete their demanding missions.

1.2 GENERAL REQUIREMENTS

Physical standards are published and maintained in the Manual of the Medical Department (MMD) Chapter 15. All applicants must meet general commissioning and/or enlistment standards in addition to aviation standards. If an applicant does not meet these standards, the applicant has a disqualifying defect and a waiver of standards is required. Designated personnel must remain fit for full duty and continue to meet the aviation standards published in the MMD. Any medical defect, disqualifying diagnosis, or chronic medication use requires a waiver of standards.

1.3 PURPOSE OF THIS GUIDE

The purpose of this guide is to offer the Flight Surgeon, Aeromedical Examiner, Aeromedical Physician Assistant, AVT, and aviator an additional resource to quickly and efficiently look up standards. The Aeromedical Reference and Waiver Guide (ARWG) is NOT an inclusive document but only highlights and gives guidance for the most common diagnoses and standards. The MMD is the proper document to reference for disqualifying conditions and physical standards. Flight Surgeons, Aeromedical Examiners, Aeromedical Physician Assistants and AVTs should be intimately familiar with the MMD Chapter 15 and it is suggested that they have access to a copy when making Aeromedical dispositions.

1.4 CLASSES OF AVIATION PERSONNEL

Last Revised: August 2015 Last Reviewed: April 2016

Applicants, students, and designated aviation personnel are divided into the following three classes:

Class I: Naval Aviators and Student Naval Aviators (SNA). Designated Naval aviators are subdivided into three Medical Service Groups based upon the physical requirements of their specific flight duty assignment

Medical Service Group 1: Aviators qualified for unlimited or unrestricted flight duties

Medical Service Group 2: Aviators restricted from shipboard aircrew duties (include V/STOL) except helicopter

Medical Service Group 3: Aviators restricted to operating aircraft equipped with dual controls and accompanied on all flights by a pilot or copilot of Medical Service Group 1 or 2, qualified in the model of aircraft operated. A waiver to medical Service Group 3 includes pilot-in-command (PIC) authority unless PIC authority is specifically restricted.

Class II: Aviation personnel other than designated naval aviators or Student Naval Aviators including Naval Flight Officers (NFO), technical observers, Naval Flight Surgeons (NFS), Aeromedical Physician Assistant (APA), Aerospace Physiologists (AP), Aerospace Experimental Psychologists (AEP), Naval Aerospace Optometrists, all medical personnel (Corpsmen, Nurses, etc.) who provide patient care during aeromedical evacuation and/or en route medical transport, Naval Aircrew (NAC) members, and other persons ordered to duty involving flying and / or will fly on a regular basis.

NOTE: Many squadrons have non-designated personnel that fly as a TFO, intelligence operator, cryptologic technician, or other duty that requires regular flying. If these individuals fly on a regular basis, receive flight pay, and/or have flight-related duties, or mission critical duties, assigned to them while flying, they shall be considered as Class II Naval Aircrew with regard to aeromedical standards and physical submission requirements. Consult with NAMI if their flight status is unclear. However, waiver requirements may be different in these individuals, and will be considered on a case-by-case basis depending on required physical and physiological training and their particular duties, aircraft, and mission.

Class III: Members in aviation related duty not requiring them to personally be airborne including Air Traffic Controllers (ATCs), flight deck, and flight line personnel.

Class IV: Members in aviation related duty not requiring them to personally be airborne including Unmanned Aerial Vehicle (UAV) operators,

Certain non-designated personnel, including civilians, may also be assigned to participate in duties involving flight: Such personnel include selected passengers, project specialists, and technical observers. The specific requirements are addressed in the OPNAVINST 3710.7 series (Naval Air Training and Operating Procedures Standardization (NATOPS) General Flight and Operating Instructions) and shall be used to evaluate these personnel. ***Selected passenger up chits are supposed to be used for a one or two flight "good deal" not for anyone who is going to fly as part of their job. Everyone who is flying on a regular basis, as part of their job, shall have an Aircrew Class II physical.***

1.5 CLASS I STANDARDS

Last Revised: FEB 2016 Last Reviewed: April 2016

Aeronautically Adapted (AA): Designated personnel must remain Aeronautically Adapted. If member is Not Aeronautically Adapted (NAA), the psychiatric block should be checked abnormal with appropriate comments. Refer to MMD 15-67 for disposition of aviators found NAA.

Valsalva: Must demonstrate ability to equalize middle ear pressure.

Self Balance Test (SBT): Must pass.

Dental: Must have no defect which would react adversely to changes in barometric pressure (Type I or II dental examination required).

Laboratory Testing:

Urinalysis: Must have normal values. Specifically must be negative for glucose, albumin/protein, and blood.

Syphilis Serology: Must be negative or have documented curative treatment or other explanation for positive test.

HIV Testing: Must be negative or documented that it was drawn.

Hematocrit: Males 40-52%. Females 37-47%. If values are outside of this range refer to ARWG for proper evaluation and disposition.

Lipid Panel: There are no standards at this time. This does not mean the flight surgeon can ignore these values. Individuals with hyperlipidemia should have documented evaluation, counseling, and treatment in accordance with standard medical guidelines.

Fecal occult blood testing: Required annually at age 50 and older or if personal or family history dictates. Digital rectal exam is not required.

EKG: Disqualifying conditions are:

1. Ventricular tachycardia defined as three consecutive ventricular beats at a rate greater than 99 beats per minute.
2. Wolff-Parkinson-White syndrome or other pre-excitation syndrome predisposing to paroxysmal arrhythmias.
3. All atrioventricular and intraventricular conduction disturbances, regardless of symptoms.
4. Other EKG abnormalities consistent with disease or pathology and not explained by normal variation.

Blood Pressure: Systolic must be less than 140 mm Hg and Diastolic less than 90 mm Hg. If a single measurement is outside of this range, a 3-5 day blood pressure check must be completed. The average of the 3-5 day blood pressure check must fall within the above standards.

Pulse Rate: Shall be determined in conjunction with blood pressure. If the resting pulse is less than 45 or over 100, an electrocardiogram shall be obtained. A pulse rate of less than 45 or greater than 100 in the absence of a significant cardiac history and medical or electrocardiographic findings shall not in itself be considered disqualifying.

Distant Visual Acuity:

1. Service Group 1, 20/100 or better each eye uncorrected, corrected to 20/20 or better each eye.
2. Service Group 2, 20/200 or better each eye uncorrected, corrected to 20/20 or better each eye.
3. Service Group 3, 20/400 or better each eye uncorrected, corrected to 20/20 or better each eye.

The first time distant visual acuity of less than 20/20 is noted a manifest refraction (not cycloplegic) shall be performed recording the correction required for the aviator to see 20/20 in each eye (all letters correct on the 20/20 line).

Refractive limits: Refractions will be recorded using minus cylinder notation. There are no limits. However, anisometropia may not exceed 3.50 diopters in any meridian.

Near Visual Acuity: Must correct to 20/20 in each eye using either the AFVT or standard 16 Snellen or Sloan notation nearpoint card. Bifocals are approved.

Oculomotor Balance:

1. No uncorrected esophoria more than 6.0 prism diopters.
2. No uncorrected exophoria more than 6.0 prism diopters.
3. No uncorrected hyperphoria more than 1.50 prism diopters.
4. Tropia or Diplopia in any direction of gaze is disqualifying

Field of Vision: Must be full.

Color Vision: Must pass any one of the following two tests:

1. FALANT or Optec 900: 9/9 correct on the first trial or, if any are missed, at least 16.18 correct on the combined second and third trials.
2. PIP color plates (Any red-green screening test with at least 14 diagnostic plates; see manufacturer instructions for scoring information), randomly administered under Macbeth lamp: scoring plates 2-15, at least 12/14 correct.

Depth Perception: Only stereopsis is tested. Must pass any <u>one</u> of the following three tests:

1. AFVT: at least A – D with no misses.
2. Stereo booklet (Titmus Fly or Randot): 40 arc second circles.
3. Verhoeff: 8/8 corrent on the first trial or, if any are missed, 16/16 correct on the combined second and third trials.

Intraocular Pressure: Must be less than or equal to 22 mm Hg. A difference of 5 mm Hg or greater between eyes requires an ophthalmology consult, but if no pathology noted, is not considered disqualifying.

Hearing (ANSI 1969):

Frequency (Hz)	Better Ear (dB)	Worse Ear (dB)
500	35	35
1000	30	30
2000	30	50

1.6 STUDENT NAVAL AVIATOR APPLICANT (SNA) STANDARDS

Last Revised: April 2016 Last Reviewed: April 2016

All applicants for pilot training must meet Class I standards except as follows:

Visual Acuity, Distant and Near: Uncorrected visual acuity must not be less than 20/40 each eye, correctable to 20/20 each eye using a Sloan letter, crowded, eye chart **(Goodlite)**. Vision testing procedures shall comply with those outlined on the Aerospace Reference and Waiver Guide Physical Exams section.

Refractive Limits: If uncorrected distant visual acuity is less than 20/20 either eye, a manifest refraction must be recorded for the correction required to attain 20/20. If the candidate's distant visual acuity is 20/20, a manifest refraction is not required. Total myopia may not be greater than -1.50 diopters in any meridian, total hyperopia no greater than +3.00 diopters in any meridian, or astigmatism no greater than -1.00 diopters. The astigmatic correction shall be reported in minus cylinder format.

Cycloplegic Refraction: This is required for all candidates to determine the degree of spherical ametropia. The refraction should be performed to maximum plus correction to obtain best visual acuity. Due to the effect of lens aberrations with pupil dilation, visual acuity or astigmatic correction, which might disqualify the candidate, should be disregarded if the candidate meets the standards for visual acuity and astigmatism with manifest refraction. A cycloplegic refraction should be performed at least 30 minutes after instillation of 2gtts (5 minutes apart) 1% cyclopentolate.

Slit Lamp Examination: Required, and must demonstrate no pathology.

Dilated Fundus Examination: Required, and must demonstrate no pathology.

Hearing (ANSI 1969) :

Frequency (Hz)	Decibel (dB)
500	25
1000	25
2000	25
3000	45
4000	55

Anthropometrics and Height/Weight: Refer to NAVAIRINST 3710.9D and OPNAVINST 3710.37A.

Reading Aloud Test. Required if speech impediment exists or history of speech therapy or facial fracture. See MMD paragraph 15-95 or Physical Exam section of ARWG for text.

Dental Readiness: All Applicants must be Dental Class 2 or better.

1.7 DESIGNATED NAVAL FLIGHT OFFICER (NFO) STANDARDS

Must meet Class I standards, except as follows:

Visual Acuity, Distant and Near: No limit uncorrected. Must correct to 20/20 each eye.

Refraction: No limits.

Oculomotor Balance: No obvious heterotropia or symptomatic heterophoria (NOHOSH).

Depth Perception: Not required.

Dental Readiness: All Applicants must be Dental Class 2 or better.

1.8 APPLICANT STUDENT NAVAL FLIGHT OFFICER STANDARDS

Last Revised: March 2015 Last Reviewed: April 2016

Must meet Class I standards, except as follows:

Visual Acuity, Distant and Near: No limit uncorrected. Must correct to 20/20 each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Refractive Limits: Manifest refraction must not exceed +/-8.00 diopters in any meridian (sum of sphere and cylinder) with astigmatism no greater than -3.00 diopters. Refraction must be recorded in minus cylinder format. Must have no more than 3.50 diopters of anisometropia in any meridian.

Oculomotor Balance: NOHOSH.

Depth Perception: Not Required.

Slit Lamp Examination: Required, and must demonstrate no pathology.

Hearing: Same as SNA Applicant.

Dental Readiness: All Applicants must be Dental Class 2 or better.

Anthropometrics and Height/Weight: Refer to NAVAIRINST 3710.9D and OPNAVINST 3710.37A.

Reading Aloud Test: Required if speech impediment exists or history of speech therapy or facial fracture. See MMD paragraph 15-95 or Physical Exam section of ARWG for text.

1.9 DESIGNATED: NAVAL FLIGHT SURGEON, NAVAL AEROMEDICAL PHYSICIAN ASSISTANT, NAVAL AEROSPACE PHYSIOLOGIST, NAVAL AEROSPACE EXPERIMENTAL PSYCHOLOGIST, AND NAVAL AEROSPACE OPTOMETRIST STANDARDS

Must meet Class I standards, except as follows:

Visual Acuity, Distant and Near. No limit uncorrected. Must correct to 20/20 each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Refractive Limits. No limits.

Oculomotor Balance. NOHOSH.

Depth Perception. Not Required.

1.10 APPLICANT: NAVAL FLIGHT SURGEON, NAVAL AEROMEDICAL PHYSICIAN ASSISTANT, NAVAL AEROSPACE PHYSIOLOGIST, NAVAL AEROSPACE EXPERIMENTAL PSYCHOLOGIST, AND NAVAL AEROSPACE OPTOMETRIST STANDARDS

All applicants must meet SNA Applicant standards except as follows:

Visual Acuity, Distant and Near: No limit uncorrected. Must correct to 20/20 each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Refraction. No limits.

1.11 DESIGNATED AND APPLICANT NAVAL AIRCREW (FIXED WING) STANDARDS

Must meet Class I standards except as follows.

Visual Acuity, Distant and Near: No limit uncorrected. Must correct to 20/20 each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Refraction: No limits.

Oculomotor Balance: NOHOSH.

Depth Perception: Not required.

Hearing: Designated must meet Class I standards. Applicants must meet SNA Applicant standards.

1.12 DESIGNATED AND APPLICANT NAVAL AIRCREW (ROTARY WING) STANDARDS

Must meet Class I standards, except as follows:

Visual Acuity, Distant and Near. Must be uncorrected 20/100 or better, each eye corrected to 20/20. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Refraction. No limits.

Oculomotor Balance. NOHOSH.

Hearing. Designated must meet Class I standards. Applicants must meet SNA applicant standards.

1.13 DESIGNATED AND APPLICANT AEROSPACE PHYSIOLOGY TECHNICIAN STANDARDS

Must meet Class I standards except as follows:

Visual Acuity, Distant and Near. No limit uncorrected. Must correct to 20/20 each eye. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Refraction: No limits.

Depth Perception: Not required.

Color Vision: Not required.

Hearing: Designated must meet Class I standards. Applicants must meet SNA applicant standards.

Age: Applicants must be less than 32 years of age.

Sinus X-rays: Applicants must submit sinus films to NAVOPMEDINST Code 53HN with initial physical examination.

1.14 CLASS III PERSONNEL NON-DISQUALIFYING CONDITIONS

Class III personnel must meet standards for aviation personnel, but within those limitations, the following conditions are not considered disqualifying:

1. Hematocrit between 38.0 and 39.9 percent in males or between 35.0 and 36.9 percent in females, if asymptomatic.
2. Seasonal allergic rhinitis unless requiring regular use of antihistamines or medications causing drowsiness.
3. Nasal or paranasal polyps
4. Chronic sinus disease, unless symptomatic and requiring frequent treatment.
5. Lack of valsalva or inability to equalize middle ear pressure.
6. Congenital or acquired chest wall deformities, unless expected to interfere with general duties.
7. Mild chronic obstructive pulmonary disease.
8. Pneumothorax once resolved.
9. Surgical resection of lung parenchyma if normal function remains.
10. Paroxysmal supravertricular dysrythmias, after normal cardiology evaluation, unless symptomatic.
11. Cholecystectomy, once resolved.
12. Hyperuricemia.
13. Renal stone once passed or in stable position.
14. Internal derangements of the knee unless restricted from general duty.
15. Recurrently dislocating shoulder.
16. Scoliosis, unless symptomatic or progressive. Must meet general standards.
17. Kyphosis, unless symptomatic or progressive. Must meet general standards.
18. Fracture or dislocation of cervical spine.
19. Cervical fusion.
20. Thoracolumbar fractures.
21. History of craniotomy.
22. History of decompression sickness.
23. Anthropometric standards do not apply.
24. No limits on resting pulse if asymptomatic.

1.15 DESIGNATED AND APPLICANT AIR TRAFFIC CONTROLLER STANDARDS (MILITARY AND DEPARTMENT OF THE NAVY CIVILIANS)

Last Revised: March 2014 | Last Reviewed: April 2016

Military must meet the standards in Chapter 15, Section III (Physical Standards); civilians shall be examined in military MTFs, by a Naval Flight Surgeon (or Aeromedical Examiner or Aeromedical Physician Assistant), and must meet the general requirements for Civil Service employment as outlined in the Office of Personnel Management, Individual Occupational Requirements for GS-2152: Air Traffic Control Series. Both groups have the following additional requirements:

Phorias: NOHOSH.

Depth Perception: Not required.

Slit Lamp Examination: Required for applicants only. Must demonstrate no pathology.

Intraocular Pressure: Must meet Class I standards.

Color Vision: Must meet Class I standards.

Hearing: Applicants must meet SNA applicant standards. Designated must meet Class I standards.

Reading Aloud Test: The “Banana Oil” test is required for all applicants and other personnel as clinically indicated.

Department of the Navy Civilian ATCs:

1. There are no specific height, weight, or body fat requirements.
2. When a civilian who has been ill in excess of 30 days returns to work, a formal flight surgeon’s (or Aeromedical Examiner or Aeromedical Physician Assistant) evaluation shall be performed prior to returning to ATC duties. DD2992 shall be used to communicate clearance for ATC duties to the commanding officer.

1.16 CRITICAL FLIGHT DECK PERSONNEL STANDARDS (DIRECTOR, SPOTTER, CHECKER, NON-PILOT LANDING SAFETY OFFICER AND HELICOPTER CONTROL OFFICER, AND ANY OTHER PERSONNEL SPECIFIED BY THE UNIT COMMANDING OFFICER)

Frequency of screening is annual. Waivers of physical standards are determined locally by the senior medical department representative and commanding officer. No BUMED or NAVPERSCOM submission or endorsement is required. **Must meet the standards in Chapter 15, Section III (Physical Standards), except as follows:**

Visual Acuity, Distant and Near: No limits uncorrected. Must correct to 20/20. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Field of Vision: Must have full field of vision.

Depth Perception: Must meet Class I standards.

Color Vision: Must meet Class I standards.

1.17 NON-CRITICAL FLIGHT DECK PERSONNEL STANDARDS

This paragraph includes all personnel not defined as critical. Frequency of screening is annual. Waivers of physical standards are determined locally by the senior medical department representative and commanding officer. No BUMED or NAVPERSCOM submission or endorsement is required. **Must meet the standards in Chapter 15, Section III (Physical Standards) except as follows:**

Visual Acuity, Distant and Near: No limits uncorrected. Must correct to 20/40 or better in one eye, 20/30 or better in the other.

NOTE: Because of the safety concerns inherent in performing duties in the vicinity of turning aircraft, flight line workers should meet the same standards as their flight deck counterparts.

1.18 PERSONNEL WHO MAINTAIN AVIATOR NIGHT VISION SYSTEMS STANDARDS

Personnel, specifically those aircrew survival equipment men (USN PR or USMC MOS 6060) and aviation electrician's mates (USN AE or USMC MOS 64xx), assigned to duty involving maintenance of night vision systems, or selected for training in such maintenance, shall be examined annually to determine visual standards qualifications. Record results in the member's health record. **Waivers are not considered. Standards are as follows:**

Distant Visual Acuity: Must correct to 20/20 or better in each eye and correction must be worn. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Near Visual Acuity: Must correct to 20/20.

Depth Perception: Not required.

Color Vision: Must meet Class I standards.

Oculomotor Balance: NOHOSH.

1.19 SELECTED PASSENGERS, PROJECT SPECIALISTS, AND OTHER PERSONNEL

Refer to OPNAVINST 3710.7. When ordered to duty involving flying for which special requirements have not been prescribed, personnel shall, prior to engaging in such duties, be examined to determine their physical qualification for aerial flights, an entry made in their Health Record, and a DD2992 issued if qualified. The examination shall relate primarily to the circulatory system, musculoskeletal system, equilibrium, neuropsychiatric stability, and patency of the eustachian tubes, with such additional consideration as the individual's specific flying duties may indicate. The examiner shall attempt to determine not only the individual's physical qualification to fly a particular aircraft or mission, but also the physical qualification to undergo all required physical and physiological training associated with flight duty. **No individual shall be found fit to fly unless fit to undergo the training required in OPNAVINST 3710.7 series, for the aircraft and/or mission.**

Visual Acuity, Distant and Near: No limits uncorrected. Must correct to 20/50 or better in one eye.

NOTE: Many squadrons have non-designated personnel that fly as a TFO, intelligence operator, cryptologic technician, or other duty that requires regular flying. If these individuals fly on a regular basis, receive flight pay, and/or have flight-related duties, or mission critical duties, assigned to them while flying, they shall be considered as Class II Naval Aircrew with regard to aeromedical standards and physical submission requirements. Consult with NAMI if their flight status is unclear. However, waiver requirements may be different in these individuals, and will be considered on a case-by-case basis depending on required physical and physiological training and their particular duties, aircraft, and mission.

1.20 NAVAL AVIATION WATER SURVIVAL TRAINING INSTRUCTORS (NAWSTI) AND RESCUE SWIMMER SCHOOL TRAINING PROGRAMS STANDARDS

Applicants, designated and instructor rescue swimmers must meet the general standards outlined in MMD Chapter 15, Section III. In addition, the following standards apply:
Visual Acuity, Distant and Near:

1. **Applicant Surface Rescue Swimmer**. No worse than 20/100 uncorrected in either eye. Must correct to 20/20 each eye.
2. **Designated Surface Rescue Swimmer**. No worse than 20/200 uncorrected in either eye. Must correct to 20/20 each eye.
3. **Naval Aviation Water Survival Training Program Instructor**. No limits uncorrected. Must correct to 20/20 in the better eye, no less than 20/40 in the worse eye.
4. **All categories**. If the AFVT or Goodlite letters are used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.

Psychiatric: Because of the rigors of the high risk training and duties they will be performing, the psychological fitness of applicants must be carefully appraised by the examining physician. The objective is to elicit evidence of tendencies which militate against assignment to these critical duties. Among these are below average intelligence, lack of motivation, unhealthy motivation, history of personal ineffectiveness, difficulties in interpersonal relations, a history of irrational behavior or irresponsibility, lack of adaptability, or documented personality disorders.

Any examinee diagnosed by a psychiatrist or clinical psychologist as suffering from depression, psychosis, manic-depression, paranoia, severe neurosis, severe borderline personality, or schizophrenia will be recommended for disqualification at the time of initial examination.

Those personnel with minor psychiatric disorders such as acute situational stress reactions must be evaluated by the local medical officer in conjunction with a formal psychiatric evaluation when necessary. Those cases which resolve completely, quickly and without significant psychotherapy can be found fit for continued duty. Those cases in which confusion exists, review by the TYCOM force medical officer for fleet personnel or BUMED, M3F1 for shore-based personnel. Any consideration for return to duty in these cases must address the issue of whether the service member, in the opinion of the medical officer and the member's commanding officer, can successfully return to the specific stresses and environment of surface rescue swimmer duty.

1.21 CLASS IV PERSONNEL: APPLICANT ACTIVE DUTY AND DON/DOD-GS UNMANNED AIRCRAFT SYSTEMS (UAS) OPERATOR STANDARDS [AIR VEHICLE OPERATORS (AVO), SENSOR OPERATORS (SO), MISSION PAYLOAD OPERATORS (MPO), AND UNMANNED AIRCRAFT SYSTEMS COMMANDERS (UAC)]

Last Revised: August 2015 Last Reviewed: April 2016

*Note: (Civilian Contract Operators must abide by their individual contracts)

Aircrew who maintain their aviation designators (pilot/NFO/aircrewmen) must continue to meet the appropriate standards of their designation. Otherwise, all unmanned aircraft system (UAS) operators must meet general duty accession standards IAW MANMED Chapter 15, Section III, except:

Vision:

1. **Visual Acuity, Distant and Near:** No limit uncorrected. Must correct to 20/20 or better each eye. If the AFVT or Sloan Letter Crowded Chart is used, a score of 7/10 on the 20/20 line constitutes meeting visual acuity requirements.
   a. The following visual corrections are not considered disqualifying (NCD):
      (1) Non-surgical Corrections:
         (a) Eye glasses
         (b) Contact lenses
   b. Corneal Refractive Surgery is considered disqualifying – Waiver applications may be considered IF the individual meets the parameters noted in the Aeromedical Reference & Waiver Guide, Chapter 12.15. The following are the only types of CRS considered for waivers:
      (a) Photorefractive Keratectomy (PRK)
      (b) Laser Epithelial Keratomileusis (LASEK)
      (c) Laser-assisted in-situ Keratomileusis (LASIK)

2. **Color Vision** Validated PIP test at 12/14 or better, Farnsworth Lantern 9/9 or 16/18 on second series (aviation applicant Falant tests are acceptable prior to 31 DEC 2016), or passing grade on approved and validated Computer-Based Color Vision Testing (CBCVT). All color vision tests will be administered as delineated in the NAMI Aeromedical Reference and Waiver Guide, Chapter 12.2.

3. **Oculomotor Balance:**
   a. No esophoria more than 6.0 prism diopters
   b. No exophoria more than 6.0 prism diopters
   c. No hyperphoria more than 1.5 prism diopters
   d. Tropia or Diplopia in any direction of gaze is disqualifying

4. **Field of Vision:** Must be full

5. **Depth Perception:** Only stereopsis is tested. Must pass any <u>one</u> of the following three tests:
   a. AFVT: at least A-D with no misses
   b. Stereo booklet (Titmus Fly or Randot): 40 arc second circles
   c. Verhoff: 8/8 correct on the first trial or if any are missed, 16/16 correct on the combined second and third trials

6. **Intraocular Pressure:** Must be less than or equal to 22 mmHg. A difference of 5 mmHg or greater between eyes requires an ophthalmology consult, but if no pathology is noted, is not considered disqualifying.

Speech: Read Aloud "Banana Oil" Test - No impediments

- IAW MANMED Chapter 15, Section IV 15-95, (1)(c)

Reading Aloud Test: The "Banana Oil" test is required for all applicants and other aviation personnel as clinically indicated.

"You wished to know about my grandfather. Well, he is nearly 93 years old; he dresses himself in an ancient black frock-coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long, flowing beard clings to his chin, giving those who observe him a pronounced feeling of the utmost respect. When he speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our small organ. Except in winter when the ooze of snow or ice is present, he slowly takes a short walk in the open air each day. We have often urged him to walk more and smoke less, but he always answers "Banana Oil." Grandfather likes to be modern in his language."

1.22 APPLICANT CHECKLIST

	SNA	SNFO	SNFS/SNAP SNAEP	AC (Rotary Wing)	AC F/W	ATC	APT	UAV
CXR	At accession or <3yr old			<3yr	<3yr	<3yr	<3yr	<3yr
Dental	Type I or II and Class I or 2							
Labs	ALL LABS ARE REQUIRED WITHIN 90 DAYS OF PHYSICAL DATE							
Urine	Occult blood, Protein and Glucose by dipstick, Specific gravity							
Serology	RPR							
Chems	Cholesterol, HDL, LDL, Triglyceride, Fasting Blood Sugar							
Other Labs	HCT, HIV, Sickle Cell, G6PD							
HCT	Males: 40-52 Females: 37-47							
EKG	MUST BE DONE WITHIN 12 MONTHS OF PHYSICAL DATE							
Anthropometrics	Must meet OPNAVINST 3710.37A guidelines							
WEIGHT (See HT-WT charts)	Must meet Navy and Marine Corps weight and body fat standards. Weight cannot be <103 lbs or >245 lbs.					NAVY STD	NAVY STD	NAVY STD
BP (Sitting)	<140/90	<140/90	<140/90	<140/90	<140/90	<140/90	<140/90	<140/90
Pulse (Sitting)	<100, >45	<100, >45	<100, >45	<100, >45	<100, >45	<100, >45	<100, >45	<100, >45
DVA uncorr w/ corr	≤20/40-0 20/20-0	No Limit 20/20	No Limit 20/20	≤20/100 20/20	SEE SPECIAL*	No Limit 20/20	No Limit 20/20	No Limit 20/20
NVA uncorr w/ corr	20/40 20/20	None 20/20	None 20/20	≤20/100 20/20	None 20/20	None 20/20	None 20/20	None 20/20
SLEX	Required							
Field of vision	Full	Full	Full	Full	Full	Full	Full	Full
REFRACTION Total Ref error astigmatism anisometropia	cyclo/manifest +3.00/-1.50 +/-1.00 3.50	manifest +/-8.00 +/-3.00 3.50	No Limit on refractive error. Record on exam					
Phoria	Eso ≤6, Exo ≤6 Hyper ≤1.5	NOHOSH	SAME AS SNA	NOHOSH				SAME AS SNA
Color	PIP MUST PASS 12/14, ISHIHARA MUST PASS 12/14 ON 16 PLATE TEST, OR FALANT MUST PASS9/9 or 16/18						NOT REQUIRED	Required
Depth	AFVT A-D Verhoeff 8/8 RANDOT or Titmus to ≤40 sec of arc	DEPTH PERCEPTION TESTING IS NOT REQUIRED	SAME AS SNA	SAME AS SNA	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	SAME AS SNA
IOP	≤ 22 mm Hg and must be no more than 4 mm Hg difference between eyes							
Audiogram	ALL APPLICANTS MUST MEET SNA HEARING STANDARDS 500HZ 25db 1000 HZ 25db 2000 HZ 25db 3000 HZ 45db 4000 HZ 55db							
Special	Cycloplegic must show correction to 20/20	Passing 7/10 on 20/20 line is considered 20/20 for Class 2 and Class 3 applicants Enlisted Naval Aircrew (NAC) >20/100 shall be PQ for fixed wing only.				Reading Aloud Test Required	Submit sinus x-rays	
Fleet Accession	Physical exam must be within 12 months							
NFO to Pilot transition	Must meet SNA standards Physical exam must be within 12 months unless specified otherwise in announcement							

1.23 DESIGNATED CHECKLIST

Last Revised: February 2015 Last Reviewed: April 2016

Item	SG1	SG II	SG III	NFO/NFS NAP/NAEP	A/C ROTARY WING USN/USMC	A/C FIXED WING USN/USMC	APT	ATC	UAV
DVA (SEE NOTE)	20/100 OR BETTER CORR TO 20/20-0	20/200 OR BETTER CORR TO 20/20-0	20/400 OR BETTER CORR TO 20/20-0	NO LIMIT CORR TO 20/20	20/100 OR BETTER CORR TO 20/20	NO LIMIT CORR TO 20/20	NO LIMIT CORR TO 20/20	NO LIMIT CORR TO 20/20	NO LIMIT CORR TO 20/20
NVA	NO LIMIT PROVIDED CORRECTABLE TO 20/20. MUST CARRY CORRECTION IF WORSE THAN 20/40.								
REF ERROR	NO LIMIT ON REFRACTION. PERFORM MANIFEST ON DVA >20/20								
PHORIAS	6ESO 6EXO 1.5HYPER			NO OBVIOUS HETEROTROPIA OR SYMPTOMATIC HETEROPHORIA (NOHOSH)					SAME AS SG1
DEPTH PERECEPTION	MUST PASS ONE OF: AFVT A-D, VERHOEFF 8/8 OR 16/16, RANDOT AND TITMUS ≤40 SEC OF ARC			NOT REQUIRED	SAME AS SG1	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	SAME AS SG1
COLOR VISION	PIP 12/14, ISHIHARA 12/14 ON 14 PLATE TEST, FALANT 9/9 OR 16/18						NOT REQUIRED	SAME AS SG1	SAME AS SG1
IOP	Must be ≤ 22mmhg and no more than 4 difference between eyes. Perform on all examinations								
ECG	Required Every 5 years at ages 25, 30, 35, 40 till age 50 then annually on all aviation duty physical exams. SEE SPECIAL ON NASA APPLICANTS								
URINE	**EVERY FIVE YEARS**: OCCULT BLOOD, PROTEIN, AND GLUCOSE BY DIPSTICK								
BLOOD TESTS	ANNUALLY: HIV **EVERY FIVE YEARS**: HCT, CHOLESTEROL, HDL, LDL, TRIGLYCERIDES, FASTING BLOOD SUGAR, RPR								
CXR	REQUIRED ONLY WHEN CLINICALLY INDICATED (SEE SPECIAL ON NASA APPLICANTS)								
B/P	SITTING ONLY REQUIRED. MUST BE LESS THAN 140/90								
PULSE	MUST BE <100 AND >45, IF <45 DOCUMENT APPROPRIATE CARDIO RESPONSE TO EXERCISE								
AUDIO	FREQ BETTER EAR WORSE EAR 500HZ 35DB 35DB 1000HZ 30DB 30DB 2000HZ 30DB 50DB								
SPECIAL	**Interservice Transfer**: Physical exams must be less than one year old, and must be sent to BUMED M3F1 for commissioning endorsement before aviation determination can be made. **NFO to Pilot transition program:** Refer to SNA standards **NASA Applicants**: Applicants for Astronaut must meet SG1 standards and have DVA of 20/100 or better. Mission specialist applicants must meet SG1 standards with DVA of 20/200 or better. Long form physical examination is required with all required labs, ECG, CXR, and manifest refraction. Submission of DD2808, DD2807, and JSC 465 (NASA Form) Supplemental Medical Hx, and ECG tracing required. Physical exam must be within timeframe noted by NAVADMIN msg which announces the program.								
NOTE	DVA of 20/20 in Class 1 personnel is 20/20 with zero misses on 20/20 line. DVA of 20/20 in Class 2 and 3 personnel is considered 20/20 with up to 3 misses on 20/20 line (7/10). All aviation personnel must wear their corrective lenses if needed. If uncorrected DVA is worse than 20/100, they must carry an extra pair.								

AEROMEDICAL TECHNICAL BULLETIN

Reading Aloud Test

Background:
Administer the reading aloud test (RAT) to aviation training applicants as a standardized assessment of an individual's ability to communicate clearly in the English language, in a manner compatible with safe and effective aviation operations. Current communication systems degrade speech intelligibility. The radio environment separates the speaker and the listener from the benefits of watching lips and body language cues. Those with marginal English skills have problems communicating effectively in the operational aviation environment.

Failure of the screening RAT by applicants with English as their native language may indicate undiagnosed or concealed learning disabilities. Administration of the RAT occasionally reveals immature, indecisive, careless, or excessively introverted personalities, which may indicate a high risk for aviation training failure.

When administered to aviation personnel, to include ATC personnel, the RAT will be used to determine the individual's ability to clearly enunciate, in the English language, in a manner compatible with safe and effective aviation operations.

The RAT appears to be a nonsense story, but was designed as a phonetic exercise. Assessment by the flight surgeon (or Aeromedical Examiner or Aeromedical Physician Assistant) is subjective. Applicants should read the RAT clearly, deliberately, without hesitation, error, or stuttering. The test is scored as "RAT-PASS" or "RAT-FAIL." The examining physician will consult with a local instructor pilot or ATC supervisor in questionable cases.

Procedure:
Have the examinee stand erect, face the examiner across the room and read aloud, as if he/she were confronting a class of students.

If he/she pauses, even momentarily, on any phrase or word, the examiner immediately and sharply says, "What's that?" and requires the examinee to start again with the first sentence of the test. The true stammerer usually will halt again at the same word or phonetic combination and will often reveal serious stammering.

Have the applicant read aloud as follows:

"You wished to know all about my grandfather. Well, he is nearly 93 years old; he dresses himself in an ancient black frock coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long flowing beard clings to his chin giving those who observe him a pronounced feeling of the utmost respect. When he speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our small organ. Except in winter when the ooze of snow or ice is present, he slowly takes a short walk each day. We have often urged him to walk more and smoke less, but he always answers, "Banana oil!" Grandfather likes to be modern in his language."

2.0 WAIVERS FOR PHYSICAL STANDARDS

2.1 INTRODUCTION

Aircrew personnel and applicants who do not meet physical standards may be considered for a waiver of standards. Waivers may be granted on the need of the service, consistent with training, experience, performance, and proven safety of the aircrew personnel. In general, applicants are held to a stricter standard than designates and are less likely to be recommended for a waiver.

2.2 GENERAL REQUIREMENTS

In addition to the criteria mentioned above, waivers are also based upon risk management and how it is applied to the following nine criteria:

1. It must be acceptable for unrestricted general military duty as per the Manual of the Medical Department (MANMED/NAVMED P-117).
2. It cannot jeopardize the successful completion of a mission.
3. The disqualifying defect must not pose a risk of sudden incapacitation.
4. It must not pose any potential risk for subtle incapacitation that might not be detected by the individual but would affect alertness, special senses, or information processing.
5. It must not be subject to aggravation by military service or continued flying.
6. It must be resolved or stable at the time of the waiver (i.e. non-progressive).
7. If the possibility of progression or recurrence exists, the first signs or symptoms must be easily detectable and cannot constitute an undue hazard to the individual or to others.
8. It cannot require uncommonly available tests, regular invasive procedures, non-routine medications or frequent absences to monitor stability or progression especially during deployment or assignment to austere areas.
9. It cannot involve unconventional medical treatments that are outside of standard of care.

2.3 GRANTING AUTHORITY

Waivers are granted by BUPERS, CMC (ASM), or other appropriate waiver granting authority. NAMI Code 53HN must review all waiver requests and forward their recommendations to BUPERS or CMC as appropriate. It is important to note that the BUMED endorsement letter recommending a disposition on an aircrew member is not the final action and requires BUPERS or CMC endorsement. In other words, a waiver is not truly granted until BUPERS or CMC acts. Until that time, the waiver is still in a “recommended” status.

2.4 REQUESTING AUTHORITY

Waivers may be requested by the following individuals:

1. The service member initiates the waiver request in most circumstances.
2. The commanding officer of the member may initiate a waiver request.
3. The examining or responsible medical officer may initiate a waiver request.

4. In certain cases the initiative to request or recommend a waiver will be taken by BUMED; the Commanding Officer, Naval Reserve Center; CMC; or NAVPERSCOM. In no case will this initiative be taken without informing the member's local command.
5. All waiver requests shall be either initiated or endorsed by the member's commanding officer.

2.5 ROUTING OF WAIVER REQUESTS

Except in rare cases, the waiver request will begin at the member's command either with the member or the commanding officer. All waiver requests must be routed through the member's commanding officer and contain a statement indicating that the commanding officer is aware of the request for a waiver, the Aeromedical recommendation, and whether the commanding officer concurs with this recommendation. A formal command endorsement typed on command letterhead must accompany all waiver requests for alcohol disorders. After review by the member's commanding officer, all waiver requests shall be forwarded to NAMI Code 53HN for review and endorsement via AERO submission. NAMI Code 53HN will review all waiver requests and forward their recommendation to the appropriate waiver granting authority (BUPERS or CMC) via formal BUMED letter via AERO. Copies of this BUMED letter are available via AERO and can be printed by the Aeromedical personnel who is responsible for the member. Copies of the BUMED letter shall be placed in the member's health record along with the waiver request.

2.6 WAIVER SUBMISSION REQUIREMENTS

The submitter should refer to the appropriate section of the Aeromedical Reference and Waiver Guide (ARWG) for specific submission requirements for each defect or disqualifying diagnosis. All waiver submissions require **ALL OP REPORTS** pertaining to the waiver (as indicated), an Aeromedical Summary (AMS), to include applicants, and the following items:

APPLICANTS:

1. Complete applicant physical exam
2. A detailed history, review of systems, and physical findings associated with the defect shall be recorded on the physical exam
3. All supporting documentation required by the appropriate section of the ARWG (i.e. laboratory, radiology, consultant reports...)
4. Flight Surgeon's recommended disposition

DESIGNATED:

1. The member's most recent flight physical
2. All supporting documentation required by the appropriate section of the ARWG (i.e. laboratory, radiology, consultant reports, etc...)
3. All information required for continuation of previous waivers
4. The Aeromedical Electronic Resource Office (AERO) website should be reviewed prior to submission to ensure that the member has all prior waivers and physical exams up-to-date
5. Once complete, the waiver request shall be submitted within 10 working days to NAMI Code 53HN via the member's commanding office via AERO.

2.7 WAIVER CONTINUATION

Waiver continuation requests must be submitted to NAMI Code 53HN for review as specified in the BUMED waiver recommendation letter and the Waiver Authority granting letter via AERO. Refer to the BUMED endorsement letter to determine how frequently submission is required and what information must be submitted. The continuation request must include the member's annual physical exam (long or short form) and all required additional information as specified by BUMED letter and/or the pertinent section of the ARWG.

2.8 AEROMEDICAL CLEARANCE

A "waiver granted" normal duration Aeromedical Clearance Notice (up-chit) may only be issued after a waiver has been granted by BUPERS or CMC. A temporary up-chit may be issued if:

1. NAMI Code 53HN has endorsed the waiver request and recommended a waiver of standards be granted
2. A Local Board of Flight Surgeons (LBFS) may issue a temporary up-chit in accordance with MMD Chapter 15-80. See criteria below

A temporary up-chit **may not exceed 90 days in duration.** If the member holds a grounding letter issued by BUPERS or CMC stating that a waiver has previously been denied, a **temporary up-chit shall not be issued.** The member must wait until a waiver is granted by appropriate authority before any up-chit is issued.

2.9 LOCAL BOARD OF FLIGHT SURGEONS

A Local Board of Flight Surgeons (LBFS) provides an expedient way to return a grounded aviator to flight status pending official BUMED endorsement and granting of a waiver by BUPERS or CMC. A LBFS is convened by the member's commanding officer based on the recommendation of the flight surgeon or higher authority. It must consist of at least three medical officers, two of whom shall be flight surgeons. The findings of the LBFS may be recorded as an Aeromedical Summary (AMS).

The senior flight surgeon on the board may issue a temporary, 90 day up-chit if the following criteria are met:

1. The condition is addressed by the ARWG
2. The member has completed all tests and required information as specified by the ARWG
3. The member has met all criteria for a waiver as specified in the ARWG
4. The member has not been previously grounded by BUPERS or CMC

A LBFS shall NOT issue an up-chit to personnel whose condition is not addressed by the ARWG. In those cases a waiver request should be forwarded to NAMI Code 53HN via AERO with a request for expedited review. A LBFS shall NOT issue an up-chit if the member currently has a grounding letter by BUPERS or CMC.

2.10 SPECIAL BOARD OF FLIGHT SURGEONS

This board consists of members appointed by the OIC of NAMI. The board evaluates medical cases, which, due to their complexity or uniqueness, warrant a comprehensive aeromedical evaluation. A Special Board of Flight Surgeons should not be requested merely to challenge a

physical standard or disqualification without evidence of special circumstances. Refer to MANMED 15-81 for specific instructions on how to request a Special Board of Flight Surgeons and more details regarding its proceedings.

2.11 SENIOR BOARD OF FLIGHT SURGEONS

This board is the final appeal board to review aeromedical dispositions as requested by NAVPERSCOM, CNO, or CMC. The board consists of a minimum of five members, three of whom must be flight surgeons and one of whom shall be a senior line officer assigned by the CNO or CMC. The presiding officer shall be the Deputy Chief, BUMED, Operations and assisted by the Director, Aerospace Medicine. Refer to MANMED 15-82 for additional information.

2.12 AEROMEDICAL SUMMARY

The Aeromedical Summary (AMS) is required for all initial waiver requests (designated, applicant and members currently in aviation training). An AMS allows the Flight Surgeon to write a detailed summary of the member's condition and how it relates to his current flying duty. It should be directed to the member's specific condition and include a detailed history of present illness (HPI), directed physical exam, and include results of all pertinent ancillary studies. The AMS should provide enough detail so that the reviewer can make an appropriate aeromedical decision based solely on this document. As stated earlier, the waiver request shall include the AMS, all ancillary consultant, laboratory, radiological and op reports, and the member's current physical exam. A LBFS may detail its findings and recommendations in an AMS, but not every AMS necessarily serves as a LBFS. Please refer to the AERO tutorial on "How to complete an AMS in AERO". A PRK AMS template and a Hypertension AMS template are also available for download in the forms section of the ARWG as well as their respective medical sections (ophthalmology and cardiology). An AMS MUST BE associated with a physical that is dated the same day or prior.

*AERO requires a UIC for the medical facility and the member's command.

2.13 HOW TO SUBMIT A WAIVER REQUEST

Waiver requests shall be submitted to NAMI Code 53HN for review and appropriate endorsement via AERO.

All flight physicals (designated or candidate) which require BUMED endorsement through NAMI, should be submitted via AERO (https://vfso.rucker.amedd.army.mil/). Packages received through mail, facsimile or e-mailed scans will be returned to the examining facility without action unless accompanied by a letter explaining why submission via AERO was not utilized. If using an e-mail, please ensure the e-mail is encrypted. If a physical needs to be sent through the mail, the physical must be sent via certified mail (FEDEX, USPS) and mailed to:

Officer in Charge
Navy Medicine Operational Training Center Detachment
Naval Aerospace Medical Institute

340 Hulse Road
Attn: Code 53HN
Pensacola, FL 32508

When mailing, please follow-up with an e-mail.

You can send an encrypted e-mail of scanned documents to NOMI-Code342@med.navy.mil. Whenever possible, the file type .pdf should be used. If necessary, .tif or .jpg can also be sent. E-MAIL SHOULD ONLY BE USED WHEN ON A SHIP AND INTERNET PROBLEMS DUE TO DEPLOYMENT.

2.14 HOW TO CHECK ON THE STATUS OF A WAIVER REQUEST

Log on to AERO website: https://vfso.rucker.amedd.army.mil/. This will give you access to check both the current status of aviation personnel and track the waiver request as it makes its way through the process. Access to this site requires your CAC card and PIN and a user account (http://www.med.navy.mil/sites/nmotc/nami/arwg/Pages/AeromedicalReferenceandWaiverGuide.aspx) has specific requirements for requesting an account).

3.0 CARDIOLOGY

Last Revised: FEB 2016 Last Reviewed: FEB 2016

Significant changes: 1) Addition of section on long QT syndrome

3.1 AORTIC INSUFFICIENCY

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case basis on Designated Personnel for mild and moderate severity, for non-ejection seat aircraft, maritime/helo/transport only

AEROMEDICAL CONCERNS: Acute complications from aortic insufficiency are rare. Chronic complications include left ventricular dilation and heart failure. There are theoretical concerns that the regurgitant flow of blood back into the LV may predispose the individual to GLOC, but this has not been confirmed. A secondary concern is that weight training to improve G-tolerance is relatively contraindicated, although such training is highly desirable in the tactical community.

WAIVER: Aortic insufficiency associated with a structural abnormality of the valve is CD, with no waiver for candidates. Designated individuals can receive waiver recommendations limited to non-ejection seat aircraft, maritime/helo/transport only. Traditionally, AI has been felt not to occur in normal subjects, but NAMI and the Air Force Aeromedical Consult Service have detected a limited degree of AI in a number of patients without detectable valvular pathology. On echo, these "physiologic" AI cases typically have a very small AI jet that does not extend out of the LVOT. In these cases, the condition is NCD, and as such does not require a waiver.

BICUSPID AORTIC VALVES: Because congenital bicuspid aortic valves can degenerate and progress to aortic stenosis or insufficiency, a bicuspid aortic valve is CD. Waivers will not be considered for applicants. If an incidental finding in designated aircrew, condition may be waiverable with possible restriction on aircraft or flight profile.

DIAGNOSIS/ICD-10 Code:
I35.1 Nonrheumatic aortic insufficiency

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology or Internal Medicine, unless otherwise specified by code 53HN.

3.2 AORTIC STENOSIS

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case basis on Designated Personnel for mild severity, for non-ejection seat aircraft, maritime/helo/transport only

AEROMEDICAL CONCERNS: Aortic stenosis (AS) is generally well compensated over long periods of time. The cardinal manifestations of AS are angina, syncope and congestive heart failure. Angina is due either to CAD or the increased myocardial oxygen demands complicated by LVH. Syncope is frequently exercise related, and is generally the result of the inability of the heart to increase cardiac output. The compensatory LVH may also predispose the member to dysrhythmias, and result in syncope or sudden death.

WAIVER: Any degree of aortic stenosis is CD for aviation. Waivers to flight status may be considered only for designated individuals with mild AS (pressure gradient < 25 mm Hg). They are restricted to non-ejection seat aircraft, maritime/helo/transport only.

DIAGNOSIS/ICD-10 Code:
I35.0 Nonrheumatic aortic stenosis

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology or Internal Medicine, unless otherwise specified by code 53HN.

3.3 MITRAL REGURGITATION

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers for Designated Personnel are considered on a case-by-case basis

AEROMEDICAL CONCERNS: Reduced exercise tolerance and sudden attacks of acute pulmonary edema in severe cases.

WAIVER: Waiver can be considered for mild mitral regurgitation provided it is not associated with mitral stenosis or connective tissue disease. Mild MR without abnormalities of the mitral valve, abnormalities of left atrial size or abnormalities of LV size will be NCD. Higher grades of valvular insufficiency, or valvular insufficiencies with structural abnormalities will be considered for waiver recommendation on a case-by-case basis.

DIAGNOSIS/ICD-10 Code:
I34.0 Nonrheumatic mitral insufficiency

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology or Internal Medicine, unless otherwise specified by code 53HN.

3.4 MITRAL STENOSIS

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR							
WNR	X	X	X	X	X	X	X
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	These cases should be forwarded to PEB for retention determination.						

AEROMEDICAL CONCERNS: Mitral stenosis has a varied clinical presentation. Hemoptysis can occur, and ranges from simply blood streaked sputum to frank hemorrhage; although dramatic, it is rarely life-threatening. Atrial fibrillation is a frequent sequela of MS. Hemodynamic decompensation may result from atrial fibrillation, with or without a rapid ventricular response rate, as ventricular filling is highly dependent on atrial contraction (atrial kick), and/or a long diastolic filling time. MS may also present with chest pain. The dilated left atrium is prone to clot formation, and embolic events are not uncommon.

WAIVER: Any degree of mitral stenosis is CD, with no waiver recommended. Valve replacement surgery is not waived.

DIAGNOSIS/ICD-10 Code:
I34.8 Other nonrheumatic mitral valve disorders

3.5 MITRAL VALVE PROLAPSE

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[2]	X[2]	X[2]	X[2]	X[2]	X[2]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case basis for Class III & IV applicants only
2. Waivers are considered on Designated Personnel on a case-by-case basis for mild severity, not requiring medication, and without history of arrhythmia

AEROMEDICAL CONCERNS: MVP syndrome symptoms vary in severity and are manifold in presentation. Arrhythmias are seen in a subset of MVP patients; most commonly premature ventricular beats, paroxysmal supraventricular and ventricular tachycardias. Non- anginal chest pain often causes patients to seek medical attention. Palpitations, syncope and light-headedness have been reported, and sudden death is a rare complication. Of those patients who develop ventricular arrhythmias, approximately 50% have a history of syncopal or presyncopal episodes.

WAIVER: Candidates are not recommended for waiver, except for class III or IV. Designated personnel with minimal regurgitation, who do not require medication or have a history of significant arrhythmias, may be considered for waiver.

DIAGNOSIS/ICD-10 Code:
I34.8 Other nonrheumatic mitral valve disorders

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Echocardiogram, Exercise stress testing and Holter monitor.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology or Internal Medicine, unless otherwise specified by code 53HN.

3.6 VALVULAR CONDITIONS (OTHER)

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case basis

AEROMEDICAL CONCERNS: The major concern is the relationship with mitral and aortic valve pathology. Pulmonic or tricuspid stenosis can both produce fatigue or shortness of breath. Tricuspid insufficiency is associated with arrhythmias.

WAIVER: Asymptomatic cases with mild functional abnormalities of the tricuspid or pulmonary valves may be considered for waiver in the absence of other pathology.

DIAGNOSIS/ICD-10 Code:
I36.8 Other nonrheumatic tricuspid valve disorders
I37.8 Other nonrheumatic pulmonary valve disorders

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Exercise stress testing and Holter monitor.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology or Internal Medicine, unless otherwise specified by code 53HN.

3.7 ARRHYTHMIAS (PAC/PVC/OTHER)

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case basis

AEROMEDICAL CONCERNS: The concerns usually relate to presence of underlying heart disease. There is also a risk of progression to the development of symptoms or yet more severe arrhythmias which could be disabling in flight.

WAIVER: A waiver is not recommended for ventricular fibrillation or flutter. Most other conditions that have not been specifically addressed are waiverable provided there is no evidence of underlying heart disease. Some conditions require the flier to be grounded while undergoing evaluation while others allow a continuation of flying status. When in doubt, discuss the case with NAMI before making any decisions.

DIAGNOSIS/ICD-10 Code:
I49.1 Atrial premature depolarization
I49.3 Ventricular premature depolarization
I49.49 Other premature depolarization

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Patients with sinus pause (>2.5 sec), single or paired premature atrial contractions (PAC), single or paired junctional premature beats, supraventricular premature beat, idioventricular rhythm, uniform ventricular premature contraction (PVC), multiform PVC, or fused PVC should have a Holter monitor while remaining on flying status.
   a. If this is normal, no further evaluation is necessary.
2. Patients with sinus bradycardia (<40 bpm) should have a rhythm strip performed during exercise, if it cannot be accounted for by a vigorous exercise program
   a. If the individual cannot achieve 100 bpm or double the heart rate, a Holter monitor and exercise stress test should be carried out while the aviator is grounded.
3. Patients with paired PVC's or PVC with R on T phenomenon require Holter monitor, exercise stress test and echocardiogram while grounded.
   a. If paired or frequent ectopic beats are seen on Holter monitoring (comprising >1% of all beats or >25% of all beats in any hour, or more than 5 per minute, or if multifocal), an echocardiogram and exercise stress test should be performed.
4. In cases where ectopic beats comprise 10% or more of all beats or >25% in any hour or more than 10 pairs of ectopic beats are seen in 24 hours, the individual should be grounded and undergo complete cardiology evaluation.

- Released from *internal medicine or cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *internal medicine or cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Internal medicine or cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).

- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology or Internal Medicine, unless otherwise specified by code 53HN.

3.8 ATRIAL FIBRILLATION (AFIB)

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Yes, if ablation performed to allow time for complete evaluation and waiver process						

1. Waivers are considered on a case-by-case basis on Designated Personnel following a single episode of atrial fibrillation with a documented precipitating factor (e.g. Holiday Heart), a return to full flight status is possible after 6 months without recurrence. No medications are waivered. Waivers are not recommended in paroxysmal/recurrent cases without successful ablation.

AEROMEDICAL CONCERNS: Loss of atrial contribution to cardiac output with or without rapid ventricular response may result in hemodynamic symptoms and impaired exercise capacity with implications for aviators in high performance aircraft. Symptoms of atrial fibrillation often include palpitations and lightheadedness, and may include near-syncope, dyspnea, or chest pain, although many episodes of atrial fibrillation are asymptomatic. There is a significantly increased risk of thrombosis and embolic phenomena in the setting of both paroxysmal and chronic atrial fibrillation. Chronic medications for maintenance of sinus rhythm or for ventricular rate control may impair hemodynamic response to +Gz loading.

REMEMBER: SINCE THE MINIMUM TIME OF OBSERVATION FOR RECURRENCE IS GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS; A LOCAL BOARD OF FLIGHT SURGEONS IS NOT AUTHORIZED TO RETURN TO FLIGHT STATUS.

Radiofrequency catheter ablation for atrial fibrillation is also CD. Paroxysmal atrial fibrillation following successful ablation may be considered no sooner than 6 months post-procedure for all designated classes with the exception of Class I, SG1 which requires at least 12 months observation post-procedure. Waiver requires that the member remain asymptomatic off all antiarrhythmic medication with no recurrence of atrial fibrillation after ablation and a normal cardiac evaluation as outlined below. Due to significantly lower success rates, waivers for ablation of permanent atrial fibrillation are generally <u>not</u> recommended.

DIAGNOSIS/ICD-10 Code:
I48.91 Unspecified atrial fibrillation

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

<u>Single episode of Afib (resolved)</u>:

1. Exclusion of secondary causes is mandatory, including an exact detailed history of the event(s) (i.e. alcohol use, thyroid disorders, stimulant use, sleep, stress, etc.).
2. Complete cardiology consultation is required, to include:
   a. Exercise treadmill testing
   b. Echocardiography
   c. Ambulatory EKG monitor (event monitor) obtained 3-6 months post-event (ideally sometime during final observation month) off all antiarrhythmic medication. Monitoring for minimum of 10 days is preferred.
   Note: If ambulatory EKG is not available a 48 hour Holter may be substituted.

Recurrent/Paroxysmal Afib treated with radiofrequency catheter ablation:

1. Exclusion of secondary causes is mandatory, including an exact detailed history of the event(s) (i.e. alcohol use, thyroid disorders, stimulant use, sleep, stress, etc.).
2. Complete cardiology consultation is required, to include:
   a. Exercise treadmill testing
   b. Echocardiography
   c. At least one ambulatory EKG monitor (event monitor). *Monitor should be applied for minimum of 10 days* and off all antiarrhythmic medication. Monitors obtained for waiver consideration at the 6 month mark should be obtained no sooner than 5 months post-ablation.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

If ablation not performed:

1. Flight surgeon exam with assessment for symptoms and EKG is required. Additional testing/monitoring requirements may be requested by NAMI on a case-by-case basis.
2. Flight Surgeon comment regarding interval history & symptoms.
3. Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

If ablation performed:

1. Ambulatory EKG monitor (event monitor): *for minimum of 10 days* at 6 month intervals required for 2 years post-ablation for continuation of waiver.
   a. After 2 years, ambulatory EKG monitor (event monitor) required at 12 month intervals for continuation of waiver. (If ambulatory EKG is not available a 48 hour Holter may be substituted).
   b. Any evidence of recurrence requires grounding. A second waiver is unlikely but may be reconsidered after a second ablation procedure.
2. Flight Surgeon comment regarding interval history & symptoms.
3. Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

3.9 ATRIAL FLUTTER (AF)

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Yes, recommended since member grounded for 6 months pending full evaluation						

1. Waivers are considered on a case-by-case basis on Designated Personnel following a single episode of atrial flutter with a documented precipitating factor (e.g. Holiday Heart). No medications are waivered. 6-month grounding required during evaluation. Waivers are not recommended in recurrent cases.

AEROMEDICAL CONCERNS: Acute atrial flutter may result in a runaway ventricular response rate. AF may be associated with chest pain, syncope or near syncope. There is a significantly increased incidence of embolic phenomena.

REMEMBER: SINCE THE MINIMUM TIME OF OBSERVATION FOR RECURRENCE IS GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS; A LOCAL BOARD OF FLIGHT SURGEONS IS NOT AUTHORIZED TO RETURN TO FLIGHT STATUS.

DIAGNOSIS/ICD-10 Code:
I48.92 Unspecified atrial flutter

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Exclusion of secondary causes is mandatory, including an exact detailed history of the event(s) (i.e. alcohol use, thyroid disorders, stimulant use, sleep, stress, etc.).
2. Complete cardiology consultation is required, to include:
   a. Exercise treadmill testing
   b. Echocardiography
   c. Three Holter monitors at monthly intervals

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

EKG.
Flight Surgeon comment regarding interval history & symptoms.
Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

3.10 ATRIAL SEPTAL DEFECT (ASD)/PATENT FORAMEN OVALE

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X[1,2]	X[1,2]	X[1,2]	X[1,2]	X[1,2]	X[1,2]
NCD							
WR							
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Hemodynamically stable ASD or PFO is NCD. Hemodynamically stable is defined as:
   a. Asymptomatic
   b. No right ventricular enlargement on echocardiogram
   c. No fixed splitting of S2
   d. Normal EKG
   e. Normal chest radiograph
2. Cases not meeting stable criteria above are CD and waivers will be considered on a case-by-case basis on Designated Personnel.

AEROMEDICAL CONCERNS: Physiologically, it is difficult to differentiate between patent foramen ovale (no murmur, no change in S2) and atrial septal defects (murmur, fixed split in S2). For the purposes of this discussion, the two conditions will be both considered "atrial septal defects". Atrial septal defects predispose individuals to several conditions, however, the known frequency of the condition in military aviation personnel and the relative lack of demonstrated pathology argue against any significant effect. It has been postulated that ASD predisposes to decompression sickness (DCS). Valvular dysfunction can occur and pulmonary hypertension may develop.

DIAGNOSIS/ICD-10 Code:
Q21.1 Atrial septal defect

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Routine Submission

Flight Surgeon comment regarding interval history & symptoms.

3.11 ATRIOVENTRICULAR CONDUCTION DISTURBANCES

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
NCD							
WR							
WNR	X[2]	X[2]	X[2]	X[2]	X[2]	X[2]	X[2]
LBFS	No	Yes	Yes	Yes	Yes	Yes	Yes
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. First degree A-V block and Mobitz type I second degree A-V block (Wenckebach) are NCD as long as non-invasive work-up as below is normal.
2. Mobitz type II second degree and third degree A-V block are CD, waivers not recommended.

AEROMEDICAL CONCERNS: There is a risk of bradycardia with decreased +Gz tolerance, syncope or sudden death in some conduction disturbances.

DIAGNOSIS/ICD-10 Code:
I44.0 Atrioventricular block, first degree
I44.1 Atrioventricular block, second degree

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. First degree A-V block:
   a. Local evaluation should include a repeat EKG or rhythm strip performed during exercise, which may be calisthenics. The heart rate may need to be increased over 80-100 bpm.
      (1) If the PR interval shortens (it does not have to be normal) with increased heart rate no further evaluation is necessary, condition is NCD.
      (2) If PR interval remains prolonged despite increased heart rate, a non-invasive cardiac evaluation including exercise stress testing, echocardiography, and Holter monitor is required. Up to this stage, the aviator may remain on flying status during evaluation. If the tests are normal, no further evaluation is needed, condition is NCD.
2. Second degree A-V block (Mobitz Type I) requires:
   a. Cardiology consultation, including exercise stress testing, echocardiography, and Holter monitor.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

EKG.
Flight Surgeon comment regarding interval history & symptoms.

3.12 CORONARY ARTERY DISEASE

Last Revised: JAN 2016 Last Reviewed: FEB 2016

Significant changes: 1) Added documentation of ASVCD risk to waiver requirements.

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS		No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case on Designated Personnel

AEROMEDICAL CONCERNS: The major concern is the risk of sudden death or incapacitation in flight – acute coronary syndromes are unpredictable and often catastrophic at initial presentation. Characterization of two hazards is important in minimizing this risk – the presence of hemodynamically significant stenosis (coronary artery narrowing) and the total burden of disease or plaque (most commonly atherosclerosis). Prevention (either primary or secondary) of excess hazards depends upon adequate identification of aviators at risk followed by treatment of modifiable factors. The risk control measures for CAD are revascularization of any significant lesions and aggressive risk factor modification. Advances in screening, diagnostic modalities, and treatment of CAD increase the likelihood that aviators with asymptomatic CAD (not strictly disqualified by the above standards) will present for aeromedical disposition. Advances in the treatment of symptomatic CAD also open the potential for recommending aviators to return to aviation duty when both the lesion and underlying disease process can be controlled to acceptable levels of risk.

Effective treatment requires long term medications. Medications used have potential adverse effects or toxicities. Effects of the aviation environment on medication toxicity are generally unknown. Monitoring of treatment may require periodic testing not commonly available in operational settings.

DIAGNOSIS/ICD-10 Code:
I25.9 Chronic ischemic heart disease, unspecified

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Statement from member documenting tobacco cessation (if applicable).
2. Documentation of ASCVD Risk found at http://tools.acc.org/ASCVD-Risk-Estimator/.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptoms.

Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

Waiver may be terminated if any of the following occur:

1. BMI > baseline or not at target
2. Noncompliance with medications
3. Unwillingness to comply with exercise program or tobacco cessation
4. Failure to promptly report recurrence of symptoms

3.13 HYPERLIPIDEMIA

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD							
NCD	X	X	X	X	X	X	X
WR							
WNR							
LBFS	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EXCEPTIONS							
LIMDU/PEB	Not required.						

AEROMEDICAL CONCERNS: Risk of ischemic heart disease with increased plasma cholesterol and with increased low density lipoprotein (LDL).

Before any therapy is initiated, exclude all causes of secondary hyperlipidemia such as hypothyroidism, diabetes, cholestasis, alcohol abuse, gout, renal failure, nephrotic syndrome, myeloma and systemic lupus erythematosus.

See MEDICATIONS section regarding antihyperlipidemic medications.

DIAGNOSIS/ICD-10 Code:
E78.4 Other hyperlipidemia

3.14 HYPERTENSION

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	Yes	Yes	Yes	Yes	Yes	Yes
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case on Designated Personnel

AEROMEDICAL CONCERNS: Untreated hypertension is associated with long term changes in the cardiovascular system that in to have the effect of significantly reducing life span. Untreated hypertension also predisposes individuals to cerebrovascular accident, myocardial infarction, ophthalmologic disease and renal failure. The magnitude of the blood pressure elevation is directly proportional to the risk of developing complications and is increased by other risk factors such as hyperlipidemia or cigarette smoking. A diagnosis of **White Coat Hypertension** may be warranted, however, must be supported by a completely normal 24-hour ambulatory blood pressure monitor**.** If the blood pressure exceeds standards at the time of exam, three day blood pressure checks (at two different times each day) are indicated. Previously high readings which are then normal on three day follow-up DOES NOT relieve the examining flight surgeon from re-evaluation if the blood pressure is high during subsequent physical exams (or sick-call visits).

Blood pressure exceeding 139 mmHG systolic or 89 mmHG diastolic is CD and a waiver will not be recommended. If the systolic pressure is 150 mm or less and/or the diastolic 100 mm or less, member may continue to fly for a maximum of six months with Flight Surgeon's approval if asymptomatic and no evidence of end organ damage. This allows for a trial of weight reduction, diet modification, exercise, etc. Clearance Notice should clearly state the necessity to re-evaluate for effectiveness of non-pharmacologic measures every three months and be issued for duration of only 90 days and the reason (pending blood pressure reduction measures). At the end of a total of six months, if member is within aviation standards (<140/90), they are PQ. If not within standards, member is NPQ, and grounded for any remaining work-up and the initiation of therapy. **Blood pressure out of standards will not be waived**; the approved medications are outlined below. Unrestricted waivers are possible if adequate control of blood pressure is achieved (BP<140/90), there is no evidence of end-organ damage, and there are no significant medication side effects in designated personnel.

LIFESTYLE MODIFICATION: The cornerstone of blood pressure management begins with lifestyle modification. Proper diet and adequate aerobic exercise will improve cardiovascular fitness and decrease the effects that hypertension can cause. When lifestyle modifications alone are insufficient to control a patient's blood pressure, medical therapy will need to be initiated. Diet and exercise remain important adjuncts to therapy and should be encouraged at a level appropriate to the patient's age, current level of conditioning, and stage of hypertension.

MEDICAL THERAPY: After appropriate evaluation of an aviator with HTN (and a trial of diet and exercise therapy if blood pressure is less than 150/100) the use of **Angiotensin Converting Enzyme (ACE) Inhibitors** and **Hydrochlorothiazide (HCTZ)** can be used as **first line** agents for treatment of HTN in aviation personnel. ACE inhibitors are preferred as they have a low incidence of aeromedically significant side effects and are generally well tolerated. There are no dose restrictions on these medications as long as manufacturer recommended maximum doses are not exceeded. Use of **Angiotensin II Receptor Blockers (ARBs)** medications can be used if aviators are intolerant to ACE inhibitors secondary to cough. The documentation should clearly state the reason for such medication

use (i.e. “member developed side effect of cough while on ACE and was switched to ARB with resolution”).

Amlodipine, a calcium channel antagonist, may be considered as a **second line** therapy either alone or in combination with ACE inhibitors, ACE-II or HCTZ. All **second line therapy waivers** are restricted to **SG3, Class II non-tactical aircraft and all Class III and IV.**

Beta blockers are not compatible with waivers for Service Groups 1 or 2. Senior officers (LCDR and above) may be waived to SG3 or Class II flying duties in non-tactical aircraft. Air controllers and UAV operators are usually waived. All SG1 or SG2 or tactical NFOs are NPQ, no waiver. Beta blockers are incompatible with physiologic compensation required in response to G forces so requests should state "transport/maritime/helo aircraft only." If beta blockers are used, we prefer the use of the more cardioselective agents.

All personnel requesting a waiver should have their blood pressure adequately controlled (<140 systolic and <90 diastolic), be free of side effects, and have no complications from their hypertension. All waiver requests outside these guidelines should consult NAMI Internal Medicine.

DIAGNOSIS/ICD-10 Code:
I10 Essential (primary) hypertension

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Documentation of good blood pressure control
2. Documentation of an absence of end organ damage
3. Initial evaluation should include:
   a. CBC
   b. CHEM 7 (serum electrolytes, glucose, urea nitrogen and creatinine)
   c. TSH
   d. Fundoscopic examination
   e. Urinalysis
   f. ECG
   g. An echocardiogram may be required if there is any suggestion of ventricular hypertrophy by exam or ECG
   h. Any pathology detected will require specialist evaluation
   i. The WS-HTN (Hypertension Worksheet) must be completed and uploaded as a supporting document within AERO.

- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding blood pressure control.

1. CHEM 7
2. ECG
3. Urinalysis
4. The WS-HTN (Hypertension Worksheet) must be completed and uploaded as a supporting document within AERO.

3.15 HYPERTROPHIC CARDIOMYOPATHY

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case on Designated Personnel.

AEROMEDICAL CONCERNS: These patients have significant risk of developing dysrhythmias. Angina may also be a complicating factor, and can be due either to superimposed coronary artery disease or ischemia from extrinsic compression of the penetrating branches of the major epicardial vessels. If the hypertrophic changes involve the LV outflow tract, a functional outflow tract obstruction can result, with the attendant reduction in cardiac output and exercise tolerance. There is an annual mortality of 3.4% without surgery. Surgery for obstructive myopathy (myotomy, myectomy) has a mortality of 5-10% and the long term gain is uncertain.

WAIVER: True primary hypertrophic cardiomyopathy (e.g., IHSS) is rare, and is not usually discovered until post-mortem. This condition is disqualifying for general duty, and no waivers are recommended either for accession to general duty or special duty. Waiver will only be considered in the very mildest of cases with no hemodynamic and minimal echocardiographic abnormalities and after the exclusion of underlying pathology. If the myopathy is secondary to other pathology, the underlying condition is the basis of disqualification. If the hypertrophic changes are documented to have resolved after treatment, a waiver recommendation may be considered. The majority of patients with idiopathic cardiomyopathy are disqualified from military flying. If a waiver is requested, refer to NAMI for evaluation.

DIAGNOSIS/ICD-10 Code:
I42.1 Obstructive hypertrophic cardiomyopathy

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Cardiology consultation is required, which should include:
   a. Echocardiography and cardiac catheterization if indicated
   b. Exclusion of underlying secondary causes for hypertrophic cardiomyopathy such as hypertension, pulmonary hypertension, valvular disorders, and hyperthyroidism

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history and cardiac symptoms.
Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

3.16 INTRAVENTRICULAR CONDUCTION ABNORMALITIES

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. See Waiver comments below

AEROMEDICAL CONCERNS: Left bundle branch block (LBBB) is usually associated with coronary artery disease. Right bundle branch block (RBBB), especially as a new finding, may also be associated with heart disease, particularly atrial septal defects.

WAIVER:

1. **RBBB, LAHB, LPHB** are NCD if a non-invasive workup (Holter monitor, treadmill and echocardiogram) is normal.
2. **LBBB** is CD. No waiver recommended for non-designated personnel. A waiver is possible for designated aviators with LBBB in the documented absence of coronary artery disease and if asymptomatic.
3. Bifascicular blocks (LAHB or LPHB with RBBB) are CD, no waiver recommended.
4. **Trifascicular blocks** (1st degree AVB with RBBB and either LAHB or LPHB) are CD, no waivers.
5. **Incomplete RBBB** is NCD, with no workup required. Please refrain from using the term "Nonspecific intraventricular conduction delay".

DIAGNOSIS/ICD-10 Code:
I45.10 Unspecified right bundle-branch block
I44.7 Left bundle branch block, unspecified

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Complete cardiology evaluation is necessary for LBBB, RBBB, left posterior hemiblock and left anterior hemiblock (LAH) if this is a sudden change from previous ECGs.
2. If LAH is found:
   a. If younger than 35 years and no previous recordings are available, an echocardiogram should be performed to rule out congenital heart disease.
   b. If older than 35 with no previous ECGs available, a treadmill test as well as an echocardiogram should be performed.
   c. Pending these evaluations, persons with LAH may remain on flying status.
   d. If the studies are normal, no further evaluation is required.
   e. If LAH develops slowly over some years as a result of progressive left axis deviation, no further evaluation is required.
   f. A standard treadmill in any patient with any conduction defect may be unreliable. Stress echocardiography or thallium stress test is preferred.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).

- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history and cardiac symptoms.
Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

3.17 LEFT VENTRICULAR HYPERTROPHY

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. For Designated Personnel, see Waiver comments below

AEROMEDICAL CONCERNS: An increase in left ventricular mass has been shown in several series to be associated with dysrhythmias, angina or sudden death. Idiopathic or secondary cardiomyopathies are discussed separately.

WAIVER: In our population, LVH based on ECG criteria is usually a false positive. Current criteria, based on the general population, are not valid for our young, athletic population. The electrocardiograph criteria established by the U.S. Air Force School of Aviation Medicine for diagnosis of LVH by voltage will be used to screen naval flight personnel.

LVH by Voltage:
For all aviators - A diagnosis of LVH by voltage is considered NCD provided the echocardiogram is normal. It is not required that the aviator be grounded pending echocardiogram interpretation.
USAFSAM LVH by voltage criteria:

1. S in V1 or V2 plus R in V5 or V6:
   >55mm if age 35 or younger
   >45mm if older than 35
2. No ST/T changes

True LVH:
Applicants - True LVH in applicants is CD and waivers are not recommended (WNR).
Designated Aviators - True LVH in designated aviators CD, with waiver recommended if the aviator is normotensive (with or without antihypertensive medication) and has a normal ejection fraction. Please submit the information required below with an Aeromedical Summary.

DIAGNOSIS/ICD-10 Code:
I51.7 Cardiomegaly

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Echocardiography
2. Internal Medicine or Cardiology evaluation to include exercise history, CAD risk factors.
3. Serial Blood Pressures

- Released from *cardiology or internal medicine* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology or internal medicine* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology or internal medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history, cardiac symptoms, and exercise tolerance.

1. EKG - comparison with previous EKG
2. Serial Blood Pressures
3. If there are any significant changes from initial evaluation, an echocardiogram should be obtained

3.18 PERICARDITIS

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case

AEROMEDICAL CONCERNS: Pericardial effusion can lead to acute cardiovascular compromise secondary to cardiac tamponade. Less severe cases can produce pain and shortness of breath that can be distracting in flight.

WAIVER: The flier should be grounded during the acute illness. Idiopathic pericarditis can be considered for waiver after the acute episode resolves provided there has been no recurrence or sequelae. The disposition of cases secondary to underlying disease will depend on the disease concerned. Any pericardial effusions must be resolved by echocardiography before waiver recommendations will be made.

DIAGNOSIS/ICD-10 Code:
I30.8 Other forms of acute pericarditis

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Cardiology consultation is necessary to exclude connective tissue disorder, myocardial infarction, neoplasm or other disease processes. The workup should include:
   a. Echocardiography to rule out sequelae such as pericardial effusion or constrictive pericarditis.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history, cardiac symptoms, and exercise tolerance.
Specialist Evaluation: Cardiology, unless otherwise specified by code 53HN.

3.19 PRE-EXCITATION SYNDROMES

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. See Waiver Requests comments below

AEROMEDICAL CONCERNS: Pre-excitation syndromes include Wolff Parkinson White (WPW) and Lown-Ganong-Lavine (LGL). WPW patterns with adverse symptoms and/or inducible to a dysrhythmia using electrophysiologic studies (EPS) are associated with increased risks of tachyarrhythmias, hemodynamic compromise (palpitations, lightheadedness, syncope), and sudden death. Ablation is recommended in symptomatic individuals and/or those with EPS-induced dysrhythmias.

Short PR with symptomatic palpitations and/or dysrhythmias, known as Lown-Ganong-Lavine (LGL), is associated with risks of tachyarrhythmias and hemodynamic compromise, and EPS is recommended.

Very short PR (< 0.1) without Delta wave, symptoms or dysrhythmia is associated with slightly elevated risks of dysrhythmia, and non-invasive studies are recommended for aviation personnel.

Short PR (≥ 0.1) without symptoms or dysrhythmias is not considered disqualifying (NCD) and requires no further evaluation. Individuals with short PR and no symptoms have the same risk of adverse cardiac events as the general population.

Pre-excitation syndromes are associated with other types of heart disease, such as hypertrophic cardiomyopathy or Ebstein's malformation. Uninvestigated and/or untreated pre-excitation syndromes are not compatible with flight safety or current care standards.

WAIVER REQUESTS and INFORMATION REQUIRED:

Class I: Applicants or Designated

1. Asymptomatic WPW pattern requires a cardiology evaluation, echocardiogram and EPS.
   a. WPW pattern alone with a normal echocardiogram and non-inducible EPS is considered disqualifying (CD), but a waiver is recommended (WR).
   b. If a dysrhythmia is induced by EPS and ablated, the patient must be retested with EPS immediately after the ablation during that same procedure to ensure dysrhythmias are no longer inducible.
      (1) Designated members are CD/WR and waivered to SG3 during the six-month post-ablation period. Waiver requests to SG1 or SG2 may be submitted six months post-ablation with documentation indicating they had no recurrence of dysrhythmias or symptoms.
      (2) Applicants are CD/WNR. Waivers are considered six months post-ablation, with documentation indicating no recurrence of dysrhythmias or symptoms.
2. WPW syndrome (WPW pattern with symptoms) or LGL (short PR with palpitations) are CD, and require a cardiology evaluation and echocardiogram. Ablation is required for waiver eligibility. Waiver recommendation is on a case-by-case basis, and local board of flight surgeons (LBFS) action is prohibited.

3. Very short PR (< 0.1) without Delta wave, symptoms or dysrhythmia requires a non-invasive cardiology evaluation (24 hour Holter, echocardiogram, stress test). If all tests are negative/normal, then the condition is not considered disqualifying (NCD). If any of the tests are positive/abnormal, then the condition is CD, requires a cardiology evaluation, and may require EPS and/or ablation. Waivers are considered on a case-by-case basis.
4. Short PR (≥ 0.1) without symptoms or dysrhythmia is NCD, and requires no further evaluation, treatment, or waiver.

Class II/III/IV: Applicant or Designated

1. Asymptomatic WPW pattern requires cardiology consultation, echocardiogram, 24-hour Holter monitor, and exercise stress testing.
   a. WPW pattern alone with normal studies is CD/WR.
   b. If cardiology studies determine EPS is indicated, and EPS does NOT cause inducible dysrhythmias, the individual is CD/WR.
   c. If cardiology studies determine that EPS is indicated and the EPS causes inducible dysrhythmias, then ablation is required. During ablation procedure, retesting is required to demonstrate that the dysrhythmia is non-inducible. The condition is CD/WR. Waiver requests are considered immediately; Class II, III and IV do not have a six-month post-ablation waiting period.
2. WPW syndrome (WPW pattern with symptoms) and LGL (short PR with palpitations) are both CD. Waiver requirements are the same as for Class I personnel with symptomatic dysrhythmias (See Class I Paragraph 2).
3. Very short PR (< 0.1) without Delta wave, symptoms or dysrhythmia requires a non-invasive cardiology evaluation (24 hour Holter, echocardiogram, stress test). If all tests are negative/normal, then the individual is NCD. If any of the tests are positive/abnormal, then the individual is CD, requires a cardiology evaluation, and may require EPS and/or ablation. Waivers are considered on a case-by-case basis.
4. Short PR (≥ 0.1) without symptoms or dysrhythmias is NCD, and requires no further evaluation, treatment, or waiver.

DIAGNOSIS/ICD-10 Code:
I45.6 Pre-excitation syndrome

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Cardiology consultation.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history, cardiac symptoms or dysrhthmias, and exercise tolerance.

1. An EKG will be completed and compared to prior studies. In some cases, a Holter monitor may be substituted.
2. If dysrhythmias or symptoms recur, personnel are NPQ and waivers are terminated.

3.20 SINUS BRADYCARDIA

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
NCD							
WR							
WNR							
LBFS							
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. If the heart rate increases with exercise, the bradycardia is NCD, and no waiver is required.

AEROMEDICAL CONCERNS: Extreme sinus bradycardia may be a reflection of an underlying conduction system abnormality. There may be an inability to increase the heart rate in response to increased demand.
WAIVER: If the heart rate increases with exercise, the bradycardia is NCD, and no waiver is required.

DIAGNOSIS/ICD-10 Code:
R94.31 Abnormal electrocardiogram

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history.

1. An EKG with heart rate > 45

3.21 SINUS TACHYCARDIA

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR							
WNR	X	X	X	X	X	X	X
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

AEROMEDICAL CONCERNS: Sinus tachycardia may be a reflection of a significant metabolic abnormality. In candidates, consider anxiety as the root problem. Other causes include fever, hyperthyroidism, dehydration, anemia, hypoxia, pulmonary emboli, and pain.

WAIVER: The waiver recommendation will stem from the reason for the tachycardia. If the heart rate is persistently >100 bpm and no cause has been identified, both candidates and designated personnel are CD, no waiver.

DIAGNOSIS/ICD-10 Code:
R00.0 Tachycardia, unspecified

3.22 SUPRAVENTRICULAR TACHYCARDIA

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. For Designated Personnel, see Waiver comments below

Note: NAMI's definition of supraventricular tachycardia is 3 or more consecutive nonventricular ectopic beats at a heart rate of greater than 99 BPM. Excluded are atrial fibrillation/flutter and multifocal atrial tachycardia. Recurrent is defined as occurring more than once in any test or during any evaluation. Sustained tachycardia is defined as lasting more than 10 minutes.

AEROMEDICAL CONCERNS: The major concern in supraventricular tachycardia (SVT) is hemodynamic decompensation in flight leading to lightheadedness, dizziness, presyncope and loss of consciousness.

WAIVER: Only asymptomatic (with the exclusion of the sensation of palpitations as a symptom) cases will be considered for waiver as symptoms are an indication of hemodynamic compromise. **Service Group 1 waiver recommendations** can be considered for those with the following: episodes of single or recurrent, non-sustained SVT including those with coexisting mitral valve prolapse (MVP), left or right bundle branch block (LBBB or RBBB), mitral regurgitation (MR) and sarcoidosis; a single episode of sustained SVT including those with coexisting MVP, L/RBBB, MR or sarcoidosis. No evidence of CAD can be present if a waiver is requested. Disqualification is mandatory in cases of SVT with hemodynamic compromise, single sustained SVT with gradable CAD, recurrent, sustained SVT when the recurrence is at intervals <3 years and any SVT associated with a pre-excitation pattern on ECG. Waivers are not recommended for students or candidates. No waivers are recommended for Multifocal Atrial Tachycardia (MAT). Note: In the absence of P-waves, distinguishing between SVT with BBB vs. VT is difficult.

REMEMBER: SINCE THE MINIMUM TIME OF OBSERVATION FOR RECURRENCE IS GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS; A LOCAL BOARD OF FLIGHT SURGEONS IS NOT AUTHORIZED TO RETURN TO FLIGHT STATUS.

DIAGNOSIS/ICD-10 Code:
I47.1 Supraventricular tachycardia

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Cardiology consultation including:
   a. Echocardiogram
   b. Stress test
   c. Three 24-hour Holters during a 6 month grounding period
2. For cases of a single, asymptomatic, 3-10 beat run of SVT, only local evaluation is required. This should include:
   a. Thyroid function testing
   b. Echocardiogram
   c. Standard treadmill test
   d. Three 24-hour Holters at monthly intervals to identify cardiovascular risk factors

e. These studies will be forwarded to NAMI with the waiver request for review. If there is any abnormality, further cardiology evaluation will be required.

3. Note: If LBBB or RBBB is present, a standard treadmill EST is almost impossible to interpret. Preferred studies are stress echocardiogram, thallium stress test or Sestamibi

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history, cardiac symptoms or dysrhythmias, and exercise tolerance.

1. An EKG will be completed and compared to prior studies.

3.23 THROMBOPHILIA/VENOUS THROMBOSIS/PULMONARY EMBOLISM

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. See waiver comments below

AEROMEDICAL CONCERNS: Pain and swelling secondary to deep venous thrombosis (DVT) can be distracting in flight. The major risk is a pulmonary embolism producing chest pain, shortness of breath, hypoxia, cardiac arrhythmias or sudden death. Dyspnea occurs in nearly 90% of patients with symptomatic pulmonary emboli (PE) with syncope occurring occasionally.

WAIVER: In cases of first DVT/PE with or without obvious external predisposing conditions: Waiver will not be considered until a minimum of three months after the event, and will only be considered after the prescribed course of anticoagulation therapy (usually 3-6 months) has been completed, member is off all anticoagulants, ultrasound of the site or suspected site(s) of thrombosis is normal, and, if pulmonary embolism was present, pulmonary function tests are normal. In cases of first DVT/PE with an inheritable thrombophilia diagnosed, if Factor V Leiden or Prothrombin 20210A mutations are detected, waivers will be considered on a case-by-case basis if all previously described conditions are met. No waivers will be considered if Protein S, Protein C, or Antithrombin III deficiency are detected or in cases of recurrent DVT/PE or a recommendation for lifelong anticoagulation therapy. The development of pulmonary hypertension, the need for continued anticoagulation, or surgical procedures such as plication of the vena cava or insertion of filter devices is CD, no waiver. Superficial thrombophlebitis is NCD.

REMEMBER: SINCE THE MINIMUM TIME OF OBSERVATION FOR RECURRENCE IS GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AND THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

DIAGNOSIS/ICD-10 Code:
I82.62 Acute embolism and thrombosis of deep veins of upper extremity
I82.40 Acute embolism and thrombosis of unspecified deep veins of lower extremity
I26.99 Other pulmonary embolism without acute cor pulmonale

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Internal medicine or hematology consultation
2. If there was a PE, confirmation of normal pulmonary function by PFTs is necessary.

- Released from *internal medicine or hematology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *internal medicine or hematology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Internal medicine or hematology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON
All associated documentation.

FOLLOW UP REQUIREMENTS	Routine Submission
Flight Surgeon comment regarding interval history.	

3.24 VENTRICULAR TACHYCARDIA

Last Revised: JAN 2016 Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR							
WNR	X	X	X	X	X	X	X
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB							

Note: NAMI's definition of ventricular tachycardia is 3 or more consecutive, ventricular, ectopic beats at a heart rate greater than 99 bpm. Recurrence is defined as occurring more than once in any Holter monitor or period of workup, or more than once in any subsequent evaluation.

AEROMEDICAL CONCERNS: Hemodynamic changes can result in a fall in blood pressure and a reduction in cerebral blood flow. The condition is often associated with underlying heart disease. There is also a risk of sudden death associated with the condition, usually from ventricular fibrillation.

WAIVER: Non-Designated and Designated Personnel: CD all DIF, no waiver for either sustained or non-sustained VT.

DIAGNOSIS/ICD-10 Code:
I47.2 Ventricular tachycardia

3.25 RAYNAUD'S PHENOMENON

Last Revised: JAN 2016 | Last Reviewed: FEB 2016

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS		No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case for Designated Personnel.

AEROMEDICAL CONCERNS: Raynaud's Phenomenon is an episodic, reversible spasm of the vasculature in the extremities. Typically the hands are primarily affected. During an episode skin changes that occur include:

1. Pallor-caused by lack of oxygenated blood
2. Cyanosis-caused by pooling of poorly oxygenated blood
3. Rubor-occurs as the vasospasm ends

During a severe episode the vascular changes and associated pain can affect hand usage in the cockpit.

WAIVER: Civilian applicants with Raynaud's Phenomenon are CD, no waiver, per the Manual of the Medical Department (MANMED). Designated aviators with primary Raynaud's Phenomenon will be considered for waiver. Underlying pathology must be excluded and symptoms must be manageable in the performance of flight duties. Designated aviators diagnosed with secondary Raynaud's Phenomenon are CD, waiver considered on a case-by-case basis.

DIAGNOSIS/ICD-10 Code:
I73.00 Raynaud's syndrome without gangrene

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Internal medicine or rheumatology consultation.
2. A flight surgeon's analysis of the aviator's ability to perform normal and emergency duties must be included with the waiver submission request.

- Released from *internal medicine or rheumatology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *internal medicine or rheumatology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Internal medicine or rheumatology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history.

3.26 PROLONGED QT INTERVAL AND LONG QT SYNDROME

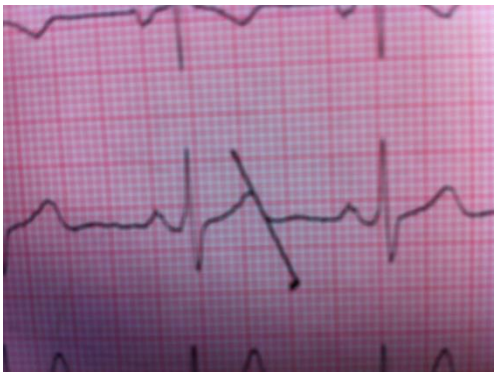
Last Revised: JAN 2016 Last Reviewed: FEB 2016

New entry.

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	If required prior to waiver consideration						

1. For Designated Personnel, see waiver comments below.

AEROMEDICAL CONCERNS: Prolonged QT interval on ECG can result in syncope, arrhythmias such as ventricular tachycardia, and sudden cardiac death. The QT interval in a normal person can be prolonged by hypocalcemia, hypothyroidism, and medications. The congenital long QT syndrome (LQTS) may cause about 4000 deaths in the United States primarily in teenagers and young adults. Medications that can prolong the QT interval include anti-arrhythmics, antimicrobials (macrolides, fluoroquinolones, choloroquine), anti-psychotics, and anti-depressants (SSRI). An updated list was found at https://www.crediblemeds.org at the time of this revision.
The QT and QTc intervals measured by the ECG machine computer are frequently inaccurate. Any prolonged QT/QTc measured by the ECG computer should be manually measured and calculated using an on-line calculator. http://www.medcalc.com/qtc.html http://reference.medscape.com/calculator/qt-interval-correction-ekg
To manually measure the QT interval, use the tangent method by drawing a line tangent to the downslope of the T wave in Lead II. Measure the interval in msec from the beginning of the Q wave to the point where the tangent crosses the baseline.



If after manual measurement of QT, the QTc is greater than 439 msec, the prolonged QT interval is CD and the following policy and evaluation apply.

WAIVER:

1. Manual confirmed QTc <440 msec males (<460 msec females) - NCD
2. Manual confirmed QTc 440-499 msec males (460-499 msec females) - CD, Waiver considered on case-by-case basis. Submit the following information:
   a. Cardiology consultation
3. Manual confirmed QTc ≥500 msec males (≥500 msec females)- CD, Waiver unlikely.

DIAGNOSIS/ICD-10 Code:
I45.81 Long QT syndrome
R94.31 Abnormal electrocardiogram (for prolonged QT interval)

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

1. Cardiology consultation.

- Released from *cardiology* care with recommendation of return to full duty, world-wide deployable, and no restrictions **documented** on last clinical note (electronic or paper).
- If *cardiology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Cardiology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history.

1. An EKG will be completed and compared to prior studies.

4.0 DERMATOLOGY

4.1 ACNE

AEROMEDICAL CONCERNS: The lesions on the face may interfere with mask seal and helmet wear. Those over the shoulders may cause discomfort when wearing safety restraints or parachute harnesses. Patients with severe cystic acne may also have psychological problems relevant to military aviation duties.

WAIVER: Normally, unrestricted waiver can be considered although severe cystic acne may dictate service group/aircraft limitation to avoid routine use of either helmet or mask. Candidates with severe cystic acne are CD, no waiver.

INFORMATION REQUIRED:

1. Detailed full-body skin exam
2. Details of current therapy
3. Documentation of the ability to achieve mask seal (if applicable)

TREATMENT: Treatment with oral erythromycin, doxycycline, or tetracycline is NCD following a period of grounding to screen for side effects. Minocycline is not acceptable because of the risk of CNS side effects such as light-headedness, dizziness and vertigo. Accutane is CD, no waiver. Accutane use requires grounding for the duration of therapy, plus 3 months after drug cessation. Slit lamp exam and triglyceride levels three months post therapy must be normal. LFT abnormalities while on Accutane must be resolved prior to requesting a waiver.

DISCUSSION: Antibiotics as described above, taken while avoiding large quantities of oral milk, alkali or iron, will produce good or excellent results in 90% of patients in 3 months. The incidence of dizziness in patients taking minocycline has reported to be as high as 17%, however the risk of side effects is dose related and is quoted as 5% in the dose required to control acne.

ICD-9 CODES:
706.1 Acne
706.17 Acne with any use of Accutane

4.2 DERMATITIS

AEROMEDICAL CONCERNS: Depending on the location of lesions, there can be interference with the wearing of flight gear. The symptoms, particularly itching, can be distracting in flight. Patients with atopic dermatitis are more susceptible to contact dermatitis due to irritants found in a military environment.

WAIVER: Symptom severity and the requirement for therapy will determine the aeromedical disposition. Patients controlled on topical therapy over small areas and patients who are asymptomatic on stable doses of loratadine (Claritin) **OR** fexofenadine (Allegra) may be considered for waiver. An initial seven day grounding period is required for loratadine and fexofenadine to document no adverse effects. A one-time separate waiver submission is required for loratadine or fexofenadine.

INFORMATION REQUIRED:

1. Allergy/immunology consultation to rule out asthma or hay fever
2. Dermatology consult (when clinically indicated)
3. Detailed full-body skin exam
4. Details of current treatment
5. Documentation of the ability to wear flight gear and achieve mask seal (if applicable)

TREATMENT: Intermittent use of topical steroids over a limited area is compatible with waiver. The use of other medications besides loratadine or fexofenadine is CD, no waiver.

DISCUSSION: Atopic dermatitis affects 1-3% of the population, 20% of whom will have the onset delayed into adult life. Between 30-50% of patients will also exhibit allergic respiratory disease such as asthma or hay fever.

ICD-9 CODES:
691 Atopic Dermatitis
692 Contact Dermatitis
708.0 Allergic Urticaria

4.3 DERMATOPHYTOSIS OF THE NAIL

AEROMEDICAL CONCERNS: The disease process does not interfere with aviation duties and is only a cosmetic concern. Treatment is potentially toxic, expensive, has high relapse rates and often requires adjuvant therapy.
WAIVER: Not required for the disease. Treatment with terbinafine is NCD provided the following guidelines.

INFORMATION REQUIRED:

1. Documentation of baseline liver function tests.
2. Monthly liver function tests for duration of treatment.

TREATMENT: Terbinafine is the only approved medication for use in aviators. A three day grounding period is required when initiating therapy with terbinafine. Ketoconazole is not recommended for waiver. A positive culture is required prior to the initiation of treatment following the standard of care.

DISCUSSION: Clinically, microscopic diagnosis is sufficient to guide therapy in most cases. Susceptibility to onychomycosis appears to be genetically determined. Susceptible individuals have frequent recurrences and a less than optimal response to treatment.

ICD-9 CODE:
110.1 Dermatophytosis of Nail

4.4 PSORIASIS

AEROMEDICAL CONCERNS: The relapsing nature of the condition together with the requirement for therapy makes it difficult for the military aviator to satisfy operational responsibilities. Some cases are exacerbated by physically and emotionally strenuous work. Some of the forms of treatment have side effects incompatible with flying.

WAIVER: Waiver may be considered for mild cases, including those needing occasional topical steroids. More severe cases will be found NPQ, with no waiver recommended. A history of psoriasis is disqualifying for entry into aviation.

INFORMATION REQUIRED:

1. Dermatology consultation(must include treatment recommendations and response to therapy)

TREATMENT: Topical steroids in mild cases will control the condition in one third of cases within 2 weeks, even when the steroid is withdrawn. A second third will respond to continued applications of steroid 1-2 times weekly. The remainder of cases do not respond. Other topical applications such as tar products and dithranol are unacceptable in aviation. Anti-mitotic drugs such as methotrexate (side effects including ataxia, hallucinations) and retinoic acid (liver toxicity, dry mouth, sore lips, conjunctivitis) are also unacceptable within aviation. Phototherapy (PUVA) can help in 75% of cases, but the requirement for maintenance therapy interferes with operational requirements.

DISCUSSION: The condition has a peak onset in young adults, with 2% of the adult population from NW Europe affected. It is less common in sunny climates and in those with darker skins. Psoriasis is a fluctuating condition of spontaneous remissions and relapses; up to one third of cases go into remission each year. Up to 7% of cases have been reported to have psoriatic arthritis. Conversely, 4% of patients with inflammatory polyarthritis have psoriasis.

ICD-9 CODE:
696.1 Psoriasis

5.0 ENDOCRINOLOGY

5.1 DIABETES MELLITUS

Last Revised: OCT 2014	Last Reviewed: DEC 2014
Changes Include: Dysglycemia is now is a separate section of the waiver guide (ARWG 5.1.1)	

DM Type 1	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR						
WNR	x	x	x	x	x	x
LBFS						
EXCEPTIONS						
LIMDU/PEB	Required for Diabetes Type 1 (NO waivers all DIF)					

DM Type 2	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR				x	x	x
WNR	x	x*	x*			
LBFS				x	x	x
EXCEPTIONS	*DM 2 in sustained remission (A1C <6.5) due to *lifestyle changes only* are WR for all SG.					
LIMDU/PEB	Not required for Type 2 (may be requested by Code 53HN)					

AEROMEDICAL CONCERNS: Alterations in blood glucose levels may result in neurologic and ophthalmologic conditions (neuropathy, headache, confusion, syncope, vision changes, etc.) causing both subtle and sudden incapacitation. Long-term complications of diabetes mellitus (DM) also include renal and cardiovascular disease, with older diabetics having similar risks of cardiovascular events as non-diabetics with established coronary artery disease. Deployment frequently decreases glycemic control secondary to uncontrolled diet, long work hours and environmental stressors.

REMEMBER: IF THE ESTABLISHMENT OF THE DIAGNOSIS AND ACHIEVEMENT OF MAINTENANCE PHASE OF TREATMENT WILL TAKE GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AND THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

ICD-9 Code/DIAGNOSIS
250.03 Diabetes Mellitus 1
250.02 Diabetes Mellitus 2
250.0d Diabetes Mellitus – Diet controlled

DIAGNOSIS/DEFINITIONS:

Diabetes Mellitus (DM):

1) FBG ≥ 126 mg/dL OR
2) 2 hr PG on OGTT ≥ 200 mg/dL OR

3) Hgb A1C ≥ 6.5%.
Alternatively random BG ≥ 200 mg/dL + symptoms of hyperglycemia.

For 1-3, diagnosis should be confirmed by repeat testing unless results from 2 different tests are both diagnostic (e.g. FBG ≥126 with A1C ≥6.5). While least convenient/readily available, OGTT appears to be the most sensitive screening test.

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING ALL WAIVERS

- Released from *Family medicine, Internal Medicine, or Endocrinology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- Completed *Diabetic Nurse Education and Nutrition consultation* and provide end of care summary- Completed *Ophthalmology/Optometry* consultation with dilated diabetic eye exam
- Consultant's *recommendation for follow on care* **documented** on last clinical note (electronic or paper).
- Provide administrative information to FS/AME to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **PHYSICAL STANDARDS**: BP <140/90, accurate height/weight for baseline BMI
- **LABORATORY LEVELS**: HgbA1C (required x 2 at least 3 months apart). For DM2 on medication: <7%. For DM2 with lifestyle changes only: <6.5%.
Avg Fasting blood glucose (assessed 4x/year at a minimum) < 120; Improving Lipid profile with a goal LDL of <100; TSH (normal), UA (normal)
- **SPECIAL TEST STANDARDS/FINDINGS/LEVELS**: For DM2 only. Markers to distinguish type 1 from type 2 DM (pancreatic autoantibodies (e.g. islet-cell antibodies [ICA] or glutamic acid decarboxylase [GAD65]), insulin and c-peptide levels) *if indicated*
- **MEDICATIONS**: On stable dose of medication (if required) for 30 days.

NOTE: Class I and Class II: *Metformin* **only** approved anti-diabetic medication. Class III: Additional medications considered on case-by-case basis (FS to discuss with NAMI), however all injectable medications are disqualifying and LIMDU+/- PEB is indicated.
Member should be asymptomatic (if any symptoms were present) and laboratory data as outlined above should be within parameters for at least 3-6 months prior to submitting a waiver request

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

Diagnosis:
How Condition Was Diagnosed/Treated:
Past Medical History:
Social And Family History: SH: Include comment on diet and physical activity, FH: Attention to endocrine diseases, malignancy, and cardiovascular disease
Military/Occupational History: Include most recent deployment
Physical Exam: Vitals, Neurologic exam (includes microfilament assessment for peripheral neuropathy), Eye exam, Skin, Cardiac, Waist circumference (measured at iliac crest)
Labs and X-ray Data: FBG, HgbA1C, Complete Metabolic Panel, Lipid Profile (goal LDL <100), TSH, UA, Urine microalbumin: urine creatinine ratio (goal <300)
Medications: Previous (prior 6 months) and current medications/dosages
Consults: Document review and completion of all required consultations.

FOLLOW-UP REQUIREMENTS (UNLESS STATED OTHERWISE IN WAIVER LETTER)

Type 2 Diabetes Mellitus

1. Annual Submission: Annual Physical - FS documents level of control and compliance, as well as BMI and waist circumference compared to baseline (generally WNR if current BMI >baseline or noncompliance)
2. Specialist Evaluation: Minimum of annual Endocrinology, Internal Medicine, or Family Medicine evaluation in addition to annual dilated diabetic eye exam
3. LABS: HgbA1c (DM2 on medication: <7%, Lifestyle changes only <6.5%), FBG avg <120 (assessed 4x/year at a minimum), Lipids (DM2: goal LDL <100); FBG, Complete Metabolic Panel, Lipid Profile (goal LDL <100), TSH, UA, Urine microalbumin: urine creatinine ratio (goal <300)
4. Medications: Report any medication changes or dosage adjustments

WORKUP/DISPOSITION:

DM - Confirm Diagnosis of Type 2/exclude Type 1 DM (take clinical picture into account, some cases require specialized testing). Ensure above waiver requirements are met.

Applicants (all flying classes): HgbA1C <5.7% - CD/WR/annual submission as above; HgbA1C >5.7%- CD, WNR (NOTE: History of GDM, Metabolic syndrome and "Pre-diabetes" (FBG>110 with Hgb A1C >5.7) are all considered disqualifying for general appointment, enlistment, or induction into the military by DoD Instruction 6130.03)

Designated (all flying classes): CD/WR/all flying class/SG, MINIMUM of annual assessment for DM submission includes FBG and HgbA1C. Specific recommendations for annual submission will be detailed in BUMED/NAMI waiver letter.

References:

[1] Considerations for Deployment of Service Members with Diabetes. Shwayhat and Gaydos. Federal Practioner. 2013

[2] DoDINST 6130.03 (2011)

[3] Diagnosis and Classification of Diabetes Mellitus. American Diabetes Association Position Statement. Diabetes Care. 2011 Jan; 34 Suppl 1:S1-2

[4] Haffner SM et al. N Engl J Med. 1998;339(4):229.

5.1.1 DYSGLYCEMIA

Last Revised: MAR 2016 Last Reviewed: MAR 2016

Changes Include: Modification to IFG disqualification level. Sustain: Separate section to cover Gestational Diabetes (in Pregnancy section), Impaired Fasting Glucose (IFG); HgbA1c criteria for "Pre-Diabetes" are CD and require a waiver.

History of GDM, Dysglycemia (IFG, IGT, elevated A1C)	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
NCD							
WR		X	X	X	X	X	X
WNR	X						
LBFS		X	X	X	X	X	X
EXCEPTIONS							
LIMDU/PEB							

1. FBG 100 -109 mg/dL is NCD; FBG 110 - 125 mg/dL is CD; FBG ≥ 126 mg/dL is CD as DM.

AEROMEDICAL CONCERNS: Alterations in blood glucose levels may result in neurologic and ophthalmologic conditions (neuropathy, headache, confusion, syncope, vision changes, etc.) causing both subtle and sudden incapacitation.

NOTE: FOR THE DIAGNOSIS OF IMPAIRED FASTING GLUCOSE THE SERVICEMEMBER DOES NOT REQUIRE GROUNDING DURING EVALUATION AND INITIAL TREATMENT.

DIAGNOSIS/DEFINITIONS:

Gestational Diabetes (GDM): See entry under Pregnancy

Dysglycemia includes:

Impaired Fasting Glucose (IFG):

FBS: 100 - 109 mg/dL is NCD. Requires local monitoring to assure control

FBS: 110 - 125 mg/dL is CD. Requires submission for waiver.

"Pre-Diabetes": HgB A1C between 5.7 and 6.4%

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING ALL WAIVERS

- Released from *Family medicine, Internal Medicine* care with recommendation of return to full duty status and no restrictions **documented** on last clinical note (electronic or paper)
- Completed *Nutrition consultation*
- Consultant's *recommendation for follow on care* **documented** on last clinical note (electronic or paper).
- Provide administrative information to FS/AME to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **PHYSICAL STANDARDS**: BP <140/90, accurate height/weight for baseline BMI

- **LABORATORY LEVELS**: Avg Fasting blood glucose < 126; Improving Lipid profile with a goal LDL of <100; TSH (normal), UA (normal)
- **MEDICATIONS**: Note all current medications

NOTE: The use of Metformin in the setting of IFG / IGT or for weight loss is considered disqualifying and waivers considered on a case-by-case basis.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

Diagnosis:
How Condition Was Diagnosed/Treated:
Past Medical History:
Social And Family History: SH: Include comment on diet and physical activity, FH: Attention to endocrine diseases, malignancy, and cardiovascular disease
Military/Occupational History: Include most recent deployment
Physical Exam: Vitals, Neurologic exam (includes microfilament assessment for peripheral neuropathy), Eye exam, Skin, Cardiac, Waist circumference (measured at iliac crest)
Labs and X-ray Data: FBG, HgbA1C, Complete Metabolic Panel, Lipid Profile (goal LDL <100), TSH, UA, Urine microalbumin: urine creatinine ratio (goal <300)
Medications: Previous (prior 6 months) and current medications/dosages
Consults: Document review and completion of all required consultations
Impaired Fasting Glucose Worksheet – upload copy of this worksheet into AERO.

FOLLOW-UP REQUIREMENTS (UNLESS STATED OTHERWISE IN WAIVER LETTER)

Dysglycemia (IFG or Pre-Diabetes)

1. Annual Submission: Annual Physical - FS documents level of control and compliance, as well as BMI and waist circumference compared to baseline (generally WNR if current BMI >baseline or noncompliance)
2. Specialist Evaluation: Minimum of annual Internal Medicine or Family Medicine evaluation with funduscopic exam. Annual dilated diabetic eye exam if any abnormalities detected.
3. LABS: HgbA1c (<6.5%), FBG, Lipids (goal LDL <100); Complete Metabolic Panel, UA,
4. Medications: Report any new medication.

WORKUP/DISPOSITION:

History of IFG - Evaluate for metabolic syndrome, exclude current diabetes, and initiate intensive nutritional counseling/lifestyle modifications.

Applicants (all flying classes): History of GDM, Metabolic syndrome, and "Pre-diabetes" (FBG>100 with Hgb A1C >5.7) are considered disqualifying for general appointment, enlistment, or induction into the military by DoD Instruction 6130.03

Designated (all flying classes): CD / WR / all flying class / SG, MINIMUM of annual assessment for DM, submission includes FBG and A1C. Specific recommendations for annual submission will be detailed in BUMED/NAMI waiver letter.

References:

[1] Considerations for Deployment of Service Members with Diabetes. Shwayhat and Gaydos. Federal Practioner. 2013
[2] DoDINST 6130.03 (2011)
[3] Diagnosis and Classification of Diabetes Mellitus. American Diabetes Association Position Statement. Diabetes Care. 2011 Jan; 34 Suppl 1:S1-2
[4] Haffner SM et al. N Engl J Med. 1998;339(4):229.

5.2 GOUT

Last Revised: APR 2014 Last Reviewed: JUL 2014

Changes include clarification on medication use, removal of temporary SG3 restriction for first 3 months, and increased initial required workup.

	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR		x	x	x	x	x
WNR	x					
LBFS				x	x	x
EXCEPTIONS						
LIMDU/PEB	Not required					

AEROMEDICAL CONCERNS: Gout may present as an acute, severely painful arthritis without warning. Untreated, chronic arthritis may develop leading to pain, joint deformity and decreased function. It is often associated with other disqualifying conditions such as atherosclerosis/coronary artery disease, diabetes, hypertension, and renal disease, to include renal stones.

REMEMBER: IF THE ESTABLISHMENT OF THE DIAGNOSIS AND ACHIEVEMENT OF MAINTENANCE PHASE OF TREATMENT WILL TAKE GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AND THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

ICD-9 Code/DIAGNOSIS
274.9 Gout

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- For complicated or *recurrent* gout flares, patient must be evaluated and released from Rheumatologist or Internist care with recommendations for return to flight status with no restrictions as well as plan for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **CURRENT PHYSICAL LIMITATIONS**: None
- **LABORATORY LEVELS**:
  1. Serum Uric Acid. If obtained during initial symptoms flare, repeat 2-4 weeks after resolution. If xanthine oxidase inhibitors are prescribed, include level on therapy
  2. Basic Metabolic Panel/Chem 7. Patients with impaired renal function require commentary and further evaluation.
  3. Urinalysis. Patients with acidic urine (pH <5.5), proteinuria or microscopic hematuria require commentary and further evaluation (see separate ARWG topics).
  4. Fasting blood glucose or Hemoglobin A1C
  5. Fasting lipid profile (within last year)
  6. CBC with differential and Liver associated enzymes (required if taking allopurinol)

- **RADIOLOGY FINDINGS**:
  1. KUB to evaluate for renal stones. Any calcifications/abnormalities consistent with stones on KUB or patients with gout and microscopic hematuria require a CT (renal stone protocol). Confirmed stones requires full workup and separate waiver.
  2. Radiographs of affected joints (as clinically indicated)
- **SPECIAL TEST STANDARDS**: Results from joint aspiration (if obtained)
- **MEDICATIONS**: Medications considered for waiver include:

Allopurinol is preferred first line treatment for aviators requiring uric acid lowering. Alternatively febuxastat is considered on a case-by-case basis in situations which require uric acid lowering therapy but allopurinol is contraindicated or not tolerated.
NSAIDS (specifically ibuprofen, naproxen) are also waiverable for rare gout attacks or for prophylaxis while titrating uric acid lowering therapy. Indomethacin and systemic steroid (e.g. prednisone) use should only be under the supervision of the flight surgeon and requires grounding during and for 2 weeks after medication use. "As needed" prescriptions without evaluations and chronic indomethacin use will not be waived. Oral or systemic corticosteroids should be reserved for polyarticular joint involvement or impaired renal function and generally should be avoided in aviation personnel. If needed, short (less than 2 weeks) treatment generally results in low risk of adrenal suppression and stim testing afterwards is not routinely required. Recurrent steroid use is not authorized. Cox-2 inhibitors (e.g. Celecoxib) are not preferred for this indication and unlikely to be approved.
Probenecid use is generally not used but will be considered for waiver when properly prescribed by a rheumatologist.
Although low (<1.2mg) dose colchicine use is generally well tolerated and is useful for gout prophylaxis while titrating uric acid lowering therapy, currently it requires grounding and is not authorized for any DIF at this time. Waivers considered once discontinued.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

Diagnosis:
Clinical Presentation:
Past Medical History/Prior Waivers:
Social And Family History: SH: Include comment on diet, EtOH and physical activity FH: Attention to endocrine disease, renal disease including stones, and cardiovascular disease
Military/Occupational History: Assess risk for lead exposure
Physical Exam: Vitals (attention to BP), Skin (rash, tophi), MSK/Joint (tophi, pain, ROM), Cardiac, Waist circumference (measured at iliac crest)
Labs And X-ray Data: comment on abnormal findings
Consults:
Medications: Review medications for potentially gout exacerbating medications. Comment on indications for uric acid lowering therapy.
Recommendation:

FOLLOW-UP REQUIREMENTS

Submission: Annual Physical: FS documents level of control and compliance with lifestyle changes/medications, including frequency of symptoms, in last year and total number of flares since diagnosis.
Specialist Evaluation: Generally not required if low frequency of attacks (<2/year)
LABS: Serum uric acid, Basic Metabolic Panel/Chem 7. Consider CBC and Serum transaminases if on uric acid lowering medications.
Medications: Report any medication used in last year, changes or dosage adjustments.

APPENDICES

COMORBID CONDITIONS:

Nephrolithiasis occurs with a much higher frequency in patients with a history of gout compared to the general population and increases in risk with serum uric acid levels. In healthy patients without a history of gout, average annual incidence of gout is 0.5 % in persons with a uric acid level between 7 and 8.9 mg/dL and 4-5%/year in those with a level of 9 mg/dL or greater. Flight surgeons should consider several comorbid conditions when first evaluating a patient with gout. In addition to screening for aeromedically disqualifying conditions such as stones, hypertension, and metabolic syndrome, assessment for chronic kidney disease, dyslipidemia and excessive alcohol intake represents an important opportunity for change.

TREATMENT

Lifestyle modifications, to include limited dietary purine intake, should be suggested for all patients. Indications for uric acid lowering pharmacotherapy include established diagnosis of gouty arthritis with tophus or tophi on clinical exam or imaging and frequent attacks (≥2/year). Therapy should also be considered in patients with CKD stage 2 or worse or past urolithiasis, though this is based on expert opinion only. Although not routinely done until after a flare resolves, allopurinol can be started during an acute gout flare if concurrently taking anti-inflammatory medication. Patients already on allopurinol should not discontinue the medication during an acute gout flare. Typical starting dose is 50-100mg daily. Allopurinol should be titrated up in increments of 50-100mg every 2-5 weeks to achieve a target serum uric acid concentration <6 mg/dl. Note: 50% of gout patients will require an allopurinol dose of greater than 300mg to reach the serum uric acid goal of less than 6. Temporary prophylaxis with low dose NSAIDS (or colchicine while grounded) can be used to prevent precipitation of gout flare while titrating allopurinol doses. The estimated incidence of allopurinol hypersensitivity syndrome is approximately 1:1,000 in the US. Patients with Asian ethnic backgrounds may have higher risk.

References:

[1] Campion EW, Glynn RJ, DeLabry LO. Asymptomatic hyperuricemia. Risks and consequences in the Normative Aging Study. Am J Med. 1987;82:421–6.

[2] Khanna D et al. 2012 American College of Rheumatology guidelines for management of gout. Part 1: systematic nonpharmacologic and pharmacologic therapeutic approaches to hyperuricemia. Arthritis Care Res (Hoboken). 2012 Oct;64(10):1431-46.

[3] Khanna D et al. 2012 American College of Rheumatology guidelines for management of gout. Part 2: therapy and anti-inflammatory prophylaxis of acute gouty arthritis. Arthritis Care Res (Hoboken). 2012 Oct;64(10):1447-61.

[4] Kramer HJ, Choi HK, Atkinson K, Stampfer M, Curhan GC. The association between gout and nephrolithiasis in men: The Health Professionals' Follow-Up Study. Kidney Int 2003;64:1022-6.

[5] Liu D, et al. A practical guide to the monitoring and management of the complications of systemic corticosteroid therapy. Allergy Asthma Clin Immunol. 2013 Aug 15;9(1):30.

[6] Neogi T. Clinical practice: gout. N Engl J Med 2011;364:443–52.

[7] Pak, CYC: Etiology and treatment of urolithiasis. Am J Kidney Dis 1991 18: 624–637

5.3 HYPERTHYROIDISM

Last Revised: APR 2014 Last Reviewed: JUL 2014

Changes: Acceptable treatments for Naval aviation personnel are highlighted/clarified. Guidance on low TSH with normal T4/T3 provided.

	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR	x*	x	x	x	x	x
WNR						
LBFS						
EXCEPTIONS	*Applicants must be euthyroid for 12 months prior to application and have no evidence of ophthalmopathy. **NOTE**: Treatment of Grave's with thionamides without radioactive iodine ablation/thyroidectomy is WNR all DIF.					
LIMDU/PEB	Required if service member elects treatment with thionamide medications.					

AEROMEDICAL CONCERNS: Cardiac manifestations (palpitations, arrhythmias) may cause sudden incapacitation. Fatigue is a common manifestation, and neurocognitive effects such as impaired attention and memory, and psychiatric symptoms, such as irritability and anxiety, may result in subtle incapacitation. Patients with thyroid ophthalmopathy may have difficulty with eye movements and corneal damage or optic neuropathy can also occur.
REMEMBER: IF THE ESTABLISHMENT OF THE DIAGNOSIS AND ACHIEVEMENT OF MAINTENANCE PHASE OF TREATMENT WILL TAKE GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AND THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

ICD-9 Code/DIAGNOSIS
242.03 Hyperthyroidism
241.0 Thyroid Nodule
241.1 Multinodular Goiter, non-toxic
240.9 Goiter, unspecified
242.9 Thyrotoxicosis without mention of goiter or other cause

SERVICE MEMBER MUST OBTAIN/COMPLETE PRIOR TO INITIATING WAIVER

- *Endocrinologist* end of care summary documenting complete resolution of symptoms and stable euthyroid status, with recommendation of return to flight status with no restriction. If *Endocrinologist* recommends restrictions, note must include documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Endocrinologist* recommendation for follow on care **documented** on last clinical note.
- Surgery/Procedure Note (if performed).
- Copies of PEB (if indicated, e.g. service member undergoes treatment with thionamides).
- Provide administrative information to Flight Surgeon that includes command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER SUBMISSION EXAM WITH FLIGHT SURGEON

- **LABORATORY LEVELS**: Two sequential sets of serum TSH and free T4 values in normal range (drawn 4-6 weeks apart)
- **SPECIAL TEST STANDARDS**: RAIU (radioactive iodine uptake) study required for all overt hyperthyroidism cases unless contraindicated (e.g. pregnancy, nursing). TSH receptor antibody testing may be substituted if RAIU unable to be obtained. Ophthalmology/optometry consultation is required in Graves' Disease to exclude ophthalmopathy.
- **MEDICATIONS**: On *stable* dose of levothyroxine (if required) for minimum of 60 days. NOTE: Levothyroxine is only approved form of replacement medication (if required). Current use of thionamide drugs (propylthiouracil or methimazole) is disqualifying for general duty and will not be granted waivers for aviation duty.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

Diagnosis:
How Condition Presented/Was Diagnosed/Treated:
Past Medical History:
Social And Family History:
Aviation History:
Physical Exam: Attention to Neurologic, Ocular, Neck, Cardiac
Labs And X-ray Data: ECG, CBC, Complete Metabolic Panel, RAIU (radioactive iodine uptake) result(required in cases of biochemical hyperthyroidism), thyroid antibody results (if obtained), thyroid ultrasound report (if obtained), pathology report (if obtained)
Medications: Previous (prior 6 months) and current medications/dosages.
Consults: Endocrinology notes required.

FOLLOW-UP REQUIREMENTS

Submission: Annual Physical documenting continued clinical and chemical euthyroidism
Specialist Evaluation: Minimum of annual Endocrinology or Internal Medicine evaluation (submit all notes from past year)
LABS: TSH, fT4 (obtained annually at a minimum)
Medications: Report any medication changes or dosage adjustments

APPENDICES

TREATMENT: There are three primary forms of therapy: medical treatment with thionamides; thyroid ablation with radioactive iodine; and surgery (thyroidectomy). The best treatment strategy will depend on the etiology of the hyperthyroidism and may vary from patient to patient. While patients have the right to choose their treatment, patients should NOT be considered world-wide deployable while taking thionamide medications and a medical board is indicated. Thionamides may cause side effects incompatible with aviation duties to include vertigo, drowsiness, liver dysfunction as well as agranulocytosis and requires close laboratory monitoring and clinical follow-up which may not be possible in an operational setting. Relapse rates once discontinued are high. For Graves' disease, only surgery or ablation is compatible with return to duties involving flying. While complete remission with radioactive iodine ablation is high, most will go on to require long-term thyroid hormone supplementation. A small number of cases will also require eye surgery.

CLINICAL PRESENTATION/DIAGNOSIS: Although hyperthyroidism can affect nearly all organ systems and lead to a variety of manifestations, neuropsychiatric and cardiovascular effects are the most relevant to the aeromedical physician. Behavior and personality changes

may include subtle irritability and restlessness or overt emotional lability, anxiety, or psychosis. Cardiovascular symptoms are often related to the potentiation of the sympathetic nervous system and include tachycardia, dysrhythmias, and systolic hypertension with widened pulse pressure. Weight loss and energy supplements may contain substances that interfere with normal thyroid function and in some cases contain thyroid hormone. Smoking cessation increases probability of remission. Smoking is a risk factor for Graves' ophthalmopathy.

Biochemical hyperthyroidism is defined as a low/suppressed TSH with either an elevated freeT4 or T3. For patients with biochemical hyperthyroidism, workup should include 24-hour radioiodine thyroid uptake study to determine the etiology (Graves', thyroiditis, nodule, etc.). This study and antibody testing is best left to endocrinologists and should not be routinely ordered by the flight surgeon. Persistent (>6-12 weeks) low TSH with normal freeT4 and T3 (subclinical hyperthyroidism) is also CD and requires a waiver with close follow-up. The need for further testing and treatment in such instances should be determined on a case-by-case basis. *Contact NAMI Internal Medicine for guidance* if needed.

5.4 HYPOTHYROIDISM

Last Revised: APR 2014 Last Reviewed: JUL 2014

Includes clarifications on Subclinical Hypothyroidism and guidance on elevated TSH with normal T4/T3 provided.

	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR	x	x	x	x	x	x
WNR						
LBFS						
EXCEPTIONS						
LIMDU/PEB						

AEROMEDICAL CONCERNS: The insidious onset of many signs and symptoms of hypothyroidism reduces the aviator's ability to recognize abnormalities. It can foster complacency or an unwillingness to seek medical advice until performance is significantly degraded. Fatigue, lethargy, muscle weakness, decreased cognitive function, motor weakness, delayed reflexes, bradycardia, first degree heart block, cardiomegaly, pericardial effusion, depression, sensorineural hearing loss and anemia are all complications relevant to aviation. The flight surgeon must know and observe their aviators for the subtle onset of any of these signs and symptoms.

REMEMBER: IF THE ESTABLISHMENT OF THE DIAGNOSIS AND ACHIEVEMENT OF MAINTENANCE PHASE OF TREATMENT WILL TAKE GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AND THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

ICD-9 Code/DIAGNOSIS
244.8 Acquired hypothyroidism (iatrogenic)
245.0 Acute thyroiditis
245.1 Subacute thyroiditis
245.2 Hashimoto's thyroiditis
245.9 Thyroiditis, unspecified

SERVICE MEMBER MUST OBTAIN/COMPLETE PRIOR TO INITIATING WAIVER

- *Endocrinologist/Internist/Family Medicine specialist* end of care summary documenting complete resolution of symptoms (if applicable) and stable euthyroid status, with recommendation of return to flight status with no restrictions **documented**. If *Endo/IM/FP* recommends restrictions, note must include documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Endo/IM/FP* recommendation/plan for follow on care **documented** on last clinical note.
- Surgery/Procedure Note (if performed).
- Provide administrative information to Flight Surgeon that includes command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER SUBMISSION APPOINTMENT WITH FLIGHT SURGEON

- **LABORATORY LEVELS**: For biochemically hypothyroid patients and those on thyroid hormone replacement therapy, two sequential sets of serum TSH and free T4 values in normal range (drawn 4-6 weeks apart) are required prior to waiver consideration. For asymptomatic patients not on hormone replacement therapy who have normal freeT4and TSH greater than the upper limit of normal but less than 10 mIU/L, waiver will be considered after 4-6 weeks showing stable TSH/freeT4 levels. Thyroglobulin(TG) and/or Thyroid peroxidase (TPO) antibody testing may help guide decisions to start levothyroxine but should generally be reserved for patients with abnormal TSH in whom replacement medication may not be used (i.e. subclinical hypothyroidism)
- **MEDICATIONS**: On *stable* dose of levothyroxine (if required) for minimum of 60 days. NOTE: Levothyroxine is ONLY approved form of replacement medication (if required) for Navy Aviation.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

Diagnosis:
How Condition Presented/Was Diagnosed/Treated:
Past Medical History:
Social And Family History:
Aviation History:
Physical Exam: Attention to Vitals, Skin/Hair, Neurologic, Ocular, Neck, Cardiac
Labs And X-ray Data: ECG, CBC, Complete Metabolic Panel required. Thyroid ultrasound report NOT routinely required, but include if obtained.
Medications: Previous (prior 6 months) and current medications/dosages.
Consults: Endocrinology, Internal Medicine, or Family Medicine consultation required.

FOLLOW-UP REQUIREMENTS

Submission: Annual Physical documenting continued clinical and chemical euthyroidism
Specialist Evaluation: Minimum of annual Endocrinology Internal Medicine, or Family Medicine evaluation for first 2 years after diagnosis. After 2 years, uncomplicated patients with stable TSH and levothyroxine dosage may be followed by FS only.
LABS: TSH, freeT4 (obtained annually at a minimum)
Medications: Report any medication changes or dosage adjustments

APPENDICES

DIAGNOSIS/DEFINITIONS:

Overt Primary Hypothyroidism: Elevated TSH (usually >10 mIU/L) with subnormal freeT4.
Central Hypothyroidism: Low, “inappropriately normal” or minimally elevated TSH with subnormal freeT4.
Subclinical Hypothyroidism: TSH >upper reference limit (usually 4-10 mIU/L) with normal freeT4, stable over several weeks (minimum 4-6).
NOTE: This is a biochemical diagnosis: TSH must be abnormal. Aviators with symptoms of hypothyroidism (fatigue, weight gain, constipation, hair/skin changes, etc.) who are *definitively* biochemically normal (TSH<2.5mIU/L, normal fT4) do NOT have subclinical hypothyroidism and further thyroid testing (e.g. ultrasound, antibody testing) is generally unnecessary and may be harmful. Other etiologies of their symptoms should considered (iron deficiency, sleep disorders, adrenal insufficiency, emotional stress, etc.). Antibody testing/imaging may be helpful in borderline elevated TSH values, with treatment often started in patients with positive antibodies and elevated TSH due to higher risk of progression. *Initiating treatment in biochemically normal*

aviation personnel with thyroid hormone replacement is not authorized and will not be considered for waiver.

MANAGEMENT/DISPOSITION:

- ***Elevated TSH + low freeT4, with or without symptoms***: Consultation, further evaluation and treatment generally indicated, grounding for all DIF until asymptomatic and biochemically normal.
- ***Elevated TSH (>10 mIU/L) + normal freeT4, with or without symptoms***: Consultation, further evaluation and treatment generally indicated, grounding for all DIF until asymptomatic biochemically normal.
- ***Elevated TSH(4.2-10 mIU/L) + normal freeT4 + symptoms c/w hypothyroidism***: Consultation, further evaluation and treatment may be indicated, grounding for all DIF until asymptomatic.
- ***Elevated TSH(4.2-10 mIU/L) + normal fT4 + NO symptoms c/w hypothyroidism***: Further evaluation and treatment may be indicated, not grounding (LBFS authorized) while undergoing evaluation. Initial close monitoring (TSH/fT4 every 3-6 months) needed with AMS and submission for waiver required for final disposition by NAMI.
- ***Transient (<4-6 weeks)***: TSH elevation with normal freeT4 and no symptoms that then returns to normal is NCD and does not require waiver submission.

5.5 MALE HYPOGONADISM

Last Revised: APR 2014 | Last Reviewed: JUL 2014

Includes current or recent use of testosterone supplementation

	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR		x	x	x	x	x
WNR	x					
LBFS	***Temporary upchits and LBFS are NOT authorized.***					
EXCEPTIONS						
LIMDU/PEB						

AEROMEDICAL CONCERNS: Hypogonadism is associated with decreased muscle mass and strength, anemia, and possibly depressed mood. Use of testosterone supplementation has a high potential for abuse, may cause non-physiologic hormone shifts, and may increase risk of BPH/Prostate Cancer, cardiovascular events, and erythrocytosis. Long term safety in aviation population is currently unknown.

REMEMBER: A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AN THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

ICD-9 Code/DIAGNOSIS
257.2 Hypogonadism (male)

SERVICE MEMBER MUST COMPLETE & ENSURE DOCUMENTATION AVAILABLE PRIOR TO INITIATING WAIVER

- Evaluation to include diagnosis and workup to be performed by a Board Certified *Endocrinologist* skilled and knowledgeable in the evaluation pituitary hormones. A recommendation of return to flight status and no restrictions should be **documented** on last clinical note (electronic or paper).
- *Endocrinologist* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Service member to email or provide FS administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM

- **CURRENT PHYSICAL LIMITATIONS:** None
- **LABORATORY LEVELS-SPECIAL TEST STANDARDS:** Copies of all laboratory testing with dates/times and reference values required. Optimal testing conditions must exist for hormonal tests to be accurately sampled. Specifically, these tests must be obtained at 0800 while fasting for 12 hours, with no sexual activity or exercise or nipple stimulation for 48 hours prior to sampling. Minimum workup required ***prior to*** any medication prescription/use:
- Serum TOTAL Testosterone (8 AM), a minimum of TWO (three is preferred) readings below the lower limit of normal for the used lab (most labs 280–300 ng/dl (9.8–10.4 nmol/liter (should be “distinctly subnormal”). Total testosterone is preferred first line screening test. Free testosterone should be measured ONLY IF total testosterone is borderline AND altered SHBG suspected; must be measured using a validated equilibrium dialysis method.

- FSH and LH should be measured if truly hypogonadal. In cases of secondary hypogonadism, i.e. low or normal FSH and LH (most patients), pituitary function assessment (8AM serum cortisol, TSH, freeT4, IGF-1), and serum prolactin, iron saturation and ferritin are required. Hematocrit (HCT) recorded at baseline and 6 months post-treatment. For males ≥50 yo (≥40 yo if African American or family history of prostate CA) also require Initial International Prostate Symptom Score (IPSS), PSA and DRE, again after 6 months post-treatment.
-**RADIOLOGY FINDINGS:** MRI of the pituitary is required for all cases of confirmed Secondary Hypogonadism
-**MEDICATIONS:** On stable dose of prescription testosterone for 90 days. Both topical and injectable formulations will be considered depending on therapeutic ranges/clinical effect of therapy. Confirmation of normalized/ therapeutic levels is required prior to waiver request.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION

Diagnosis:
Clinical History/How Condition Was Diagnosed:
Past Medical History:
Social And Family History: Include reproductive history.
Military/Occupational History:
Aviation History:
Physical Exam: Vitals, body habitus, neck and waist circumference, weight, BMI. GU exam including testicular size(cm or mL), body hair distribution, presence or absence of gynecomastia, prostate exam
Labs And Imaging Data: Summarize above findings.
Medications: Current dosage and frequency.
Consults:
Recommendation:

FOLLOW-UP REQUIREMENTS

Submission: Annual Physical: FS documents continued control of symptoms with medication and assesses for symptoms of OSA
Specialist Evaluation: Minimum of annual Endocrinology evaluation.
LABS: Serum testosterone level (approximately ≥350 ng/dL to ≤750 ng/dL) on therapy (measured midway between injection doses or anytime with topical doses). Annual HCT within aviation standards (suspend treatment if HCT >54). For males ≥50 yo (≥40 yo if African American or family history of prostate CA) also require Initial International Prostate Symptom Score (IPSS), PSA and DRE.
Medications: Report any medication changes or dosage adjustments

APPENDICES

DISCUSSION:
A variety of herbal and nutritional supplements are available on the market and may interfere with normal pituitary-gonadal hormonal physiology/testing. Direct to consumer marketing of prescription testosterone can make accurate diagnosis difficult and has resulted in a marked increase in inappropriate prescriptions. Male hypogonadism requires both a good clinical history and properly done laboratory workup. Initiation of treatment prior to a completed evaluation may interfere with testing results. Flight Surgeons and consultants should be made aware of the required workup and are discouraged from making this diagnosis and initiating potentially lifelong treatment prior to proper evaluation. Once initiated, discontinuation can result in symptoms due a potential prolonged recovery period of the pituitary-gonadal axis after

suppression with supplementation. Patients should be counseled that testosterone supplementation may result in infertility issues.

Symptoms and signs are nonspecific and modified by age, comorbid illness, severity and duration of androgen deficiency, variation in androgen sensitivity, and previous testosterone therapy. They are based on *expert opinion* from clinical experience (no studies to validate). Although low testosterone levels have been shown to correlate with central adiposity, it is unclear whether this relationship is causal.

5.6 PITUITARY TUMORS

Last Revised: APR 2014 Last Reviewed: JUL 2014

Changes Include: Clarification in workup and management is provided based on tumor size and functionality. Non-functioning microadenomas causing no local effects can be considered for waiver in applicants and dispositioned with a LBFS for designated.

	Applicant	Class 1			Class 2	Class 3
		SG 1	SG 2	SG 3		
CD	x	x	x	x	x	x
NCD						
WR	x*	x	x	x	x	x
WNR						
LBFS						
EXCEPTIONS						
LIMDU/PEB	Required for all macroadenomas and those treated with surgery					

*Restrictions in eligibility apply (see Appendix below)

AEROMEDICAL CONCERNS: The complications of pituitary tumors of aeromedical significance generally center around the following main factors: 1) size of the tumor and whether it causes or has potential to impact anatomic adjacent anatomic structures; 2) risk of tumor hemorrhage (apoplexy) resulting in sudden visual field deficits and hormonal dysfunction; 3) metabolic effects of hormone excess or deficiency; 4) side effects or complications from treatment. Local effects from the larger tumors can also cause local hemorrhage (apoplexy), headache, cranial nerve palsies, and visual field defects. Pituitary carcinomas are associated with a poor prognosis. Hypersectretion and hyposecretion of pituitary hormones may result in disqualifying conditions discussed elsewhere (e.g. hypothyroidism, hyperthyroidism, diabetes mellitus). Surgical treatments may result in neurologic complications and side effects of medications used to treat certain pituitary tumors may cause headache, dizziness, sedation, as well as psychological effects (psychosis, impulsive behavior) causing safety of flight issues. ***REMEMBER: IF THE ESTABLISHMENT OF THE DIAGNOSIS AND ACHIEVEMENT OF MAINTENANCE PHASE OF TREATMENT WILL TAKE GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AN THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.***

ICD-9 Code/DIAGNOSIS
227.3 Benign neoplasm of pituitary

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

For Microadenomas (<10mm in maximal dimension)
- Completed *Endocrinology* evaluation with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- Endocrine evaluation must obtain following LABS: fasting glucose, serum prolactin, thyroid stimulating hormone (TSH), free T4 (FT4) and insulin like growth factor type I (IGF1). If triad of impaired fasting glucose, body mass index >29, and hypertension (BP > 140/90) co-exist, 24 hour collection of urine for free cortisol also required.

For Macroadenomas (>10mm in maximal dimension)
- Six month grounding period for observation
- Completed *Endocrinology* evaluation with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).

- Endocrine evaluation must obtain following LABS: fasting glucose, serum prolactin, insulin like growth factor type I (IGF1), follicle stimulating hormone (FSH), luteinizing hormone (LH), thyroid stimulating hormone (TSH), free T4 (FT4), 8 AM total testosterone (or estradiol in females), fasting morning cortisol, and chemistry panel.
NOTE: A fasting morning cortisol <12 mcg/dL requires a Cortrosyn stimulation test (250 mcg). Peak cortisol at 30 or 60 minutes must be > 18 mcg/dL.
- Neurosurgery evaluation with recommendation of return to flight status and no restrictions documented on last clinical note (electronic or paper)
-Completed Ophthalmology/Optometry consultation with visual field testing and dilated eye exam with recommendation of return to flight status and no restrictions documented on last clinical note (electronic or paper).

For Pituitary Surgery
- Six month post-operative grounding period for observation
- Follow-up at 6 weeks and 6 months with evaluations by neurosurgery, optometry or ophthalmology, endocrinologist
- Testing six months post-operative and annually must include the following LABS: Fasting glucose, serum prolactin, insulin like growth factor type I (IGF1), thyroid stimulating hormone (TSH), free T4 (FT4), follicle stimulating hormone (FSH), luteinizing hormone (LH), testosterone or estradiol (females), cortisol, chem 10 , and Cortrosyn stimulation test (250mcg) with peak at 30 or 60 minutes >18 mcg/dL.
- Provide administrative information to FS/AME to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **LABORATORY LEVELS:** Laboratory values listed above should be within normal limits. Ongoing but stable abnormalities of pituitary function (e.g. prolactin elevation) should be discussed with NAMI prior to submitting a waiver request. ***It must be emphasized that optimal testing conditions must exist for hormonal tests to be accurately sampled**. Specifically, these tests must be obtained at 0700 while fasting for 12 hours, with no sexual activity or exercise or nipple stimulation for 48 hours prior to sampling.***
- **MEDICATIONS:** A summary of the medications used during evaluation/treatment should be provided to the Flight Surgeon. For prolactinomas, no waivers are granted for use of bromocriptine; use of cabergoline may be **considered** on a case-by-case basis for waiver after a 6 month observation period. No waivers are granted for any other medications used for suppression or replacement of pituitary hormones.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

Diagnosis:
How Condition Was Diagnosed:
Treatment Summary:
Past Medical History:
Social And Family History: FH: Attention to endocrine diseases and malignancy
Military/Occupational History: Attention to radiation exposures
Physical Exam: Vitals, Full Neurologic exam, Eye exam
Labs And X-ray Data: Results of MRI of sella turcica and required labs
Medications: Previous (prior 6 months) and current medications/dosages
Consults: FS to document all required consultations completed and reviewed.

FOLLOW-UP REQUIREMENTS

Submission: Annual Endocrinology follow-up with FS summary. Medical and/or surgical therapy should be considered if significant tumor growth, threat to vision (or invasion of) local structures, the appearance of hormonal excess or deficiencies.
Specialist Evaluation: Minimum of annual Endocrinology follow-up. Macroadenomas and those treated with surgery require neurosurgical evaluation and visual field evaluation by optometry or ophthalmology.
LABS: Based on tumor type and behavior on follow-up.
Minimums required based on diagnosis:

Microadenomas: prolactin, insulin like growth factor type I (IGF1), thyroid stimulating hormone (TSH) and free T4 (FT4)

Macroadenomas: full pituitary hormonal evaluation to include fasting glucose, serum prolactin, insulin like growth factor type I (IGF1), follicle stimulating hormone (FSH), luteinizing hormone (LH), thyroid stimulating hormone (TSH), free T4 (FT4), testosterone (or estradiol in females), cortisol, and chemistry panel, Cortrosyn stimulation test. Peak cortisol at 30 or 60 minutes must be >18 mcg/dL
IMAGING: MRI of sella turcica annually up to 5 years, then periodic if stable
MEDICATIONS: Report any medication changes or dosage adjustments. No waivers are granted for any other medications used for suppression or replacement of pituitary hormones.

APPENDICES

WAIVER DISPOSITIONS ELABORATED

Applicants: may be considered for waiver ONLY if they meet all of the following criteria:

1. Maximal dimension <10 mm by MRI of the sella turcica (preferably performed at a military MTF and read by a neuroradiologist).
2. No imaging evidence of compression of local anatomic structures.
3. No evidence on history or physical examination of multiple endocrine neoplasia type 1a).
4. The tumor is established as non-functional with appropriate tests performed by an endocrinologist trained and skilled in hormonal testing.
5. Applicants with tumors that do not meet the above four criteria will NOT be considered for waiver.

Designated: Designated aviators with a pituitary adenoma that meets all four of the following criteria are considered disqualified:

1. Maximal dimension <10 mm by MRI of the sella turcica (preferably performed at a military MTF and read by a neuroradiologist).
2. No imaging evidence of compression of local anatomic structures.
3. No evidence on history or physical examination of multiple endocrine neoplasia type 1a).
4. The tumor is established as non-functional with appropriate tests performed by an endocrinologist trained and skilled in hormonal testing.

BUT, may be granted clearance by a Local Board of Flight Surgeons. Designated aviators with pituitary tumors that do not meet all four of the above criteria may not be granted clearance by a Local Board of Flight Surgeons but may be considered for waiver. Waivers for designated aviators with pituitary tumors are considered based upon the following:

- ***Functional microadenomas*** may be considered for waiver based on tumor type, therapeutic options, complications and side effects of therapy, among other factors. No waivers are granted for use of bromocriptine; cabergoline may be considered for waiver. *No waivers are granted for any other medications used for suppression or replacement of pituitary hormones.*

This includes but is not limited to Cortisol, Growth hormone, and Vasopressin (antidiuretic hormone).

- ***Macroadenomas*** are usually not considered for waiver. Exceptions are those aviators with pituitary macroadenomas that have demonstrated all six of the following characteristics:

1. Regression or response to medical therapy.
2. Long history of presence (>5yrs) without growth.
3. No evidence of compromise of other pituitary hormones.
4. No evidence of anatomic complication or compression.
5. Normal visual field examination by optometry or ophthalmology.
6. An extensive (6 month) grounding period of observation.

DISCUSSION:

In pooled autopsy studies pituitary adenomas have been found in 1.5-27% of subjects who otherwise had no indication of pituitary dysfunction suggesting that the rate of occurrence in the general population is higher than previously thought. Tumors are classified as those discovered incidentally – when no pre imaging suspicion existed – and those discovered clinically due to patient presentation. They are further categorized as functional if they secrete excess hormones or nonfunctional if they are do not secrete excess hormones or secrete hormones that are inert. Finally, pituitary adenomas are categorized by size; those less than 10 mm in maximal dimension are termed microadenomas and those greater than or equal to 10 mm in maximal dimension are termed macroadenomas. The size of the tumor and whether it has hormonal effects have the greatest established impact on its prognosis.

Most pituitary tumors are microadenomas that either secrete prolactin or are nonfunctional, do not grow, and otherwise are of no clinical consequence. As a general rule virtually all prolactinomas respond to dopamine agonist therapy and will regress in dimension over time without causing complications. For most patients the side effects of dopamine agonist therapy regress over 8 weeks after initiation of therapy. Other treatments aside from surgery are available for pituitary tumors. The type of treatment and the success rates of treatment depend on the size of the tumor and the type of tumor. An endocrinologist is the best subspecialist to evaluate and treat pituitary adenomas.

6.0 EAR NOSE AND THROAT

Last Revised: Feb 2015 Last Reviewed: Feb 2015

ENT Dept Head: 850-452-3256
ENT Corpsman: 850-452-3251

6.1 ALLERGIC/VASOMOTOR RHINITIS

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Allergic Rhinitis resulting in mucosal inflammation can lead to nasal congestion, impairment of paranasal sinus ventilation, and Eustachian tube dysfunction. These can, in turn, lead to sinus/facial pressure and discomfort, ear and/or sinus barotrauma, along with the potential use of medications with unacceptable side effects, all of which have the potential for in-flight incapacitation and prolonged periods of grounding.

WAIVER: *Uncomplicated* perennial and seasonal allergic rhinitis [PAR and SAR] are **NCD!** *Vasomotor* rhinitis (VR) may be CD if symptoms interfere with aviation, although this is a rare occurrence. For more information on VR, see the Discussion section below. In evaluating a member with a history of allergic rhinitis, the following conditions must **all** apply before determining that the member is PQ:

1. Symptoms, if present or expected to recur, must be controllable with any combination of topical nasal steroid sprays, approved antihistamines, montelukast (Singulair), nasal cromolyn, or the topical antihistamine, azelastine (Astelin).
2. A Waters' view x-ray of the sinuses must show no evidence of acute or chronic mucosal disease (mucus retention cysts are the exception and are NCD). See Manual of the Medical Department, Chapter 15, section 15-84.
3. A nasal examination using a hand-held magnifying otoscope with large speculum must show no evidence of mucosal disease such as polyp(s) or purulent drainage. If in doubt, seek ENT consultation. Your nasal examination is best done several minutes after spraying both nasal cavities with a decongestant nasal spray.
4. There has been no use of allergy immunotherapy (AIT) within the past 12 months. (The active use of immunotherapy requires a waiver. However, if an individual has completed immunotherapy and it has been 12 months since the last dose of immunotherapy, he/she may request that the waiver be lifted/removed.)
   a. If an applicant has used immunotherapy in the past, but it has been more than 12 months since their last dose, a waiver is not required as long as all the other conditions listed above are met.

(Note: AR and SAR do not automatically become CD if the only additional treatment is an antihistamine and/or nasal steroid. It is the severity of the condition that requires the waiver, not the medication. See more in the TREATMENT section below)

INFORMATION REQUIRED:

1. Documentation of diagnosis on DD 2807/2808
2. Nasal speculum exam
3. Waters' view x-ray (only x-ray report needs to be submitted, not actual films)
4. **Allergic Rhinitis Worksheet**

If the conditions outlined above aren't met, then the allergic rhinitis is presumably more complicated and the member is NPQ. Depending on the reason for disqualification, a waiver may or may not be considered. In these cases, the following information is also required for waiver consideration:

1. ENT and/or Allergy consultation
2. Results of any further tests that have been performed, such as sinus CT

Vasomotor rhinitis, which causes significant disability, will require the same documentation as for allergic rhinitis. The **Allergic Rhinitis Worksheet** (see below) is helpful in assuring that all useful information is collected for submission and need for waiver review.

TREATMENT: The non-sedating antihistamines (Claritin, Clarinex, and Allegra), one topical second-generation antihistamine (azelastine-Astelin-topical nasal spray) and the leukotriene receptor antagonist montelukast (Singulair) are approved for use in all aviation personnel, **with no waiver required providing the above conditions are met**. If the Flight Surgeon chooses to start a member on one of these medications, a seven-day grounding period is mandatory in order to observe for any untoward effects. This period does not need to be repeated with subsequent use of that drug. However, if the member switches to another antihistamine, another grounding period is then necessary as two of the three approved medications are chemically dissimilar from the third. Note **that only the plain forms of these antihistamines are approved and not the ones containing decongestants**. Singulair is not generally considered first line therapy. It is generally used as a medication that provides benefit in conjunction with topical nasal steroids or antihistamines. Topical nasal steroids and cromolyn do not require a waiver and do not require a 7 day period of observation, although it may take that long for the patient to notice a benefit of the medication.

Allergy immune therapy (AIT) in stable, (maintenance) effective doses is CD but will be considered for waiver. AIT can be delivered using subcutaneous injections-subcutaneous immunotherapy (SCIT), or by sublingual instillation in the form of drops or tablets-sublingual immunotherapy (SLIT). SCIT can be challenging to administer (12 hour grounding after shot, refrigeration of allergen solutions required, loss of serum potency, potential for anaphylaxis necessitating a 30 minute period of observation following administration and difficulty obtaining refills) and should not be undertaken if topical sprays or non-sedating antihistamines are effective. SLIT is not as widely available as the more traditional SCIT, and requires daily administration (sometimes 3 times a day), but the SLIT formulations of allergens are stable at room temperature and do not require refrigeration. There is also virtually no risk of anaphylaxis with SLIT. For this reason there is no requirement to observe the individual in the clinic following administration of the allergen.

All forms of AIT require a variable period of time to work up to appropriate dosages of the allergen(s) being administered. During this phase of treatment, the individual will be in a down status. Once the individual has reached maintenance levels of allergen and has achieved relief of symptoms, he or she may be considered for a waiver. With SLIT, it may not take as long to get to an initial maintenance dose, but there are often subsequent changes made to the concentration of one or more components of the allergens in the solution. If a change is made to the concentration of any component of the allergen solution of an aviator receiving SLIT, the individual will be in a down status for 7 days in order to be sure that there are no new side effects from the change. Applicants on a stable dose of AIT may be considered for waiver.

There has been success with an accelerated method of reaching maintenance (Rush technique), and, if available, this may be considered when grounding time must be minimized.

DISCUSSION: PAR and SAR are manifested by any or all of the following symptoms: rhinorrhea, sneezing, lacrimation, pruritus (nasal, ocular, and palatal) and congestion. Etiology is inhaled allergens (and on rare occasions, food in PAR). SAR tends to be seasonal or multi-seasonal, whereas PAR may be year round. AIT is used in the treatment of PAR/SAR following allergy testing, though, as noted above, AIT is not without problems. Sometimes individuals using either form of AIT will have some break through symptoms. This can sometimes mean that the individual will be receiving AIT and also using topical steroids or an approved antihistamine. This is very appropriate and is better than trying to tough it out and being at increased risk of barotrauma. Nasal inhaled steroids, azelastine and cromolyn have minimal side effects and are approved for use in aviation personnel, as are three non-sedating antihistamines (Claritin, Clarinex, and Allegra).

It can be very helpful in evaluating an individual for their suitability for a career in aviation to ask them about their experience in commercial flights and also about their ability to tolerate diving to a depth of 10' or more. If an individual is a certified SCUBA diver it is unlikely (although not impossible) for them to have significant Eustachian tube dysfunction or sinus problems. Please be sure to include information regarding their ability to tolerate pressure changes in your submission of a waiver request.

Allergic rhinitis may be mimicked by Vasomotor Rhinitis, which may consist of rhinorrhea, sneezing, and congestion. The congestion is often seen as alternating, sometimes severe, nasal obstruction. Inciting factors include temperature and humidity changes, odors, irritants, recumbency, and emotion. Treatment of vasomotor rhinitis with inhaled nasal steroids can be effective, and, if symptoms aren't disabling, no waiver is required. The potential for VR to cause barotrauma is nil.

ICD-9 CODES:
477.9 Allergic/Vasomotor Rhinitis
477.98 Allergic Rhinitis, treated with steroids
477.0 Allergic Rhinitis, due to pollen
477.8 Allergic Rhinitis, due to other allergens
P22.60 Functional Endoscopic Sinus Surgery (FESS)

ALLERGIC RHINITIS WORKSHEET

EXAMINING FACILITY:	FACILITY UIC:
TODAY'S DATE:	EXAMINER'S PHONE #:
REQUESTING WAIVER?	REQUESTING TO ELIMINATE WAIVER?

HISTORY

SYMPTOMS		**FREQUENCY**		**TREATMENT**		**PRIOR PROBLEMS**	
	RHINORRHEA		SPRING		None		EAR BAROTRAUMA
	CLEAR		SUMMER		OTC Med		SINUS BAROTRAUMA
	CLOUDY		FALL		Steroid Spray		SINUSITIS; CHRONIC? RECURRENT? ACUTE?
	LACRIMATION		WINTER		Rx. Med*	OTHER:	
	SNEEZING		PERENNIAL		AIT**		
	CONGESTION						
	ITCHING						

How many years of sx.? Typical duration of sx:

CURRENT SYMPTOMS (if no sx. at present, when was pt. last symptomatic?):

CURRENT THERAPY, IF ANY: *(LIST MEDS) PAST EFFECTIVE THERAPY:

**IF HX. OF ALLERGY IMMUNOTHERAPY, DATE BEGUN:	DATE COMPLETED:

PHYSICAL EXAMINATION

RIGHT EAR:	VALSALVA?
LEFT EAR:	VALSALVA?

PHYSICAL EXAMINATION

NOSE:

MOUTH:

OROPHARYNX:

SINUS FILMS RESULTS: (Include actual films if abnormal/**submit all films on APT applicants**)

ENT EVALUATION: **(ONLY IF REQUIRED PER WAIVER GUIDE)**

ALLERGY EVALUATION: **(ONLY IF REQUIRED PER WAIVER GUIDE)**

IMPRESSION:

FLIGHT SURGEON'S RECOMMENDED DISPOSITION

	NPQ, WAIVER RECOMMENDED		PQ, DISCONTINUE WAIVER
	NPQ, WAIVER NOT RECOMMENDED		

FLIGHT SURGEON SIGNATURE/ STAMP

PATIENT'S SIGNATURE:	DATE:

PT'S NAME: LAST/ FIRST/ MIDDLE/RANK/RATE

DATE OF BIRTH:	AGE:	SSN:

6.2 CHRONIC SINUSITIS/SINUS SURGERY

Last Revised: Oct 2014 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: This is of particular concern because sinus barotrauma has the potential for in-flight incapacitation, prolonged periods of grounding, and other symptoms affecting performance. Patients with chronic sinusitis may have a wide variety of upper respiratory symptoms (congestion, intermittent facial pressure, post nasal drip, cough, Eustachian tube dysfunction, etc.) that can lead to frequent trips to sick call and an inordinate amount of time in a down status, thus impacting squadron flight schedules and mission accomplishment.

WAIVER: Students and designated aviation personnel who are diagnosed with chronic sinusitis while on active duty are NPQ. Waiver will only be considered after the disease has been successfully treated. Many patients with chronic sinusitis will require surgery, but there are some patients who will respond to prolonged courses of medical management. If surgery (usually FESS, or Functional Endoscopic Sinus Surgery) is performed, before the patient can return to flight duties, they must be healed and free of active disease as demonstrated by an endoscopic examination performed by the surgeon. Regardless of treatment method, the patient must demonstrate that his/her sinuses are able to tolerate pressure changes. This is usually accomplished by having the patient complete a functional hypobaric chamber run where the chamber is taken up to three successively higher altitudes (5,000', 10,000' and 18,000') at 5,000 ft/min and returned to site level at 2,500 ft/min after each sequential ascent. If surgery was performed, the surgeon should state that the patient is cleared for evaluation in a low-pressure chamber before the flight surgeon schedules a chamber run. If a hypobaric chamber is not available, then a hyperbaric chamber run down to 33 feet or a flight (not in control of the aircraft) that includes touch and go landings from 5,000' and 10,000' will demonstrate that the individual is able to tolerate pressure changes.

Class III aviators (Air Traffic Controllers, UAV operators, etc.) are somewhat of an exception to the above. For these individuals, a history of chronic sinusitis is not necessarily disqualifying. The Manual of the Medical Department, section 15-94: non-disqualifying conditions for Class III aviators lists the following as not being disqualifying: "Chronic sinus disease, unless symptomatic and requiring frequent treatment." In this vein, if a Class III aviator requires sinus surgery to manage their symptoms, this would be considered disqualifying. A waiver would be favorably considered when the patient reports that his/her symptoms have significantly improved such that they feel well and the surgeon states that the endoscopic exam shows a good surgical result and is ready to return the patient to full duty. A chamber run or other demonstration of their ability to tolerate pressure changes is not required.

Civilian applicants with a history of chronic sinusitis are NPQ. A waiver shouldn't be requested unless he or she is free of disease, as indicated by a recent ENT consultation and on some occasions, a sinus CT. If surgery has been done, enclose any pre- and postoperative notes as well as the operative report. In addition, some evidence of the applicant's ability to handle pressure changes, regardless of treatment method, should be documented. Low pressure chambers are not generally accessible to civilians, so look for a history of recent successful SCUBA diving or aerobatic flying. Many individuals have not done either of these, so please include documentation of their ability to tolerate commercial flights or diving to a depth of 10-12'. If the applicant is military, make every attempt to have him or her perform a barofunction run in a low pressure chamber.

PLEASE NOTE, IN THOSE PATIENTS WHO HAVE BEEN TREATED FOR CHRONIC SINUSITIS WITH SURGERY THERE IS NO REQUIREMENT FOR A POST-OPERATIVE CT SCAN. Individuals who have had successful surgery will often have persistent changes on a CT scan that are of no clinical significance. We are more interested in the functional outcome. Although there are several very serious potential complications from sinus surgery, the most frequent "complication" is that patients who have had sinus surgery have an approximately 10% chance of requiring additional sinus surgery. This will generally necessitate at least one additional sinus CT scan as part of the subsequent evaluation and these sinus patients can end up with an amazing number of sinus CT scans. There is no need to add to this number with a post-op CT scan if the individual has demonstrated a good functional result with a functional baro run. If the patient successfully completes the run without pain or significant facial pressure, a waiver is generally recommended and usually granted. A common waiver stipulation is that the patient must have an annual ENT consultation with nasal/sinus endoscopy for the first 3 years after surgery (with annual submission) before a request for routine (every 5 years) waiver continuation can be recommended. The following is the usual provision in the waiver endorsement from NAMI: "ENT evaluation with endoscopy 2 or 3 times in the first year and once a year for the next 2 years. After 3 years, if there is no evidence of recurrent sinus disease, may request change to routine submission. After that time ENT evaluation is necessary only if clinically indicated."

INFORMATION REQUIRED:

1. Detailed information on the events that led to the diagnosis
2. Physical examination findings
3. X-ray studies (including CT scan if performed)
4. Details on the treatment provided or operation performed
5. Surgeon's postoperative findings and recommendations
6. Copies of the pre- and post-op notes and dictated operation report
7. Post-op CT report (if performed, please remember that this is not necessary and is not required by NAMI. A post-op CT scan should only be ordered if clinically indicated by the otolaryngologist/surgeon.)
8. Documentation of a successful post-treatment/post-surgical barofunction run in a low pressure chamber or other means (hyperbaric chamber, touch and go landings in the back seat from 5,000' and 10,000' or other means-call NAMI ENT to discuss if necessary).

In many cases, it is appropriate for a Local Board of Flight Surgeons to return the member to a flying status while awaiting the waiver, but it is best to consult with the NAMI Otolaryngology Department and NAMI Physical Qualification before doing so. ***REMEMBER: Grounding physicals are required for any condition resulting in a grounding of greater than 60 days and Local Boards of Flight Surgeons are not appropriate after grounding by the Waiver Authority.***

TREATMENT: Chronic sinusitis can be relatively asymptomatic, and may only come to the attention of the flight surgeon because the member suffers an episode of sinus barotrauma. On the other hand, there may be persistent or intermittent cough, purulent postnasal drainage, facial pressure, nasal congestion, and low-grade malaise for many months without history of barotraumas before the flight surgeon is consulted. The symptoms may date back to a particularly severe upper respiratory infection, or even to an episode of acute sinusitis. The symptoms may be dismissed as allergic (although sneezing, clear rhinorrhea, and lacrimation are usually absent) and the patient may have been treated for allergies on multiple occasions, usually with little or no relief. By definition, chronic sinusitis is a condition that is present for more than three months, although in reality most patients have a considerably longer history of waxing and waning symptoms that often are mistakenly treated as multiple episodes of acute sinusitis.

Broad spectrum antibiotic therapy with activity against anaerobes is recommended for three weeks or more. Decongestants, mucolytics, nasal saline, and topical steroid sprays are often prescribed, but there is no consensus as to their effectiveness in shortening the course of chronic sinusitis. If antibiotics fail to eliminate the symptoms and the x-rays don't improve, surgery is often the next step. Surgery may be done sooner in aircrew than in others because flying personnel are unable to do their jobs until the disease is eliminated. Again, be judicious in the use of CT scans since these patients can accumulate an amazing number of scans in the course of an evaluation and treatment.

DISCUSSION: Although early surgery may seem a bit extreme, it is quite effective in eliminating disease and returning aircrew to flying. Not all ENT surgeons are comfortable with doing early surgery, especially if the patient is asymptomatic and the CT shows only minimally diseased mucosa, but when the "minimal" disease is in the area of the osteomeatal complex, it can have a profound effect on the sinuses' ability to ventilate and thereby lead to recurrent episodes of sinus barotrauma. The Air Force studied 50 pilots and navigators who were found to have chronic sinusitis during an evaluation following an episode of sinus barotrauma. They all underwent FESS, and 47 returned to flying without further problems. The other three, because of barotrauma in the chamber post-op, needed a minor revision of the original surgery. They eventually returned to flying too. The post-op chamber run is invaluable in proving that the member will do well upon returning to flying. Although it seems obvious that the chamber run is necessary in someone who had suffered barotrauma previously, it is also necessary in post-op patients who never had barotraumas since it is possible for the surgery itself to cause scarring that can compromise sinus ventilation. An uneventful chamber run puts those concerns to rest. Chronic sinusitis can recur in spite of successful treatment in the past, so the flight surgeon should have a relatively low threshold for treatment or for referral back to ENT if typical symptoms (or barotrauma) should resurface. There is one circumstance in which neither a waiver nor a chamber run would be necessary for an aircrew who has undergone FESS. Occasionally this surgery is done to open a maxillary sinus in order to decompress a mucus retention cyst. In such a case there is no chronic sinusitis, and the surgery itself has little chance of leading to barotraumas, but virtually all other patients who undergo FESS will need a waiver.

ICD-9 CODES:
473 Chronic Sinusitis
P22.60 Endoscopic Sinus Surgery

6.3 NASAL/SINUS POLYPS

Last Revised: Feb 2015 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Sinus barotrauma has the potential for in-flight incapacitation and prolonged periods of grounding. Changes in olfactory abilities (one of the most common presenting symptoms in a patient with nasal polyps) result in a decrease in ability to respond in a timely manner to cockpit smoke and fumes during emergencies.

WAIVER: Civilian applicants with nasal polyps present at the time of examination are CD, no waiver. They may be considered for waiver if the polyps were surgically removed more than three years earlier, have required no subsequent surgical treatment, and have not recurred. For military, if surgery is done (see the exception to surgery regarding polypoid middle turbinates in the treatment section below), waivers are considered if the condition is controlled postoperatively and a barofunction run in a low pressure chamber is completed successfully. Inflammatory nasal polyps are similar to other chronic diseases that require lifelong management. Control may require immunotherapy, long term usage of topical nasal steroids and/or cromolyn, or other approved medical management. At the very least, daily sinus irrigations are usually necessary. Some polyp patients have a past history of treatment with systemic steroids. If systemic steroid treatment has been used as primary therapy and/or has been necessary to control polyp recurrences, these patients may be eligible for a waiver if the need for steroids is infrequent (less than once a year) and if there have been no episodes of barotrauma. The occurrence of barotrauma in a patient with nasal polyps indicates a degree of obstruction that is significant and that should probably be managed with surgical intervention to hopefully ensure a more favorable long term result. Use of topical nasal steroids is approved, and is encouraged as needed to control polyp recurrences. As a general rule, if polyps are diagnosed and treated, a post-treatment barofunction run in the chamber will be necessary. If in doubt as to the need for a chamber run, call NAMI ENT.

PLEASE NOTE, IN THOSE PATIENTS WHO HAVE BEEN TREATED FOR CHRONIC SINUSITIS OR NASAL POLYPS WITH SURGERY THERE IS NO REQUIREMENT FOR A POST-OPERATIVE CT SCAN UNLESS IT IS CLINICALLY INDICATED.

INFORMATION REQUIRED:

1. ENT evaluation
2. All surgical reports
3. Any CT Scan Reports
4. Results of post-op barofunction chamber flight(s)

If polyps are currently present, the following additional information is also required:

1. Sinus CT (to look for the sinus disease that often accompanies polyps)

TREATMENT: Resection of nasal polyps is advisable in most cases. If polyps are very small and in no way blocking the middle meatus according to the ENT consultant, and the CT scan shows no significant sinus disease, then a waiver may be recommended even without surgery. Topical nasal steroids may be needed to keep these from enlarging.

DISCUSSION: Nasal polyps have a poorly understood etiology and tend to be recurrent. “Once a polyp former, always a polyp former,” is a common statement made by otolaryngologists and these patients must be advised that they need to maintain good nasal “hygiene”. At a minimum,

they may need to perform saline nasal irrigations on a daily basis and may very likely need to use daily topical steroids or other forms of treatment for the rest of their lives. Allergic polyps are relatively uncommon considering the large number of allergic rhinitis patients on active duty. Inflammatory nasal polyps may be more common in our population, and are frequently the result of chronic sinusitis. They are usually found in and near the middle meatus, which is why even a small polyp may lead to sinus barotrauma. Polypoid middle turbinates are somewhat more common, and don't cause barotraumas frequently. They often can be reduced dramatically in size by topical nasal steroid sprays, and rarely require surgery. If there is no history of barotrauma or chronic sinusitis, the presence of polypoid turbinates alone is NCD. Sinus mucus retention cysts are often mistakenly called "polyps", and these cysts are NCD. Large maxillary mucous retention cysts may occasionally cause symptoms and may need to be treated surgically. This surgery may be of such a limited nature that a waiver is not required since it has no impact on the other sinuses. Since radiologists often cannot differentiate between a sinus cyst and polyp, it is fair to call them cysts unless there is obvious evidence of mucosal thickening elsewhere, in which case the diagnosis is more likely chronic sinusitis. This is CD and needs treatment as in section 6.2.

ICD-9 CODES:
471 Nasal Polyps
P21.31 Nasal Polypectomy within last 12 months
471.0 Polyp of Nasal Cavity
471.8 Polyp of Sinus Cavity
471.9 Nasal Polyp, site unspecified

6.4 DISORDERS OF THE SALIVARY GLANDS

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Pain or discomfort will usually result from retained salivary stones, especially after eating or drinking. Tumors may interfere with oxygen mask fit.

WAIVER: Following successful treatment of salivary stones or tumors, a waiver may be granted provided there is no facial deformity or nerve damage that would interfere with flight duties.

INFORMATION REQUIRED:

1. Copies of all pertinent consultations
2. CT/MRI reports (and films, if available)
3. Operative report (if applicable)
4. Pathology reports (if applicable)

If pathology reports indicate a malignant process, the following information is also required:

1. Oncology evaluation

TREATMENT: Stone or gland excision (partial or total) is compatible with waiver, as are most cases of benign tumor removal. Extensive surgery for malignancy may not be, so each case of malignancy will be considered in detail by NAMI ENT before a recommendation can be made.

DISCUSSION: Mixed tumors (pleomorphic adenomas) comprise 65% of all salivary gland tumors; only a small number of these (5-6%) are malignant. The great majority of salivary tumors (85%) occur in the parotid gland, and 60% of these are the benign mixed type. Another benign tumor, the Warthin's tumor, accounts for 7% of parotid neoplasms, while malignant tumors (in descending order of frequency: mucoepidermoid carcinoma; malignant mixed tumor; acinous cell, adenoid cystic, and squamous cell carcinomas), and other rare lesions account for the remaining 33%. Benign mixed tumors have a recurrence rate of approximately 2%, usually due to incomplete removal, or seeding at the time of removal. Malignant tumors have a much higher rate of recurrence. With adenoid cystic carcinoma, 40% have metastasized by the time of diagnosis; 5-year survival is 45-82%, depending on the study, falling to as low as 13% at 20 years. The corresponding figure for adenocarcinoma is 49-75% at 5 years, with a drop to 41-60% at 10 years. The 20-year survival figures are not readily available. Fortunately, salivary gland disorders of any kind are rare in our population, so this section does not go into great detail. When questions arise that aren't answered here, please consult with NAMI ENT.

ICD-9 CODES:
527 Disorders of the Salivary Glands
527.2 Sialoadenitis
527.5 Sialolithiasis
527.9 Disease of Salivary Gland, unspecified
142.9 Malignant neoplasm of Salivary Gland
210.2 Benign Neoplasm of Salivary Gland

6.5 HEARING LOSS/STAPEDECTOMY (OR STAPEDOTOMY)

Last Revised: Feb 2015 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: The inability to clearly hear cockpit radio transmissions and warning tones can have a significant impact on flight safety.

For the purposes of this discussion, whenever the word stapedectomy is used it can be assumed that this also refers to a stapedotomy. Generally speaking, most patients with otosclerosis who undergo surgery are having a stapedotomy performed and not a stapedectomy, which was the original procedure that resulted in long term correction of stapes fixation secondary to otosclerosis. However, the term stapedectomy has remained entrenched and is used in this discussion.

WAIVER: Waivers will be considered depending on the degree of hearing loss, and the member's functional capability. Waivers following surgical treatment of conductive hearing loss may or may not be necessary, depending on the final hearing result and the nature of the surgery. For instance, repair of a traumatic eardrum perforation resulting in full correction and normal hearing would not require a waiver. However, a stapedectomy done to treat otosclerosis is CD and requires a waiver. Designated pilots are grounded for three months following stapedectomy before a waiver would be recommended to SG1. For NFO and other Class II of Class III personnel who undergo a stapedectomy, a waiver is also considered for duty involving flying after three months. ***Grounding physicals are required for any condition resulting in a grounding of greater than 60 days and Local Boards of Flight Surgeons are not appropriate after grounding by the Waiver Authority.***

Waivers for applicants will be considered on a case-by-case basis.

Other waiver criteria for surgical correction of middle ear disease include:

1. Asymptomatic
2. Passes a current flight physical
3. Prosthesis used for stapedectomy was not a wire loop/gelfoam (a piston prosthesis and tissue seal is preferred versus a blood seal)
4. There are no other restrictions on the types of prostheses that might be used for other forms of ossicular reconstruction.

For all individuals with hearing loss of any variety- conductive, sensorineural, mixed (with or without surgical correction, no waiver will be recommended if there are signs of vestibular dysfunction, spontaneous nystagmus, or if progressive sensorineural hearing loss (SNHL) is present. A patient who has suffered a sudden SNHL will be considered for a waiver following ENT evaluation/treatment and after a suitable interval has elapsed in order to establish the stability of their hearing level (30 days at a minimum). If an individual has suffered severe sudden hearing loss and does not recover function in spite of aggressive treatment, it is unlikely that a waiver will be recommended. This individual is now reliant on one ear and to put that ear at risk in the noisy aviation or shipboard environment is unwise. Bilateral stapedectomy will be considered for a waiver on a case-by-case basis. For anyone undergoing a stapedectomy, the use of a tissue seal to seal the hole around the piston of the prosthesis is recommended over the use of a blood clot to seal the area around the shaft of the prosthesis. Presumably a tissue seal results in a repair that is less likely to suffer a perilymphatic fistula. ***Applicants with a history of stapedectomy are CD, no waiver.***

INFORMATION REQUIRED: *(Please note the standards for the worse ear listed below. There has been a mistake in previous iterations of this guide. See also ManMed section 15-85.)*

1. ENT consult
2. Audiology consult (must include speech reception thresholds and speech discrimination scores)
3. Surgical report (if applicable)
4. Result of functional/cockpit hearing test if there is a SNHL or if a conductive loss persists following treatment/surgery that exceeds standards as listed below:

500	1000	2000	
35	30	50	(worse ear)
35	30	30	(better ear)

Wearers of hearing aids will also require:

1. Cockpit/in-flight hearing evaluation (to demonstrate the ability of the subject to communicate adequately in that noisy environment)
2. Air traffic controllers will also need to have a functional hearing test completed by their supervisor or other qualified individual to document that they are able to communicate effectively with the aircraft that they are controlling and with tower personnel.

Testing in a multiplace aircraft will suffice for testing of aviators normally assigned to single seat aircraft, provided ambient noise levels are similar. Newer hearing aids that sit entirely within the ear canal are comfortable enough to be compatible with in-flight use, although they may not improve one's ability to hear in that environment and may actually be detrimental. ***Remember all equipment must be tested for use in the aviation environment to make sure that it is compatible with systems (i.e. will not explode at altitude).*** Therefore an in-flight hearing test should be performed both with and without the aid(s), if the individual intends to wear them. In the past, use of the US Air Force in-flight hearing test was advised, but it proved to be difficult to administer. Instead, it would seem most practical to have the member repeat a list of common aviation phrases, such as checklist items and responses, air traffic control commands, air-to-air communications, etc. The list of phrases can be tailored to the aircraft and its mission. Admittedly, there would be no data on how well a normal-hearing individual would do on such a test, but at least you and the member will have an idea of where you stand. A third party with normal hearing can take the test at the same time so that there will be some means of comparison. Such testing should not be necessary unless the member fails to meet SG1 hearing standards that are listed above and/or is interested in trying a hearing aid in flight. Testing should also be considered in the rare instance of an aircrew member who is having communication difficulties in the aircraft in spite of an audiogram that shows pure tone thresholds to be above standards. A sample submission narrative for a functional hearing test is listed at the end of this portion of the waiver guide.

TREATMENT: Conductive hearing loss may well be improved with amplification (hearing aid) if surgical treatment is not a reasonable alternative, or the individual does not desire to pursue surgery. Benefits from amplification for SNHL are variable, but can be significant. The use of hearing aids in flight, however, is not necessarily advantageous due to possible interference with wearing of the helmet and the perceived lack of benefit in the noisy cockpit environment. Hearing aid users will often do well without the aids in the cockpit as long as they have a properly fitting helmet, wear noise attenuating plugs or Communication Ear Plugs (CEPs), and carefully adjust their radio volumes. Hence the in-flight hearing test gives the most

information if performed both with and without the aid(s). In some aircraft, it is possible to utilize active noise reduction headsets (e.g. those made by Bose and David Clark) which will further enhance speech intelligibility, although at some financial cost. In some aircraft, the noise cancellation headsets cannot be used because some of the cockpit alarms are external to the cockpit communication system and will therefore be cancelled by the noise cancellation technology.

DISCUSSION: Persons with conductive hearing losses usually hear relatively well in noisy backgrounds, due to a phenomenon called the paracusis of Willis, while those with SNHL are more often handicapped when there is significant background noise such as in the cockpit. In some respects, individuals with a sensorineural hearing loss can be considered to be comparable to a computer with limited bandwith or RAM. Their inner ears have a limited ability to process the sounds that they hear and if there is a great deal of background noise, this noise takes up some of their bandwidth and limits their ability to understand the spoken words in their headset. Therefore, aeromedical decisions should be based on evaluation of hearing on the ground **and** in the cockpit, especially if the loss is severe enough to warrant use of a hearing aid or aids on the ground. Unilateral hearing loss presents few operational problems, but new or progressive unilateral loss can have significant medical implications and ENT consultation is necessary to rule out such conditions as acoustic neuroma or atypical Meniere's (cochlear hydrops). The guidelines used at NAMI for when to refer a patient for ENT evaluation of asymmetric hearing loss are:

- three contiguous frequencies that are each 10 dB or more worse than the same frequencies in the other ear,
- two contiguous frequencies that are 15 dB or more worse than the same frequencies in the other ear, or
- 1 frequency that is 25 dB worse than the same frequency in the other ear.

These are very tight guidelines and other otolaryngology departments may have different criteria. The important thing is to recognize when asymmetry is present and be sure that it receives appropriate consideration and evaluation if indicated. A stapedectomy may present problems because the operation creates an opening into the labyrinth, and involves the placement of a prosthesis There is a risk of postoperative perilymph fistula, as well as subsequent shifting of the prosthesis, both of which can result in sudden attacks of vertigo. The 3 month post-op waiting period allows for healing, which reduces the chances that barotrauma (or an over enthusiastic Valsalva maneuver) will cause a perilymph leak.

Patients with sudden SNHL can present a diagnostic challenge. Frequently these patients have difficulty describing what they feel and in addition to saying that their hearing has diminished they use phrases like; "My ear feels plugged," or "My ear feels full." Frequently these patients end up with a course of treatment for Eustachian tube dysfunction when there is nothing wrong with their Eustachian tubes. **Examine patients with a complaint of sudden hearing loss carefully.** Observe their tympanic membranes for movement with Valsalva. Be suspicious of sudden SNHL and have a low threshold for using tuning forks, getting a formal audiogram or getting an ENT consult. The longer it takes for this to be recognized, the less likely it is that intervention will be successful to restore hearing. Current accepted management includes an aggressive steroid taper and also may include transtympanic steroids and/or hyperbaric oxygen. There probably is no role for oral antiviral medications. Some patients will recover most of their hearing with no intervention. But, a significant number of patients with sudden SNHL will not recover and this will have a significant impact on their quality of life and may not be waiverable for aviation. The percentage of patients who recover serviceable hearing is improved with

steroid treatment. A waiver may be considered if there is adequate recovery and if stability is demonstrated for at least 30 days, assuming there were no vestibular symptoms.

Below is a brief paragraph that can be used to submit the results of a functional cockpit hearing assessment for aviation personnel who have hearing that is abnormal enough to bring into question their ability to communicate. This test does not need to be elaborate. All that needs to happen is for the individual to be tested in their airframe or usual duty station (the tower for an air traffic controller, for example) and to demonstrate that the individual is able to communicate clearly and without mistakes or repetition. An example of a situation where this would be required is an individual with otosclerosis who does not want to have surgery (or is not quite ready for surgery). He/she may or may not have hearing aids. Typically hearing aids are not used in flight, and probably should not be used in flight. The volume control for the headset works as a hearing aid. Before this individual can be considered for a waiver, we will need the results of a functional cockpit hearing test.

Make adjustments to this statement as necessary for your particular situation.

NARRATIVE STATEMENT FOR FUNCTIONAL COCKPIT HEARING TEST.
On (date)_____the subject, (name)_____had a functional hearing test performed at (location)__. The test was performed in (aircraft type) on the ground with the engine functioning and with the aircraft capable of achieving flight. (name) demonstrated that he/she was able to communicate clearly and effectively with the air traffic control personnel on the radio as well as with aircrew and ground crew personnel on the intercom. There were no errors in communication and he/she demonstrated effective understanding of instructions given over the radio. I was present during this test and witnessed his performance. (Alternatively you could state the pilot's name, or whoever it was, who witnessed the test and verified the performance.)

Signed:

If the test was done in an aircraft that was airborne (which is perhaps a bit more accurate) then change the second line accordingly.

ICD-9 CODES:
389.0 Conductive Hearing Loss/Stapedectomy
389.1 Sensorineural Hearing Loss
387 Otosclerosis
P19.1 Stapedectomy

As an indication of how seriously hearing loss is being considered in individuals attempting to join the Navy, the following Memorandum from the Surgeon General of the Navy is included for your review. It states that individuals with hearing levels that do not meet accession standards (which are slightly worse than the standards for aviation applicants, see below) will not be allowed to enter the Navy. Generally speaking, the first official audiogram is obtained in Boot Camp or at OCS/TBS (or its equivalent). If the individual has a conductive loss that was previously unrecognized and that is amenable to treatment, that treatment may be undertaken if it is reasonable (again, see below). If the hearing loss is a sensorineural loss, then they will be discharged from the Navy at that time. No exceptions!

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
7700 ARLINGTON BOULEVARD
FALLS CHURCH, VA 22042

IN REPLY REFER TO
5100
Ser M00/14AT-0287204
21 Apr 2014

MEMORANDUM FOR COMMANDER, NAVY MEDICINE EAST
COMMANDER, NAVY MEDICINE WEST

Subj: GUIDANCE ON THE DISPOSITION OF ACTIVE DUTY AND RESERVE ACCESSIONS FAILING TO MEET HEARING REQUIREMENTS

Ref: (a) DoD Instruction 6130.03 of April 28, 2010
(b) NAVMED P-117, Manual of the Medical Department, Article 15-38

Encl: (1) Guidelines on New Accessions and Hearing Loss

1. Enclosure (1) provides Department of the Navy guidance regarding the evaluation and disposition of accessions failing to meet the hearing requirements specified in references (a) and (b).

2. Please ensure your medical treatment facilities responsible for processing enlisted and officer accessions are aware and comply with the guidelines.

3. My point of contact for this matter is CDR Joel Bealer, MSC, USN, at 703-681-5392 or via e-mail at joel.bealer@med.navy.mil.

M. L. NATHAN

Guidelines on New Accessions and Hearing Loss

Individuals seeking to serve in the Navy or Marine Corps are required to meet minimal health standards as specified in DODI 6130.03. Occasionally, the services may elect to waive certain conditions in order to meet manpower requirements. Hearing loss, however, is not a condition that may be considered for waiver. Military Entrance Processing Stations are effective in screening candidates. Occasionally, some individuals report to training commands before the condition is identified. The purpose of this document is to provide guidance on the evaluation and disposition of new Navy and Marine Corps accessions who fail to meet hearing standards.

1. Identification

a. All active duty and reserve personnel in the Navy and Marine Corps are required to obtain a reference audiogram at their initial point of training. Reference audiogram results are documented on DD Form 2215, placed in the medical record, and serve as the baseline to compare future hearing performance.

b. The initial reference audiogram should occur as early in the training cycle as possible to facilitate the evaluation and disposition process.

c. Minimal hearing performance standards as specified in DODI 6130.03 and the Manual of the Medical Department are:

(1) Pure tone thresholds at 500, 1000, and 2000 cycles per second for each ear of not more than 30 decibels (dB) on the average with no individual level greater than 35 dB at those frequencies.

(2) Pure tone level not more than 45 dB at 3000 cycles per second or 55 dB at 4000 cycles per second for each ear.

(3) There is no standard for 6000 cycles per second.

(4) Individuals failing to meet minimal hearing performance standards on their initial DD Form 2215 must be referred to an audiologist for full diagnostic evaluation.

2. Evaluation

a. Referrals for full diagnostic evaluations must be made to an audiologist with current privileges and license to practice audiology. Department of Defense (DoD)/Veterans Affairs providers follow and are most familiar with DoD requirements.

b. A full diagnostic evaluation in accordance with American Speech-Language-Hearing Association or American Academy of Audiology clinical practice guidelines must be performed to validate screening test results and rule out mitigating factors such as medical or functional issues that may adversely affect the results.

Enclosure (1)

3. Disposition

a. Individuals who meet hearing standards following a full diagnostic evaluation will proceed with training as directed.

(1) Any special testing requirements must be noted in both the physical and electronic health record.

(2) Examples of special testing requirements may include:

(a) Masking (Identified on initial screening exam)

(b) Collapsing ear canals

(c) Test anxiety

(d) Claustrophobia

b. Individuals failing to meet hearing standards following a full diagnostic evaluation will be released from military service.

(1) For accessions who fail to meet the standard due to a treatable medical condition, a reasonable effort will be made to resolve the condition prior to a final decision to retain or release.

(2) "Reasonable effort" will be determined at the discretion of the clinical facility directly supporting the relevant training command based on:

(a) Facility limitations

(b) Availability of specialists

4. References

a. DoD Instruction 6130.03 of April 28, 2010

b. Manual of the Medical Department, Chapter 15, Article 15-38

6.6 MENIERE'S DISEASE/VERTIGO

Last Revised: Feb 2015 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Incapacitating vertigo may occur suddenly in flight, which is obviously a potentially catastrophic occurrence. Attacks may be precipitated by stress and fatigue. A fluctuating hearing loss usually accompanies the labyrinthine symptoms in a patient with Meniere's disease, and may progress over a period of time to a significant and permanent impairment. Other forms of vertigo such as Benign Positional Vertigo (BPV), Vestibular Neuritis (or Neuronitis), or Labyrinthitis may also present suddenly and can be incapacitating as well.

WAIVER: Due to the unpredictable and sudden nature of the vertigo episodes in many patients with Meniere's disease and the potential for the condition to become bilateral, waivers are very rarely granted for a diagnosis of Meniere's disease. Other causes of vertigo may be waiverable, hence the importance of gathering as much diagnostic information as possible. Waivers for applicants will be considered on a case-by-case basis.

INFORMATION REQUIRED:

1. ENT evaluation
2. Audiology evaluation, including any vestibular function testing that has occurred (such as rotary chair testing, video nystagmography [VNG], vestibular evoked myogenic potentials [VEMP], electrocochleography [Ecog], dynamic posturography or dynamic visual acuity)
3. Results of vestibular rehabilitation therapy (if performed).
4. Results of follow up vestibular function testing and demonstration of compensation as indicated by dynamic posturography and dynamic visual acuity testing (if applicable).

Not all vertigo is Meniere's, and causes which are self-limiting and non-recurrent may well be waiverable once symptoms have abated. A neurology consultation can be of great help in making or ruling out specific diagnoses, and should be included with waiver submission if performed. Some vestibular injuries can leave a permanent deficit of a particular part of the vestibular system and may initially be incapacitating, but with appropriate vestibular rehabilitation therapy and enough time, many individuals can compensate and achieve a normal degree of function.

TREATMENT: Treatment with low sodium diet, thiazide diuretics, stress management, and vestibular sedatives such as diazepam may diminish symptoms, but the underlying condition persists and is very unlikely to be waiverable, especially if vestibular sedatives are required for the patient to remain symptom free. Surgery (labyrinthectomy, endolymphatic sac drainage or decompression, and vestibular nerve section) is of variable effectiveness. Surgery may diminish or even abolish some of the more severe symptoms, but the patient may be left with some vestibular dysfunction so waiver consideration remains highly individualized. Transtympanic middle-ear gentamicin therapy via microcatheter or injection is being done at many centers, but the relief of vertigo is variable, so this treatment has not yet been routinely considered for waiver and will require one-on-one communication with the NAMI ENT Department. At present, very few aviation personnel have received waivers for Meniere's Disease. If a waiver is granted for a pilot, he or she will have to demonstrate at least 6 months of being symptom free and will generally be waived to SG3. They will generally need to have had ablative therapy (transtympanic gentamicin or surgery) and will need to demonstrate normal function on dynamic posturography and dynamic visual acuity. A waiver to SG1 is extremely

unlikely. Other aviation personnel with Meniere's disease may receive a waiver if they have demonstrated long term stability of symptoms using appropriate (non-sedating) medical management or with ablative therapy. This will generally require a period of at least 6 months with no symptoms and they will also need to demonstrate normal function on dynamic posturography and dynamic visual acuity.
Grounding physicals are required for any condition resulting in a grounding of greater than 60 days and Local Boards of Flight Surgeons are not appropriate after grounding by the Waiver Authority.

Vestibular nerve section is not an operation to be taken lightly, and there is no guarantee that a waiver will be granted if surgery is done.

Treatment of patients with BPV is best accomplished with a canalith repositioning maneuver (such as the Epley Maneuver), although symptoms generally do resolve spontaneously, but take a lot longer to go away. Aviation personnel with BPV can be considered for a waiver when their symptoms have been totally resolved for at least 4 weeks. Advanced vestibular testing and/or therapy is not usually employed, nor is it required, for patients with "straight forward" BPV.

A diagnosis of labyrinthitis requires the presence of both hearing loss and vertigo. Remember, the labyrinth consists of both the cochlear and the vestibular systems and the labyrinthine fluid communicates throughout the entire labyrinth. Inflammation in one part of the labyrinth will affect all parts, at least in theory. If a patient presents with both vertigo and a sensorineural hearing loss, this represents somewhat of an emergency and in most otolaryngology clinics, this individual would be treated with an aggressive steroid taper (and/or transtympanic steroids). It would behoove the flight surgeon evaluating such a patient to communicate with their local otolaryngologist. The degree of recovery of hearing and vestibular function will dictate the potential for a waiver. Vestibular rehabilitation therapy has a very real role in the recovery of those patients with a protracted course of vertigo. Some patients recover quickly and will not need it. In those patients with an extended period of significant vertiginous symptoms, a demonstration of compensation and recovery will be necessary. At a minimum this will require normal results of dynamic posturography and dynamic visual acuity.

The evaluation of a patient with an extended course of vertigo can be a fairly extensive process and will often involve other specialties, such as neurology as mentioned above. Testing that may be performed includes video nystagmography (which includes caloric testing), rotary chair testing, electrocochleography, vestibular evoked myogenic potentials as well as dynamic posturogaphy and dynamic visual acuity. Not every test is indicated in each patient and the tests obtained will sometimes depend on availability. Please contact NAMI ENT to discuss the more complicated cases in order to make sure that requirements are met up front.

DISCUSSION: The cause of symptoms in Meniere's Disease is felt to be due to an increase in pressure of the endolymph within the labyrinth. The reason for this increase is not known, although multiple theories abound. The average age of onset is in the forties, with a range between 20 and 60, which includes virtually all military aviation personnel. The disease is progressive in approximately 10% of patients, with a relentless worsening of the vertigo episodes and hearing loss. Medical treatment is often of no help in these individuals, and surgery or ablative therapy is often the only option. The other 90% can expect some symptomatic relief from medical therapy, and on occasion may show spontaneous long-term remission, although the underlying pathology is not actually altered by medical therapy. One should therefore be reluctant to say that a case of Meniere's is cured or "burned out", even in

the face of a prolonged symptom-free interval. Even when Meniere's has been successfully treated, there is approximately a 20% incidence of the disease later striking the other ear, hence the reluctance to waiver to SG1 no matter what the result of treatment has been.

In a population of young healthy aviation personnel, the most common form of vertigo is probably vestibular neuritis (or neuronitis). These patients have no aural symptoms (fullness, hearing loss, tinnitus), an important distinguishing feature. Their symptoms frequently follow a viral illness, so the etiology is presumed to be viral. Symptoms can be every bit as disabling as other forms of vertigo and can drag on for days or weeks. Sometimes these patients (or other vertigo patients as well) are so disabled that they need vestibular suppressants such as diazepam or meclizine. However, the use of vestibular suppressants can delay central compensation, so advise patients to use them sparingly, if possible.

Other vertigo-producing labyrinthine disorders, such as vestibular neuronitis and Benign Paroxysmal Positional Vertigo (BPPV) are not nearly as likely as Meniere's disease to be recurrent, and recovery is frequently complete, so a waiver for these conditions is more likely. If an individual has a viral illness followed by a brief (1-3 day) period of vertigo or disequilibrium followed by complete recovery of function and a completely normal neurologic evaluation with no evidence of vestibular dysfunction, then this individual can be returned to flight duties without need for a waiver if they remain completely free of symptoms for at least 4 weeks. Do not be in too big of a hurry to return these patients to flight duty. More protracted cases of vertigo following viral illnesses should be more fully evaluated, including advanced vestibular testing as indicated above and if a vestibular deficit is identified, they will need to demonstrate complete central compensation as indicated by dynamic posturography and dynamic visual acuity testing. A precise diagnosis is not always possible in cases of vertigo, but if a waiver is sought, the more specific a diagnosis one has, the easier it is to determine waiverability.

ICD-9 CODES:
386.0 Meniere's Disease/Vertigo
780.48 Vertigo, not otherwise specified
386.12 Vestibular neuronitis
386.11 Benign paroxysmal positional vertigo

6.7 CHOLESTEOTOMA

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: This is a concern in aviation personnel due to hearing loss and risk of recurrence, with the possibility of labyrinthine involvement, and even intracranial extension in the more advanced cases.

WAIVER: A history of cholesteatoma is CD. It must be surgically removed before a waiver can be considered. Since the recurrence rate is approximately 35%, initial waivers are for one year only; an ENT consultation must be submitted before the waiver will be continued after that first year. Persistence of cholesteatoma would be cause for waiver withdrawal, pending the outcome of further surgery. Waivers for applicants will be considered on a case-by-case basis.

INFORMATION REQUIRED:

1. Current ENT evaluation
2. Current audiology evaluation
3. Operative report

Since cholesteatoma surgery usually involves the mastoid, there is risk to hearing, balance, and facial nerve function. Any impairment in these areas should be addressed in the waiver request. Post-op hearing that is below standards will also require a waiver (see section on Hearing Loss).

TREATMENT: Surgical removal.

DISCUSSION: Given the relatively high recurrence rate, it is important that every attempt is made to assure that there is no residual disease. Recurrent or continuous drainage following surgery may indicate the presence of persistent cholesteatoma, and is not waiverable until adequately treated. Occasionally, the surgeon will plan (or advise) a re-exploration of the ear at a specific time in the future, usually in 6-12 months. Every attempt should be made to have this done, as the surgeon most likely feels that the chance of there being persistent disease is fairly good. **If re-exploration uncovers residual disease, the waiver process must be repeated.** As a rule, each time residual cholesteatoma is found, the surgeon will recommend re-exploration at yet a later date until no further cholesteatoma is found. There is no policy stating the maximum number of repeat surgeries that are allowed before a waiver is permanently revoked, but **Code 53HN and ENT need to be advised each time a surgery is performed for recurrent cholesteatoma**.

ICD-9 CODES:
385.3 Cholesteatoma
P18.29 Excision of cholesteatoma

6.8 VESTIBULAR SCHWANNOMA/ACOUSTIC NEUROMA

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Progressive hearing loss, tinnitus, trigeminal parasthesia, imbalance, and occasionally true vertigo have all been attributed to acoustic neuromas. Following surgery, total hearing loss, labyrinthine dysfunction, and facial nerve weakness or paralysis can be present on the side of the procedure. Following treatment with radiation or proton beam therapy, some patients experience a gradual, but significant, decrement in hearing (up to 75% of patients in one study). Facial nerve weakness is less common, but possible, following radiation therapy.

WAIVER: One year following successful excision of a unilateral tumor, a waiver may be considered if there are no serious sequelae. Vertigo, ataxia, and facial paralysis are examples of unacceptable complications. Unilateral hearing loss, even total loss, is common following treatment (surgical or with radiation therapy) and may well be waiverable provided adequate hearing remains in the other ear and the hearing loss is compatible with the member's mission. Waivers for applicants are generally NOT recommended.

INFORMATION REQUIRED:

1. ENT consult
2. Audiology consult
3. MRI (serial reports if indicated)
4. Neurology consult
5. Neurosurgery consult
6. Surgical report
7. Pathology report (if tumor was resected)
8. Radiation oncology report (if treated with radiation)
9. Post-operative vestibular evaluation including dynamic posturography and dynamic visual acuity testing to demonstrate complete compensation of any permanent vestibular deficit.
10. Functional cockpit hearing test if there is significant hearing loss present
11. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

Untoward postoperative symptoms, such as recurrent headaches, as well as complications (CSF leak, facial paralysis, etc.), need to be especially well documented in the Aeromedical Summary and waiver request.

TREATMENT: Observation with serial MRI, Surgical excision, stereotactic radiotherapy, stereotactic radiosurgery, or proton beam therapy.

DISCUSSION: Vestibular schwannomas have a peak incidence in individuals approximately 50 years of age. They arise from the superior or inferior branch of the vestibular division of the eighth nerve within the internal auditory canal. Although patients may describe some degree of unsteadiness, true vertigo is not a very common presenting complaint due to central compensation of the gradually progressive loss of vestibular function on the affected side. Hearing loss is the most common presenting symptom, followed by tinnitus. Large tumors can extend from the internal auditory canal into the cerebellopontine angle as they enlarge and thereby impact cranial nerves in that region, such as the trigeminal nerve, resulting in facial

parasthesias/numbness. Other neurologic dysfunction is possible, so a thorough neurologic evaluation is critical. In patients with neurofibromatosis, neuromas can occasionally be bilateral. Vestibular schwannomas are virtually always benign. Operative morbidity is related to the size of the tumor, and hearing is often affected. Up to 50% of patients will have no useful hearing in the involved ear after surgery, although hearing preservation following surgical treatment of small tumors can be higher than with stereotactic radiosurgery. Other cranial nerves also may be damaged during surgery (i.e. trigeminal and facial). Facial paralysis may make wearing of an oxygen mask difficult, may result in speech problems, and can cause eye symptoms due to inability to close the eyelids. Radiotherapy is not without risk and although complications may take longer to develop, patients can still develop a significant hearing loss. There is a slight risk of benign cyst development and a rare possibility of malignant transformation. Persistent tumor growth occurs in roughly 5% of patients following various forms of radiation treatment and will require surgical excision. Treatment choice will be up to the patient and the available resources.

In the aviation community, where all individuals are part of the hearing conservation program and an asymmetric hearing loss may be the first sign of a problem, vestibular schwannomas are likely to be found before they have gotten very large and before there is a significant effect on the individual's ability to function. Many of these individuals will be unaware of their asymmetric hearing and will be otherwise completely asymptomatic. In these cases, it may be completely appropriate for the patient to elect no treatment. In these cases, they will usually be followed with serial MRIs at 6 to 12 month intervals. As long as there is no evidence of clinically significant vestibular dysfunction, these individuals may be eligible for a waiver to Service Group 3 after an initial 6 month period of observation. Generally speaking, if the tumor increases in size, if there is further decrement in the hearing on the affected side, if facial weakness or paralysis develops or if vertiginous symptoms develop, the tumor is either removed surgically or treated with stereotactically delivered radiation therapy. Roughly 50% of these lesions will not progress any further. If the tumor demonstrates growth at a rate greater than 2.5mm per year, the individual is at greater risk of hearing loss and should receive treatment sooner than later.

This guide is not recommending a specific treatment. Regardless of treatment modality, if the treatment is effective and if the patient demonstrates a good recovery with good vestibular function, no significant complications and adequate hearing, a waiver is possible.

ICD-9 CODE:
225.1 Acoustic Neuroma

6.9 OVAL/ROUND WINDOW FISTULA

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: A perilymph fistula (PLF) can result in either the sudden onset of sensorineural hearing loss or a rapidly progressive and/or fluctuating loss, with or without episodic vertigo. It may mimic Meniere's disease.

WAIVER: A history of fistula is CD, no waiver, for all applicants. For a unilateral healed fistula in Designated Naval Aviator, ground for six months, SG3 for six months, then SG1. For NFO's and all Class II or III personnel, ground for six months, submit a waiver request. Call NAMI ENT in the rare case of bilateral fistulae.

INFORMATION REQUIRED:

1. Copies of all records involving the initial clinical presentation
2. All ENT consults, notes, tests, operation reports, etc.
3. Audiology report
4. Vestibular test results

TREATMENT: Initial treatment is conservative, with avoidance of lifting and straining or exposure to significant barometric pressure changes, especially ones that might require a Valsalva maneuver. If a medevac is necessary, it will be important to limit altitude changes. If hearing and vestibular symptoms don't improve, and certainly if they worsen, exploratory tympanotomy is indicated. If a fistula is present, it can be surgically sealed.

DISCUSSION: While fistulae may occur spontaneously, most are associated with head injury or barotrauma, especially in the active duty population. Many patients with a “fresh” PLF from barotrauma will complain of vertigo coming in waves in a crescendo/decrescendo pattern accompanied by a progressive sensorineural hearing loss. This pattern of symptoms/findings occurs as perilymphatic fluid is forced through a tear in the round window (RW) membrane or through the annular ligament of the stapes in the oval window (OW). The tear in either the RW or the OW allows some perilymphatic fluid to escape and then may partially seal itself until more perilymphatic fluid is produced and forces its way through the defect. Perilymphatic fluid is thought to be produced as a filtration product of cerebrospinal fluid, so there is a bit of a pressure head that tends to force more fluid out through the defect in either the RW or OW.

PLFs may also occur as a result of Q-tip misadventure or improper cerumen irrigation technique. These will be associated with injury to the tympanic membrane and probably the ossicular chain. These patients will most likely have a conductive hearing loss in addition to the sensorineural loss that is caused by the PLF.

It will be of critical importance to know the timing of symptom onset in relation to the patient’s flight profile in order to distinguish a PLF from Type II decompression sickness. Barotrauma of sufficient severity to cause a PLF generally only occurs during descent. If the onset of vertigo and/or hearing loss occurs during or after ascent (or a rapid decompression), consideration must be given to the more likely onset of DCS, in which case hyperbaric oxygen therapy is indicated. The descent involved in HBO treatments will make a PLF worse.

As surgery does not always seal the fistula, and recurrence is possible, various waiting periods are prescribed for different classes of personnel. The longest period is for designated Naval Aviators, as there is a considerable safety issue should acute vertigo occur during flight.

ICD-9 CODE:
386.4 Oval/Round Window Fistula

6.10 SURGICAL PROCEDURES THAT DO NOT REQUIRE A WAIVER

Last Revised: Jul 14 Last Reviewed: Feb 2015

Assuming that recovery is uncomplicated and there are no other significant factors, the following surgical procedures do not require a waiver. If there is any question regarding suitability for aviation duties following one of these procedures, please communicate with NAMI ENT at 850-452-3256/3251 (commercial) or 459-3256/3251 (DSN).

NASAL SURGERY

If any of the following procedures are done in conjunction with sinus surgery (endoscopic or otherwise), then the patient will require a waiver.

Septoplasty: Cautery or submucous resection of the inferior turbinates (or any other means of reducing the size of the inferior turbinates, such as coblation, cryotherapy, radiofrequency ablation, etc.).

Septorhinoplasty: For all these procedures there will be a degree of tenderness involved and it seems as though the nose becomes a target for elbows and other random blows once it has undergone surgery. When the tenderness has resolved so that the nose can be manipulated without discomfort (this can take up to 4-6 weeks for some folks) the patient can return to flight duties. There can also be a risk of bleeding that can last up to three weeks or so. For this reason, putting anyone back in the cockpit any sooner than three weeks following one of these operations is not recommended.

EAR SURGERY

Otoplasty: This procedure will frequently involve placing sutures to hold the ear in a certain position until it can scar in place and retain that position. The patient should not be manipulating the ears (as would occur when putting on and taking off a helmet) until cleared by the surgeon, which again may take up to six weeks.

Uncomplicated tympanoplasty for an otherwise uncomplicated tympanic membrane perforation: If it is the second (or subsequent) attempt to repair a perforation, or if there is a history of chronic drainage or cholesteatoma, a waiver will be required. If the history is in some way complicated by duration or symptoms, then a waiver will probably be required. As an example of the type of surgery that would not require a waiver is the simple repair of a simple traumatic perforation, such as one caused by a slap injury. When in doubt, call NAMI ENT at the above number.

THROAT SURGERY

Tonsillectomy

Adenoidectomy

Uvulopalatopharyngoplasty (UPPP) for primary snoring. [If the patient has obstructive sleep apnea and undergoes a UPPP, a waiver will be required. See the neurology section of the waiver guide for OSA waiver requirements.]

Palatal stiffening procedures for treatment of primary snoring (Restore© palatal implants, coblation, radiofrequency ablation, etc.). Primary snoring refers to the individual who snores, but does not have any evidence of obstructive sleep apnea. This is considered a "cosmetic" problem and may be a nuisance, but does not require a waiver. The surgical procedures to correct it do not require waivers unless there is some sort of complication that has an impact on aviation capabilities.

NECK PROCEDURES

Removal of submandibular salivary gland as long as there is no malignancy. The marginal mandibular branch of the facial nerve is sometimes injured during this procedure. If it results in no difficulties eating or using a mask this is not disqualifying.

Parotidectomy as long as there is no evidence of malignancy. Again, the facial nerve can be injured in this procedure with potentially significant functional deficits. If this has occurred, it will probably require a waiver and may be permanently disqualifying.

Removal of a branchial cleft cyst as long as there is no debilitating nerve injury or other complication.

Removal of other embryologic remnants such as a thyroglossal duct cysts**.**

MISCELLANEOUS CONDITIONS

Nasal Fractures typically do not interfere with sinus function and even if the fracture is not reduced, the patient usually retains an adequate airway. As soon as the patient can wear a mask without pain or distraction from tenderness, he/she may return to flight duties. This can take 4-6 weeks.

Isolated fracture of the anterior wall of the maxillary sinus (softball to the face is a fairly common cause). These fractures do not require a waiver as long as the upper medial wall of the maxillary sinus, where the drainage pathway is located, is uninvolved. Again, it may take 4-6 weeks for tenderness to resolve to the point of being able to tolerate a mask or other safety equipment.

Peritonsillar abscess. If the patient chooses not to have an interval tonsillectomy (often done ~6 weeks after drainage of the abscess) he/she may return to aviation duties when free of pain and off medications, typically 2-3 weeks.

Face lift, or other cosmetic procedures (facial nerve injuries can also occur with this procedure and if so, must not interfere with function of masks or other equipment).

ICD-9 CODES:
P21.89 Repair and plastic operations on the nose, other
P21.88 Septoplasty, other
P21.87 Rhinoplasty, other

P18.79 Plastic repair of external ear, other
P19.5 Tympanoplasty, other
P28.2 Tonsillectomy without adenoidectomy
P28.3 Tonsillectomy with adenoidectomy
P28.6 Adenoidectomy without tonsillectomy
P27.69 Plastic repair of palate, other
P26.29 Excision of salivary gland lesion, other
P29.2 Excision of branchial cleft cyst or vestige
P06.7 Excision of thyrologlossal duct of tract
802.0 Closed fracture of nasal bones
802.4 Closed fracture of molar and maxillary bones
475 Peritonsillar abscess

7.0 GASTROENTEROLOGY

Last Revised: September 15 | Last Reviewed: September 15

7.1 EOSINOPHILIC ESOPHAGITIS (EOE)/PPI-RESPONSIVE ESOPHAGEAL EOSINOPHILIA (PPI-REE)

Significant changes: 1) Addition of PPI-REE as a differential diagnosis; 2) Biopsies of the antrum or duodenum are no longer required unless clinically indicated.

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	May be required for esophagitis when it is persistent and not responsive to therapy (SECNAVINST 1850.4 series, encl (8)).						

1. Current or history of esophageal disease is considered disqualifying. Waivers are considered on a case-by-case basis.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect flight performance, mission, or safety. Symptoms relevant to aviation include dysphagia, food impaction, nausea, vomiting, chest and or abdominal pain. The symptoms are of concern primarily due to the potential impact while operating the aircraft or their effects on mission completion. They may also require additional evaluations and specialty follow up.

DIAGNOSIS/ICD-9 Code:
530.13 Eosinophilic esophagitis
530.19 Other Esophagitis

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology or Internal Medicine* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Gastroenterology or Internal Medicine* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Gastroenterology or Internal Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- *Allergy* consultation to determine if food allergy is present.
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptomatic control.
Specialist Evaluation: Gastroenterology, Internal Medicine, or Family Practice, unless otherwise specified by code 53 HN.
Medication Stable Dose: PPI, swallowed steroids, non-sedating approved antihistamines, or cromolyn if necessary for management

APPENDICIES

References:

Dellon ES, Gonsalves N, Hirano I, et al. ACG clinical guideline: Evidenced based approach to the diagnosis and management of esophageal eosinophilia and eosinophilic esophagitis (EoE). Am J Gastroenterol 2013; 108:679.

7.2 CROHN'S DISEASE

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR							
WNR	X [1]	X [1]	X [1]	X [1]	X [1]	X [1]	X [1]
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Required (SECNAVINST 1850.4 series, encl (8)).						

1. Crohn's Disease is CD, no waiver for all DIF. NAMI does not recommend waivers for Crohn's disease.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Frequent bowel movements are an inconvenience in flight, particularly when protective clothing is worn. Abdominal pain or hemorrhages can both cause subtle or sudden incapacitation in flight or performance degradation. Disqualifying anemia is a common complication. Surgical intervention may be necessary on an emergent basis for obstruction or hemorrhage.

A Grounding Physical is required.

DIAGNOSIS/ICD-9 Code:
555.9 Crohn's Disease

7.3 DIVERTICULAR DISEASE (DIVERTICULITIS)

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X	X	X	X	X	X
WNR	X						
LBFS	No	Yes	Yes	Yes	Yes	Yes	Yes
EXCEPTIONS	Recurrent diverticulitis in applicants is CD, WNR						
LIMDU/PEB	May be required in severe cases of diverticular disease when associated with significant nutritional deficiency, treatment, or dietary restriction (SECNAVINST 1850.4 series, encl (8)).						

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Diverticular disease is associated with diverticulitis. Any history of diverticulitis is disqualifying. Diverticulitis is associated with pain, gastrointestinal motility dysfunction functional, abscess, and hemorrhage. Diverticulitis has a recurrence risk of 25% with an increasing risk of complications with each recurrence.

DIAGNOSIS/ICD-9 Code:
562.11 Diverticulitis of Colon

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology, Internal Medicine, or Surgery* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (electronic or paper) if performed including flexible sigmoidoscopy, colonoscopy, laparotomy, hemicolectomy.
- Hospital narrative summary if admitted.
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Routine Submission

Flight Surgeon comment regarding interval history & symptomatic control.
Specialist Evaluation: Gastroenterology, Internal Medicine, or Family Practice, unless otherwise specified by code 53 HN.

7.4 CHOLELITHIASIS AND CHOLECYSTITIS

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X	X	X	X	X	X	X
WNR							
LBFS	No	+/-[1]	+/-[1]	+/-[1]	+/-[1]	+/-[1]	+/-[1]
EXCEPTIONS	A history of cholecystectomy, either open or laparoscopic, is NCD for applicants after 6 months from surgery.						
LIMDU/PEB	Typically not required.						

1. LBFS is authorized for asymptomatic cholelithiasis and uncomplicated symptomatic cholelithiasis successfully treated with cholecystectomy.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Current or history within the last six months of symptomatic cholelithiasis and/or cholecystitis are disqualifying. Asymptomatic gall stones are not disqualifying, but need special consideration in applicants. Aviators with symptomatic gall stones should be grounded until the stones are removed by open or laparoscopic cholecystectomy. Extracorporeal shock wave lithotripsy (ESWL) is not recommended in aviators because 35% of patients undergoing ESWL have 1 or more episodes of biliary colic before the clearance of all stone fragments. The member with a history of ESWL may apply for a waiver after a 6-month period free of biliary colic. Cholecystectomy is disqualifying for the first six month postoperative for aviation except Air Traffic Controllers. For Air Traffic Controllers, cholecystectomy is NCD once the condition is resolved and the member is asymptomatic.

DIAGNOSIS/ICD-9 Code:
574.2 Gallstones
574.0 Gallstones with acute cholecystitis
574.2 Gallstones without cholecystitis
575.0 Acute Cholecystitis
575.11 Chronic Cholecystitis
P51.22 Cholecystectomy

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *specialist* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *specialist* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Specialist* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (electronic or paper).
- Completed *specialist* recommended course of *physical therapy/rehabilitation/counseling* and provide end of care summary.
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Routine Submission

Flight Surgeon comment regarding interval history & symptomatic control.

7.5 GASTRITIS, DUODENITIS

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		X	X	X	X	X	X
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	May be required when condition is not responsive to therapy or requires hospitalization (SECNAVINST 1850.4 series, encl (8)).						

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Current gastritis or non-ulcerative dyspepsia requiring maintenance medication is disqualifying. Gastritis is an inflammatory process resulting in mucosal injury and is frequently associated with infections such as *Helicobacter pylori*. Gastropathy is mucosal damage without inflammation resulting from alcohol, aspirin, and NSAIDS. Both gastritis and gastropathy can cause abdominal pain, vomiting and Mallory-Weiss tears, gastrointestinal hemorrhage, and anemia (acute blood loss, iron deficiency, pernicious).

DIAGNOSIS/ICD-9 Code:
535.50 Gastritis/Duodenitis
535.3 Acute Gastritis
535.6 Acute Duodenitis

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology or Internal Medicine* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Gastroenterology or Internal Medicine* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Gastroenterology or Internal Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (electronic or paper).
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Routine Submission

Flight Surgeon comment regarding interval history & symptomatic control.

7.6 GILBERT'S SYNDROME

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD							
NCD	X	X	X	X	X	X	X
WR							
WNR							
LBFS	No	Yes	Yes	Yes	Yes	Yes	Yes
EXCEPTIONS							
LIMDU/PEB	Not required.						

AEROMEDICAL CONCERNS: No significant aeromedical concerns.

DIAGNOSIS/ICD-9 Code: ***(Do not list any NCD diagnosis or codes.)***
277.4 Gilbert's Syndrome

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology or Internal Medicine* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Routine Submission**

7.7 VIRAL HEPATITIS

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	**May be required with persistent symptoms, persistent evidence of impaired liver function, or presence of chronic biomarkers indicating chronic condition (SECNAVINST 1850.4 series, encl (8)).**						

1. Acute viral hepatitis requires grounding while member is symptomatic and is CD when resolved with waivers recommended on case-by-case basis.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Current viral hepatitis or unspecified hepatitis is disqualifying. History of hepatitis in the preceding six months is disqualifying. The symptoms of acute and chronic hepatitis relevant to aviation are mainly fatigue, malaise, and nausea; other symptoms may occur which could be distracting in flight. Cases may progress to cirrhosis, which has its own aeromedical significance. Care should be taken to identify whether or not alcohol has contributed to the disease. Public health concerns of hepatitis A transmission should be paramount in the flight surgeon's thought process. Significant advances in antiviral therapy for chronic HBV and HCV infections have resulted in improved cure rates and greater potential for waiver consideration.

DIAGNOSIS/ICD-9 Code:
070.1 Viral hepatitis A without coma
070.3 Viral hepatitis B without coma
070.54 Chronic viral hepatitis C without coma

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Infectious Diseases/GI* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Infectious Diseases/GI* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Infectious Diseases/GI* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history & symptomatic control.
Specialist Evaluation: Gastroenterology, Infectious Diseases, or Internal Medicine, unless otherwise specified by code 53 HN.

7.8 IRRITABLE BOWEL SYNDROME

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS	NCD if asymptomatic and controlled by diet alone.						
LIMDU/PEB	Typically not required.						

AEROMEDICAL CONCERNS: The condition, its sequelae, or treatment can adversely affect the flight performance, mission, or safety. Irritable bowel syndrome is disqualifying unless asymptomatic and controlled by diet alone. The urgency and frequency of defecation, together with the discomfort felt by many patients, can be distracting in flight and can be inconvenient when living in field conditions. Many treatments are incompatible with flying duties. There is a tendency for the syndrome to be associated with depression and anxiety.

DIAGNOSIS/ICD-9 Code:
564.1 Irritable Bowel Syndrome

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Internal Medicine or Gastroenterology* care with recommendation of return to flight status with no restrictions **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptomatic control.
Specialist Evaluation: Gastroenterology or Internal Medicine, unless otherwise specified by code 53 HN.

7.9 PEPTIC ULCER DISEASE

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Typically not required.						

AEROMEDICAL CONCERNS: The condition, its sequelae, or treatment can adversely affect the flight performance, mission, or safety. Peptic or duodenal ulcer disease is disqualifying. The major concern is the risk of acute hemorrhage or perforation in flight. Chronic blood loss can cause iron deficiency anemia, which can then lead to subtle or sudden incapacitation, or cardiorespiratory compromise in flight.

DIAGNOSIS/ICD-9 Code:
531.9 Gastric Ulcer
532.9 Duodenal Ulcer

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology or Internal Medicine* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Gastroenterology or Internal Medicine* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Gastroenterology or Internal Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptomatic control.
Specialist Evaluation: Gastroenterology or Internal Medicine, unless otherwise specified by code 53 HN.

7.10 GASTROESOPHAGEAL REFLUX DISEASE (GERD) & HIATAL HERNIA

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case
WNR							
LBFS	No	Yes	Yes	Yes	Yes	Yes	Yes
EXCEPTIONS							
LIMDU/PEB	May be required when severe and not responsive to therapy (SECNAVINST 1850.4 series, encl (8)).						

AEROMEDICAL CONCERNS: The condition, its sequelae, or treatment can adversely affect the flight performance, mission, or safety. GERD is disqualifying. Retrosternal pain associated with either condition can be distracting in flight. Exposure to -Gz may exacerbate the symptoms of both esophagitis and hiatus hernia.

DIAGNOSIS/ICD-9 Code:
530.81 Esophageal reflux
530.11 Reflux esophagitis
530.3 Esophageal stricture
530.7 Mallory-Weiss tear
553.3 Hiatal Hernia

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology or Internal Medicine or Family Medicine* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Gastroenterology or Internal Medicine or Family Medicine* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Gastroenterology or Internal Medicine or Family Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.
Include the GERD Worksheet (WS-GERD) – uploaded to AERO.

FOLLOW UP REQUIREMENTS	Routine Submission

Flight Surgeon comment regarding interval history & symptomatic control.

7.11 ULCERATIVE COLITIS

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case-by-case	case-by-case	case-by-case	case-by-case	case-by-case	case-by-case
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	May be required when significantly affecting nutritional status or requiring significant dietary restrictions (SECNAVINST 1850.4 series, encl (8)). All members requiring surgery for control of the disease must have a PEB finding them fit for full duty before waiver consideration.						

AEROMEDICAL CONCERNS: The condition, its sequelae, or treatment can adversely affect the flight performance, mission, or safety. Ulcerative colitis or ulcerative proctitis is disqualifying. There is a small risk of subtle or sudden in-flight incapacitation. Discomfort and fatigue persist between episodes, which can detract from operational performance and availability. Patients may have diarrhea and considerable urgency of defecation. Iritis is a complication in up to 3% of patients.

DIAGNOSIS/ICD-9 Code:
556.9 Ulcerative Colitis
556.1 UC controlled with Azulfidine

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Gastroenterology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Gastroenterology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Gastroenterology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history & symptomatic control.
Specialist Evaluation: Gastroenterology, unless otherwise specified by code 53 HN.

8.0 HEMATOLOGY

8.1 ANEMIA

AEROMEDICAL CONCERNS: Anemia reduces tissue oxygenation and can be associated with widespread organ dysfunction, particularly when the hemoglobin concentration falls below 10 g/dl or the hematocrit is less than 30%. Work capacity and the compensation to conditions of hypoxia are also reduced. In acute blood loss, cardiovascular decompensation can occur from volume loss, leading to loss of +Gz tolerance and syncope.

WAIVER: The standards for aviation are derived from healthy aviators, not from hospital patients. Hence, our "abnormal" values are generally still within most hospital norms. Acceptable values for hematocrit are 40-52% in males and 37-47% in females. If the average of three hematocrits (*from three separate blood draws, not from the same sample analyzed three times*) falls below the normal range but between 38.0% and 39.9% for males (35.0% - 36.9% for females), the following work-up should be completed:

1. Thorough history (with emphasis on any personal or family history of anemia, ethnicity, blood loss, diet, menstruation, medications, and ETOH)
2. Focused physical (ensure no hepatosplenomegaly or lymphadenopathy)
3. CBC with RBC count, RBC indices, manual differential, RBC morphology, and reticulocyte count
4. Iron studies (serum iron, serum ferritin, and TIBC)
5. Chem 7
6. Liver function tests
7. TSH

If history, physical exam, and all labs are within normal limits as defined below (for labs not listed, use laboratory reference ranges), the member is PQ and no waiver is required. The accepted ranges are:

Acceptable Lab Values:

- RBC count - Male: 4.0-7.0, Female: 3.8-5.3
- Differential – Segs 40-80, Bands 0-10, Lymphs 20-50, Eos 0-10, Basos 0-3, Monos 0-10
- RBC indices - MCV 80-100 fl, MCH 26-36 pg, MCHC 31-38%, Retic count 0.5%-2.0%, RDW 11.0%–16.0%
- Iron studies - Ferritin 20-300 ng/ml, Iron 40-180 ug/dl, TIBC 240-460 ug/dl

If any abnormality exists, or if the average of three hematocrits falls below 38% or above 52% for males (below 35% or above 47% for females), the member is NPQ and a hematology or internal medicine consultation is required. Additional anemia work-up at that time may include hemoglobin electrophoresis, fecal occult blood tests, endoscopy, serum vitamin B12 level, serum or RBC folate level, and/or bone marrow biopsy depending upon the initial findings. This work-up may be initiated by the flight surgeon, depending upon his or her comfort level, so that

laboratory data will be available for the consulting physician. If unsure whether or not a test is indicated, do not order it. Waivers will be considered on a case-by-case basis in light of the underlying diagnosis.

NOTE: Blood donation of 450 cc (1 pint) requires grounding for at least 4 days. Flight personnel in combat or flying in a shipboard environment shall not donate blood within 4 weeks prior to such flying (per General NATOPS). Air Traffic Controllers who donate blood should only be in a down status for 24 hours immediately following blood donation.

INFORMATION REQUIRED:

1. Full clinical history
2. Physical examination
3. Laboratory evaluation as outlined above
4. Hematology and/or Internal Medicine consult

TREATMENT: Oral iron supplements are compatible with flying status, but require a waiver if needed to maintain a hematocrit within standards. Any cause that precipitated the iron deficiency must be rectified before a waiver recommendation would be considered.

DISCUSSION: The World Health Organization recommends that anemia should be considered to exist when hemoglobin levels fall below 13 g/dl in males and 12 g/dl in females. Chronic blood loss from the bowel or uterus of 15-20 ml/day will produce a state of negative iron balance in the body, which will eventually lead to anemia. A full hematological response to iron therapy is indicated by a rise in hemoglobin level of 1 g/dl/week.

ICD-9 CODES:
280.1 Iron Deficiency Anemia
285.9 Anemia, unspecified

8.2 HEMOCHROMATOSIS

AEROMEDICAL CONCERNS: Symptomatic cases typically present with the classic triad of diabetes mellitus, hepatomegaly, and skin hyperpigmentation. Cardiac complications manifest primarily as congestive heart failure in young patients that can rapidly progress to death if untreated. CNS complications have been reported but, other than lethargy, are rare.

WAIVER: Waiver recommendations for hemochromatosis are not routinely made.

INFORMATION REQUIRED:

1. Internal medicine or hematology consult
2. Histocompatibility locus antigen (HLA) typing
3. Serum iron
4. Serum ferritin
5. Total iron body content
6. Transferritin saturation
7. Liver biopsy (if indicated)
8. Family studies (if indicated)
9. Cardiology consult
    a. Holter monitor
    b. Echocardiogram

TREATMENT: Frequent phlebotomy and/or treatment with chelating agents such as desferrioxamine are not compatible with waiver.

DISCUSSION: Phenotypic expression of the idiopathic hemochromatosis gene usually occurs between the ages of 20 and 40, with symptoms mainly occurring after the age of 50. Patients have the condition for an average of 3-5 years before the diagnosis is made. Hepatic fibrosis is unusual in patients younger than 35, but it will occur sooner and progress more rapidly to cirrhosis in heavy drinkers. Hypogonadism will occur in 25% of male patients and primary hypoaldosteronism in 10%. Cardiac failure and arrhythmias are common presenting features in younger patients. Up to 50% of patients over 40 years old have ECG irregularities and 43% of autopsied hearts from hemochromatosis patients show iron deposits in the AV node and conduction system.

Arthropathy is present in 30-50% (commonly in the proximal interphalangeal and metacarpophalangeal joints although 10% of patients have destructive arthropathy of the hip and knee joints). Phlebotomy 2-3 times a week until hemoglobin <10 g/dl, serum iron is less than normal, or ferritin is in the low normal range, followed by maintenance phlebotomy every 2-4 months, will reduce the incidence of complications other than arthropathy and the eventual appearance of hepatoma. However, this treatment is not compatible with waiver. The death rate at 5 and 10 years with phlebotomy is 66 and 32%, compared to 18 and 6% without treatment.

ICD-9 CODE:
275.0 Hemochromatosis

8.3 SICKLE CELL DISEASE/TRAIT

AEROMEDICAL CONCERNS: Patients with sickle cell disease have a severe risk of splenic infarct and other vaso-occlusive episodes involving the viscera, lungs, kidneys, or nervous system when exposed to hypoxia, infection, dehydration, or cold temperatures.

WAIVER: By direction from the SECNAV, sickle cell trait (SCT) is not disqualifying for any aviation, undersea or general duty program. Sickle Cell Disease and a history of sickling on exposure to altitude in flight or in a decompression chamber are disqualifying. A completed long form physical (SF-88) should be submitted to NOMI whenever an adverse physiologic event is recognized.

INFORMATION REQUIRED:

1. Hemoglobin electrophoresis documenting the percentage of hemoglobin S
   a. Hemoglobin S greater than hemoglobin A is disqualifying for general duty
2. Information on coexistent hemoglobinopathies.

TREATMENT: Patients requiring treatment for the condition are disqualified from flying.

DISCUSSION: The condition occurs often in African American populations, and sporadically in those of Mediterranean, Middle Eastern, or Indian descent. Between 7 and 9% of African Americans have sickle cell trait (SCT). Cases of sickling have been reported at altitudes as low as 2,500 feet, although patients with SCT are unlikely to sickle below 21,000 feet. Exercise and dehydration predispose to sickling. In addition to the classic sickle cell crisis, transient episodes of bone marrow aplasia can occur in response to infection and sequestration of erythrocytes in the liver and spleen that can also be life threatening. Patients with SCT should be counseled about the dangers of recreational diving and risks of anesthetics.

ICD-9 CODES:
282 Sickle Cell
282.5 Sickle Cell Trait
282.6 Sickle Cell Disease

8.4 SPLENECTOMY

AEROMEDICAL CONCERNS: There is risk of serious, overwhelming infection in patients with co-morbid diseases who have had a splenectomy. Examples include ITP and lymphoproliferative diseases (leukemia, etc.). In such cases, the time between onset of symptoms and death can be rapid (i.e. just a few hours). In cases where splenectomy is performed due to traumatic rupture, these serious complications occur much less frequently.

WAIVER: Waivers are considered on a case-by-case basis after splenectomy, provided there is full recovery from the condition necessitating the operation. This includes splenectomy following traumatic splenic rupture and diagnostic splenectomy for Hodgkin's disease (see section 9.7 – Hodgkin's disease for further waiver requirements).

INFORMATION REQUIRED:

Initial Waiver:

1. Detailed history of the circumstances that led to splenectomy
2. Focused physical exam
3. CBC
4. Confirmation of the absence of malaria, infectious mononucleosis, and leukemia (in cases of spontaneous rupture of the spleen)
5. Fit for Full Duty determination from surgeon

Follow-up:

1. CBC (when co-morbid conditions exist)

Note: In cases where traumatic rupture necessitated splenectomy, no specific follow-up is required, provided there is no resulting compromise of the immune system.

TREATMENT: Prophylactic antibiotics may be acceptable in certain circumstances. Immunizations against pneumococcus, meningitis, and Hemophilus B are compatible with flying status, and should be administered before elective splenectomy if at all possible.

DISCUSSION: Following therapeutic splenectomy, the course is that of the disease requiring the splenectomy. The overall mortality rate is around 3%, of which infections account for 11% of the deaths. Mortality for isolated injury to the spleen is <1%. Late sepsis after splenectomy for Hodgkin's disease occurs in 11.5% of patients, with a 5% mortality rate. This is related to the chemotherapy rather than the splenectomy. In adults who have had a splenectomy, the mortality from pneumococcal pneumonia is 17% despite administration of antibiotics. If the patient is older than 50, the mortality rate is 28%.

ICD-9 CODES:
P41 Splenectomy
P41.5 Splenectomy (complete)
P41.43 Splenectomy (partial)

8.5 THALASSEMIAS

AEROMEDICAL CONCERNS: Thalassemias produce a low-grade anemia that can cause problems at altitude. Splenic enlargement and worsening of the anemia can occur under conditions of stress.

WAIVER: Aviation personnel must meet the hematocrit standards previously listed in the Anemia section (section 8.1). Personnel with beta thalassemia minor (heterozygous carriers – beta thalassemia trait) or with alpha thalassemia minor (1 or 2 gene loci absent) may be considered for waiver provided there are no other hemoglobinopathies present. Any anemia must be limited to a mild, microcytic anemia. Patients who have required splenectomy because of their thalassemia are permanently disqualified from military flying.

INFORMATION REQUIRED:

1. Establishment of the detailed diagnosis
   a. Estimation of HbA2, HbF, serum Fe and ferritin and by quantitative electrophoresis
2. Focused physical exam
3. Internal medicine or hematology consult (if obtained)

NOTE: The diagnosis of thalassemia cannot reliably be made in the face of iron deficiency, hence iron studies must be provided that document normal iron status with submission of the waiver request.

TREATMENT: N/A.

DISCUSSION: The thalassemias probably constitute the world's largest genetic disorder. Beta thalassemia occurs widely in a belt extending from Southeast Asia, through India, the Middle East, the Mediterranean (as far north as Romania and Yugoslavia), and to north and west Africa. Carrier frequencies can vary from 2 to 30% in these populations. Beta thalassemia also occurs sporadically in all racial groups. Splenectomy results in a greater risk of overwhelming infection and of severe malaria, which can affect an aviator's fitness to deploy. The flight surgeon will often make the diagnosis of thalassemia after chart review turns up a chronic, low grade microcytic anemia that does not respond to iron therapy. Patients with homozygous beta thalassemia or deletions in more than two of the alfa chains are almost always severely symptomatic or anemic, and as such rarely make it into the military.

ICD-9 CODE:
282 Thalassemias

9.0 MALIGNANCIES

9.1 GENERAL INFORMATION

Classification: Classification of tumors into categories facilitates decision making and aeromedical disposition. The minimal requirements for return to flight status are an accurate diagnosis, indication of tumor size, differentiation and local invasion, and confirmation of the presence or absence of lymph node or distant metastases.

The American Joint Commission on Cancer (AJCC) **TNM classification** of malignant disease allows a reasonably accurate standardization of the staging of the malignancy, which should allow greater consistency in the aeromedical disposition. In review, T refers to the size of the primary tumor with subscripts to quantify the size, N with subscripts 0 or 1 identifies absence or presence of spread to the lymph nodes and M with subscripts 0 or 1 identifies absence or presence of distant spread. Other classification systems and protocols for staging cancer exist and may be used.

To provide standardization in aeromedical disposition, it is recommended that the histological diagnosis be confirmed by the Armed Forces Institute of Pathology (AFIP). Note: we have seen at least two cases where aviators were treated inappropriately due to a misdiagnosis.

Effects of Treatment: Aeromedical disposition requires knowledge of the primary tumor, the clinical or surgical stage, and interventions that are currently being used, or have been previously used.

Assuming complete healing, surgery itself is not disqualifying for aviation provided major organ dysfunction does not exist. The condition for which the surgery was performed may, however, be disqualifying. Surgical procedures for the removal of cancer will require a variable period of grounding. The length of grounding will depend on the chance of cure, the likelihood that recurrence will cause a flight safety hazard or otherwise interfere with the military task, and on the site and extent of operation.

Radiation therapy is generally delivered to a localized area for a limited time. The immediate side effects of nausea, neutropenia, and other dose-related effects usually disappear a few weeks after completion of therapy. Until then, the patient should be disqualified from flying. Return to flying status will then depend on other factors. Follow-up is required because of the risk of developing another primary cancer. Any complications of radiation therapy (radiation proctitis, xerostomia) may be permanently disqualifying, without recommendation for waivers.

Chemotherapy is incompatible with flying until full recovery from side effects such as anemia, thrombocytopenia, granulocytopenia, nausea, and vomiting has occurred. The use of steroids or hormone therapy for the treatment of tumors is also disqualifying, although waivers can be recommended for their use as replacement therapy. Return to flying duties after completion of drug therapy will then depend on other factors. Follow-up may be required for long term side

effects of chemotherapy such as cardiac or pulmonary toxicity and the development of second malignancies.

Waiver Consideration: Waiver recommendation for applicants with a history of cancer is done on a **case-by-case basis**. Survivors of childhood leukemia or lymphoma are generally considered cured if their disease-free survival is for more years than their age at diagnosis. We occasionally receive requests on such individuals. Recommendation is based on the type of tumor and any residual effects of chemotherapy.

With the exception of basal cell carcinoma, all malignancies require medical board dictation. The board may find the member fit for full duty immediately, as would be expected after excisional biopsy of a low level malignant melanoma, or it may place the member in limited duty status for some period of time. **A member must be on full duty before waiver consideration for flight status or other special duty is appropriate.** Moreover, AFIP confirmation of the diagnosis is necessary. It is helpful to our reviewers if an objective assessment by the oncologist of the chances of cure, the risks, likely nature and ease of detection of recurrence, and recommendations for follow-up are included. Of particular interest is an estimate of the 5 year survival rate.

In general terms, it will be appropriate to recommend a return to restricted flying status provided there is a minimal risk of incapacitation as a result of recurrence of the malignancy. This decision will include an assessment of survival and recurrence rates, in conjunction with the tendency for recurrences to present catastrophically.

The necessity for continued follow-up will almost certainly interfere with operational requirements unless the follow-up is at greater than 6-month intervals, or the tests required for follow-up are very simple (e.g. CBC). In such cases, LIMDU is the only realistic option for these individuals, as the deployed environment may result in a recurrence being overlooked at a curable stage. Medical board dictation is the only way to achieve this restriction on deployability.

In most cases upgrading to full duty, and hence a waiver to full flight status, can be considered 2 years after completion of therapy provided there is no recurrence. Specific exceptions to this are addressed on the individual data sheets.

9.2 BLADDER CANCER

AEROMEDICAL CONCERNS: Urinary frequency and urgency may be distracting in flight. Pain can occur if obstruction is caused by clots. Metastasis to bone can give rise to pathological fractures.

WAIVER: A waiver request can be considered after initial therapy, provided the tumor is confined to the epithelium. Cystectomy or the requirement for repeated catheterization results in disqualification, with no waiver recommended.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board recommendations
3. AFIP confirmation of histology
4. Full long-form flight physical
5. CXR
6. Cystoscopy
7. Contrast studies of the entire urinary tract
8. CT scanning of the abdomen and pelvis.

FOLLOW-UP: Annual submission to include:

1. Annual oncology/nephrology and/or urology consult

TREATMENT: Ongoing therapy is not compatible with flying status.

DISCUSSION: The overall 5 year survival rate is 67%; transitional cell tumors have a 5 year survival rate of <50% and squamous cell tumors have a worse prognosis. However, carcinoma in situ or papillary noninvasive carcinomas are associated with a high probability of cure. Recurrence is primarily local and no sudden symptoms except hematuria occur. The disease is strongly associated with cigarette smoking.

ICD-9 CODES:
188.9 Bladder Cancer
223.3 Benign neoplasm of the bladder

9.3 BREAST CANCER

AEROMEDICAL CONCERNS: There is an unpredictable chance of developing brain metastases, which may cause seizures. Bone metastases may also occur.

WAIVER: Request for waiver may be submitted upon recovery from treatment for early stages of breast cancer. Patients with spread to lymph nodes or more distant sites will not normally be considered for waiver.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. Surgical/oncology consult

FOLLOW-UP: Annual submission to include:

1. MRI scan of the brain
2. Bone scan
3. CT scan of the liver
4. Mammography of the opposite breast are

TREATMENT: The patient is grounded during treatment.

DISCUSSION: At the time of detection, about half of breast cancers have metastasized to lymph nodes. Of those detected by screening, 42% are too small to detect by physical examination. Up to 80% of those detected by screening have negative axillary lymph nodes. Of patients with up to 3 affected nodes, 60% will relapse by 10 years. Even the earliest stage of breast carcinoma carries a relapse rate of 20% by 5 years. The average time to relapse is 3-4 years in patients with 1-3 involved nodes and 1-2 years if more nodes are involved. From the point of view of comfort when wearing restraint harnesses, it may be necessary to delay return to flying duties until after breast reconstruction has been carried out in cases where simple mastectomy rather than "lumpectomy" has been performed. The site of metastasis is bone in 27% of cases, local in 26% and pulmonary in 21%.

ICD-9 CODES:
217.0 Benign neoplasm of male and female breast
74.9 1Malignant neoplasm of breast, female
175.9 Malignant neoplasm of breast, male

9.4 CERVICAL CANCER

AEROMEDICAL CONCERNS: Later manifestations of the disease include anemia, weakness, and weight loss. Distracting pain may be caused by invasion of the pelvic nerves.

WAIVER: Waiver is not required for carcinoma in situ or for those cases treated as outpatients by laser or cauterization; however, a 4 week grounding period is mandatory following these surgical treatments. For other patients without evidence of spread, waiver can be considered 6 weeks after operation. Aircrew with evidence of metastasis are grounded but may be considered for waiver 2 years after completion of therapy as long as there is no evidence of recurrence.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. Gynecology/oncology consult

FOLLOW-UP: Annual submission to include:

1. Current gynecology/oncology consult

TREATMENT: Continuation of therapy is incompatible with flying status.

DISCUSSION: For carcinoma in situ, there is an almost 100% survival rate with therapy. The 5 year survival rate for patients with localized but invasive carcinoma of the cervix is about 82% while for all groups as a whole it is 59%.

ICD-9 CODES:
180.9 Malignant neoplasm of the cervix
219.0 Benign neoplasm of the cervix

9.5 COLORECTAL CARCINOMA

AEROMEDICAL CONCERNS: Carcinoma of the colon presents as an emergency (obstruction, perforation) in up to 30% of cases. Rectal carcinoma rarely presents as an emergency. Both can cause anemia to a degree that can cause problems in flight if undetected.

WAIVER: Waiver can be considered after successful resection of the tumor and completion of any adjuvant chemotherapy. It is suggested to wait 2 years before requesting initial waiver recommendation.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board
3. AFIP confirmation of the diagnosis
4. Liver scan
5. Liver enzyme tests
6. Colonoscopy
7. Serum carcinoembryonic antigen measurements

FOLLOW-UP: Annual submission to include:

1. GI/oncology follow-up every six months
2. Colonoscopy report

TREATMENT: Surgery, with or without additional radiotherapy or chemotherapy. Continuing treatment is incompatible with waiver. Colostomy is not compatible with military aviation. (Remember the balloon in the low pressure chamber?)

DISCUSSION: Colorectal cancer accounts for more than 12% of all carcinomas and is the most common malignancy in the USA after skin cancer. On average, 30% arise in the rectum, 30% in the sigmoid colon and 30% in the proximal colon. The distribution of metastases is liver >60%, lung >50%, peritoneum 15% and bone 15%.

There is a 20% incidence of coexisting benign or malignant neoplasm elsewhere in the colon. The overall survival for patients with Duke's Stage I/II/III (i.e. confined to mucosa or submucosa/confined to the wall of the colon or rectum/penetrating all layers including serosa) tumors has been reported as 80/50/30%. Most metastases occur within the first few years and can be predicted up to 6 months in advance by serum carcinoembryonic antigen estimation in 60% of cases. Up to 20% of single hepatic or pulmonary metastases can be cured by resection. Liver function tests (LFT) can remain within normal limits until quite advanced disease exists.

The primary care physician (the flight surgeon) plays an integral role in the detection of curable colon malignancies. Annual rectal examination with guaiac testing can provide substantial benefits, particularly in individuals who are asymptomatic and are most likely to be cured by intervention.

ICD-9 CODES:
153.9 Malignant neoplasm of the colon
154.1 Malignant neoplasm of the rectum
211.3 Benign neoplasm of the colon
211.4 Benign neoplasm of the rectum

9.6 OTHER GASTROINTESTINAL TUMORS

AEROMEDICAL CONCERNS: Esophageal carcinoma carries a risk of sudden hemorrhage and aspiration. Gastric carcinoma has the risk of incapacitating hemorrhage, anemia, or metastasis to brain, bone, or lungs. Hemorrhage is also a risk in primary hepatic carcinoma. Pancreatic carcinoma is associated with a risk of developing diabetes mellitus, thrombophlebitis, and serious psychiatric illness.

WAIVER: Waiver may be considered for aircrew members who have survived 5 years after treatment without symptoms or recurrence.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. Full flight physical
5. Oncology/internal medicine review
6. CXR
7. CT scan of mediastinum and abdomen
8. Endoscopy (if indicated)

TREATMENT: Any treatment modality is acceptable provided the patient remains symptom-free 5 years after cessation of therapy.

DISCUSSION: The 5 year survival rates for the various carcinomas are as follows: esophagus 3%, stomach 12% (although 90% with early detection and resection has been reported), liver <1%, gall bladder 2%, and pancreas 1%. Three disorders occur in pancreatic carcinoma that could affect aircrew efficiency. Diabetes mellitus occurs in 10-20% of patients. Thrombotic disorders including thrombosis of the splenic vein (15% of cases) or pulmonary embolism (10%) may also occur. Serious psychiatric disorders, particularly depression, can be the presenting symptom and occur in over 75% of patients. Primary lymphoma of the bowel is treated as other lymphomas are. Colonic polyps are also considered separately.

ICD-9 CODES:
150.9 Malignant neoplasm of the esophagus
151.9 Malignant neoplasm of the stomach
157.9 Malignant neoplasm of the pancreas
211.0 Benign neoplasm of the esophagus
211.1 Benign neoplasm of the stomach
211.6 Benign neoplasm of the pancreas

9.7 HODGKIN'S DISEASE

AEROMEDICAL CONCERNS: There is little risk of incapacitation with active disease or in those undergoing therapy. More advanced cases can exhibit thrombocytosis or anemia.

WAIVER: Waiver is possible 2 years after completion of treatment of Stage I and IIA Hodgkin's disease with no evidence of recurrence. Patients with IIB through IVB disease have a greater recurrence rate with up to 75% achieving median length of remission of 3 years, and can be considered for a waiver 5 years after completion of therapy.

INFORMATION REQUIRED:

1. Staging using Ann Arbor classification
2. AFIP confirmation of histology
3. Tumor Board report
4. Medical Board
5. Confirmation that the chemotherapy has not caused residual toxicity
6. Full pulmonary functions testing including DLCO and an echocardiogram with ejection fraction to confirm lack of pulmonary and cardiac toxicity (A gated radionuclide cardiac study can also be provided)
7. Neurological exam for peripheral neuropathy

FOLLOW-UP: Annual submission to include:

1. Oncology/internal medicine evaluations
2. CBC
3. Sedimentation rate
4. CXR are required

NOTE: Formal neuropsychological testing may be required in some cases, as there is an effect of chemotherapy on cognition.

TREATMENT: Patients must be grounded when undergoing therapy.

DISCUSSION: The incidence of Hodgkin's disease is bimodal, with one peak in the mid 20s. Because of the risks of long term complications of therapy, patients should be followed at least quarterly for the first 2 years, then every 6 months for the next 8 years and annually thereafter. After 3 years of remission, there is an 80% chance of permanent cure, which rises to 96% after 5 years. Second malignancies are not unheard of, especially in patients that have received alkylating agents in their initial therapy.

ICD-9 CODES:
201.9 Hodgkin's Disease

9.8 KIDNEY TUMORS

AEROMEDICAL CONCERNS: Renal cell carcinoma tends to metastasize to the brain, with seizure as the initial presentation. Bone metastases carry a risk of pathological fracture.

WAIVER: Waiver recommendations may be considered 2 years after successful resection of a renal carcinoma provided that the disease was confined to the kidney and that there has been no recurrence. Since applicants for flight training with congenital absence of one kidney are rejected, it follows that applicants with a history of nephrectomy for Wilms tumor will be treated the same way.

INFORMATION REQUIRED:

1. Medical Board finding the member fit for full
2. Tumor board appraisal
3. AFIP confirmation of the histology
4. Full flight physical
5. Oncology/nephrology consult
6. CXR
7. CT scan of abdomen and retroperitoneum
8. MRI scan of the brain

FOLLOW-UP: Annual submission to include:

1. Flight physical
2. Oncology/nephrology consult
3. CXR
4. CT scan of abdomen and retroperitoneum
5. MRI scan of the brain

TREATMENT: Ongoing therapy is not compatible with flying status. Chemotherapy results for treatment of renal cell carcinoma have been dismal.

DISCUSSION: With localized disease, the 5 year survival rate is reported as 72%. The smallest tumors that exhibit minimal caliceal distortion and are surrounded by normal renal parenchyma have a good prognosis after surgery but they are at risk for relapse. One third of patients already have disseminated disease at diagnosis, involving the lung in 50% of cases, bone in 30%, liver in 30%, and brain in 25%. Brain metastases from kidney cancer are reported to be particularly susceptible to hemorrhagic degeneration with abrupt onset of headache and neurological compromise. Hypertension occurs in about 30% of cases with renal cell carcinoma (hypernephroma) and a polycythemia syndrome occurs in 2-3%. Hematuria may be the only manifestation of renal tumors, and as such renal tumors should enter into the differential diagnosis of protracted hematuria.

ICD-9 CODES:
189.0 Kidney Tumors
223.9 Benign neoplasm of the kidney

9.9 LARYNGEAL CANCER

AEROMEDICAL CONCERNS: Airway compromise and speech difficulties.

WAIVER: Early diagnosis (T1N0M0) and treatment not involving laryngectomy, with no evidence of recurrence or speech dysfunction, will be considered for a waiver 12 months after completion of treatment.

INFORMATION REQUIRED:

1. Surgical and/or radiation reports
2. Medical Board
3. Tumor Board recommendations
4. AFIP confirmation of histology
5. Current ENT/oncology consult

FOLLOW-UP: Annual submission to include:

1. ENT/oncology consult

TREATMENT: Laryngectomy is CD, no waiver considered, but other types of treatment will be considered once treatment is completed and there is no airway compromise or speech dysfunction. Treatment, depending on site of lesion and its extent, can range from local laser excision to total laryngectomy with neck dissection and post-operative radiation therapy. Pre-operative chemotherapy is also used in selected advanced cases.

DISCUSSION: Overall, early laryngeal cancer carries a 5 year survival of 76%, but localized glottic cancer has a figure of 90%. Recurrence is primarily local. Early laryngeal carcinoma (all sites) has a 5 year survival of 76% while localized true vocal cord carcinoma has a 5 year survival of 90%. Recurrence is primarily local.

ICD-9 CODES:
161.9 Laryngeal Cancer
212.2 Benign neoplasm of the larynx

9.10 LEUKEMIA

AEROMEDICAL CONCERNS: Most of the leukemias present with lethargy, malaise, infection, anemia or hemorrhage. Disseminated intravascular coagulation as a complication of acute lymphocytic leukemia (ALL) can give sudden, fatal cerebral hemorrhage or disabling bone pain. A relapse of ALL can present in the CNS. Prophylactic CNS radiation in cases of ALL can produce leukoencephalopathy, the symptoms of which can include ataxia and confusion.

WAIVER: A history of ALL as a child is compatible with waiver. Patients with other leukemias may be considered for waiver recommendation, provided they have been free of symptoms and off treatment for 2 years. Aircrew with satisfactory response to treatment for early hairy cell leukemia may be considered for waiver on completion of treatment.

INFORMATION REQUIRED:

1. Tumor Board recommendations
2. Medical Board disposition
3. AFIP confirmation of the diagnosis
4. Neuropsychological review and testing (in patients who have had prophylactic CNS radiation)

FOLLOW-UP: Annual submission to include:

1. Oncology consultation.

TREATMENT: Ongoing therapy is not compatible with waiver. Patients who have had bone marrow transplantation are not likely candidates for waiver, unless they are asymptomatic and on no medications.

DISCUSSION: Overall, the requirement for frequent assessment may interfere with military mobility. Adult ALL has a high relapse rate and long term survival is uncommon. CNS relapse occurs in 50% of cases, although this figure is reduced to 5% with chemical or radiation prophylaxis. Although 60-80% of cases of acute myelogenous leukemia (AML) go into remission, this is short (15 months on average) and there is a high relapse rate, particularly to the CNS. Long term survival without bone marrow transplant is rare but the addition of this technique to the therapeutic armamentarium has increased long term survival of AML to 50%. Chronic myelogenous leukemia (CML) usually requires cytotoxic therapy during the chronic phase; the development of a blast crisis is unpredictable and may be sudden. Chronic granulocytic leukemia (CGL) is rare; 10% of patients exhibit an accelerated progression with death occurring in weeks. Bone marrow transplant can produce long term survivors. Patients with chronic lymphocytic leukemia (CLL) may progress unpredictably from one stage to another; cytotoxic therapy is often needed and the risk of incapacitation from cytopenia is serious. Up to 20% of patients with CLL have another, coexisting malignancy. Hairy cell leukemia, on the other hand, may be clinically benign; patients may live for many years without impairment although the results of chemotherapy can range from disappointing with some drugs

to a relapse rate of <1% in 5 years with pentostatin; splenectomy can also increase long term survival. Relapse in hairy cell leukemia can usually be identified by regular CBC.

ICD-9 CODES:
204.9 Lymphoid leukemia
205.9 Myeloid leukemia
206.9 Monocytic leukemia

9.11 LUNG CANCER

AEROMEDICAL CONCERNS: The major concern for aviators is the risk of cerebral metastasis with the development of seizures. There is also the likelihood of diminished pulmonary function producing symptoms in flight or, more rarely, hemorrhage leading to incapacitation. Chest discomfort is a presenting feature in 40% of cases and this may be exacerbated by the pressure of a restraint harness. Depending on the tumor subtype, there may also be associated neuropathies or endocrine disturbances.

WAIVER: Aviators with carcinoma of the lung are CD, no waiver. Patients with successful resection of early stage carcinoma could be considered for waiver recommendation after 5 years without recurrence.

INFORMATION REQUIRED:

1. Tumor Board recommendations
2. Medical Board
3. AFIP confirmation of the diagnosis
4. Oncology consult
5. CXR
6. MRI of the brain
7. Full physical exam
8. Pulmonary function testing

TREATMENT: Patients who have had lobectomy may be considered for waiver provided the criteria listed above are met. Pneumonectomy will inevitably result in permanent disqualification.

DISCUSSION: Overall, lung cancer has a 5 year survival rate of 9%; between 17-20% survive 1 year after diagnosis. Even those who have curative surgery for localized cancer of the lung, and in whom all disease is confined to the lung without any spread to any lymph nodes, have a 5 year survival rate of only 42% and a 10 year survival rate of 16-18%. The 5 year survival rate for resected Stage I carcinoma has been reported as 70%. However, most recurrences are distant suggesting that micrometastasis has already occurred by the time of diagnosis. The rate of cerebral metastasis for the varying types of lung carcinoma has been reported to range from 14-30%.

ICD-9 CODE:
162.9 Lung Cancer

9.12 MALIGNANT MELANOMA

AEROMEDICAL CONCERNS: Melanoma has become an epidemic cancer. Incidence has increased over 300 percent in the last 40 years. Of the cancers causing mortality in the 15-34 year old age group, melanoma ranks fourth. There is a risk of visceral metastases to lung, liver, brain, bone and gastrointestinal tract, in order of decreasing occurrence. Brain metastases may present as a seizure disorder, raising concerns of acute in-flight incapacitation. There is no specific evidence that melanoma sequelae have been directly implicated in any aviation mishap. However, in an examination of 584 AJCC stage Ill patients, one third of metastases were noted to be in the brain or liver. The CNS frequently appears as a sanctuary for melanoma because immune defenses have difficulty crossing the blood-brain barrier. In clinical series, the CNS is involved in 12-20% of the time, and this incidence increases to 36-54% in autopsy series. Other research shows that 75% of lesions found at autopsy are asymptomatic in the clinical setting. Behavioral changes are most frequently seen, followed by focal neurological deficits. Due to the vascular nature of melanoma, these tumors hemorrhage easily, at a rate of 19% in one study of head CT features in 28 brain metastatic melanoma patients. Asymptomatic screening contrast MRI represents a necessary screening tool for safety of flight concerns in our population.

WAIVER: Malignant melanoma or a history of malignant melanoma is disqualifying for aviation duties. Applicants are generally not considered for waivers, but may be evaluated on a case-by-case basis if greater than 5 years disease-free. Waivers may be considered for designated personnel after treatment is complete, using the AJCC staging system as a guide.

T-CATEGORY

– 1.00 mm (T1) a= no ulceration
– 2.00 mm (T2) b = ulceration
– 4.00 mm (T3)
> 4.00 mm (T4)

AJCC Stage IA (T1a < 1.00 mm, Clark II or III): 95% 5-year survival. Return to SG I flight status when surgical wounds are healed, provided no interference with function or flight equipment as determined by local flight surgeon or aerospace physiologist. Follow up mucocutaneous skin examinations submitted every six months for two years, then annually. Examinations should be done annually by a Dermatologist and should include a careful history and physical with emphasis on skin, lymph node, and neurological exams. All semi-annual exams may be submitted with the annual physical.

AJCC Stage lB (T1b < 1.0 mm, T2a: 1.0 - 2.0 mm, Clark IV or V): 91% 5-year survival. Same as above, but mucocutaneous skin examinations should be every six months for three years, then annually. Examinations should be done annually by a Dermatologist and should include a careful history and physical with emphasis on skin, lymph node, and neurological exams. All semi-annual exams may be submitted with the annual physical.

AJCC Stage IIA (T2b, T3a: 2.0-4.0 mm): 60-80% 5-year survival. Because of increased morbidity and mortality associated with these lesions, additional diagnostic information should

be applied. Analysis of sentinel node for melanoma metastasis has been shown to predict nodal involvement in 96% of cases, and should be obtained prior to consideration for return to flight. The pathologic indicators of mitotic rate, tumor-infiltrating lymphocytes, and histological regression have been shown to alter the probabilities of long-term survival and should be obtained in these intermediate cases if possible. Readily available clinical data such as age, gender, anatomic site, ulceration of the lesion, and growth pattern can also be submitted, as they have been shown to more accurately predict outcomes than tumor thickness alone. Lesions that are classified as IIA without evidence of ulceration or nodal involvement may be considered for waiver for SG I after complete excision. A semi-annual physical exam with specific attention to the skin and lymph nodes for three years then annually, with an annual dermatology consultation, is required. All semi-annual exams may be submitted with the annual physical.

AJCC Stage IIB (T3b, T4a > 4.0 mm): 60-80% 5-year survival. Because of increased morbidity and mortality associated with these lesions, additional diagnostic information should be applied. Analysis of sentinel node for melanoma metastasis has been shown to predict nodal involvement in 96% of cases, and should be obtained prior to consideration for a return to flight. The pathologic indicators of mitotic rate, tumor-infiltrating lymphocytes, and histological regression, have been shown to alter the probabilities of long-term survival and should be obtained in these intermediate cases if possible. Readily available clinical data such as age, gender, anatomic site, ulceration of the lesion, and growth pattern can also be submitted, as they have been shown to more accurately predict outcomes than tumor thickness alone. Consideration of SG Ill status can be entertained in aviators with predicted greater than 80% disease free five-year survival. Otherwise, a downing period of at least five years is appropriate prior to consideration to SG I. Follow up examinations submitted semi-annually for five years, then annually thereafter. Annual Dermatology consult is required. All semi-annual exams may be submitted with the annual physical. All aviators with a diagnosis of Stage IIB need an MRI with and without contrast prior to consideration to return to flight status (SG I – SG III).

AJCC Stage IIC, Ill A/B/C (IIC: T4b > 4.0 mm, III: regional nodes): All aviators with the diagnosis of Stage IIC or Stage III A/B/C will be considered for a waiver on a case-by-case basis after a minimum of 5-years disease free from completion of treatment. All required follow up care is in accordance with the guidelines for Stage IIB.

AJCC Stage IV (distant metastasis, elevated serum LDH): 5-25% 5-year survival. Because of the relatively poor prognosis and high likelihood of recurrent disease over time, waivers will not be routinely entertained.

INFORMATION REQUIRED:

1. Complete mucocutaneous examination performed by a dermatologist and lymph node exam with particular attention to the primary draining nodal area
2. Neurological exam (performed by the flight surgeon for Stage IIA and lower)
3. Serum chemistries
4. CBC
5. CXR

6. Tissue examination performed by a dermatopathologist. If a dermatopathologist is not available then tissue specimens should be sent to AFIP for confirmation of diagnosis. Must include comment about presence or absence of ulceration and Breslow depth
7. Tumor board report and medical board report returning the member to full duty (if applicable)
8. All patients with a diagnosis of Stage IIB and higher tumors require MRI with and without contrast and a full Neurology exam performed by a neurologist

TREATMENT: The treatment of primary non-metastatic melanoma consists of complete local surgical excision to the underlying muscle fascia with a margin of normal appearing skin, usually 1-3cm.

DISCUSSION: The most common clinical presentation is a pigmented lesion changing in size, shape, or color. The diagnosis is based on an excisional biopsy whenever possible (i.e. the entire lesion is removed down to the subcutaneous fat). For disease confined to the skin at presentation, the treatment, prognosis, and follow-up recommendations are most accurately based on the tumor thickness and presence or absence of tumor ulceration (see average 5-year survivals above). However, other factors such as increasing age, male gender, and tumors of the palms or soles are associated with a worse prognosis. Pathologic factors that are associated with worsening survival are high mitotic rate, absent tumor-infiltrating lymphocytes, and presence of histological regression. These modifiers can be used in various mathematical models to more accurately predict outcomes and to make better aeromedical decisions.

Aviation-specific studies of morbidity and mortality are scarce, but there are many large studies derived from the general population that are the basis for these waiver guidelines. It should be noted that Stage I cases and Stage II cases associated with a favorable prognosis will in general be recommended for a waiver. Close follow-up as outlined above is required because recurrence rates have a linear slope over time and are not negligible (1-7% per year) even after a 10-15 year period. There is no point where it is safe to conclude that a melanoma patient is "cured." Aviation personnel on melanoma waivers and their flight surgeons must be cognizant of the potential for recurrence and maintain close follow-up.

Patients should be taught how to examine their own skin for the “ABCD” characteristics of melanoma and should be encouraged to do so on a monthly basis. **A** stands for asymmetry, **B** for border irregularity, **C** for differences in color within the lesion, and **D** for increasing diameter (>5 mm or about the size of a pencil eraser). Avoidance of midday sun, use of sunscreens with sun protection factor 15 or higher, and the use of protective clothing are all-important preventive measures.

ICD-9 CODE:
172.9 Malignant Melanoma

9.13 NEUROLOGICAL TUMORS

AEROMEDICAL CONCERNS: Brain tumors carry a risk of seizures and disability due to both tumor location and therapy. There is a risk of sudden dysfunction in tumors of the spinal cord.

WAIVER: Tumors of the spinal cord may receive a waiver recommendation 5 years after therapy provided there is no recurrence or sequelae. Waiver may be granted for tumors of the peripheral nervous system if there is no impairment of function. All tumors involving the brain or meninges, irrespective of therapeutic outcome, are CD with no waiver recommended.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. All imaging studies performed
5. NAMI evaluation of the patient

TREATMENT: For those conditions that are waiverable, the aviator should be grounded during treatment.

DISCUSSION: Approximately 33% of all patients with malignant brain tumors experience unexpected and incapacitating seizures. Survival rates for malignant gliomas approach 20% after one year. The survival rates for other tumors vary, with some reaching as high as 90%, but in most there is a greater than 10% chance of recurrence. Those tumors with the best prognosis (i.e. the least chance for subsequent seizure disorders or loss of neurological function) are subtentorial, axial, and encapsulated. Those with the greatest chance of subsequent seizure disorder are the opposite (i.e. supratentorial, extra-axial and unencapsulated).

ICD-9 CODES:
171.9 Malignant Neoplasm of the peripheral nervous system
191 Malignant neoplasm of the brain
192.2 Malignant neoplasm of the spinal cord
225.0 Benign neoplasm of the brain
225.3 Benign neoplasm of the spinal cord
225.4 Benign neoplasm of the spinal meninges
215.9 Benign neoplasm of the peripheral nervous system

9.14 NON-HODGKIN'S LYMPHOMA

AEROMEDICAL CONCERNS: The major concern is that of poor prognosis, particularly in lymphocytic lymphoma, histiocytic lymphoma, and T-cell diffuse histiocytic lymphoma. Occasionally, patients present with CNS disease. Acute incapacitation is rare.

WAIVER: Waiver recommendations may be possible for aircrew with low-stage, non-Hodgkin's lymphomas if treated in the early stages of the condition. Interestingly, more aggressive disease carries a better chance for cure than indolent lymphomas. The low-grade lymphomas are not yet considered curable and do not normally warrant waiver recommendation, although waiver may be possible after 5 years of remission.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board appraisal
3. AFIP confirmation of the histology
4. Oncologist/hematologist opinion
5. CT scans of the chest and abdomen
6. Confirmation that the chemotherapy has not caused residual toxicity
7. Full pulmonary functions testing including DLCO and an echocardiogram with ejection fraction to confirm lack of pulmonary and cardiac toxicity (A gated radionuclide cardiac study can also be provided)
8. Neurological exam for peripheral neuropathy

FOLLOW-UP: Annual submission to include:

1. Hematology/oncology consultation

TREATMENT: All forms of treatment are acceptable provided the patient remains symptom-free with no recurrence. Ongoing treatment is not compatible with flying.

DISCUSSION: Extranodal presentation occurs in 20-30% of patients. Primary lymphoma of the stomach represents up to 10% of all gastric cancers, with the presenting symptom being pain in 80% of cases and hemorrhage in 20%. Surgery with postoperative radiotherapy or chemotherapy yields a 5 year survival of 50%. Generally, the 5 year survival for low grade non-Hodgkin lymphomas is about 45% compared to 35% for high grade tumors.

ICD-9 CODE:
202.8 Non-Hodgkin's Lymphoma

9.15 ORAL CAVITY CANCER

AEROMEDICAL CONCERNS: Localized and referred pain can occur. Difficulties with speech or with the wearing of an oxygen mask are possible. Salivary control may be marginal. Cancer of the tongue can give rise to local pain and to earache.

WAIVER: Waiver will be considered on a case by case basis 12 months after completion of therapy for localized disease without recurrence, speech dysfunction, or airway obstruction. Pharyngeal cancer is CD, with no waiver recommended.

INFORMATION REQUIRED:

1. Surgical report
2. Pathology report
3. ENT consult
4. Oncology consult
5. Medical Board
6. Tumor Board recommendations
7. AFIP confirmation of the histology

TREATMENT: Ongoing treatment, such as chemotherapy or radiation therapy, is not compatible with waiver.

DISCUSSION: Cancer of the lower lip has the best prognosis of the oral cancers, with a 10 year survival rate for early cases of over 95%. Most recurrences (to the lip in 43% and cervical nodes in 43%) occur in the first 2 years. Up to 12% of patients with lip cancer develop a second primary lesion, usually of the mouth or pharynx. Cancers of the upper lip carry a 5 year survival rate of 58-73%. Stage I (T1N0M0) and Stage II (T2N0M0) cancers of the oral cavity carry 5 year survival rates of 76% and 65% respectively, but overall the 5 year survival rates are 25-35% for tongue, 20-40% for the floor of the mouth, 30-50% for cheek and 25% for oropharynx, palate and gingiva. Recurrence is primarily local, but up to 15% will metastasize while the local lesion is controlled. Up to 86% of those who have recurrence will manifest their metastases within 12 months. Between 15-35% of patients develop a second squamous carcinoma (head and neck 10-20%, esophagus 2-10%, bronchus 3-10%). Of those patients who have had a radical neck dissection, 30% develop a dropped shoulder because of sacrifice of the 11th cranial nerve causing weakness of the trapezius muscle; this may preclude flying duties. Pharyngeal cancers are usually diagnosed late and carry a 5 year survival of 33%.

ICD-9 CODES:
145.9 Oral Cavity Cancer
528.6 Leukoplakia of oral soft tissues
210.4 Benign neoplasm of the oral cavity

9.16 OVARIAN TUMORS

AEROMEDICAL CONCERNS: The vast majority of ovarian tumors are benign, and waivers are not necessary for benign ovarian disease. Because the majority of ovarian carcinomas have already metastasized by the time of diagnosis, the prognosis is usually grim.

WAIVER: Waiver may be considered 2 years after cessation of therapy provided the patient is symptom-free and has no evidence of recurrence. Waiver is not required for excised benign ovarian tumors.

INFORMATION REQUIRED:

1. Medical Board
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. Full physical exam
5. Gynecology/oncology consult
6. CT scan of the abdomen, retroperitoneum and pelvis
7. Intravenous pyelogram
8. Tumor markers (if obtained)

TREATMENT: Hormone replacement therapy after bilateral oophorectomy is acceptable for service members in aviation billets.

DISCUSSION: Almost 75% of ovarian tumors are benign. Of those with malignant disease, 80% will have metastases by the time of diagnosis. Metastasis of breast or colonic carcinoma to the ovary is more common than primary carcinoma of the ovary. The 5 year survival of early ovarian carcinoma can reach 90%.

ICD-9 CODES:
183.0 Malignant neoplasm of the ovary
220 Benign neoplasm of the ovary

9.17 PITUITARY TUMORS

AEROMEDICAL CONCERNS: The aeromedical complications largely center on the consequences arising from hormone hypersecretion. These include heat intolerance, diabetes mellitus, diabetes insipidus, hypercalciuria, hypothyroidism, nerve entrapment syndromes, hypertension, cardiomyopathy and spondylosis. Local effects from the tumor can also cause headache, cranial nerve palsies, and visual field defects.

WAIVER: Waiver may be considered provided sequelae are within acceptable limits. Diabetes insipidus (either as a result of posterior pituitary tumor or following surgery or Yttrium-90 implant) is not waiverable.

INFORMATION REQUIRED:

1. Medical Board disposition
2. Tumor Board recommendations
3. AFIP confirmation of the histology (in those cases where surgical removal has been carried out)
4. Endocrinology consult
5. Postoperative visual field studies

FOLLOW-UP: Annual submission to include:

1. Endocrinology consult

TREATMENT: Surgical removal of the tumor and insertion of Yttrium-90 implant are both compatible with aviation duties. Ongoing treatment with bromocriptine is not waiverable.

DISCUSSION: Cure rates of up to 80% for anterior pituitary tumors resulting in acromegaly can be expected with any of the treatment modalities. Prolactinomas have an even better success rate.

ICD-9 CODES:
227.3 Benign neoplasm of the pituitary
194.3 Malignant neoplasm of the pituitary

9.18 PLASMA CELL DYSCRASIAS

AEROMEDICAL CONCERNS: Plasma cell dyscrasias require frequent toxic therapy. They are also associated with side effects that can lead to sudden incapacitation, such as neurological impairment. Vertebral involvement is common in myelomas, giving rise to severe backache and increased susceptibility to injury on ejection. These individuals are immunocompromised, and are thus prone to life threatening infections.

WAIVER: Aviators who remain free of recurrence 3 years after treatment for a single plasmacytoma may be considered for waiver. Personnel with monoclonal gammopathy of unknown significance (MGUS) may be considered for waiver provided that the monoclonal spike comprises <2 g/dl of protein, there are fewer than 5% plasma cells in the bone marrow, the serum viscosity is normal, and there is no hematopoietic compromise or osteolytic lesions. Other plasma cell dyscrasias are not waiverable. These include amyloidosis associated with plasma dyscrasia, heavy chain disease, cold agglutinin disease, and cryoglobulinemia.

INFORMATION REQUIRED:

1. Oncology/hematology consult
2. Medical Board disposition
3. Tumor Board recommendations
4. AFIP confirmation of diagnosis

FOLLOW-UP: Annual submission to include:

1. Hematology/oncology consult

NOTE: Patients with benign monoclonal gammopathy require assessment every six months by hematology/oncology, and waiver request submission every six months.

TREATMENT: Continuing therapy is CD, no waiver.

DISCUSSION: The risks of benign monoclonal gammopathy are progression to multiple myeloma and increased serum viscosity leading to neurological impairment. The median survival for patients with gamma heavy chain disease is 12 months. Neurological involvement is insidious and, although usually a condition of older patients, has been reported in those a young as 23. Alpha heavy chain disease is associated with progressive and fatal abdominal lymphoma. There is a risk of sudden hemolysis in cold agglutinin disease, and a risk of sudden vascular accidents and neurological dysfunction in cases of cryoglobulinemia. Up to 60% of patients with myeloma present with skeletal pain, while anorexia and depression associated with hypercalcemia are present in 30%. About 10% present with paraplegia while others exhibit mental impairment or visual disturbance resulting from hyperviscosity. Amyloidosis is encountered in 5-10% of myeloma patients. Two year survival ranges from 9-76% depending on the stage of the disease at the time of diagnosis.

ICD-9 CODE:
203.1 Plasma Cell Dyscrasias

9.19 PROSTATE CANCER

AEROMEDICAL CONCERNS: Advances in screening for prostate cancer have resulted in most cases being asymptomatic at the time of diagnosis. In rare cases, a variety of symptoms capable of affecting safety of flight and/or mission completion may be present. These include hesitancy, urgency, frequency, urinary retention, dysuria, hematuria, and acute obstruction. Furthermore, metastatic disease can affect bony sites, most often the spine, which can result in pain and/or pathological fracture. In the military aviation population, which is relatively younger, healthier, and with better access to health care when compared to the general population, symptom occurrence as described above would be less likely.

WAIVER: Waivers are considered on a case by case basis. Waiver may be considered as early as six months post-treatment (radical prostatectomy or radiation therapy) for tumors staged as T2, Gleason 3+3. Individuals with lesions staged as T3 or higher or Gleason score greater than or equal to 7 may submit a waiver request, but due to their having a greater chance of local recurrence, the urology/oncology consult must specifically mention the likelihood of disease progression. Treatment by "watchful waiting" with quarterly PSA and biannual urology consultation and follow-up may be considered for waiver, however, member shall be restricted to current command and CONUS-only. In all cases, the member must be fully recovered, off all medications including estrogen compounds, and have no urinary incontinence. The wearing of absorbent undergarments (Depends) or intermittent self-catheterization is not compatible with full or special duty.

INFORMATION REQUIRED:

1. Initial history, with details of the presentation and treatment course
2. Medical Board disposition
3. Tumor Board recommendations
4. Pathological reports
5. AFIP confirmation of the histology (must include Gleason grade)
6. Primary definitive treatment reports (surgical or radiation as applicable)
7. Post-treatment urology or oncology consult
8. Renal function testing (including serum BUN and creatinine)
9. IVP (only required if BUN or creatinine are elevated)
10. Pre-treatment and serial PSAs every three months post-treatment
11. Remarks affirming that the member is free of symptoms/side effects and physical limitations, and retains full bladder continence and function
12. Remarks concerning future required follow-up (as per urology or oncology recommendations)
13. Bone scan (if recommended by the urologist/oncologist)

NOTE: Any residual or unresolved treatment complications or side effects (incontinence, anesthesia, DVT/PE) will make the waiver request more complex and will have to be considered separately as part of the complete waiver package. All individuals approved for a waiver will be required to have DRE and PSA every three months for the first post-treatment year, followed by

every six months indefinitely. A yearly follow-up by a flight surgeon will be required to ensure this is being performed.

TREATMENT: The choices for the treatment of prostate cancer involve multiple factors. The disease itself is most often slowly progressive, and when coupled with a number of well-documented side effects of therapy, recommended treatment options can be variable and are often individualized. Both surgery and radiation therapy offer the potential for complete cure, with surgery having a higher cure rate. Radiation, if not curative, will likely halt the progression of disease. Both therapies have their associated benefits, risks and side effects. Watchful waiting, which is not curative, is less often preferred but remains an acceptable choice in certain cases if the patient and specialist are in agreement. This therapy requires closer follow-up for progression of disease. Special cases involving newer therapies such as cryotherapy will be handled on a case by case basis. Individuals requiring chemotherapy/estrogen therapy will be considered NPQ/WNR.

DISCUSSION: Carcinoma of the prostate is the second leading type of cancer in men next to skin cancer. Increased incidence is seen with increasing age and in African American populations. Over their lifetime, approximately 15 percent of men in the United States will be diagnosed with prostate cancer, with the vast majority being over the age of 65 at the time of diagnosis. Being that the disease is usually slow growing, and that most treatment modalities are associated with significant risks and side effects, patients and health care providers are often left with no one definitive treatment decisions. Very low-grade tumors have an approximately 95% 15-year survival. Young African American individuals tend to have more poorly differentiated tumors and do less well than older African American patients. This age/severity correlation has not been definitively recognized in Caucasian males. The presence of related symptoms, rarely seen anymore, suggests locally advanced or metastatic disease. Hormonal therapy, when indicated, is known to have significant side effects. Patients must be made aware of the specific risk related to each agent being considered.

ICD-9 CODES:
185 Malignant prostate cancer
233.4 Prostate carcinoma in situ
222.2 Benign neoplasm of the prostate
600 Benign prostate hypertrophy
H605 Status post radical prostatectomy

9.20 SKIN CANCERS (NON-MELANOMA)

AEROMEDICAL CONCERNS: The lesion may be irritated by the wearing of protective equipment or, if it is on the face, may prevent adequate mask seal.

WAIVER: Waiver is not required for adequately treated basal cell carcinoma. Waiver may be required if grafting has been necessary, once the graft has settled adequately to allow wear of flight clothing or equipment and provided that there is no disability. Squamous cell carcinoma is CD, with waivers considered on a case-by-case basis.

INFORMATION REQUIRED:

1. AFIP confirmation of diagnosis is required
2. Dermatology consult

TREATMENT: The aircrew member should be grounded during treatment.

DISCUSSION: The incidence of metastasis varies. Primary cutaneous squamous cell carcinomas have a secondary rate of 3%, compared to 11% with mucocutaneous lesions and 10-30% with tumors secondary to inflammatory and degenerative processes. Metastases tend to be in the regional lymph nodes.

ICD-9 CODES:
173.0 Skin Cancers (Non-Melanoma)
M8091 Multicentric Basal Cell Carcinoma
M809B Basal Cell Carcinoma
M8070 Squamous Cell Carcinoma

9.21 TESTICULAR TUMORS

AEROMEDICAL CONCERNS: Treatment with bleomycin-based chemotherapy can lead to compromised pulmonary function. This is significantly exacerbated by breathing high concentrations of oxygen. Pulmonary metastases may eventually cause respiratory symptoms, which could be exacerbated by hypoxia. Very rarely, cardiac or cerebral metastases have been reported.

WAIVER:

Seminoma: Patients with Stage I or IIA seminomatous tumors treated by orchiectomy and/or external beam radiation may be considered for waiver after completion of radiation, provided tumor markers are absent. Stage IIB or III treated with orchiectomy plus chemotherapy must complete a 2 year LIMDU board, during which time no waiver will be considered. After completion of LIMDU, waiver may be considered provided patient is free from recurrence (normal physical exam, tumor markers negative) and pulmonary function tests show no evidence for oxygen toxicity/hypersensitivity.

Non-Seminomatous Germ Cell: Clinical Stage I or low volume Stage II treated with orchiectomy and retroperitoneal lymph node dissection and confirmed to be pathological Stage I or low volume Stage II may be considered for waiver after 6 months LIMDU board, provided patient is free from recurrence. If pathology is upstaged to Stage IIB, adjuvant chemotherapy is required, as well as a 2 year LIMDU board. Wavier may then be considered after completion of the 2 years of LIMDE. Patients with Stage III disease treated with orchiectomy and chemotherapy require a 2 year LIMDU board. After completion of LIMDU, waiver may be considered if the patient is free from recurrence (normal exam, tumor markers negative, abdominal CT scan free from residual masses) and pulmonary function tests are normal.

INFORMATION REQUIRED:

1. Medical Board disposition
2. Tumor Board recommendations (if available)
3. AFIP confirmation of histology
4. CXR and/or CT scan reports

FOLLOW-UP: Annual submission to include:

1. Urology consult
2. CXR, chem panel, tumor markers and physical exam as follows:
   a. Monthly for first year
   b. Bimonthly for second year
   c. Every 6 months for third year
   d. Annually after third year

TREATMENT: Treatment by orchiectomy with or without prosthetic implant, with or without surgical staging, radiotherapy, or chemotherapy can all be considered for waiver as described above.

DISCUSSION: Overall cure rate for all stages of testicular cancer is 98%. Seminoma is the most common cell type, seen in 40% of cases, with a peak incidence between the ages of 30 and 39 years. Embryonal carcinoma or teratocarcinoma is present in another 45-55% with a peak incidence of 25-35 years. 25% of seminomas and 50-70% of nonseminomatous tumors will have metastatic nodes at time of diagnosis. The addition of radiation therapy decreases the relapse rate for Stage I seminomas from 30% down to 5-10%. Retroperitoneal lymph node dissection results in a recurrence rate of 5% for pathological stage I and 5-20% for pathological low volume stage II nonseminomatous tumors. Two cycles of adjuvant chemotherapy for pathological stage IIB tumors lowers the recurrence rate from 30-40% down to <10%. Except in the cases of pure teratoma, where recurrence may occur out to five years, it is rare to see recurrence beyond two years.

ICD-9 CODES:
186.9 Malignant testicular tumor
222.0 Benign neoplasm of the testes

9.22 THYROID CARCINOMA

AEROMEDICAL CONCERNS: There is almost inevitable hypothyroidism after surgical treatment. The condition also carries a small risk of damage to the recurrent laryngeal nerves either from local invasion of the tumor and/or surgical damage. The parathyroid glands may also be involved, resulting in hypoparathyroidism.

WAIVER: Waiver will be considered after treatment of papillary or follicular carcinoma of the thyroid. Medullary or undifferentiated thyroid tumor will normally lead to permanent disqualification, with no waiver recommended. This is a reflection of the differing prognoses of the varied histologies.

INFORMATION REQUIRED:

1. Medical Board disposition
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. Confirmation of clinical and chemical euthyroid status
5. Evidence of TSH suppression
6. Endocrinology consult

FOLLOW-UP: Annual submission to include:

1. Confirmation of clinical and chemical euthyroid status
2. Evidence of TSH suppression
3. Endocrinology consult

TREATMENT: Surgery is generally the first line of therapy. Some authorities prefer to use radioiodine treatment. Surgical procedures have the risk of injuring the recurrent laryngeal nerve, resulting in voice changes. In addition, removal of the parathyroid glands may lead to symptomatic hypoparathyroidism.

DISCUSSION: Generally, men over 40 years old and women over 50 have a poorer prognosis. Another poor prognostic indication is a primary tumor over 5 cm. Papillary carcinoma is slow growing, spreading locally to the strap muscles of the neck, lymph nodes, and occasionally trachea, but it may metastasize to lungs or bone. Some 20% are said to be multicentric. Overall 5 and 10 year survivals of better than 95 and 90% respectively can be achieved. Because the growth rate is slow, there is no particular trend to early recurrence (recurrence rates from 10-24% have been reported); patients should be able to return to flying as soon as they are euthyroid. Follicular carcinoma tends to metastasize to lungs and bone rather than infiltrate locally. A major determinant of outcome is the extent of microinvasion. The usual treatment of choice is total thyroidectomy, because there is an 87.5% chance of the opposite lobe containing microscopic follicular carcinoma. For patients treated with total thyroidectomy and radioactive iodine, the death rate at 5 years is quoted as 11%, rising to 30% when treatment is by incomplete thyroidectomy alone. This can be largely explained by the fact that only total thyroidectomy allows subsequent accurate localization and treatment of distant metastases by Iodine-131.

Medullary carcinoma and undifferentiated carcinomas have a 10 year survival of 50 and 20% respectively.

ICD-9 CODES:
193 Malignant neoplasm of the thyroid
226 Benign neoplasm of the thyroid

9.23 UTERINE CANCER

AEROMEDICAL CONCERNS: Some cases develop anemia, but there are otherwise very few specific aeromedical concerns in carcinoma of the uterus.

WAIVER: Waiver may be considered 6 weeks after hysterectomy provided that there has been a full recovery and there is no indication of metastasis. Waiver may be requested 2 years after treatment of disseminated disease provided there is no evidence of sequelae or recurrence. Leiomyosarcoma of the uterus is not waiverable.

INFORMATION REQUIRED:

1. Medical Board disposition
2. Tumor Board recommendations
3. AFIP confirmation of the histology
4. Gynecology/oncology consult
5. Intravenous pyelogram
6. CT scan of the abdomen, retroperitoneum and pelvis

FOLLOW-UP: Annual submission to include:

1. Gynecology/oncology consult

TREATMENT: Aircrew are grounded during treatment and during the immediate postoperative period.

DISCUSSION: The earliest truly invasive carcinoma of the endometrium has a cure rate of 90%. Spread is usually slow and recurrence is usually local for long periods of time. However, recurrence for all stages is unpredictable. The incidence of leiomyosarcoma arising in uterine fibroids has been reported to be 0.1-0.6%, with a 5-year survival rate of 31%.

ICD-9 CODES:
179 Malignant neoplasm of the uterus
219.9 Benign neoplasm of the uterus

10.0 NEUROLOGY

Revised 27 January 2015 | Reviewed 27 January 2015

10.1 CRANIAL NEURALGIA

Revised 30 July 2014 | Reviewed 15 August 2014

AEROMEDICAL CONCERNS: The pain of cranial neuralgia can be incapacitating in flight. The symptoms of trigeminal neuralgia may be stimulated by the wearing of an oxygen mask. Glossopharyngeal neuralgia has been associated with syncope and cardiac arrest.

WAIVER: Because of the severity and chronic recurrent behavior of the neuralgias, these are CD, waiver usually not considered.

INFORMATION REQUIRED:

1. Neurology or neurosurgical consultation

TREATMENT: Pharmacological treatments (Tegretol, Triavil, Prolixin, Mexitil), although effective, are not waiverable due to side effect profiles. Surgical "cures" (microvascular decompression) may be achieved, and waivers may then be considered on a case-by-case basis.

DISCUSSION: Although most cranial neuralgias are probably due to microvascular compression at the root entry zone, other etiologies need to be considered, especially in the young adult population in whom demyelinating disease, aneurysms, neoplasms, and infectious etiologies (post-herpetic, Lyme disease, etc) may be more common. The finding of sensory loss in the company of neuralgia should alert the flight surgeon to consider these other causes of cranial neuralgia.

ICD-9 CODES:
350.1 Trigeminal Neuralgia
352.1 Glossopharyngeal neuralgia

10.2 DECOMPRESSION SICKNESS

Revised 30 July 2014 Reviewed 15 August 2014

AEROMEDICAL CONCERNS: Residual neurological/neuropsychological impairment is a safety of flight issue. Most individuals who have suffered DCS make a full recovery and are not at increased risk for recurrent DCS. Decompression sickness with full recovery is not considered disqualifying (NCD) for flying duties. Type I or Type II DCS with residual symptoms after treatment is CD, however waiver may be considered on a case by case basis. Neurology (and possible neuropsychological examination) is required for waiver consideration.

The flight surgeon with a patient with suspected DCS should:

1. Make an aeromedical disposition after consulting with NAMI Neurology.
2. Document a normal evaluation by neurologist, DMO or HMA prior to returning a member to flight status.
3. Members with a history of DCS should be referred for hypoxic training using the Reduced Oxygen Breathing Device (ROBD).
4. Bubble contrast echo is offered to patient only as an option.

Grounding requirements:

1. Type I DCS: at least 3 days with no evidence of residual effects
2. Type II DCS: at least 14 days with no evidence of residual effects

TREATMENT: Recompression therapy is the standard, however many Type I patients will respond completely to surface oxygen therapy and may not require hyperbaric oxygen.

DISCUSSION: Often we err on the conservative side and treat patients whose findings and symptoms may be equivocal, especially in the training commands where students are instructed to report any and all symptoms that occur following low pressure chamber flights. A high index of suspicion in this setting coupled with enthusiasm for treatment must be weighed in evaluating the outcome and disposition. Diving-related cases of DCS tend to be more straightforward, as well as more severe. These patients often receive relatively delayed treatment and are more likely to suffer permanent residual effects. Except for older age, no factors are clearly linked to increased risk for recurrent DCS. Individuals who do suffer recurrent DCS are probably at higher risk for reasons that cannot be defined or predicted and should not be considered for waiver without careful evaluation of the risk-benefit factors. The above recommendations adopt the policy used by the Navy diving community and consider DCS as a treatable occupational hazard that should have no adverse impact on a member's future career following full clinical recovery.

ICD-9 CODES:
993.3 Decompression Sickness
993.30 Type I DCS, pain only
993.35 Type II DCS

10.3 EPILEPSY/SEIZURE

Revised 30 July 2014 Reviewed 15 August 2014

AEROMEDICAL CONCERNS: The aeromedical implication of a seizure in flight is severe.

WAIVER: A single, febrile seizure under age 5 is NCD. Two or more febrile convulsions are CD, waiver considered. A single seizure clearly attributable to a toxic cause may be considered for waiver. All other seizures are CD, no waiver. Myoclonic jerks associated with G-LOC are NCD.

INFORMATION REQUIRED:

1. Neurological consultation
2. EEG
3. MRI scan

TREATMENT: N/A for waiver purposes.

DISCUSSION: The risk of having a first seizure falls from about 0.4% at age 20 to 0.06% at age 50, before rising sharply to 0.8% by age 70. The late rise is because of the increase in precipitating factors such as neuronal degeneration and cerebrovascular disease. After a single, unprovoked seizure in adults, the risk of a second episode while not taking anticonvulsants is 64% over 3 years and 80% at 5 years, with over two thirds of these occurring during the first year. With no risk factors, such as previous neurological insult or a sibling with epilepsy, the risk of a second seizure is 23% at five years. Relapse, even after many years of symptom-free existence without therapy, is possible. These figures apply to individuals living at one atmosphere and one +Gz. The risk for seizure recurrence associated with exposure to the physiological stressors of military aviation is likely to be much higher. Etiologies for seizures in the adult include alcohol (25%), brain tumor (16%), cerebral infarction (14%), trauma (4%), miscellaneous (5%) and unknown (36%). The EEG does not prove or disprove the diagnosis, although an unequivocally abnormal EEG with a good history of seizure does support the diagnosis. EEGs are normal in half of the patients with frank epilepsy. An epileptiform EEG does not, by itself, signify the presence of epilepsy.

ICD-9 CODES:
780.3 Epilepsy/Seizure
780.3 Convulsive episode, unspecified cause
780.30 Infantile Seizure
345.9 Epilepsy

10.4 GUILLAIN-BARRE SYNDROME (ACUTE INFLAMMATORY DEMYELINATING POLYNEUROPATHY – AIDP)

Revised 30 July 2014 | Reviewed 15 August 2014

AEROMEDICAL CONCERNS: Skeletal muscle weakness which can involve extremity, truncal or bulbar groups and typically evolves over a matter of several hours to a few days can affect flying and aircrew abilities, creating safety of flight as well as mission completion concerns. In the C. Miller-Fisher variant, ataxia as well as ophthalmoplegia (internal and external) accompanies the obligatory findings of areflexia. Dysautonomia may also be present, posing an additional concern regarding tolerance of gravitational force changes, blood pressure, and cardiac rhythm disturbances that may be especially life-threatening in the aviation environment.

WAIVER: A waiver can be considered after full recovery of strength and autonomic nervous system function. Tendon-stretch reflexes may never return, but would not prohibit waiver recommendation.

INFORMATION REQUIRED:

1. Neurology or PM&R (physical medicine and rehabilitation) consultation that includes quantified strength testing of all motor groups and assessment of autonomic nervous system function (orthostatic BP measurements, treadmill testing, and, if appropriate, thermal stress testing)
2. Functional cockpit and egress testing should be considered, but are not necessarily required
3. Gravitational tolerance testing should be performed if autonomic instability is a concern

TREATMENT: Plasmapheresis and/or intravenous immunoglobulin (IVIG) therapy is warranted in those cases which involve weakness progressing to the point of impairing walking or respiratory abilities. Adrenocorticosteroid therapy is not beneficial and may actually worsen the outcome.

DISCUSSION: Antecedent flu-like illness within two weeks prior to the onset of neurological symptoms occurs in approximately 65% of cases. This syndrome often occurs in clusters of small epidemic proportions and may have broad spectral presentations ranging from minor (e.g. Bell's palsy) to severe (complete paralysis of all skeletal muscle groups with respiratory and cardiovascular support dependency). Some of these patients may experience relapses and progress to chronic inflammatory demyelinating polyneuropathy (CIDP). HIV positive patients may present with AIDP. Lyme disease may mimic AIDP. The presence of pleocytosis in the CSF is incompatible with AIDP and suggests alternative diagnoses (e.g. sarcoidosis, leptomeningeal lymphomatosis).

ICD-9 CODE:
357.0 Guillain-Barre Syndrome

10.5 HEADACHES AND MIGRAINE (INCLUDING HEADACHE ALGORITHM)

Revised 30 July 2014 | Reviewed 15 August 2014

AEROMEDICAL CONCERNS: Severe headaches can be incapacitating in flight, while milder headaches may act as a distraction. Migraine may involve visual and other aura, nausea and vomiting, and transient neurological deficits that may include aphasia, hemisensory and hemimotor impairment, vertigo, syncope, confusion, and disorientation. These are of obvious concern in aviation personnel. Cluster headaches are incapacitating and may be associated with transient neurological symptoms, lacrimation, and a unilateral Horner's syndrome.

WAIVER: The specific nomenclature or diagnostic label of the headaches is not the key factor for determining whether it is disqualifying. Of greater concern is the effect on general performance, special senses, and risk of recurrence. The aeromedical disposition of members with headache will depend on the frequency and severity of the symptoms, the etiology, and the medication required to control the headaches. The accompanying algorithm may be used to help determine whether a history of headache is disqualifying or not. **Migraine headaches with aura and scotoma are CD no waivers considered for applicants.**

Severity criteria: If *any* of the following criteria are met, the headache is considered disqualifying:

1. Prohibits performance of required social, vocational or academic activities
2. Member sought Emergency Department, hospital or acute care
3. Neurological dysfunction other than nausea/vomiting or photophobia (especially disturbance of special senses, balance, or motor function)
4. Requires other than simple analgesics or non-pharmacologic methods for control.

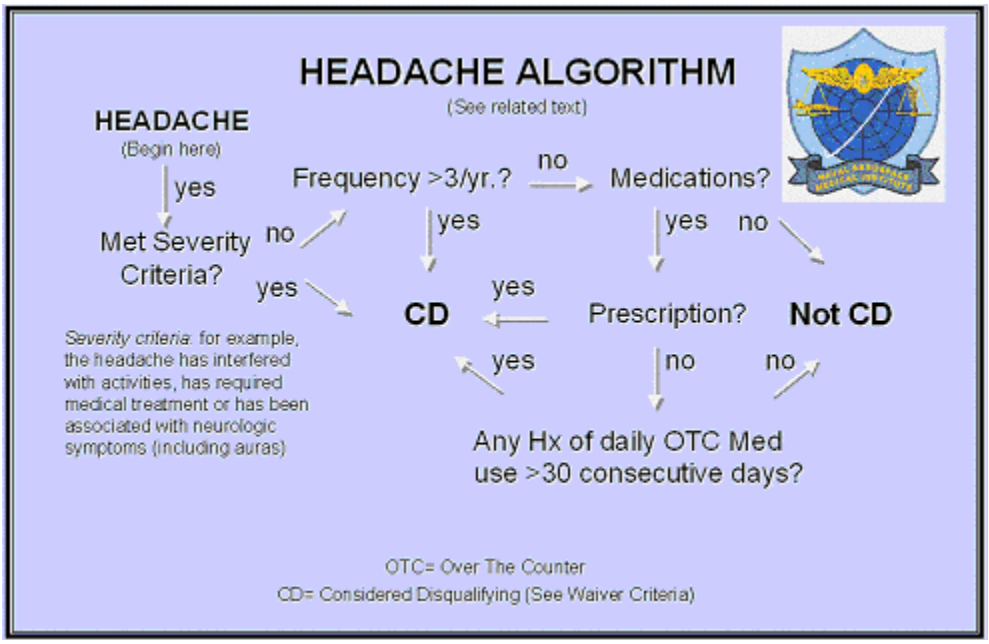
Waiver Consideration Factors: If the headache is determined to be disqualifying, the following factors are considered in the waiver recommendation. Please note these conditions require evaluation by NAMI Neurology and Code 342 prior to issuance of clearance. A Local Board of Flight Surgeons or Aeromedical Summary should not issue clearance prior to review. The following factors should be considered when submitting for a waiver:

1. Frequency
   a. Severe headache occurred during flight
   b. More than three severe headaches per year
2. Predictability
3. Severity
4. History of any Incapacitation
5. Treatment Required
   a. Non-pharmacologic
   b. PRN abortive therapy
   c. Prophylactic therapy
      (1) Verapamil daily considered for waiver with restrictions if effective and without side effects on a case-by-case basis
      (2) Topamax and inderal are not considered for waiver
6. Type of aircraft
7. Flight hours and experience
8. Specific diagnosis and presentation

9. Status
    a. Applicant or designated
    b. Class I vs. Class II/III

INFORMATION REQUIRED:

1. Neurology consultation



TREATMENT: Simple analgesics are acceptable. The use of NSAID's may be considered for waiver on a case-by-case basis. Life-style changes, biofeedback, and relaxation therapy, if successful, may permit return to flight status for the muscle-contraction or "tension" headache sufferer. Psychiatric/psychological evaluation of these members is strongly recommended. Lithium, methysergide, intranasal lidocaine, adrenocorticosteroids, oxygen inhalation, and sumatriptan may be effective in treating cluster headaches, however neither the cluster headaches nor these treatments generally would be considered for waiver. Although there are many effective pharmacologic treatments for migraine, most are incompatible with waiver.

DISCUSSION: Historically, migraine patients who have returned to flying duties claimed to have had no symptoms for periods ranging from 6 months to several years. This suggests that the original diagnosis was incorrect, that our understanding of the natural history of migraine is at fault, or that symptoms are being deliberately suppressed in order to return to flying. Migraines often begin in adolescence then may remit for several years, usually returning by mid-life. At least 70% of migraineurs have a family history for the same. Less than one third of patients have "classic" migraine with visual aura, but nearly one half will have paresthesias (usually lingual and perioral) with their attacks. Vertigo occurs in about 10% of the cases. Auras typically last 15 - 20 minutes and are followed by unilateral, throbbing headaches associated with photo- and phonophobia, nausea, anorexia, and lethargy. Most patients prefer to lie in a dark quiet room for relief. Precipitants for migraine may include dairy products, chocolate, MSG, nitrates (preserved meats), tyramine (aged cheese, pickled herring, yogurt, fava beans), sleep deprivation, food deprivation, barometric pressure changes, ice cream, and alcoholic beverages. Digital pressure applied to the temples, cold packs, and caffeine are usually beneficial in providing relief. Many patients have a history of carsickness in childhood.

Cluster headaches occur almost exclusively in men, begin in the third or fourth decade, are unilateral, and never change sides. Clusters consist of recurrent severe headaches lasting about 45 minutes, several times daily for a few weeks to months at a time, with a tendency to recur annually, often around the summer or winter solstice.

Recurrent muscle-contraction or tension headaches are associated with depression in the majority of cases, however, underlying cervical spondylosis and DJD may be a contributing factor and will respond to NSAID's and physical therapy. Exertional headaches, cough headaches, and immersion headaches may be associated with posterior fossa pathology (especially Arnold-Chiari Malformation), thus warranting a MRI scan. Coital headaches are almost always benign. Incorrect prescription for astigmatism may also be a cause for headaches; however eye and ENT pathologic explanations are unlikely unless the patient has obvious gross clinical findings of disease in these areas.

ICD-9 CODES:
346.0 Migraine with aura
346.1 Migraine without aura
346.2 Cluster headache
346.8 Other forms of migraine (include ophthalmoplegic)
307.81 Tension headache

10.6 MULTIPLE SCLEROSIS

Revised 30 July 2014 Reviewed 15 August 2014

AEROMEDICAL CONCERNS: MS typically presents with visual disturbance, vertigo, lower body weakness, or sensory changes. The symptoms can present over a period of time as short as a few hours. Mild dementia may occur in 20% or more of patients. In some cases, paroxysmal events lasting less than 5 minutes (trigeminal neuralgia, abdominal "crises", myoclonus) can be the presenting feature.

WAIVER: A diagnosis of definite MS is permanently disqualifying without waiver. Waivers may be considered for uncertain diagnoses that may be classified as monosymptomatic demyelinating disease, possible MS, etc. Usually a period of grounding for observation of 6 to 12 months after full recovery from the "attack" of monosymptomatic disease is required. Laboratory findings are critical in predicting the likelihood of progression to MS.

INFORMATION REQUIRED:

1. Neurology consultation
2. Multimodality evoked potentials
3. MRI scans (brain and spinal cord)
4. CSF (cells, protein electrophoresis, IgG, oligoclonal bands, myelin basic protein)
5. Monocular color vision testing
6. Visual fields
7. Retinal photographs (if indicated)
8. Neuropsychological testing (if indicated)

TREATMENT: High dose intravenous methylprednisolone (250 mg qid x 3 days) followed by eleven days of tapering prednisone (1 mg/kg) given ASAP for the first "attack" of MS may reduce or delay the subsequent progression to relapsing-remitting or chronic progressive MS. Beta Interferon may also have a prophylactic or delaying effect on the development of MS.

DISCUSSION: The average age of onset is 33 years, with a male:female ratio of 2:3. The onset is of a single CNS white matter lesion in 55% of cases, with optic neuritis (ON) occurring in 16-30% of initial presentations. ON will occur at some time during the disease in 30-70% of cases, and 25% of these will have a recurrence of ON. In 90% of persons with ON, recovery is complete. Up to 20% of cases follow a benign course with no permanent disability, 20-30% follow an exacerbating/remitting course, 40% follow a remitting/progressive course, and 10-20% show steady progression. In the early stage the attack rate is 0.5/year falling to 0.25/year in intermediate years. In 5% of cases, there is a latent period of several years between first and second attacks, while in a few cases the disease becomes totally quiescent. The features suggesting favorable prognosis are onset before 35 years, acute onset with only 1 symptom, and predominantly sensory symptoms. Poor prognosis is associated with onset at age greater than 35 years, more than 1 symptom with each attack, early onset of motor signs within 5 years, and male gender.

ICD-9 CODES:
340.0 Multiple Sclerosis
341.9 Monosymptomatic demyelinating disease or possible MS

10.7 PERIPHERAL NEUROPATHY

Revised 30 July 2014 Reviewed 15 August 2014

AEROMEDICAL CONCERNS: Depending upon the nerve or nerves involved, peripheral nerve dysfunction may represent a trivial nuisance (e.g. meralgia paresthetica) or a grounding impairment (e.g. radial nerve palsy). Full recovery of neurological function, elucidation of the underlying etiology, and certainty regarding the prognosis are issues to be considered in the individual with peripheral nerve abnormalities.

WAIVER: Most conditions require grounding pending full recovery (if it occurs) and establishment of a firm diagnostic understanding of the cause of the patient's neuropathy.

INFORMATION REQUIRED:

1. Neurology consultation
2. Supporting laboratory findings (where appropriate), such as EMG, NCV, evoked potentials, thyroid functions, Lyme serology, VDRL, HIV, B12, folic acid, ESR, protein electrophoresis, heavy metals, etc.

TREATMENT: Depends on the underlying cause, if known and if treatment exists.

DISCUSSION:

Bell's Palsy: During the acute phase of the paralysis, grounding is required both as a result of the disabling nature of acute facial nerve weakness (difficulty speaking clearly, inability to blink and close the eye in response to visual threats) and because of the fact that not all Bell's palsies are mononeuropathies (i.e. may evolve into acute inflammatory demyelinating polyneuropathy a.k.a. Guillain-Barre, or may be associated with other systemic conditions such as Lyme disease or sarcoid). Once full function has returned, member is PQ. In the event of incomplete recovery or recurrence of facial palsy, waivers are considered on a case-by-case basis.

Carpal Tunnel Syndrome: Safety of flight concerns due to impaired fine motor coordination, strength, sensation, and abnormal sensations in the fingers and hands require grounding until adequate resolution of the neuropathy has been achieved. Waiver requests should include results of electrophysiological studies and functional demonstration of satisfactory recovery (e.g. performance in simulator, cockpit egress testing, operation of safety harness and parachute fittings, etc).

Ulnar/Radial Neuropathy: Same as for Carpal Tunnel Syndrome.

Peroneal Neuropathy: Must demonstrate sufficient return of strength to control rudder and brake pedals and safely egress from aircraft (documented by actual testing) to be considered for waiver. Please also submit electrophysiological test results.

Sciatica: Return of strength (as for peroneal neuropathy) in addition to disappearance of pain (off medication) is required for waiver consideration.

Meralgia Paresthetica: As this is only a sensory neuropathy, waiver can be recommended as long as the member is not disabled or impaired by discomfort and can tolerate the symptoms without need of medication.

ICD-9 CODES:
351.0 Bell's Palsy
355.0 Sciatica
355.1 Meralgia Paresthetica
354.0 Carpal Tunnel Syndrome
356.1 Peroneal neuropathy

10.8 SUBARACHNOID HEMORRHAGE (SAH)

Revised 30 July 2014 Reviewed 15 August 2014

AEROMEDICAL CONCERNS: The major risk is rebleeding, but there is also a risk of developing hydrocephalus. Bleeding usually follows sudden increases in blood pressure, and it is likely that the anti-G straining maneuver could be just as effective in this as exercise, lifting, or defecation.

WAIVER: Waivers are not considered for patients who have undergone surgical repair of leaking intracerebral aneurysms or removal of AVM's. Patients who have recovered fully from idiopathic SAH with conservative measures may be considered for waiver after 2 years. **No waivers are considered for Applicants.**

INFORMATION REQUIRED:

1. Neurosurgical opinion and confirmation of successful obliteration of the vascular anomaly
2. Neurological evaluation
3. Neuropsychological evaluation
4. MRI or CT scan to confirm absence of hydrocephalus or superficial siderosis

TREATMENT: Intracranial surgery is disqualifying for flying duties.

DISCUSSION: Most patients with this condition have ruptured a Berry aneurysm. Approximately 5% have bled from an AVM and 15% have no identifiable cause. About 25% of patients treated conservatively die within 24 hours of rupture of intracranial aneurysm and up to 25% die in the following 6 months from recurrent hemorrhage, cerebral infarction, or following vasospasm. In the survivors, the risk of rebleeding is just over 2% for the first year declining to almost 1%/year after that. Only 32% of such cases are reported to lead a normal life after the bleed. Those patients in whom no cause is found tend to have a better prognosis. Aneurysms are multiple in 10-20% of cases, and the rate of rebleeding for these is 3% a year. In those patients treated surgically, the risk of rebleeding is negligible if the aneurysm is solitary and has been successfully isolated from the cerebral circulation, but up to 20% of such patients exhibit cognitive or psychosocial decrements at one year. AVMs cause less early death (about 10%); the risk of rebleeding is 7% in the first year and 3% a year thereafter. In patients with AVMs who did not undergo operative repair and were followed for 20 years, there was a 42% incidence of hemorrhage, 29% incidence of death, 18% risk of epilepsy, and a 27% chance of having neurological impairment.

ICD-9 CODE:
430 Subarachnoid Hemorrhage (SAH)

10.9 SYNCOPE

Revised 30 July 2014 | Reviewed 15 August 2014

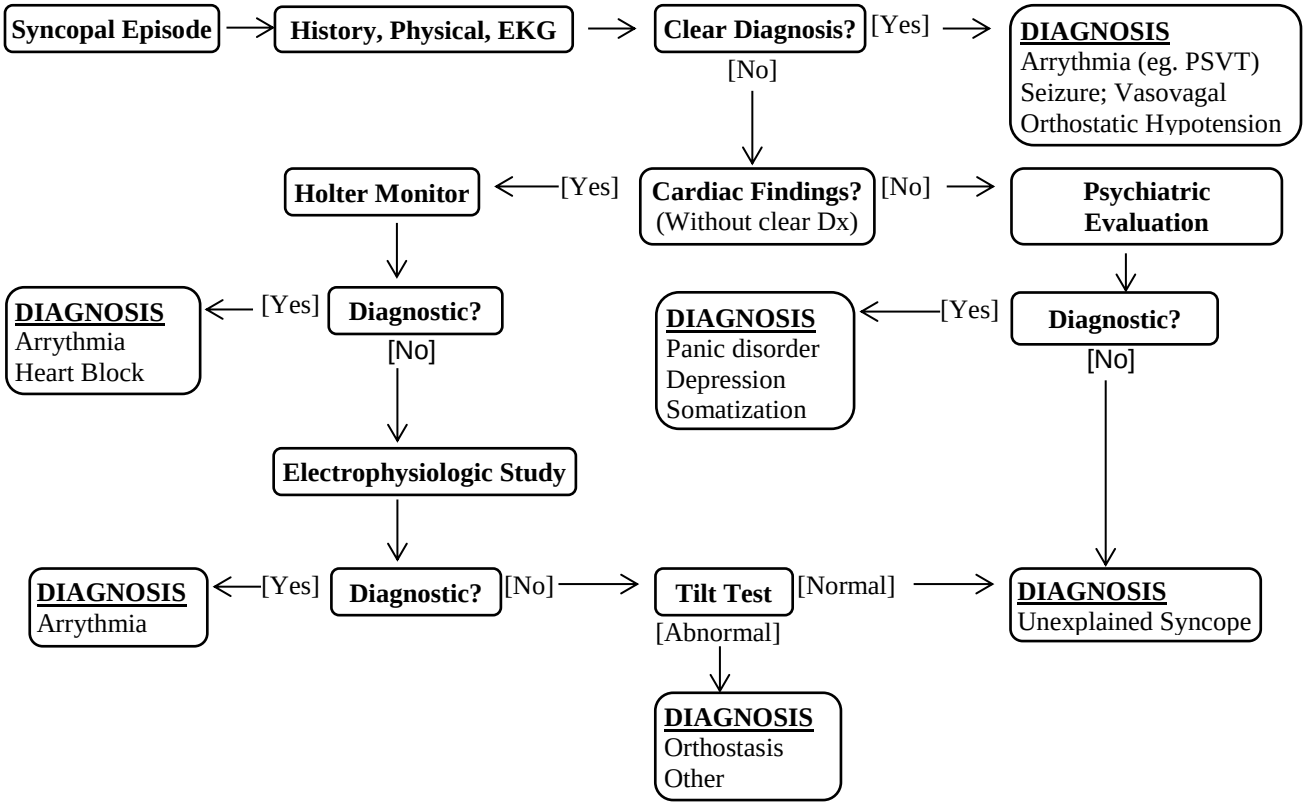
AEROMEDICAL CONCERNS: Loss of consciousness in flight.

WAIVER: A waiver is not required for simple episodes of vasovagal syncope, with known precipitating causes such as pain or the sight of blood. Normal physiological syncope in response to a training event (i.e. hypoxia demonstrated in a hypobaric chamber or G-induced loss of consciousness (G-LOC) in a centrifuge) does not require a waiver. A waiver is necessary for unexplained syncope, recurrent syncope, syncope associated with pathology (e.g. cardiac conduction or valvular defect), syncope with LOC > 1 minute, delay in recovery of normal function > 5 minutes, or G-LOC > 18 seconds, or syncope associated with convulsions lasting over 6 seconds. Non-waiverable situational syncope includes cough-, postural-, Valsalva-, and exertion-induced syncope. Other types of syncope with be considered for waiver on a case-by-case basis.

INFORMATION REQUIRED:

1. Detailed history of the event(s)
2. Physical exam
3. EKG
4. Additional cardiovascular studies as indicated (see Syncope algorithm)
5. Psychiatric evaluation (as indicated)

SYNCOPE WORK-UP



TREATMENT: Avoidance of known stressors (if possible).

DISCUSSION: In 12% of patients with syncope, some type of convulsive movement may occur. Careful history taking, the presence of facial pallor, and the rapid recovery without amnesia help to distinguish syncope from epilepsy. Head injury sustained during the fall may confuse the issue. Presence or absence of incontinence does not help in distinguishing between syncope and seizure. Tongue-biting is strong evidence in support of a seizure and is unlikely in syncope. Recurrent unexplained syncope often can be attributed to psychiatric causes, especially panic disorder, depression, and somatization. Brain scans, EEGs, carotid ultrasound, and lab tests are not usually helpful in arriving at a cause for syncope. If the history, PE, and EKG don't provide the diagnosis, it is unlikely that further studies will help. In cases of cough-, Valsalva- and exertion-induced syncope, remember to consider posterior fossa pathology, especially Arnold-Chiari malformation.

ICD-9 CODE:
780.2 Syncope

10.10 SLEEP DISORDERS

Revised: 27 January 2015 Reviewed: 27 January 2015

AEROMEDICAL CONCERNS: Disorders of sleep architecture and timing are common in the general population. These disorders frequently result in complaints of excessive daytime somnolence or insomnia with demonstrable deficits in cognitive and psychomotor performance. Aviation personnel perform a variety of complex tasks requiring a high degree of mental and physical well being. Fatigue, sleepiness, and circadian rhythm disturbances can have a critical effect on aviation safety.

WAIVER: Because of the persistent nature and impact on psychomotor and cognitive performance, a history of sleep disorders is generally considered permanently disqualifying without waiver. Waivers may be considered in cases when successfully treated.

INFORMATION REQUIRED:

1. Neurology/sleep specialist consultation with polysomnography (PSG). Naval Aviation personnel who require aeromedical certification shall undergo PSG for evaluation of suspected sleep disorder. Referral to a quality sleep medicine center required. (MTF vs civilian center preference should be consistent with TriCare access standards).
2. Vigilance testing (see: The Nerve Center)
3. Psychiatric evaluation (as indicated)

TREATMENT: Treatment options for the sleep disorders vary based upon diagnosis.

DISCUSSION: Diagnosis of a potential sleep disorder requires a detailed history around the individuals sleep complaint. This should include severity, duration, details of sleep schedule, collateral history from a spouse or partner regarding snoring or apneas, significant environmental stressors, and any evidence of underling psychopathology. Prior to referral to a specialist, every attempt should be made to distinguish a pathologic sleep disorder from poor sleep hygiene. In these cases, simple behavioral modifications may be all that is needed to return the individual to normal function.

Further discussion on the following are discussed below: somnambulism, obstructive sleep apnea, insomnia, idiopathic hypersomnia, narcolepsy, periodic limb movement disorder, restless legs syndrome, and circadian rhythm disorders.

Somnambulism: Due to undesirable or fatal activities that can occur while sleepwalking, a history after age 12 is disqualifying for naval duty, but waivers have been granted for general duty. Sleepwalking episodes typically occur in children before puberty. It is unusual after age 12, with most outgrowing these episodes by age 15. The prevalence in adults has been reported to be approximately 1%, with most persisting from puberty. Recurrent sleepwalking rarely may be associated with a seizure disorder. Other disorders can result in nocturnal wandering (i.e. REM sleep behavior disorder, dissociative disorders, and sleep apnea). These disorders need to be investigated before a primary diagnosis of somnambulism is given. Due to the variable and unpredictable risk to the individual onboard ship, this condition is generally not waived for aviation duty.

Obstructive Sleep Apnea (OSA): see separate section which follows.

Insomnia: The term insomnia is a symptom rather than a specific diagnosis. Insomnia refers to difficulty initiating or maintaining sleep. Among individuals complaining of sleep problems, insomnia is the most common complaint. Insomnia can result from a multitude of diagnoses, including sleep apnea and periodic leg movement disorder. Insomnia is commonly associated with psychiatric disorders including anxiety, depression, personality disorders, or maladaptive traits. Transitional situational insomnia can also result from changes in sleeping environment or in proximity to a significant life event. The psychology of insomnia can occur as a result of a preoccupation with a perceived inability to sleep, or when poor sleep habits persist following resolution of a life stressor. Drug or alcohol related insomnia is another common cause of this complaint. This can result from a variety of agents, including caffeine, which may disrupt sleep architecture as long as 14 hours after ingestion. Most insomnia complaints are transient, resolve in less than 3-4 weeks, and do not require a waiver. Persistent insomnia requires work-up to define an underlying cause. In those cases where an underlying cause is not found, the term Primary Insomnia has been used. Treatment of the underlying diagnosis and a normal sleep study are required before waiver submission.

Idiopathic Hypersomnia: This is a diagnosis of exclusion. It is characterized by complaints of excessive daytime somnolence, generally develops in adolescence or early adulthood, and is persistent. It is important to differentiate this from Upper Airway Resistance Syndrome, a variant of OSA. Stimulant medications are frequently used in treatment and are not compatible with aviation duty. Despite adequate treatment, it is difficult for patients to maintain adequate task performance. Waiver will not be considered for this diagnosis.

Narcolepsy: Narcolepsy affects 50-70 persons per 100,000. Peak onset occurs in the teens and the 25-30 year age group. The classical tetrad of symptoms includes excessive daytime sleepiness, cataplexy, hypnogogic hallucinations, and sleep paralysis, but not all of these are present in every individual. There is a 40-fold increased risk if there is an immediate family member with the disorder. EDS and sleep attacks are generally the first symptoms observed. Diagnosis is confirmed by sleep studies including a polysomnogram and a Multiple Sleep Latency Test (MSLT). The disorder is characterized by short sleep latencies and rapid-onset REM. Treatment consists of stimulants, which are not compatible with aviation duties. Waivers will not be considered for this diagnosis.

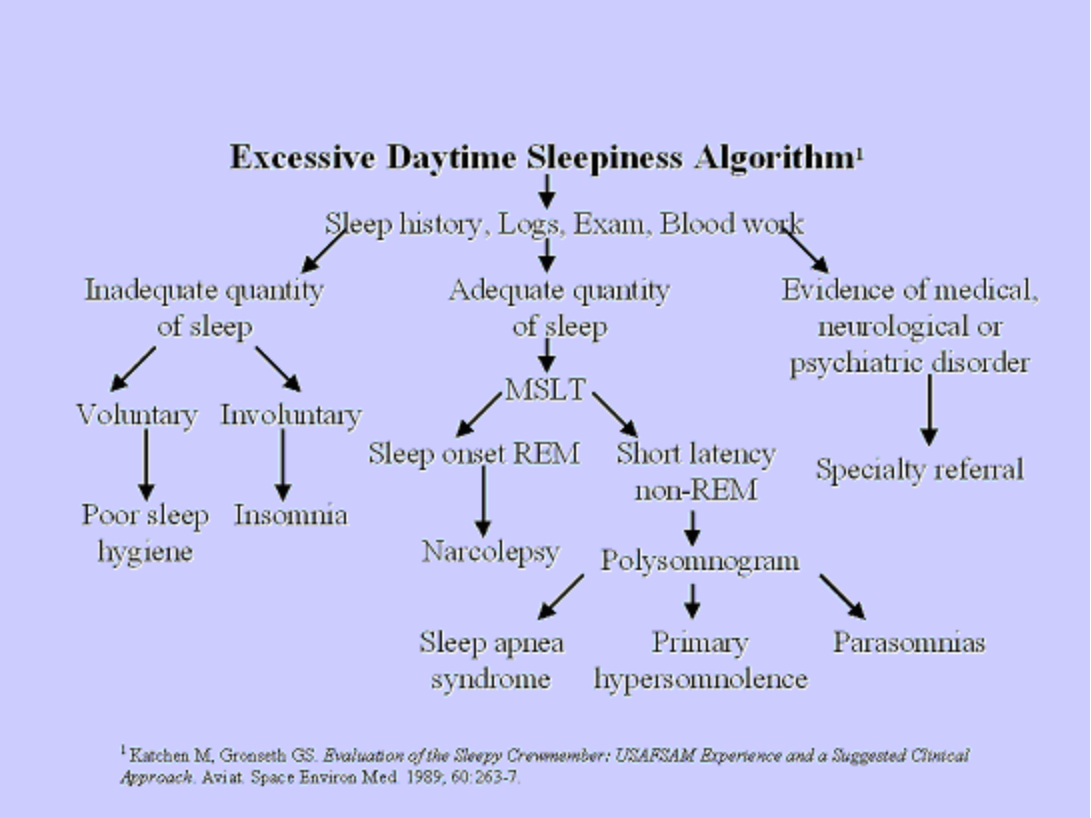
Periodic Limb Movement Disorder (PLM): This disorder is manifested by rhythmic nocturnal myoclonus of the arms and legs and may last minutes to hours. It occurs in the first half of the sleep period and may result in frequent arousals and sleep fragmentation. PLM is present in 17% of those having a polysomnogram for insomnia and can coexist with other sleep disorders including narcolepsy and sleep apnea. 11% of individuals with PLM complain of excessive daytime sleepiness. Treatment consists of benzodiazepines (e.g. clonazepam), which are not consistent with aviation duty. Waivers will not be considered for this diagnosis.

Restless Legs Syndrome (RLS): This disorder is manifested by uncomfortable leg sensations that occur at rest. Unlike PLM, night time awakenings in RLS are associated with conscious awareness of the limb movements. RLS affects up to 10% of the U.S. population and over 90% of patients with RLS report sleep disturbance. Despite this, RLS is typically under diagnosed. Only 30% of PLM patients have RLS, but 85% of cases with RLS will also have PLM. Waivers are not considered in patients with PLM. Primary idiopathic RLS manifests an early age and is associated with a better prognosis than secondary RLS. Secondary RLS may occur as a result of pregnancy, end stage renal disease, arthritis and iron deficiency. The severity of RLS symptoms correlates inversely with serum ferritin levels in iron deficient individuals. Iron and magnesium supplementation may resolve RLS, but iron supplementation is not therapeutic in

those individuals with ferritin levels above 50ng/mL. Beneficial lifestyle modifications include alterations in timing, duration and intensity of physical exercise, elimination of alcohol, caffeine and tobacco products as well as optimization of personal sleep hygiene. Stretching, hot baths, alternation of warm and cold soaks to the legs, engaging in mentally engrossing activity and cooling of the feet have also been reported to alleviate symptoms. Waivers are not considered for applicants. For designated aviators, vigilance testing and polysomnogram are required for waiver consideration. Underlying medical conditions in secondary RLS must be addressed. Medications such as opiates, tramadol, clonazepam, and dopaminergic agents such as levodopa, ropinirole and pramipexole, are not approved for waivers due to common side effects.

Circadian Rhythm Disorders: This refers to a series of disorders in which there is a disorganization of the regular daily alteration between sleep and wakefulness and its synchrony with the day-night cycle. These disorders can be classified as either persistent or transient. The persistent disorders include Delayed Sleep Phase Syndrome (DSPS), Advanced Sleep Phase Syndrome (ASPS), Non-24 hour Sleep Syndrome, and Irregular Sleep-Wake Syndrome. In DSPS, the circadian system is shifted markedly later than normal (e.g., unable to fall asleep before 3 am and cannot wake up before noon without extraordinary effort). This syndrome occurs in young to middle aged adults. DSPS has been estimated to occur in over 7% of adolescents. It should be noted that the remaining diagnoses are rare. ASPS occurs in the aged and is the exact opposite circadian shift seen in DSPS. In Non- 24 hour Sleep-Wake Syndrome, environmental cues fail to synchronize the internal sleep-wake rhythm with the day-night cycle. This results in the circadian rhythm being shifted 1-2 hours later each day, resulting in cyclical insomnia. Irregular Sleep-wake Syndrome represents a failure of the internal clock. It is manifested by random, scattered sleep-wake periods throughout the 24-hour period. This is usually associated with a tumor or other destructive neurological lesion. Transient conditions include Time-zone Change Syndrome or "Jet-Lag" and Shift-work Syndrome. Jet-Lag is a self-limiting and is NCD, but may necessitate grounding until re-synchrony occurs. The transient sleep disruptions and performance decrements seen in jet-lag may become chronic in the shift worker. Individuals affected severely enough to seek medical attention may best be treated by removal from the shift-work environment. In almost all cases this condition is not compatible with aviation duty and is CD, waiver not recommended. All persistent disorders are CD, but waiver may be considered in successfully treated cases. One should recognize that treatment of these disorders involves sleep schedule manipulations and successful treatment only occurs in a small percentage of individuals.

Medical Conditions that may disrupt normal sleep include depression (20%), post-viral fatigue syndrome, head injury, anemia, hypoglycemia, thyroid disease, drugs/alcohol, pain, GERD, and pulmonary disease, among others. Treatment of the medical condition generally resolves the sleep complaint.



*None of these conditions, by themselves, are an indication for Sleep Medicine referral without additional symptoms or other evidence suggestive of a sleep disorder.

ICD-9 CODES:
307.40 Nonorganic sleep disorder NOS
307.42 Persistent disorder of initiating or maintaining sleep
307.44 Primary Hypersomnia
307.45 Circadian Rhythm Sleep Disorder
307.46 Somnambulism or Night Terrors
333.94 Restless Legs Syndrome
347.00 Narcolepsy
780.57 Sleep Apnea, NOS
780.51 Insomnia with sleep apnea
780.52 Insomnia NEC
780.59 Other Sleep Disturbance

10.11 OBSTRUCTIVE SLEEP APNEA

Revised: 27 January 2015 Reviewed: 27 January 2015

AEROMEDICAL CONCERNS: The primary aeromedical concern is cognitive impairment due to Excessive Daytime Sleepiness (EDS), manifested by the inability to sustain attention to tasks, reduced reaction time, and poor executive function, including multitasking and situational awareness. Aviation personnel perform a variety of complex tasks requiring a high degree of mental and physical acuity. OSA causes Excessive Daytime Sleepiness (EDS) with demonstrable deficits in cognitive and psychomotor performance. By their nature, military aviation operations can impose sleep deficit and disruption even in healthy members due to shifting sleep-wake cycles, sustained wake periods, and circadian rhythm shifts with crossing time zones. With an underlying sleep disorder the potential for a critical effect on aviation safety and mission effectiveness is magnified substantially.

DISCUSSION: Obstructive sleep apnea (OSA) is a disorder of ventilation that occurs during sleep in which the soft tissues of the upper airway collapse during inspiration thereby obstructing or limiting air flow into the lungs. When the airway obstruction is of sufficient duration an arousal is triggered. Arousal facilitates adequate inspiration and the patient resumes sleep. This process repeats itself in a cyclical fashion and results in fragmented, non-restorative sleep. In severe cases, this cycle can occur hundreds of times over the course of the night.

Multiple factors contribute to tissue collapse and obstruction of the airway, including loss of pharyngeal muscle tone with sleep, the relative negative pressure of the airway with inspiration (Bernoulli effect), gravity when the member is supine, and excessive or redundant tissue, such as enlarged tonsils and polyps.

Individuals are typically amnestic to arousals and may be unaware that they have OSA. Clinical suspicion for OSA should arise when symptoms consistent with the disorder, such as EDS, are coupled with collateral information from a bed partner who witnesses prominent snoring, breathing interruptions, gasping or choking. It is often the bed partner who insists on a medical evaluation. Non-specific symptoms of OSA may include morning headache, dry mouth on awakening, irritability, impaired mental or emotional functioning.

The strongest risk factors for OSA include age, male gender, obesity, and certain craniofacial anatomic features and soft tissue abnormalities affecting the upper airway.

The American Academy of Sleep Medicine (AASM) considers the evidence that OSA is a risk factor for several chronic medical conditions to be substantial. These include systemic hypertension, coronary artery disease, congestive heart failure, and stroke. Moreover, accumulating evidence suggests that OSA is also a risk factor for type 2 diabetes, independent of obesity. Thus, while our primary aeromedical concern is the cognitive impairment that arises from sleepiness and mood disorders, OSA may also be an insidious contributor to potential events of sudden incapacitation such as myocardial infarction and stroke.

Clinical suspicion for OSA should prompt a referral to Sleep Medicine. If EDS is present, the member should be grounded until treatment results in resolution.

DIAGNOSIS: The International Classification of Sleep Disorders, 3rd Edition (ICSD-3), published in 2014 by the American Academy of Sleep Medicine, sets forth the following diagnostic criteria for OSA:

(A plus B) or C satisfies the criteria:

A: The presence of one or more of the following:

i. The patient complains of sleepiness, nonrestorative sleep, fatigue, or insomnia symptoms.

ii. The patient wakes with breath holding, gasping, or choking.

iii. The bed partner or other observer reports habitual snoring, breathing interruptions, or both during the patient's sleep.

iv. The patient has been diagnosed with hypertension, a mood disorder, cognitive dysfunction, coronary artery disease, stroke, congestive heart failure, atrial fibrillation or type 2 diabetes mellitus.

PLUS:

B: Polysomnography (PSG) or Out-of-Center Sleep Testing (OCST) demonstrates:

i. Five or more predominantly obstructive respiratory events (obstructive and mixed apneas, hypopneas, or respiratory effort related arousals [RERAs]) per hour of sleep during a PSG or per hour of monitoring (OCST).

OR

C: PSG or OCST demonstrates:

ii. Fifteen or more predominantly obstructive respiratory events (apneas, hypopneas, or RERAs) per hour of sleep during a PSG or per hour of monitoring (OCST).

Polysomnography (PSG) is the current standard for evaluation of suspected OSA, though both AASM and the Centers for Medicare and Medicaid Services (CMS) now consider Out-of Center Sleep Testing (OCST) an acceptable alternative to PSG for diagnosis of OSA.

Naval Aviation personnel who require aeromedical certification shall undergo PSG for evaluation of suspected OSA. Referral to a quality sleep medicine center required. (MTF vs civilian center preference should be consistent with TriCare access standards).

A PSG report from a sleep center documents an Apnea-Hypopnea Index (AHI) and/or a Respiratory Disturbance Index (RDI). AHI is calculated by dividing the total number of apnea and hypopnea events observed overnight by the number of hours of sleep recorded. If a RDI is documented, then Respiratory Effort Related Arousals (RERAs) were included in the calculation. An AHI or RDI greater than or equal to 5 is a prerequisite to a diagnosis of OSA though additional information is required for diagnosis (see below). An AHI or RDI greater than or equal to 15 is, by itself, diagnostic of OSA.

The Centers for Medicare & Medicaid Services (CMS) criteria for the diagnosis and treatment of OSA differs slightly from the ICSD-3, as follows: An AHI or RDI greater than or equal to 15 or, An AHI or RDI greater than or equal to 5, when the beneficiary has a documented co-morbidity related to OSA. The following conditions are recognized by CMS as co-morbidities related to OSA when present in this context:*

- Excessive Daytime Sleepiness/somnolence (EDS)
- Hypertension
- Ischemic heart disease
- History of stroke
- Impaired cognition
- Mood disorders
- Insomnia

A diagnosis of Upper Airway Resistance Syndrome (UARS) may be made by the sleep medicine specialist in cases when respiratory events are predominantly RERAs. While not causing hypoxia, RERAs result in sleep fragmentation and EDS. UARS has been subsumed under the OSA diagnosis in ICSD-3.

When sleep medicine consultation leads to a diagnosis of UARS, aeromedical standards and waiver requirements of OSA apply.

An OSA diagnosis is further classified according to severity according to the following:

Mild OSA = AHI or RDI ≥ 5 and < 15 with OSA symptoms or a co-morbidity
Moderate OSA = AHI or RDI ≥ 15 and ≤ 30
Severe OSA = AHI or RDI > 30

TREATMENT: Positive Airway Pressure (PAP) is the treatment of first choice in Moderate or Severe OSA and may be waivered for use by designated aviation personnel if sufficient efficacy is documented. Types of PAP include Continuous (CPAP), Bilevel (BiPAP), or Autotitrating (APAP), with or without pressure relief (reduction of pressure on exhalation).

PAP has been successfully deployed in the aircraft carrier and submarine environments. Approval for use of PAP aboard ship must be obtained from the Commanding Officer of the ship in advance (usually on recommendation of the Senior Medical Officer).

Alternatives to PAP may be indicated for selected patients with mild disease, though this is rare. These include surgical procedures to alter the anatomy and compliance of the upper airway, Oral Appliances (OA) worn during sleep, obligatory non-supine sleep in patients with strong positional exacerbation of respiratory events, weight loss, avoidance of alcohol, and combinations of these. Research into medical therapies is ongoing.

Hypoglossal nerve stimulation has recently been approved by the FDA for treatment of Moderate or Severe OSA where patients are unable to tolerate PAP. These devices are not currently authorized for use by aircrew.

A follow-up PSG is indicated at an appropriate interval after initiation of treatment to assess the results of surgical or OA treatment. If surgical treatment was undertaken, post-operative PSG should be delayed until healing is complete. If treated with an OA, a PSG must be done with the OA in place after final fit has been achieved.

WAIVER: Because of the persistent nature and impact on psychomotor and cognitive performance, OSA is considered disqualifying (CD). Waivers in designated personnel may be considered in cases when successfully treated. Waivers will not be considered in applicants.

INFORMATION REQUIRED:

1. Neurology/sleep specialist consultation with polysomnography (PSG). (MTF vs civilian center preference should be consistent with TriCare access standards).
2. PAP titration results (if applicable), performed). (MTF vs civilian center preference should be consistent with TriCare access standards).
3. Vigilance testing documentation:
   a. Maintenance of Wakefulness Test (MWT) 40-minute protocol., OR
   b. Formal neuropsychological evaluation that included a test of sustained attention performed). (MTF vs civilian center preference should be consistent with TriCare access standards) and after a minimum of one month of treatment

4. Statement that the member has no symptoms of daytime sleepiness
5. Positive Airway Pressure compliance data based on machine data, showing ≥5 hours of use on 90% of nights since initiation (if applicable). Obtain after one month of treatment minimum.
6. Objective weight measurement
7. Documentation and assessment of the presence or absence of other medical conditions known to be associated with OSA, for example:
   a. Excessive Daytime Sleepiness/somnolence (EDS)
   b. Impaired cognition
   c. Hypertension
   d. Mood disorders or insomnia
   e. Ischemic heart disease
   f. History of stroke

VIGILANCE TESTING: The defacto standard for measuring sustained alertness where public safety is concerned is the Maintenance of Wakefulness Test (MWT). Although a Mean Sleep Latency (MSL) of 30.4 +/- 11.2 minutes is considered normal for the general population, treated aircrew members have historically demonstrated the ability to stay awake for all 40 minutes of each of the 4 trials of the MWT. Research has shown significantly more lapses in attention in drivers whose MSL was less than 33 minutes. Accordingly, the minimum MSL standard for aeromedical waiver eligibility is ≥ 35 minutes.

If a MWT cannot be obtained, vigilance may be assessed with a Neuropsychological evaluation that includes a test of sustained attention, such as the Connor's Continuous Performance Test (CPT-II). The report should address how vigilance was assessed, as well as how the patient performed on measures of executive function.

The Multiple Sleep Latency Test (MSLT) is not a test of sustained vigilance and will not support an aeromedical waiver.

An aviator's self-report is not sufficient evidence of adequate alertness for initial aeromedical waiver.

WAIVER CONTINUATION: Annual submission shall include documentation that the aircrew member:
1. continues to be free of symptoms of EDS,
2. continues to satisfy treatment compliance standards (if applicable),
3. has not gained more than 10% of their body weight at the time of OSA diagnosis, and,
4. has not, since the previous submission, developed or experienced relapse or exacerbation of an OSA-related co-morbidity (see above).

If any of the above conditions are not met the aviator should be re-evaluated for exacerbation of OSA and adjustments to treatment, if indicated. Grounding is appropriate until treatment is optimized, compliance is confirmed, and adequate vigilance is again demonstrated.

ICD-9 CODES:
307.42 Persistent disorder of initiating or maintaining sleep
780.57 Sleep Apnea, NOS
780.51 Insomnia with sleep apnea
780.59 Other Sleep Disturbance

10.12 TRANSIENT ISCHEMIC ATTACK (TIA)

Revised 30 July 2014 Reviewed 15 August 2014

AEROMEDICAL CONCERNS: The symptoms develop abruptly and are unrelated to any particular activity. Symptoms depend on the distribution of the blood vessel concerned and can range from distracting to incapacitating.

WAIVER: TIA's are permanently disqualifying.

INFORMATION REQUIRED:

1. Neurology consultation
2. MRI scan
3. ECHO (to include bubble-contrast and if negative, trans-esophageal ECHO)
4. Cerebral angiography
5. ESR
6. Lupus anticoagulant
7. Antiphospholipid antibodies
8. CBC (including platelet count)
9. Coagulation studies (PT, PTT)
10. Protein S
11. Homocysteine levels

TREATMENT: Treatment depends upon the underlying cause, if identified. If no surgically correctable etiology, then ASA, low-dose Coumadin, or ticlopidine may be appropriate. Life-style changes and treatment of risk factors (smoking, obesity, HBP, diabetes, hyperlipidemia, alcohol excess, sedentary behavior) need be explored.

DISCUSSION: About 25% of patients with TIA do not appear to have any identifiable serious disease. Approximately 30% have a potential cardiac cause and diabetes is present in 6-28% of patients with TIA. The risk of developing cerebral infarction following TIA is 5-7% a year, with a further 5% a year developing myocardial infarction. The risk of stroke and/or death is 10% a year. These risks rise with age, blood pressure, and the presence of ischemic heart disease. In cases of purely retinal TIA (amaurosis fugax), the 7 year cumulative rate of cerebral infarction is 14% and the 5 year cumulative rate of recurrence is 37%.

ICD-9 CODE:
435.9 Transient Ischemic Attack (TIA)

10.13 TRAUMATIC BRAIN INJURY - MINOR

Revised 30 July 2014 Reviewed 15 August 2014

Total duration of Loss of consciousness (LOC), Alteration of consciousness (AOC), and Post-traumatic amnesia (PTA) less than 5 (five) minutes, with normal neuroimaging (Head CT or Brain MRI).

AEROMEDICAL CONCERNS: This category of TBI poses little risk to the future health of the aircrew member aviator, but the potential for mild post-concussive syndrome (PCS) symptoms does exist. A thorough history of symptoms and careful neurological examination by the flight surgeon are the standard.

WAIVER: If the member is asymptomatic and the exam is normal, this condition is NCD. NO waiver is required.

INFORMATION REQUIRED: A thorough neurological examination must be completed and documented; this applies to ALL TBI cases. This information includes:

1. Alertness and orientation (mental status exam if indicated)
2. Cranial nerves I – XII
3. Motor strength
4. Sensation (detailed if indicated; light touch, pinprick, vibration, proprioception)
5. Gait
6. Cerebellar testing (e.g. rapid alternating movement, Romberg, finger-nose)
7. Reflexes (including Babinski, frontal release signs, etc., if indicated)

ICD-9 CODE:
854.01 Traumatic Brain injury - Minor

10.14 TRAUMATIC BRAIN INJURY - MILD

Revised 30 July 2014 Reviewed 15 August 2014

DEFINED AS:

- GCS >12 on initial assessment, and
- Loss of Consciousness 5-30min, and
- Post-traumatic Amnesia <= 1hr, and
- Alteration of Consciousness <= 24 hrs, and
- Negative Brain Imaging. Findings on brain imaging attributable to the injury precludes a diagnosis of Mild TBI.

**Consider upgrading an otherwise MILD TBI patient who was HOSPITALIZED to MODERATE TBI, given the increased risk for developing post-traumatic epilepsy (PTE) in that patient population.

AEROMEDICAL CONCERNS:

1. Post-concussive symptoms that may be distracting or adversely impact performance, e.g.,
   - Headaches
   - Dizziness
   - Memory/concentration difficulties
   - Sleep disturbances
   - Affective symptoms
   - Fatigue
2. Cognitive impairment.
3. Increased risk of seizure (minimal for Mild TBI).

Clinically these may appear to be mild injuries, although a surprising percentage of these patients (up to 11%) have significant craniocerebral damage (basilar skull fractures, linear as well as depressed skull fractures, sinus fractures, intracranial hemorrhages, fronto-temporal contusions), which would upgrade the severity level of their injury.

WAIVER: A waiver for a designated aircrew member will be considered as soon as the required work-up is complete providing the member is asymptomatic. Applicants will be considered two (2) years post injury if the examining Flight Surgeon is satisfied with his/her own detailed evaluation.

INFORMATION REQUIRED:

1. Neurology consultation
2. Comprehensive neuropsychological evaluation (including cognitive and affective symptom testing). If evidence of a mood/anxiety disorder, Psychiatry/Psychology/Mental/Behavioral Health consultation .
3. Brain imaging study (CT or MRI)

TREATMENT: Current VA/DoD Clinical Practice Guidelines for the assessment, management, and disposition of mild TBI is available at: http://www.dvbic.org/. These represent an evidence-based, regularly updated approach to TBI, but are applicable to the general military population. They should be adapted as appropriate for aeromedical risk management.

DISCUSSION: Immediate seizures (within seconds to minutes of injury, often referred to as "concussive convulsions") are not a factor in determining the risk for the development of post-traumatic epilepsy (PTE). The risk of developing PTE is not appreciably greater in the mildly head injured population than in the general population. There is a risk of post-traumatic cognitive problems (e.g. memory and information processing skills), and recovery should be documented prior to requesting a waiver.

ICD-9 CODE:
854.02 Traumatic brain injury – Mild

10.15 TRAUMATIC BRAIN INJURY – MODERATE

Revised 30 July 2014 Reviewed 15 August 2014

DEFINED AS:

- GCS 9-12 on initial assessment, or
- Loss of Consciousness 30min-24hr, or
- Post-traumatic Amnesia 1-24hr.
- Total duration of altered Consciousness > 24hrs precludes a diagnosis of Mild TBI
- Negative or Positive Brain Imaging. Findings on brain imaging attributable to the injury precludes a diagnosis of Mild TBI.

**Consider upgrading an otherwise MILD TBI patient who was HOSPITALIZED to MODERATE TBI, given the increased risk for developing post-traumatic epilepsy (PTE) in that patient population.

AEROMEDICAL CONCERNS:

1. Post-concussive symptoms that may be distracting or adversely impact performance, e.g.,
   - Headaches
   - Dizziness
   - Memory/concentration difficulties
   - Sleep disturbances
   - Affective symptoms
   - Fatigue
2. Cognitive impairment.
3. Increased risk of seizure.

WAIVER: May be considered for a waiver after 12 months have elapsed since the time of injury. Applicants will be considered three (3) years post-injury if the examining Flight Surgeon is satisfied with his/her own detailed evaluation.

INFORMATION REQUIRED:

1. Neurology consultation
2. Comprehensive neuropsychological evaluation (including cognitive and affective symptom testing). If evidence of a mood/anxiety disorder, Psychiatry/Psychology/Mental/Behavioral Health consultation.
3. Brain imaging study (MRI)

TREATMENT: These patients should undergo initial CT scanning, and repeat scanning within 12 hours of the injury to detect “delayed” or progressive intracranial damage that would warrant a change of therapy. Medical management should be performed by Emergency Medicine, Internal Medicine, and/or Critical Care providers, according to the current standard of care. Neurosurgical management as indicated.

DISCUSSION: The risk of PTE in cases of moderate head injury at one and five years is 0.6% and 1.6%, respectively. Of those individuals who develop PTE, 80% do so within the first two years. The risk then declines to equal that of the normal population by 10 years post-injury.

ICD-9 CODE:
854.02
854.03

10.16 TRAUMATIC BRAIN INJURY – SEVERE

Revised 30 July 2014 Reviewed 15 August 2014

DEFINED AS:

- GCS 3-8 on initial assessment, or
- Loss of Consciousness >24hr, or
- Post-traumatic Amnesia >=24hr, or
- Total Alteration of Consciousness > 24hrs, or
- Brain Imaging with significant findings attributable to the injury.

AEROMEDICAL CONCERNS:

1. Post-concussive symptoms that may be distracting or adversely impact performance, e.g.,
   - Headaches
   - Dizziness
   - Memory/concentration difficulties
   - Sleep disturbances
   - Affective symptoms
   - Fatigue
2. Cognitive impairment.
3. Increased risk of seizure.

In cases of severe traumatic brain injury, there are greater risks for the development of post-traumatic epilepsy (PTE) and the persistence of permanent neurological and neuropsychological sequelae.

WAIVER: After 30 months' grounding, designated personnel may be considered for waiver on a case-by-case basis. Applicants could be considered for waiver five (5) years post injury on a case-by-case basis with all supporting documentation of injury and a detailed Neurological examination.

INFORMATION REQUIRED:

1. Neurology consultation
2. Comprehensive neuropsychological evaluation (including cognitive and affective symptom testing). If evidence of a mood/anxiety disorder, Psychiatry/Psychology/Mental/Behavioral Health consultation.
3. Brain imaging study (MRI for waiver consideration)

Note that EEGs are no longer required as they have very poor predictive value for PTE.

ICD-9 CODE:
854.04

10.17 TRAUMATIC BRAIN INJURY – PERMANENTLY DISQUALIFIED

Revised 30 July 2014 | Reviewed 15 August 2014

Permanently disqualifying for all aviation personnel (designated, student, or applicant):

1. Depressed skull fracture with LOC > 5 minutes
2. PTS > one month
3. LOC & PTA > 1 month
4. CSF leak > 7 days
5. Any intracranial bleeding (SDH, EDH, ICH, IVH, SAH)*
6. Dural penetration (traumatic or surgical)
7. Post-traumatic seizures

AEROMEDICAL CONCERNS: These patients are likely to have permanent, disabling residual neurological and neuropsychological impairments as well as an unacceptably high risk for Post-Traumatic Seizures (PTE).*

WAIVER: These members are permanently NPQ, no waiver.

TREATMENT: In addition to neuro-ICU and neurosurgical care, these patients require long-term neuro-rehab care as well.

*Glossary
SDH = Subdural Hematoma
EDH = Epidural Hematoma
ICH = Intracranial Hemorrhage
IVH = Intraventricular Hemorrhage
SAH = Subarachnoid Hemorrhage

ICD-9 CODE:
854.0 Traumatic Brain Injury - Permanently Disqualified

10.18 SUMMARY: AEROMEDICAL DISPOSITION OF TRAUMATIC BRAIN INJURIES

Revised 30 July 2014 Reviewed 15 August 2014

Severity Ratings (assign severity according to highest criteria):

Severity	GCS	AOC	LOC	PTA	Imaging
Mild	13-15	<=24 hours	5-30 minutes	<= 1 hour	Negative
Moderate	9-12	>24 hours	>30 minutes, <24 hours	>1 hour, <24 hours	Negative or Positive
Severe	3-8	>24 hours	>=24 hours	>=24 hours	Negative or Positive

Aeromedical Disposition for designated aviation personnel:

Severity	FS Eval	Neurology Consul	Neuropsych Eval	Neuroimaging Study	Eligibility
Minor	X	--	--	CT or MRI	NCD if FS evaluation normal
Mild	X	X	X	CT or MRI	LBFS when workup complete
Moderate	X	X	X	MRI	NAMI review at 12 months
Severe	X	X	X	MRI	NAMI review at 30 months
Penetrating	--	--	--	--	No waiver

NOTES:

- In all but minor injuries, submission of pertinent contemporaneous medical records is required.
- Waiver eligibility times are contingent on acceptable workup results. Otherwise, additional time will be required.
- Any abnormalities or irregularities must be reviewed at NAMI (submit actual films or studies).
- Applicants with a **history of M*ild* TBI** more than **2 years** previously require only a normal detailed neurological examination by a Flight Surgeon to satisfy waiver criteria.
- Applicants with a **history of M*oderate* TBI** more than **3 years** previously require only a normal detailed neurological examination by a Flight Surgeon to satisfy waiver criteria.
- Applicants with a history of S***evere* TBI** more than **5 years** from injury will be considered for waiver on a case-by-case basis with all supporting documentation of injury and a detailed Neurological examination.

11.0 OBSTETRICS AND GYNECOLOGY

Last Revised: Jan 2015 Last Reviewed: Jan 2015

11.1 CHRONIC PELVIC PAIN

AEROMEDICAL CONCERNS: Chronic recurrent pain can be a distraction in flight and may occasionally cause incapacitation. Chronic pelvic pain is defined as pelvic pain present throughout most of the menstrual cycle for 3 or more months. The causes of chronic pelvic pain include gynecological etiology, GI tract, urinary tract, musculoskeletal, and psychiatric conditions. Aircrew should be grounded during a work-up for chronic pelvic pain until the etiology is known and the condition is controlled. Waivers may be considered for the individual causes.

WAIVER: Chronic pelvic pain is CD. Waiver recommendations will be highly individualized depending on cause and degree of treatment.

INFORMATION REQUIRED:

1. Full gynecological evaluation
2. GI consult (as appropriate)
3. Orthopedic consult (as appropriate)
4. Psychiatry consult (as appropriate)

TREATMENT: If chronic pelvic pain is of gynecologic etiology, more than 50% of cases will be controlled with NSAIDS and oral contraceptives. Laparoscopy may be required for diagnosis and treatment. Therapy should be directed at the cause and, if successful, a waiver should be recommended.

DISCUSSION: Gynecological causes for chronic pelvic pain include:

- Endometriosis
- Dysmenorrhea
- Adhesive disease
- Uterine fibroids
- Ovarian cysts
- Adenomyosis
- Pelvic Inflammatory Disease/Infection

11.2 DYSPLASIA

Last Revised: Nov 14 Last Reviewed: Jun 14

AEROMEDICAL CONCERNS: The aeromedical hazards of cervical dysplasia and glandular cervical changes involve the distraction of knowing a precancerous condition is present, the requirements for specialized follow up and treatment, and the actual risk of developing a cancerous condition. For **squamous cervical dysplasia**, there is a high likelihood of its regression in mild cases and the rate of progression in all cases is generally slow. Currently, the appropriate screening interval for squamous cervical dysplasia is based on age and the screening method. Ignored or inappropriately evaluated cervical changes can allow progression to severe dysplasia in a few years, or cancer within several years. Progression to severe dysplasia or cancer will require more significant treatment. The severity of dysplasia affects the monitoring, management, and treatment requirements, which in turn, may affect deployability. While squamous dysplasia is more effectively treated and progresses in a more predictable course, **glandular cervical changes** are more unpredictable and progress to cancer more commonly.

Because of the evidence regarding age differences for HPV infection, and the persistence, spontaneous resolution, and progression of dysplasia, the American College of Obstetricians and Gynecologists (ACOG), the American Society for Colposcopy and Cervical Pathology (ASCCP), and the American Society of Clinical Pathologists (ASCP) have changed screening guidelines based on the age groups of under 21, 21-29, and 30-65. These guidelines recommend that Pap smear screening of otherwise healthy women begin at age 21 regardless of the age of sexual initiation, then every 3 years until age 30, then every 3-5 years (depending on use of HPV testing) until age 65. MANMED directs Pap smears to be performed starting at age 21, then every three years until age 30 in women with normal Pap Smears. After age 30, screening of women with normal Pap smears is done every three years, or extended to every 5 years if HR-HPV Co-Testing is used. Identification of HPV or dysplasia changes the management and surveillance. Underlying conditions such as HIV or immunosuppression can increase the surveillance to every six months. These guidelines are based on the accumulating evidence and are designed to decrease unnecessary screenings, decrease invasive procedures to the cervix, and reduce adverse effects from the procedures.

Squamous cervical dysplasia involves precancerous changes to squamous cells of the uterine cervix and is associated with human papilloma virus infection (HPV). HPV types include oncogenic (high-risk) and non-oncogenic. Most HPV infections affecting the cervix are non-oncogenic and often resolve spontaneously within one year. As the HPV infection resolves, the dysplasia resolves as well. Infection with high-risk HPV is usually necessary, but not sufficient for the development of cervical squamous intraepithelial neoplasia. HPV-16 and 18 are the most common subtypes associated with cervical cancer and are considered high-risk HPV (HR-HPV). The likelihood of progression to cervical cancer is 55-60% HPV-16, and 10-15% with HPV-18. These two subtypes are included in the available HPV vaccination. HPV infections of all types are most common in women in their teens and twenties. In most women with a normal immune system, especially those under age twenty-one, the HPV infection will resolve spontaneously within 8 months and the average time to eliminate the virus is 8-12 months. An apparent persistence of HPV in this age group more commonly represents reinfection as opposed to persistent infection. As women age, the prevalence of HPV infection decreases. When dysplasia is newly diagnosed after age 30, it is more likely to be persistent. The average time for untreated HGSIL (HSIL) to progress to invasive cancer is 3-7 years. Cofactors that increase the likelihood of a persistent HPV infection and dysplasia include tobacco use, immune

deficiency, and human immunodeficiency virus (HIV). Women with + HIV status require dysplasia screening more frequently than the routine screening recommendations for the general population.

Dysplasia is graded as cervical intraepithelial neoplasia I, II, III (CIN I-III) or carcinoma in-situ (CIS). Dysplasia is more commonly described as low grade squamous intraepithelial neoplasia (LGSIL, LSIL), high grade intraepithelial neoplasia (HGSIL, HSIL), and CIS. In some cases, both systems are used for description. LGSIL includes CIN I and + high risk HPV, whereas HGSIL includes CIN II and CIN III. The higher the grade, the more likely and more quickly the dysplasia will progress to cancer. Atypical squamous cells (ASC) of undetermined significance (ASCUS, ASC-US) include cervical changes that are uncertain of the presence of HPV or grade of any dysplasia that may be present. ASCUS can be associated with inflammatory changes in a cervix with underlying changes that range from no dysplasia to HGSIL. For this reason, ASCUS findings are usually managed based on high-risk HPV reflex testing. When high-risk HPV is present (ASC-H), it is evaluated and managed as dysplasia. When high-risk HPV is absent, it is generally managed with observation.

HPV Type Testing (Reflex Testing and Co-Testing): HPV is the cause of squamous cervical dysplasia. HPV is considered necessary, but not sufficient for cancer. HPV 16 and HPV 18 types are associated with the highest risk for progression to cervical cancer. These types are considered high risk and are included in HPV testing. High risk HPV (HR-HPV) typing is used in two ways: Reflex Testing and Co-Testing. **HR-HPV Reflex Testing** is used in cases of ASCUS *in all age groups* to determine the presence of dysplasia. ASCUS with a positive HR-HPV reflex test (also called ASC-H) is managed as LGSIL. ASCUS with a negative HR-HPV is managed as no dysplasia. **HR-HPV Co-Testing** is part of a screening method used only for women over age 30. Women younger than age 30 are more likely to have recurrent HPV infections that resolve and as such, Co-Testing is not used in this group. In women aged 30 and older, HR-HPV Co-Testing can be used in conjunction with Pap smear cytology. When both are used and both are negative, the routine screening interval in this age group is every five years. When Pap cytology only is used in this group, routine screening is every 3 years. MANMED Chapter 15 explains that HPV testing (Co-Testing) should not be used in women under age 30. In MANMED Chapter 15, the algorithm for abnormal Pap describes using HR-HPV testing (Reflex Testing) for ASCUS identified at any age.

Atypical Glandular Changes (AGC) are less common, but are significantly different from squamous changes and have a more significant cancer risk and aeromedical hazard that require separate consideration. These changes involve glandular cells of the cervix and endometrium, which are occasionally identified on routine cervical screening. These more concerning glandular changes can occur in association with squamous dysplasia. The types of glandular changes reported include atypical glandular cells-not otherwise specified (AGC-NOS), atypical glandular cells-favor neoplasia, and adenocarcinoma in-situ (AIS). These glandular changes require more significant evaluation, often with a Gynecological Oncologist, since they are associated with greater risk of cancer and recurrence.

Most squamous dysplasia regresses spontaneously and some progress gradually (years) and in a contiguous pattern. In contrast, AIS is associated with skip lesions affecting various areas of the cervix and endometrium. As such, a careful specialty evaluation requires HPV testing, colposcopy with biopsies as indicated, and sampling of the endometrium. Recurrence of AIS and its progression to adenocarcinoma are common and unpredictable. The definitive treatment of choice is hysterectomy. Cervical excision is not considered definitive. Fertility preserving management strategies require close specialized follow up for recurrence or

progression. If child bearing is desired, then an early attempt is recommended to successfully accomplish it prior to recurrence.

AIS is considered disqualifying. Waivers for AIS without definitive treatment are considered on a case-by-case basis, but are uncommon due to the required monitoring, and uncertainty (with high likelihood) of progression, recurrence, and concurrent adenocarcinoma. A history of AIS that has been definitively treated with hysterectomy is not considered disqualifying.

CERVICAL CONDITIONS:
-Cervical dysplasia confirmed as **greater than** LGSIL (CIN I) is considered disqualifying. This includes: HGSIL (CIN II and III), CIS, and cervical cancer.
-ASCUS without adequate evaluation (absent HR-HPV screen and indicated evaluation) is CD.
-ASCUS that is fully evaluated and found to have no HR-HPV is NCD.
-LGSIL (CIN I and ASC+High-risk HPV) is NCD.
-HGSIL (CIN II-III) is CD.
-CIS is CD.
-History of HGSIL (CIN II-III) and/or CIS fully treated and resolved is NCD.
-AGC without adequate specialized evaluation and confirmation is CD.
-History of AGC, fully evaluated (treated if necessary), resolved and without AIS is NCD.
-AIS untreated or treated without hysterectomy is CD.
-History of AIS definitively treated with hysterectomy is NCD.

WAIVER:

1. **Untrained** –Waivers are required while in training for any abnormal PAP results to facilitate and ensure adequate follow-ups are obtained as recommended. Submit an AMS with all available documentation and lab results for NAMI review.
   a. ASCUS, ASC without adequate evaluation: No waiver considered without HPV Reflex Testing. Requires HR-HPV Reflex Testing and further evaluation as indicated.
      ASCUS, ASC-US with a negative HR-HPV is NCD.
   b. LGSIL, LSIL or ASC-H: (CIN I and positive HR-HPV): Requires evaluation and follow-up. LGSIL and ASC-H evaluated as indicated and without more advanced dysplasia is NCD.
   c. HGSIL or HSIL: (CIN II-III): incompletely evaluated: No waiver. Requires definitive evaluation. Waivers considered when fully evaluated and treated if necessary.
   d. CIS: Requires definitive evaluation. Waivers considered when fully evaluated and treated.
   e. AGC incompletely evaluated. No waiver. Requires definitive evaluation. Waivers may be considered when fully evaluated and treated if necessary.
   f. AIS untreated or treated without hysterectomy: Requires definitive evaluation. No waiver. AIS fully treated with hysterectomy is NCD.
   g. Squamous carcinoma or adenocarcinoma: Waivers are considered on a case-by-case basis. See Chapter 9, Malignancies.

2. **Designated**
   a. ASCUS: Requires HPV screen and further evaluation as indicated. Continue flight duties while completing evaluation. ASCUS with a negative HR is NCD.
   b. LGSIL (CIN I and High-risk HPV): Requires evaluation and follow-up. Continue flight duties while completing evaluation. LGSIL evaluated as indicated and without more advanced dysplasia is NCD.

c. HGSIL (CIN II-III): Requires definitive evaluation. Continue flight duties while completing definitive evaluation. Waivers considered when fully evaluated and treated if necessary.
d. CIS: Requires definitive evaluation. Continue flight duties while completing definitive evaluation and treatment. A history of CIS fully treated without residual CIS or HGSIL is NCD.
e. AGC: Requires definitive evaluation. Continue flight duties while completing definitive evaluation. Waivers are considered when fully evaluated and treated if necessary.
f. AIS untreated or treated without hysterectomy: Requires definitive evaluation. Waivers are considered on a case by case basis. AIS fully treated with hysterectomy is NCD.
g. Squamous or adenocarcinoma carcinoma: Waivers are considered on a case-by-case basis. See Chapter 9, Malignancies.

INFORMATION REQUIRED:

1. **Initial waiver**
   a. Gynecological notes (including oncology notes when involved) from diagnosis, treatment, and post-treatment.
   b. Radiological reports if performed for the condition.
   c. Pathology reports before, during, and after treatment.
   d. Follow-up as recommended by the treating Gynecologist

2. **Renewal**
   a. Gynecological notes (including oncology notes when involved) of follow-up and condition status
   b. Interval radiological reports if performed for the condition.
   c. Pathology reports from interval evaluations.
   d. Follow-up as recommended by the treating Gynecologist

TREATMENT: Dysplasia may require frequent colposcopy, biopsy, and increased frequency of evaluations. High-grade squamous intraepithelial lesions (HGSIL) require colposcopy and may need surgical treatment (LEEP, cold knife conization (CKC)). Evaluation of HGSIL is not emergent and should be performed within 2-4 months. LGSIL may require colposcopy to confirm that more advanced dysplasia is not present. Repeat evaluations are performed as recommended by ACOG. CIS requires cervical sampling with a CKC or LEEP and is typically followed with a gynecological oncologist. AGUS and AIS require a more thorough evaluation of the cervix and endometrium. The definitive treatment for AIS is hysterectomy, but this treatment may be delayed for child bearing after a thorough evaluation by a gynecological oncologist.

DISCUSSION: The recommendations for routine Pap smear screening have decreased in frequency based on age-specific evidence. This addresses the age-specific recurrent HPV infections that commonly resolve spontaneously, and differentiates recurrences from the more concerning persistence. These changes have reduced the likelihood of unnecessary cervical procedures, especially for younger women, and the potential side effects they can induce. It also utilizes screening for high risk HPV types (Co-Testing) to reduce screening frequency only for women over age 30 with normal Pap smears. HPV type testing (Reflex Testing) is used in all age groups to evaluate and manage ASCUS. Military women can be considered in a high risk subgroup, and considering the possibility of deployment or training cycles, a greater vigilance is necessary within the guidelines. In addressing the risk of HPV/dysplasia recurrences, preventive measures include appropriate sexual practices, barrier use, and

vaccination. Dysplasia of all types, especially HGSIL, still requires appropriate assessment, treatment, and follow-up with military training and deployment consideration. AGC and AIS are occasionally identified through routine evaluations. These glandular changes are significantly different from the more common squamous dysplasia and require different and specific evaluation and treatment to address their greater risk.

ICD-9 CODES:

Histological	**Bethesda System**
622.10 Cervical dysplasia, NOS	**795.00 AGCUS**
622.11 CIN I, mild dysplasia	**795.01 ASCUS**
622.12 CIN II, moderate dysplasia	**795.02 ASCUS +HG HPV (ASC-H)**
233.1 CIN III, severe dysplasia	**795.03 LGSIL**
233.1 CIS, cervix uteri	**795.04 HGSIL**
233.1 AIS, of cervix	**795.05 High-risk HPV**

180.1 Malignant neoplasm of the cervix (squamous)

Reference

New Cervical Cancer Screening Recommendations from the U.S. Preventive Services Task Force and the American Cancer Society/American Society for Colposcopy and Cervical Pathology/American Society for Clinical Pathology, March 14, 2012, https://www.acog.org/About-ACOG/News-Room/News-Releases/2012/Medical-Groups-Release-New-Cervical-Screening-Guidance

11.3 ENDOMETRIOSIS

Last Revised: Nov 14 | Last Reviewed: Nov 14

AEROMEDICAL CONCERNS: Endometriosis occurs when the endometrial tissue proliferates outside the endometrial cavity. The ectopic endometrial implants are most commonly located in the pelvis and abdomen, but can occur elsewhere in the body. It is associated with cyclic menstrual pains, non-cyclic pains, ovarian cysts, infertility, and symptomatic adhesive disease. While variable and unpredictable, the condition and its symptoms typically progress over time. The disease affects 5-10% of reproductive aged women and occurs most commonly between the ages of 25 and 29 and a familial tendency has been identified. Endometriosis is the cause in a significant portion (15%) of women with pelvic pain. The pain is typically located in the pelvis and lower abdomen, but also in the lower back. The pain can be exacerbated by exercise, intercourse, micturition, or defecation. Pain is the most common symptom associated with endometriosis and approximately three quarters of symptomatic patients experience pelvic pain and/or dysmenorrhea. The range of symptoms include: chronic pelvic pain, dysmenorrhea, deep dyspareunia, infertility, abnormal menstrual bleeding, chronic fatigue, low back pain, bloating, and bowel or bladder symptoms. These symptoms usually occur in a monthly cyclical pattern in association with the menstrual cycle. The ectopic endometrial tissue of endometriosis responds to the woman's hormonal milieu in the same manner as the endometrium, whether it is proliferating or menstruating. Since the endometriosis implants are embedded in atypical locations, these cyclic changes play an integral role in the associated symptoms and sequelae. These changes are the underlying cause of the cyclic symptoms and subsequently lead to symptomatic abdominal and pelvic adhesions. Menorrhagia is often associated with endometriosis and may lead to an anemia. The dysmenorrhea, pelvic pain, and backache can be distracting and unexpected in the flying environment, while an anemia may affect flight performance and G-tolerance.

TREATMENT: Endometriosis proliferates in response to estrogen and may be suppressed in response to progesterone in a similar fashion to the responses of the endometrium. The diagnosis is generally confirmed surgically, but may be made empirically. Treatment is focused on inhibiting estrogen exposure on the endometriosis. Hormonal contraceptives (including estrogen containing) are the first-line of therapy and can be very effective in controlling symptoms and disease progression. Progesterone-only contraceptives are preferred and can be effective cases that fail estrogen containing contraceptives. The more advanced medical treatments include medications that fully suppress ovarian estrogen and induce a medical menopause. Gonadotropin releasing hormonal analogs fully suppress the ovaries as a reversible medical oophorectomy. These medications are administered in a cyclic fashion and are associated with significant menopausal symptoms including mood, vasomotor, vaginal, and dermatological symptoms. These symptoms are variable within and across individuals making them unpredictable in the flight environment. Other medical treatments include aromatase inhibitors that can have similar adverse side effects in unpredictable patterns. Surgical exploration and treatment may be required before, during, or after medical therapy. Minor surgical treatments can improve the condition, but more extensive surgery may be required. Unilateral/bilateral oophorectomy, hysterectomy, and/or adhesionolysis can be beneficial or curative.

WAIVER: Current or history of endometriosis is disqualifying for all aviation duties. Mild endometriosis, which requires only mild analgesia and hormonal contraceptives, is considered for waiver with evidence of persistent pain control and medication tolerance. Treatment with long acting, reversible, systemic progesterone-only hormonal contraceptives is preferential in

many cases and when oral contraceptives have been ineffective. Progesterone emitting intrauterine devices provide a local inhibiting effect on the endometrium and may not be as effective for control of endometriosis symptoms. Treatment with Gn-RH analogs or aromatase inhibitors is associated with more unpredictable adverse side effects and are typically not considered for waiver.

With the diagnosis of endometriosis, continuation of the oral contraceptives (or other hormonal suppression medication) is recommended to reduce the risk of symptom recurrence and endometriosis progression. The use of any medication requires supervision by a Flight Surgeon. For more recalcitrant cases, a waiver can be recommended when the symptoms are controlled; recommendations will be on a case-by-case basis depending on symptoms and medications.

INFORMATION REQUIRED:
Initial and renewal:

1. Gynecology evaluation
2. History of symptoms and treatments
3. Notes regarding diagnostic and treatment procedures
4. Pertinent labs and hematocrit
5. Evidence of sustained treatment tolerance
6. Evidence of sustained symptom control

DISCUSSION: Endometriosis symptoms often begin in the late teens in a periodic fashion with the menstrual cycle. The symptoms may begin as mild, responding well to hormonal contraceptive treatment, and may elude early diagnosis. Endometriosis is typically persistent and progressive. Over time, the disease generally progresses and can cause the development of abdominal and pelvic adhesions, which induce additional non-cyclic symptoms independent of the menstrual cycle. Its adverse symptoms are variable and unpredictable. The disease progression often results in the need for additional diagnostic/therapeutic surgical procedures, medication adjustments, and subsequent re-evaluations.

ICD-9 CODES:
617 Endometriosis
617.0 Endometriosis of uterus
617.9 Endometriosis, site unspecified

11.4 HORMONAL REPLACEMENT THERAPY AND CONTRACEPTION

Last Revised: Jan 2015 Last Reviewed: Jan 2015

DEFINITION: Hormonal replacement therapy and contraception includes birth control, estrogen replacement therapy, and hormone replacement therapy.

AEROMEDICAL CONCERNS: Alterations of hormone balance may lead to nausea and vomiting, depression, bloating, and emotional irritability. Regardless of the reasons for initiation of estrogen hormones, an initial down period of two weeks in order to assess tolerance is recommended.

WAIVER: Waiver is not required. Use of estrogen and progesterone preparations is NCD.

INFORMATION REQUIRED:

1. Annual gynecological exam per OPNAVINST 6000.1 series
   a. Pap smear as indicated
   b. Breast examination
   c. Pelvic exam

TREATMENT: None

DISCUSSION: Oral contraceptives in the current dosing formulations contain very low doses of estrogen/progesterone and have minimal side effects. If a patient has taken any preparation of oral contraceptive pill in the past and tolerated it well, a down period is not required. However, as with all medications, the use (or resumption) of contraceptive medication must be with the approval of the local flight surgeon. Side effects of combination oral hormonal contraceptives may include nausea, vomiting, depression or irritability, weight gain and headaches. Side effects of progesterone only preparations (Depo-Provera, Micronor, Norplant, etc.) may include depression, irregular vaginal spotting, bloating, and fluid retention.

Estrogen replacement therapy is generally well tolerated when given in recommended physiologic doses and is strongly recommended for all women without endogenous production of estrogen. Replacement therapy constitutes reestablishing the normal physiologic levels of estrogen/progesterone. This replacement should not be construed as introducing a foreign chemical into the body but rather the restoration of the natural state. Estrogen replacement therapy involves a lower dose of estrogen than is in use in currently available oral contraceptives (Ethinyl estradiol in a dose of 5 micrograms is equivalent to 0.625mg conjugated estrogens).

11.5 PELVIC INFLAMMATORY DISEASE

AEROMEDICAL CONCERNS: Pelvic inflammatory disease is an acute infection of the upper female genital tract characterized by severe lower abdominal pain. Sequelae can include chronic pelvic pain and infertility. Aviation personnel should be grounded during treatment of the acute phase.

WAIVER: A history of pelvic inflammatory disease (PID) in female aircrew who are symptom free is NCD. Female aircrew members who have chronic pelvic pain as a sequelae to PID should be evaluated by a Gynecologist and a waiver may be recommended on a case-by-case basis.

INFORMATION REQUIRED:

1. Gynecology consult
2. Documenting resolution of acute PID

TREATMENT: Antibiotic treatment during the acute phase will result in grounding. Initial outpatient treatment is Rocephin® 250 mg IM plus Doxycycline 100 mg bid for 14 days. Patients should be re-evaluated in two days if symptoms are not better. In those cases, the diagnosis of PID should be reconsidered or the patient should be admitted to the hospital for IV antibiotic treatment. Surgical treatment for the sequelae of PID (adhesions) is compatible with a return to flying duties. Patients may return to flying one week after laparoscopy provided they remain asymptomatic.

DISCUSSION: The incidence of PID in the US is approximately 1% in young females. The diagnosis of pelvic inflammatory disease is made based upon the triad of abdominal pain, cervical motion tenderness, and adnexal tenderness (usually bilaterally) along with any one of multiple non-specific indications of inflammation or infection (e.g. temperature elevation, leukocytosis, leukorrhea, etc). Many women are improperly diagnosed with PID, and definitive diagnosis is made with laparoscopy. Sequelae include pelvic adhesions, infertility, chronic pelvic pain, and increased risk for ectopic pregnancy.

ICD-9 CODE:
614.9 Pelvic Inflammatory Disease

11.6 PREGNANCY

Last Revised: Nov 14 Last Reviewed: Nov 14

AEROMEDICAL CONCERNS: Pregnancy is a normal female condition associated with various dynamic physiological changes capable of modifying an aviator's expected tolerance to the aviation environment. Examples of aeromedically relevant changes include hypotension, physiologic anemia (dilutional), hypercoagulability, and alterations in pulmonary function, glucose metabolism, and visual acuity.

Pregnancy is also associated with certain pregnancy-specific disorders that may pose additional risk in the aviation environment. Examples of these disorders include ectopic pregnancy, hypertension-seizure, bleeding, miscarriage and even morning sickness (hyperemesis). Pregnancy can also increase the risk of other non-pregnancy specific conditions that could affect the member's flight safety. Pregnancy increases the risk of blood clots and pulmonary emboli. Underlying clotting disorders increase this risk. Screening for preexisting clotting disorders should be considered and may be offered to pregnant aviators.

Although incompletely researched, flying during pregnancy may place the fetus at risk. The physiologic stresses of aviation duty, in addition to noise, vibration, Gz forces, pressure changes, and hypoxia all introduce potential risk to the mother and fetus. See Request to Continue Flying While Pregnant for common physiologic changes in pregnancy and potential hazards to the pregnant aviator.

WAIVER: Pregnancy is considered disqualifying (CD) for all aviation duties except for Air Traffic Controllers. Pregnancy is not considered disqualifying (NCD) for Air Traffic Controllers, provided the pregnancy remains uncomplicated. Designated aviators may request a waiver to continue flying after a complete obstetrical evaluation for flying from 12 weeks to 28 weeks gestation, as Class I-Service Group 3, Class II, or Class III. Waivers are considered for singleton pregnancies. No waivers are considered for candidates or student aviators in training. Participation in aviation physiology, aviation water survival, or other water survival programs is not authorized at any time during pregnancy. Aviation physiology qualifications and anticipated expiration dates must be considered prior to waiver request. Specific guidance on pregnancy in flight personnel is contained in the OPNAVINST 3710.7 and OPNAVINST 6000.1 series, and includes the following conditions:

1. A waiver of physical standards may be granted for pregnant designated aviators to Service Group 3 only, and will not include shipboard operations.
2. A waiver will only permit flight in Transport/Maritime/Helicopter aircraft with a cabin altitude of 10,000 feet or less.
3. Flying in solo or ejection seat aircraft will not be considered for waiver.
4. The member may request an authorization for Pilot-in-Command, as described in OPNAVINST 3710.7 series. In these circumstances, a completed Pregnancy AMS (LBFS) with ultrasound, laboratory, and full obstetric evaluation will be accepted in lieu of a typed SF 88.

Upon confirmation of her pregnancy, an aviator shall immediately notify her flight surgeon, and obtain a referral for initial obstetric evaluation. To continue flying during pregnancy, an aviator must request a pregnancy-specific waiver by signing and submitting the **Request to Continue Flying while Pregnant** form. The flight surgeon shall recommend the member's Commanding Officer convene a Local Board of Flight Surgeons (LBFS), comprised of the member's flight surgeon, a second flight surgeon, and the member's obstetrical care provider. A Pregnancy

Summary shall be completed for all pregnant flight personnel and submitted to NAMI Code 53HN. All abnormalities must be addressed on the Summary by the obstetrical care provider and the LBFS. The unit flight surgeon shall notify the Commanding Officer of the LBFS's recommendation, in addition to the member's condition and intentions. If the pregnancy is uncomplicated (as defined below), the LBFS recommends a waiver, the Commanding Officer is in concurrence, and there are no other medical conditions requiring a waiver, a 90-day aeromedical clearance notice may be issued to the aviator. The flight surgeon shall submit the completed Pregnancy Summary (LBFS), with all documentation, to NAMI Code 53HN for final review and submission to BUPERS/CMC via AERO.
For those aviators who do not desire to continue flying while pregnant or a waiver is not recommended, the aeromedical summary may be signed solely by the member's flight surgeon, and submitted to NAMI Code 53HN as a grounding physical.

Pregnancy, Uncomplicated: For aeromedical purposes, pregnancies are considered uncomplicated when a formal obstetrical evaluation has determined it to be an uncomplicated (low risk), single gestation, and the member has no other medical condition requiring a waiver. The minimum determinants for an uncomplicated pregnancy require consultation with an obstetrical care provider, ultrasound confirmation of a singleton intrauterine pregnancy with estimated gestational age, routine obstetric laboratory studies, and a visual acuity examination documenting 20/20 vision. Complications, or new disqualifying conditions which arise in a pregnancy after initial granting of the waiver, shall terminate the waiver, and NAMI Code 53HN will be notified immediately.

Pregnancy, Uncomplicated; with Other Medical Conditions/Waivers: Pregnancies are considered uncomplicated, with other medical conditions/waivers for aeromedical purposes when the formal obstetrical evaluation is found to be uncomplicated, but the member has other medical condition(s) that require a waiver. Pregnancy can affect or be affected by other medical conditions and/or medicine regimens. Even if these conditions were previously waived and stable pre-pregnancy, they must be reevaluated. In general, these cases must be deferred to NAMI for final disposition on the pregnancy and other conditions, before an upchit can be issued. In some instances, the "other condition(s)" may be unaffected by and inconsequential to the uncomplicated pregnancy. In these cases, a 90-day upchit may be issued only after discussion with and approval from NAMI. The other medical condition(s) and the current status of each must be described in the aeromedical summary. The minimum determinants for an uncomplicated pregnancy are described under pregnancy, uncomplicated. Complications or new disqualifying conditions which arise in a pregnancy after initial granting of the waiver shall terminate the waiver, and NAMI Code 53HN will be notified immediately.

Pregnancy, Complicated: For aeromedical purposes, pregnancies are considered complicated if the formal obstetrical evaluation finds the pregnancy complicated, any abnormal pregnancy-specific condition exists at any time in the pregnancy, or the member has another medical condition(s) shown to be affected by, or influencing the pregnancy. In these cases, an aeromedical clearance notice shall NOT be given until reviewed by NAMI Code 53HN, and forwarded to the appropriate waiver authority for final disposition. For circumstances involving a complicated pregnancy, a completed Pregnancy Summary, obstetrical notes, and documentation regarding all other non-pregnancy condition(s), medications, and waivers must be submitted to NAMI Code 53HN.

Air Traffic Controllers: An uncomplicated pregnancy is not considered disqualifying (NCD) for Air Traffic Controllers. A Pregnancy Summary is submitted to NAMI for information only. They may continue to perform their duties, until the medical officer, the member, or the command determines the member can no longer perform her duties as an ATC. At the time of medical grounding from controlling duties, a Pregnancy Summary shall be submitted to NAMI Code 53HN as a grounding physical or to request a waiver with restrictions. Complicated pregnancies are considered disqualifying (CD) for Air Traffic Controllers. These members shall

be grounded and processed as a complicated pregnancy with a Pregnancy Summary as described above.

Pilot in Command: According to OPNAVINST 3710.7 series, waivers to Class I, Service Group 3, automatically include Pilot In Command (PIC) authority, unless the PIC authority is specifically restricted. In addition, student aviators may not assume flight controls/ fly with a Service Group 3 Pilot. The appropriate box in the Pregnancy Summary may be checked if there are no specific restriction recommendations. The reason for a PIC restriction recommendation should be listed on the AMS.

INFORMATION REQUIRED (templates on ARWG front page):

1. Request to Continue Flying while Pregnant – signature required.
2. Obstetric Evaluation to include an Obstetric Ultrasound, Estimated Date of Confinement (EDC), and baseline labs.
3. Pregnancy Summary (LBFS) with any abnormalities evaluated by the obstetrical care provider and explained in the Flight Surgeon comments section.
4. Physical exam with associated electronic AMS created and submitted in AERO

Monitoring by Flight Surgeon:

1. The pregnant aviator shall routinely meet with her flight surgeon every two weeks.
2. The member will be evaluated to confirm she:
   a. Desires to continue flying while pregnant
   b. Is receiving routine obstetrical care
   c. Has not developed any condition which defines a complicated pregnancy
   d. Has not developed any condition which impairs her safety in flight or emergency egress
   e. Maintains 20/20 vision (or corrects to 20/20)
3. The member shall be educated to return to her flight surgeon should any concerning symptoms develop between visits.
4. Any time in the continuum of care these conditions are not met, the pregnancy waiver shall be terminated and NAMI Code 53 HN notified immediately.

Postpartum Return to Flight Status (submit completed template on ARWG front page):

1. In accordance with OPNAVINST 6000.1 series, convalescent leave, following any uncomplicated delivery or cesarean section, will normally be for 42 days after discharge. For aviation purposes, this will allow adequate time for recovery and return to pre-pregnancy physiologic baseline. This form is also used for miscarriage and termination. A shorter grounding period may be considered for a first trimester pregnancy loss with a normal obstetrical exam, aeromedical exam and appropriate grieving period.
2. Return to flight status may be requested after convalescent leave. The aviator must meet physical standards before returning to flight duty. The flight surgeon shall submit to NAMI Code 53HN:
   a. Completion of Pregnancy Summary to NAMI
      (1) Information of aeromedical significance regarding the pregnancy, delivery, post-partum course or complications.
      (2) Information of aeromedical significance regarding the health of the child and mother.
   b. Postpartum obstetrical exam
   c. Long Form Flight Physical Complete to include:
      (1) Hematocrit
      (2) Visual acuity
   d. Electronic AMS created and submitted in AERO

DISCUSSION:
The reasons for flight restrictions vary with each stage of pregnancy. As in aviation, one can employ a risk management model to determine when a pregnant aviator can safely fly. In this case, both the probability and severity of adverse outcomes are greatest in the first and third trimester, effectively eliminating these times for waiver consideration. In the first trimester, ectopic pregnancies, bleeding and miscarriages are common, and often present unexpectedly. These complications are difficult to predict, and frequently present with life-threatening or incapacitating emergencies. Also in the first trimester, potential teratogenic exposures, vibration, hypoxia, Gz forces and other stresses of the aviation environment can have undesirable effects on the developing fetus. The uncertainties of the first trimester, combined with the severity of pregnancy-specific complications, present unacceptable risks to the pregnant aviator, thus limiting the consideration for waivers at this time.

In the second trimester, a normal intrauterine pregnancy can be confirmed with ultrasound, therefore mitigating some of the risk uncertainty present in the first trimester. For this reason, the aviator with an uncomplicated pregnancy can more safely fly at this time, assuming careful consideration is given to limit her exposure to other potentially harmful effects of the flight environment, such as hypoxia or excessive Gz exposure.

In the third trimester, pre-term labor, rupture of the membranes and bleeding can occur in an unpredictable fashion, creating an emergent risk to the mother, fetus, and aircrew. These events introduce unacceptable risks to the safety of flight and prohibit the issuance of waivers in the third trimester.

Pre-existent medical conditions represent an additional risk consideration in the pregnant aviator. Pre-gravid, stable medical issues may become exacerbated during pregnancy, or impart an adverse effect on the pregnancy. Additionally, chronic medication regimens are frequently discontinued or changed during pregnancy. For these reasons, each aviator with a previous medical waiver, including medication waivers, must be evaluated in the context of her pregnancy, prior to issuance of a pregnancy waiver. In these circumstances, NAMI Code 53HN must be consulted prior to determination of waiver recommendation or LBFS upchit.

Prior to waiver recommendation, and during waiver continuance, careful consideration must be given to the effects of pregnancy on the aviator, including how she is coping with the physiologic, emotional, and professional stresses of pregnancy. Regular follow- up is required to confirm her desire to continue flying during pregnancy, and the absence of any condition(s) which may adversely impact her safety in flight.

ICD-9 Codes:
V22 Pregnancy, Uncomplicated
630-650 Pregnancy, Complicated

12.0 OPHTHALMOLOGY

Last Revised: APR 15 Last Reviewed: APR 15

April 2015 updates include:

- NEW Chapters on Central Serous Retinopathy (12.18), Pigment Dispersion Syndrome (12.19), Peripheral Retinal Degeneration and Retinal Hole (12.20), including guidance on local board eligibility
- Updates to Refractive Surgery Chapter, including new surgical center for Class I Aviators (Wilford Hall, San Antonio), expanded pre-op limits for designated personnel, information on recommended wait times after surgery

Contact information: usn.pensacola.navmedotcnamefl.list.nami-ophthal@mail.mil
Contact Phone: 850-452-2933

12.1 CATARACT

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Cataracts reduce visual acuity (VA). When the cataract involves the visual axis, visual acuity is most affected in bright sunlight and conditions of glare.

WAIVER: The condition is considered disqualifying. Once vision has deteriorated to less than 20/20 correctable or the patient has a positive Glare test, the flier should be disqualified from flying until successful surgical removal of the cataract. Waiver to SG1 may be considered after surgery provided the VA returns to 20/20 corrected, is within refraction limits, and the Glare test is negative (normal).

INFORMATION REQUIRED:

1. Ophthalmology consultation is required for initial waiver request.
2. Because of the potential for deterioration, ophthalmologic follow-up may be needed every 6 months until surgery is deemed necessary.
3. Prior to and after surgery, a Mentor Brightness Acuity Test (BAT, a glare-testing device) should be performed with VA documented for each eye separately at the low, medium and high settings.
4. Confirmation is needed of exclusion of underlying pathology such as Wilson's disease, diabetes or hypoparathyroidism.

TREATMENT: Surgery with an intraocular lens (IOL) implant usually provides a sufficiently acceptable VA result for military flying duties. Consultation with NAMI ophthalmology prior to surgery is recommended.

DISCUSSION: The visual effect of a cataract depends on its encroachment on the visual axis and the proximity to the nodal point. A posterior subcapsular cataract can have a devastating effect on vision. 2 to 3 episodes of serious dehydration can increase the risk of developing a cataract 21 fold. Surgical success of greater than 90% in achieving a 20/40 best corrected VA after 1 year has been reported. The RAF restricts the flying of personnel with IOL from high performance aircraft and helicopters. This is because of the risk of pressure on ciliary body blood vessels under high Gz or vibration and because of the unknown long term effect on the corneal epithelium.

ICD-9 CODES:
366 Cataract
366.1 Posterior Sub-Capsular Cataract (senile)
366.20 Traumatic Cataract
366.45 Drug induced Cataract
743.30 Congenital Cataract

12.2 COLOR VISION ABNORMALITIES

Last Revised: JUN 15 Last Reviewed: JUN 15

AEROMEDICAL CONCERNS: Color vision is required to accurately identify warning lights and color visual displays in the cockpit, airfield and shipboard lighting, colored smoke in combat, ground target identification, and aircraft formation lights. Interactions with other optical devices, such as laser eye protection glasses and protective visors may worsen color vision problems. For testing purposes, proper instructions and lighting are critical to accurate results. Best corrected spectacles are recommended, but no tinted or colored lenses may be worn during testing, as that will decrease the sensitivity of the test for detecting color vision deficiency.

WAIVER: Applicants are CD, no waiver if the applicant cannot pass the required color vision tests. Certain non-aviators require adequate color vision, including ATC, UAV, and sonar display operators (anti-sub aircraft). Waivers have been granted for aeromedical and other Class II aircrew applicants on a case-by-case basis. Waivers for designated personnel with a change in color vision may be considered on a case-by-case basis.

COLOR TESTS:

1. Pseudo-Isochromatic Plates (PIP) are considered a primary test of color vision. Approved: **Ishihara 38-plate edition**, **Pseudoisochromatic Ishihara Compatible (PIPIC) 24-plate edition**, **ColorDx Standard 24-Plate Edition.**
   a. Scoring: 12 (or more) of 14 correctly identified red/green numerical test plates constitute a passing score. Passing criteria is 12 or more plates correctly read, i.e., no more than 2 errors.
   b. Use one demonstration and 14 test plates (the orange number on page one is a demo plate only, and not a test plate, and should not be counted). **Directions:** Best corrected vision, Daylight Illuminator stand or a light source ~ 6500 degree Kelvin temperature “Daylight” fluorescent bulb, three seconds each page, no tracing allowed, random order. Regular white incandescent bulbs may not be used, as they are the incorrect color and reduce the sensitivity of the test.
   c. Other editions of pseudoisochromatic plates may not have the correct types of plates (numbers only required). Research has shown that individuals scoring 11 (or less) on the PIP test do not have normal color vision.

2. **Farnsworth Lantern** (FALANT), The Farnsworth Lantern was designed in the 1940’s to pass mildly color vision deficient individuals for Naval submarine service. Passing the FALANT does not ensure normal color vision. Original model or modern Optec 900 accepted. Certain aviation classes may not use FALANT (per MANMED).
   a. Passing criteria for FALANT remains 9 of 9, or 16 of 18 correct responses. **Directions:** normal room lighting, best corrected vision worn, both eyes open, 8 foot test distance, random presentation of targets, two seconds each target. Prior to testing, read the instructions to the patient exactly as written on the side of the unit to ensure predictable responses, and follow all directions on the guide.
   b. The FALANT will be phased out eventually from all classes, but those designated and student aviators who have passed the FALANT prior to phase-out will be grand-fathered for their career, unless a documented color vision degradation requires further evaluation to exclude progressive or acquired disease.

3. **Computerized Color Vision Tests** (CCVT) may be either used as a primary test of color vision, or may be used as a backup test for PIP or FALANT failures.

Computerized Tests (validated and approved):

a. **ColorDX** (Waggoner): A score of "normal" or "mild" color vision deficiency in red, green or blue is acceptable for aviation. Tested binocularly (both eyes open). May test monocularly for isolating and tracking acquired color vision defects.
b. **Colour Assessment & Diagnosis** (CAD, City University London): A score of less than or equal to 6 CAD units for all three cone types in each eye. Tested binocularly (both eyes at the same time).
c. **Cone Contrast Test** (CCT, Rabin): A score of 55 or greater in each eye is required for all three cone types. This test is given monocularly (one eye at a time).
d. Computer tests shall be administered per manufacturer recommendations with regard to distance, lighting, screen calibration, and monocular or binocular testing. Best correction worn. Computerized tests must be utilized per manufacturer's instructions; such as administration processes and calibration, room lighting, and screen brightness. Computer-printout grade sheets should be submitted with the physical exam, to ensure objectivity and correctness.

INFORMATION REQUIRED: If a designated crewmember fails the PIP, and either a FALANT or computerized test (worse than mild defect), an ophthalmologic evaluation is required to screen for acquired pathology. Additionally, a practical test of color vision must be performed, and administered with the objective oversight of the flight surgeon, type standardization instructor, and type NATOPS officer as observers. Tests would include identification of cockpit lighting, gauges, safety indicators, cockpit display symbology, map symbology for both cockpit and actual charts (hazards/obstacles, airspace coordination areas, route markings, etc.), identification of shipboard and landing field lighting, and ALDIS lights. For Marines, smoke color identification testing is also required. A control group of two additional aviators with normal color vision is recommended for comparison. Commanding Officer endorsement is required.

TREATMENT: N/A.

DISCUSSION: Defective color vision is overwhelmingly congenital, and mainly involves red and green cones, due to X-linked genetics. Blue cones are encoded on Chromosome 7. In Caucasians, approximately 8% of males have inherited red/green color defective vision. Of males, 2% of the population have only two cones, "dichromats", and are severely deficient. The majority of color deficient individuals have three cone types, "trichromats", but are red or green weak. Moderate to severe color deficient individuals have increased difficulty interpreting VASI and PAPI lights' correctly, as well as difficulty with navigation and shipboard lighting and colored smoke identification. Color deficient individuals also take a longer time to interpret color signals and targets, while also making more errors, than individuals with normal color vision.

Blue color deficiency may be acquired by ocular diseases, including cataracts, optic neuritis, macular degeneration, central serous retinopathy, or side effects of medications or toxins.

Mild color vision deficiencies are considered acceptable for safe flight. Moderate-to-severe red-green abnormalities are the most problematic for aviation, and those individuals can sometimes pass the FALANT. Any degree of color vision deficiency, even mild, should always be considered as a potential causal or contributing factor in mishap investigations.

ICD-9 CODES:
368.5 Color Vision Abnormalities

12.3 DECREASED VISUAL ACUITY

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Decreased visual acuity degrades lookout and target acquisition.

WAIVER: A waiver for visual acuity less than standards may be considered in designated individuals, provided the central and peripheral retina is normal and all other visual standards are met.

Category	Unaided Visual Acuity	Refractive Limits	NATOPS Restrictions
SG1	20/100 or better each eye	None	None
SG2	20/200 or better each eye	None	* Restricted from shipboard duties including VSTOL * Helicopters OK
SG3	20/400 or better each eye	None	* Dual Controlled only * Requires SG1 or 2 onboard * Pilot in Command is included

Consider whether a waiver is actually required. An aviator whose vision is worse than 20/400 will need a waiver to fly in any Service Group. A clear justification is required, including primary type of aircraft in which he or she will be flying and the number of hours in that type of aircraft.

INFORMATION REQUIRED:

1. Optometry or ophthalmology consults for any waiver request for excessive refractive error.
2. Ophthalmology consult required for cases of decreased visual acuity not due to simple myopia, hyperopia, astigmatism or presbyopia (i.e. amblyopia, optic neuritis, corneal scarring, cataracts, etc.)
3. Obtain dilated retinal evaluation at corrections greater than -8.00 diopters.
4. Progressive astigmatism should be evaluated to exclude keratoconus.

TREATMENT: Refraction by spectacles within the limits set by MANMED Chapter 15. Contact lenses are permissible for aviation personnel after optometry examination, but spare clear spectacles must be carried in flight and the aviator must demonstrate 20/20 with contact usage. Other corneal surgical procedures (not allowed by Chapter 12.15) are CD, no waiver.

DISCUSSION: Myopia is usually a progressive condition, stabilizing around age 30. Significant myopia is complicated by considerable visual distortion at the periphery of corrective lenses. Individuals with significant myopia may see halos or flares around bright lights at night and are more at risk for night blindness. Elongated globes are at an increased risk of retinal detachment and lattice degeneration. Whenever a prescription is changed, aircrew should be warned about transient visual distortion and counseled on the period of adjustment. Evidence suggests that there is no difference in civil accident rates or in Naval carrier landing accidents in pilots who require visual correction. Severe myopia tends to be a problem pertaining to Class II personnel since the entry requirements for other pilots tend to be sufficiently stringent to exclude those whose vision would deteriorate that much. The risk of retinal detachment in normals is 0.06%

over 60 years compared to 2% in 5 diopter myopes. Beyond -9.75 diopters, the risk increases to 24%. Recent studies of radial keratotomy suggest that the procedure leaves 28% of the eyes with unstable refraction and nearly all with glare problems.

ICD-9 CODES:
367.9 Decreased Visual Acuity
367.9 Ametropia [Includes Myopia and Hyperopia]
367.95 Ametropia, exceeding standards
368.0 Amblyopia

12.4 DEFECTIVE DEPTH PERCEPTION

Last Revised: APR 15 | Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Although many visual cues regarding the relative positions of objects in space (depth perception) are monocular. The binocular visual reflex of stereopsis is an important indicator of normal visual acuity in each eye, with normal ocular alignment and neurological function. Defective stereopsis may make certain piloting duties such as formation flying and aerial refueling more difficult and unsafe.

WAIVER: No waivers shall be recommended for any candidate or designated Class I duty involving actual control of aircraft. Class II and III personnel must meet standards for depth perception except when remarked as "not required" under types of aviation duty specified under MANMED Articles 15-87 through 15-99.

INFORMATION REQUIRED:

1. Valid tests of stereopsis include:
   a. **Armed Forces Vision Tester (AFVT**)
   b. **Stereoacuity Plates** used with polarized viewers such as the Stereo Optical, Titmus Optical **Stereo Fly,** or **Randot**. A randomized version of these tests should be used.
   c. **Verhoeff Stereopter**: tested at 1m, eight correct of eight random presentations for passing grade.
2. A pass of any one test meets the stereopsis standard. The tests must be administered and results recorded as specified in MANMED and elsewhere in the ARWG.
3. Recent loss of stereopsis in a designated Class I naval aviator is usually due to a change in refraction or onset of presbyopia, but may also be a sign of cataract, macular or optic nerve disease, or new motility disturbance, requiring ophthalmologic or optometric evaluation. New failures to meet the stereopsis standard must be evaluated by an ophthalmologist including completion of the ocular motility worksheet (See chapter 12.14).

TREATMENT: Correct any underlying refractive error or eye disease.

DISCUSSION: Defective stereopsis is typically innate and due to abnormal visual development prior to the age of 9. The Verhoeff Stereopter tests stereovision in real space. Eight test presentations are made at a 1 meter distance, with no head movement of the patient. All eight tests must be correct for a passing score. Causes of defective stereopsis include abnormal ocular muscle balance, amblyopia, anisometropia, microtropia, and monofixation syndrome.

ICD-9 CODES:
368.33 Defective Depth Perception

12.5 HISTORY OF STRABISMUS SURGERY

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Single, fused, simultaneous binocular vision in all versions at all times with the stereopsis reflex active is a requirement for safe and effective duty involving actual control of aircraft. Congenital or acquired defects of ocular alignment as well as any surgery to correct ocular misalignment can cause mild to severe degradations to binocular vision and acuity and be a grave hazard in aviation.

WAIVER: History of strabismus surgery is considered disqualifying for all aviation duty. A waiver will not be considered for an SNA applicant, due to the risk of progressive degradation to alignment even decades later. A waiver for aviation duty other than an SNA applicant will be considered on a case-by-case basis no sooner than six months after a successful and stable strabismus surgery if post-operatively, the member otherwise meets the visual standards appropriate for his or her duty.

INFORMATION REQUIRED:

1. Submission must include an ocular motility worksheet (see chapter 12.14) completed at the time of waiver request by a provider qualified to measure all required data.
2. Include copies of all eye exams and operative report(s) with AMS.

TREATMENT: Strabismus surgery involves enhancing or retarding the action of one or more extraocular muscles in either or both eyes. An extraocular muscle tendon may be shortened (resection) to strengthen its action, or the insertion of the muscle moved posteriorly on the globe (recession) to weaken its action. Suspending the tendon on hangback sutures is an alternative to traditional recession surgery. Adjustable sutures may be employed to fine tune ocular alignment in the perioperative period. A spacer may be inserted in the muscle tendon with unusual forms of vertical muscle surgery. In general, vertical muscle strabismus surgery is more complex and problematic than horizontal muscle surgery for simple eso- or exotropia.

DISCUSSION: Ocular misalignment is always the consequence of disease and never a normal finding. Surgery on extraocular muscles is imprecise and has a risk of regressing to the original state of misalignment or progressing in effect and causing sequential overcorrection. Multiple surgeries are frequently necessary for congenital misalignment. Scarring of the globe and adnexa after muscle surgery may lead to restricted ocular movements. Vertical muscle surgery often causes or does not fully correct cyclotorsional misalignment.
Realignment of the eyes with muscle surgery does not resolve the underlying disorder in congenital misalignments and while peripheral binocular function may be partially enhanced, normal central binocular stereopsis is rarely achieved. Even after satisfactory surgical alignment in congenital esotropia, residual comorbidities such as latent nystagmus and dissociated vertical deviations are often seen. The desirable cosmetic result after strabismus surgery is 10 or fewer prism diopters of misalignment, since this relatively small degree of heterotropia is not noticeable to casual observation of the eyes. Asymptomatic vision (i.e. normal acuity without diplopia complaints) with tropia less than 10 prism diopters, meets the NOHOSH standard for Class II and III.

"NOHOSH" stands for "No obvious heterotropia or symptomatic heterophoria". "Obvious heterotropia" is visually noticeable misalignment of the two eyes in primary, straight-ahead gaze (with no head turn or tilt) or noticeable misalignment during motility testing in the cardinal fields

of gaze. “Symptomatic heterophoria” is complaints of intermittent diplopia while alert and performing tasks such as night-driving, night-flying, scanning for air-traffic in hazy skies, etc.

ICD-9 CODES:
H153 Surgery for strabismus or ocular muscle imbalance

12.6 EXCESSIVE PHORIAS

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Excessive phorias are frequently associated with defective stereopsis and/or diplopia complaints, a hazard if this occurs during a critical phase of flight.

WAIVER: CD for Class I aviators. No waivers are considered.

INFORMATION REQUIRED:

1. Evaluation by a qualified optometrist or ophthalmologist is necessary.
2. The consult should address any history of diplopia or previous eye surgery, and include all the studies requested on the accompanying ocular motility worksheet (see chapter 12.14)

ICD-9 CODES:
378.4 Excessive Phorias
378.41 Esophoria
378.42 Exophoria
378.43 Hyperphoria

12.7 RETINAL DETACHMENT

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: A detached or torn retina can lead to visual impairment, the degree of which depends on the part of the retina involved and the success of any timely surgery. Some retinal repairs involve injecting gas into the eye (pneumatic retinopexy), which will restrict the patient from air transport for some time afterward.
Routine exposure to slow-onset G forces has not been shown to increase the risk of retinal detachment.
Small atrophic peripheral holes generally do not require treatment, but should be monitored for progression or subretinal fluid development over time by annual dilated examinations.

WAIVER: Waivers will not be considered in SNA applicants for retinal detachments involving intraocular repairs, vitrectomy, pneumatic retinopexy or sclera buckles. SNA applicants with small peripheral tears and/or detachments treated successfully with laserpexy may be considered on a case-by-case basis after six months with stable follow-up examinations. Waivers in other designated classes will be considered on a case-by-case basis after a minimum of three months post-operatively. Annual dilated exams will be required for any waivered retinal tear, treated holes or detachment. **A Grounding physical is required to be submitted upon diagnosis due to the post-operative observation period of greater than 60 days.**

INFORMATION REQUIRED: Please submit all relevant eye examinations and operative reports to include a Humphrey Visual Field, detailed retinal drawings, motility exam (if scleral buckling is performed), and glare testing if a pneumatic retinopexy (air injection) or vitrectomy is performed.

TREATMENT: Surgical intervention is required in most cases. The best approach will be determined by the surgeon and may consist of one or more of the following techniques cryotherapy, laser retinopexy, pneumatic injection, scleral buckling, or vitrectomy.

DISCUSSION: Visual acuity and visual field loss, changes in refractive error, motility disorders, and cataracts are frequent sequelae for retinal detachments. Detachments involving the macula have the highest impact on central vision. Annual follow-up is required for the duration of military service and recommended after separation from service.

ICD-9 CODES:
361.0 Retinal Detachment with retinal defect

12.8 GLAUCOMA & OCULAR HYPERTENSION

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Glaucoma is an optic-nerve disease characterized by a combination of two or more of the following: elevated intraocular pressures, visual field loss and/or progressive cupping of the optic nerve. It may be associated with increasing age, a family history of glaucoma, racial predilection, underlying eye conditions associated with elevated pressures, or trauma to the involved eye.

Open angle glaucoma is the most common type and is usually asymptomatic, even as vision loss is occurring slowly. Gradual, almost imperceptible loss of peripheral visual field is typically the earliest clinical manifestation with loss of central vision occurring only in the most advanced later stages of the disease. Elevated eye pressure is not always present in patients losing vision from open angle glaucoma. Roughly a third of those presenting with glaucoma have intraocular pressures (IOPs) less than 22 mmHg and some will continue to lose vision even with a lowering of their IOP with eyedrops or surgery.

Acute angle glaucoma is much less prevalent and will present in a much different manner then the open angle variety, with symptoms such as acute onset of eye pain, decreased vision, and halos around lights. Signs may include a red eye with a hazy cornea and a mid-dilated, poorly reactive pupil.

Both types require referral to the eye clinic with an acute angle attack requiring emergency referral to an ophthalmologist to reduce the risk of swift and severe vision loss. Both types of glaucoma are considered disqualifying because the risk of loss of vision and peripheral visual fields is incompatible with flight duties.

Ocular hypertension (i.e. elevated pressures in the eye, without visual field loss, or optic nerve cupping) is not equivalent to the actual diagnosis of “glaucoma”. In fact, most people with what is often considered to be high pressure (>22 mm Hg) never develop vision loss. This population, nonetheless, is at higher risk of developing glaucoma and so this condition is also considered disqualifying.

WAIVER: For the purposes of Naval Aviation, any IOP consistently (on at least 2 different exams on different days) and accurately measured above 22 mmHg by contact tonometry (applanation tonometer or tonopen), is considered disqualifying whether or not the diagnosis is simply ocular hypertension or glaucoma. Simply large optic nerve cupping alone is not disqualifying, if all other glaucoma screening tests and intraocular pressures are normal.

Any diagnosis of glaucoma is considered disqualifying regardless of IOP. “Glaucoma Suspicion” is not considered disqualifying, though patients are encouraged to undergo ongoing screening evaluations by an ophthalmologist or credentialed optometrist every six to eighteen months.

Designated: Waivers are considered on a case-by-case basis.

Applicants: Waivers will not be considered for actual glaucoma, or ocular hypertension (corrected for corneal thickness or pachymetry measurements).

INFORMATION REQUIRED:

Initial Evaluation:
A complete eye exam must include the following:

1. IOP by Goldmann applanation tonometer or Tonopen
2. Central Corneal Thickness (pachymetry)
3. Dilated fundus examination (to include comment on the cup-to-disc ratios and description of the nerves)
4. Automated visual field testing (30-2 or 24-2 SITA, standard or fast protocols are acceptable, ensure reliability of the test, and repeat any abnormal field examinations, submit ALL testing)
5. Slit lamp examination
6. Gonioscopy grading reports on the angles of the eye
7. Retinal nerve fiber layer analysis (i.e. ocular coherence tomography or OCT) is required.

Annual Waiver Evaluation:
A complete eye exam must include all of the above except:

1. Central corneal thickness
2. Gonioscopy, except when clinically indicated by the eye care professional.

TREATMENT:
The following are acceptable topical agents and non-invasive treatments:

1. Prostaglandin analogs are the initial treatment of choice due to insignificant incidence of systemic side effects.
2. Beta blockers – side effects of reduced exercise tolerance, orthostatic hypotension and loss of G-tolerance.
3. Carbonic anhydrase inhibitors – side effects of tingling in hands and feet, depression, anemia and sluggishness.
4. Sympathomimetic eye drops – side effects of hypertension, tremors, tachycardia, headache, conjunctivitis, anxiety.
5. Laser treatments to the angle of the eye (selective laser trabeculoplasy or SLT) may reduce the intraocular pressures for up to five years, and may reduce or eliminate the need for eye drops during this time. Re-treatment may be necessary, and routine follow-ups must be maintained.

Beta blockers and carbonic anhydrase inhibitors must NOT be used if there are any significant side effects, including any reduction in circulatory or respiratory function. The treating eye care professional must be mindful of the unique cardio-respiratory demands of the aviation environment, and may need input from the flight surgeon to tailor any medications. Patients must be instructed in proper drop protocols to reduce systemic absorption (e.g. pinching the lacrimal sac for two minutes to reduce migration to the nasal mucosa. Miotic drugs are incompatible with night operations due to the inability of the pupil to dilate to admit sufficient light.

DISCUSSION:
Waivers may be considered if peripheral visual field loss is minimal, and IOP is stabilized either with an acceptable topical agent as listed above or with laser trabeculoplasty. Incisional surgery, including filtration or tube shunt surgery is usually not considered compatible with safe flight operations. Continuation of the waiver requires annual submission, though eye examinations are usually conducted more frequently as determined by the treating eye doctor.

ICD-9 CODES:
365 Glaucoma & Ocular Hypertension
365.04 Ocular hypertension
365.10 Open angle glaucoma
365.20 Closed angle glaucoma

12.9 KERATOCONUS

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Keratoconus is a degeneration of the cornea leading to progressive thinning and irregular deformation. Visual acuity may eventually be reduced to the point that vision cannot be corrected to 20/20 with spectacles or contact lenses. Other symptoms may include diplopia, haze, ghosting of images or reduced ability to discern low contrast images.

WAIVER: Waivers will not be considered for applicants, but may be considered in designated personnel if correctable to 20/20 with spectacles.
Local boards of Flight Surgeons are not appropriate for this diagnosis.

INFORMATION REQUIRED FOR INITIAL AND ANNUAL SUBMISSION:

1. Current ophthalmologic/optometric exam to include:
   a. Corneal Topography
   b. Best corrected visual acuity (BCVA) with contact lenses (if used).
   c. BCVA with spectacles

TREATMENT: Contact lenses are often necessary to achieve the best vision. Advanced disease management may include a full-thickness corneal transplant, which is not waiverable. Corneal refractive surgery is an absolute contraindication in the presence of any keratoconus. Contact lens use in any aviator requires specific authorization on the aeromedical clearance form (up-chit). Please refer to section 12-16, Naval Aviation contact lens policy.

DISCUSSION: It is very difficult to diagnose keratoconus in the early stages unless a corneal topographic mapping apparatus is used. Aviators with rapidly increasing myopia or astigmatism may warrant such testing.
Keratoconus is usually bilateral but in rare cases, may affect one eye only. The symptoms usually start in the teen years. The condition is slowly progressive in 20%-25% of cases, but stabilization can occur at any time.

ICD-9 CODES:
371.6 Keratoconus

12.10 OPTIC DISC DRUSEN

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Optic Disc Drusen (ODD) is prevalent in 1% of the population. Drusen are calcified proteinaceous bodies located within the optic nerve head that may result in progressive visual field defects, and less commonly transient disturbance of visual acuity, color vision, and night vision. ODD is often found during routine exam in asymptomatic individuals and must be considered with any crowding or elevation of the optic nerve.

WAIVER: A history of ODD is considered disqualifying for all aviation duty. Due to the possibility of progressive visual field loss, a waiver will not be considered for applicants. Waivers may be considered in already designated personnel providing the member has no other optic pathology, significant visual field loss, and otherwise meets the visual standards appropriate for his or her duty.
Local Boards of Flight Surgeons are not appropriate in this situation since waivers are considered on a case-by-case basis.

INFORMATION REQUIRED:

Initial Evaluation:

1. Ophthalmology consultation is required for **initial** waiver request to confirm the diagnosis of ODD and the absence of other conditions (e.g. papilledema).
2. Complete aeromedical history to include pertinent positives and negatives (e.g. headaches, pulsatile tinnitus, hypertension, diabetes, family history of ODD).
3. Document presence or absence of visual symptoms and their operational impact (e.g. transient visual obscurations, perceived scotomas or metamorphopsia).
4. Documented exam to include stereoscopic optic disc evaluation, refraction to best visual acuity, color vision and Amsler grid testing.
5. Optic disc photos should be obtained for baseline documentation and future monitoring.
6. Automated perimetry visual field testing (Humphrey 30-2 is preferred, but 24-2 acceptable).
7. Retinal nerve fiber layer (RNFL) analysis using Optical Coherence Tomography (OCT) is required for baseline and future monitoring.
8. B-scan ultrasound (preferred) or CT to demonstrate buried drusen.

Annual Waiver Evaluation:
A complete eye exam and history must include all of the above except #8. Ophthalmology consultation is required only for initial waiver request; optometry follow-up is acceptable with submission of all required testing and documentation.

TREATMENT:
None. No evidence or definitive studies exist at this time supporting surgical intervention.

DISCUSSION:
Optic Disc Drusen is an indolent and progressive condition, with studies showing as high as 75% of those with ODD developing visual field abnormalities. Central vision may be affected with rare cases of anterior ischemic optic neuropathy or retinal bleeding from choroidal membranes. A thorough, detailed history and a comprehensive eye exam are essential to ensure that the individual has optimal nerve function. While the risk for sudden incapacitation

from visual obscuration is extremely low, there remains a constant threat to the aviator's field of vision with reduced peripheral visual cues for maintaining safety of flight.

Candid reporting of any change in visual performance by the aviator is as important as objective annual Amsler grid and visual field testing to ensure the safety of flight and mission readiness.

ICD-9 CODES:
377.21 Optic Disc Drusen

12.11 RETINAL VASCULAR OCCLUSION

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Symptoms vary and range from mild peripheral visual blurring to severe central vision loss. Onset is usually painless with rapid onset of vision symptoms within minutes to hours.

WAIVER: Waivers will not be considered in applicants. Designated personnel may be considered for waiver after vision returns to class standards, and on no further treatments or frequent follow-ups. Annual submission will be required.

INITIAL WAIVER:

1. All ophthalmology consultation notes from time of first diagnosis and subsequent visits documenting treatments and visual recovery to normal.
2. Retinal photos of baseline disease and post-treatment retina. Submit copies of any fluorescein angiography (FA) performed at the time of initial presentation, and any subsequent FA.
3. Exclusion of other pathology such as hypertension, diabetes, blood dyscrasias, multiple myeloma and dysgammaglobulinemia is required.

ANNUAL WAIVER:

1. Ophthalmology consultation required, with retinal photos, drawings and all other documentation showing stability of the disease and vision.

TREATMENT: Photocoagulation and/or intraocular medication injections are sometimes useful in central retinal vein thrombosis and in long-standing cases of branch retinal vein occlusion. Hyperbaric oxygen treatment may be considered in retinal artery occlusion, contact the hyperbaric medicine branch of NAMI for emergent treatment locations and protocols.

DISCUSSION: Macular edema occurs in 57% of cases of occlusion of the temporal branch of the retinal vein. Visual acuity improves in 60% of patients with branch retinal vein occlusion and 50% achieve visual acuity of 20/40 or better within 1 year. In central retinal vein occlusion, neovascular glaucoma develops in 15% of cases.

ICD-9 CODES:
362.3 Retinal Vein Occlusion

12.12 UVEITIS

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Uveitis is the inflammation of any of the intraocular pigmented uveal tissue, which includes iris, ciliary body and posterior sub-retinal pigmented epithelium. Anterior intraocular eye inflammation (often referred to as iritis or anterior uveitis) can result in severe eye pain, photophobia, and blurred vision. Although it is usually an isolated idiopathic condition, there may be an associated underlying auto-immune disease. Eye pain, photophobia and chronic steroid use are incompatible with flight, and recurrent episodes are difficult to treat in the austere environments of shipboard duty or in far-afield outposts without ophthalmologic care available.

WAIVER: A waiver can be considered for a single episode of iritis that resolves without complication and is not associated with any underlying systemic condition. A waiver will not be considered for recurrent uveitis of any type, or for any posterior uveitis, in applicants. Any associated underlying diagnoses should be considered carefully when determining waiverability for designated persons.

INFORMATION REQUIRED:

1. Ophthalmology consult is preferred, with dilated fundus examination to exclude posterior disease. Iritis history to rule out other causative diseases. Recurrent episodes will require laboratory workup for underlying autoimmune or infectious disease.
2. Appropriate referral as necessary for any underlying systemic condition.

TREATMENT: Treatment for uveitis depends on the portion of the uvea that is affected. Anterior uveitis is usually successfully treated with topical steroids and cycloplegics to reduce pain and ciliary body spasm.

DISCUSSION: Uveitis is an inflammation of the uveal layer inside the eye. The uvea consists of the choroid, ciliary body, and iris. It provides most of the blood supply to the retina. Uveitis may be unilateral or bilateral and occurs most frequently in people ages 20-50.

Iritis is the most common form of uveitis. These patients have an intense dull pain of the eye, perilimbal injection and extreme sensitivity to light. The hallmark signs of anterior uveitis are a constricted pupil on the affected side, and “cells and flare” in the anterior chamber. WBC’s and proteins are liberated into the anterior chamber as part of the inflammatory response. In more severe cases, patients may present with keratic precipitates (white blood cell collections on the posterior corneal surface) and posterior synechiae (iris adhesions to the anterior lens capsule). Most cases of iritis are idiopathic, but blunt trauma to the eye will frequently be associated with iritis. Iritis may also be the result of an autoimmune disorder, infection, or exposure to toxins. A single episode of iritis is generally not an indication for further testing to determine a systemic cause, however, recurrent, or persistent iritis warrants further work up.

Posterior uveitis is an inflammation of the choroid and/or ciliary body (inflammation of the ciliary body, or pars planitis, is often termed intermediate uveitis, however, will be grouped with posterior uveitis for the purpose of this discussion). Patients with this type of inflammation may complain of ocular pain and/or floaters, however, are quite often asymptomatic. Comprehensive slit lamp examination may reveal an inflammatory response (“cells and flare”) in the posterior chamber. The severity of the response may result in a “snow banking” or “snowball” appearance, and resultant scarring can form, leading to vision loss.

Possible underlying conditions may include:

Toxoplasmosis	Histoplasmosis	Tuberculosis
Sarcoidosis	Syphilis	AIDS
CMV	Ulcerative colitis	Rheumatoid Arthritis
Herpes Zoster	Ankylosing Spondylitis	Behcet Syndrome
Reiter Syndrome	Lyme Disease	

Standard lab tests include:

CBC with differential	ANA	HLA-B27
RF	ACE	PPD
FTA-ABS	Lyme titer (if appropriate)	RPR

ICD-9 CODES:
364.3 Uveitis

12.13 PTERYGIUM

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: A pterygium is an elevated patch of subconjunctival tissue that extends from the medial canthus onto the cornea. The slow, progressive encroachment of a pterygium upon the cornea may lead to progressive astigmatism and refractive error that may not correct with spectacles. Pterygia may also cause irritation of the cornea and conjunctiva, resulting in complaints of a red, scratchy, dry eye. The use of UV protective lenses may reduce the likelihood of pterygium growth and irritation.

WAIVER: Asymptomatic ptyergia up to and including 1.0 mm corneal invasion (measured from the limbal border at the slit lamp) are NCD for both applicants and designated aviation personnel, provided vision corrects to 20/20 with spectacles.
Designated aviation personnel with symptomatic pterygia or pterygia greater than 1.0 mm are CD but a waiver will be considered if vision corrects to 20/20 with spectacles and symptoms, if present, are controlled with conservative measures such as artificial tears. If a pterygium requires surgical removal, a waiver may be considered when the member's vision has stabilized and is correctable to 20/20, post-op complaints have resolved, and the member is returned to full duty by the operating surgeon. Aviation applicants with pterygia greater than 1.0 mm are NPQ with waiver not recommended.

INFORMATION REQUIRED:

1. Ophthalmology or optometry consult to include:
   a. Drawing or clear description of the pterygium and the amount of encroachment on the cornea.
   b. Manifest refraction documenting visual acuity corrects to 20/20 with spectacles.
   c. Documentation of any symptoms (e.g. tearing, irritation, etc…) and any treatments.
2. Post-op patients also must also submit:
   a. Operative report.
   b. Clearance for full duty by operating surgeon.
   c. Post-op manifest refraction documenting visual acuity corrects to 20/20 with spectacles.
   d. Documentation of absence of post-op complications or complaints.

ICD-9 CODES:
372.4 Pterygium

12.14 OCULAR MOTILITY WORKSHEET

OCULAR MOTILITY WORKSHEET

* Exam and the reporting of results MUST conform with the instructions on the back of this form *

Pertinent History

Distant Visual Acuity OD 20/ OS 20/	**Manifest Refraction** OD_____ Corrected to 20/ OS_____ Corrected to 20/
Cycloplegic Refraction (as needed) OD_____ 20/ OS_____ 20/	**Habitual Rx** OD_____ OS_____ Prism (if any in specs):_____

Correction used for remainder of examination ❑ Habitual ❑ Manifest ❑ None

Cover Test

Far: (all gazes) R | | | | L

Near (all gazes) R | | | | L

Extraocular Motility	**Maddox Rod or Von Graefe Prism Diopters**	**Stereopsis (Verhoeff, Randot, or Titmus) Arcseconds**
Worth 4 Dot @ 20 feet	**Vectograph (if available)**	**Red Lens Test**
4$^{\Delta}$ Base Out (microstrab)	**Other test results (as applicable)**	

Impression:		**Is patient NOHOSH?** ❑ Yes ❑ No
Provider	**Date**	**Provider Phone**
Patient Name		**SSN**
Rank/Rate	**Unit/Address**	

INSTRUCTIONS FOR OCULAR MOTILITY WORKSHEET

IF YOU HAVE ANY QUESTIONS PLEASE CALL NAMI OPHTHALMOLOGY AT DSN 922-4558 OR COMMERCIAL (850) 452-2933, or
Email: usn.pensacola.navmedotcnamefl.list.nami-ophthal@mail.mil

PERTINENT HISTORY: Explain why the workup is being done. For example: "scored 7 esophoria on AFVT" or "muscle surgery OS at age 6 years."

REFRACTION: SNA applicants need a cyclopentalate 1% cycloplegic refraction recorded, all others require a manifest refraction only. SNA applicants who see less than 20/20-0 on the Goodlite Chart unaided also require a manifest refraction recorded.

HABITUAL RX: Record the subject's habitual Rx here if different from the manifest. If none is used, or the subject wears contact lenses, please note on the form.

COVER TEST: Report **numerical** prism diopter values. Do horizontal and/or vertical as applicable to the case. Horizontal limits are approximately 45 degrees to the left and right of center. Vertical limits are approximately 25 degrees above and 35 degrees below center. Limits may need to be modified as dictated by the size of the nose and brow.

EXTRAOCULAR MOTILITY: Give description, such as "Smooth and full."

MADDOX ROD/VON GRAEFE: Report **numerical** prism diopter values for **both** horizontal and vertical phorias. Fixation target must be at 20 feet.

STEREOPSIS: Verhoeff, done at 1 meter in a normally lit room. Neither the device nor the patient should move during the test. Randot or Titmus stereo testing acceptable, do not allow head movement. Report in Arcseconds.

WORTH 4 DOT: Perform at **both** distance and near. Report "fusion," "diplopia," or "suppression OD (or) OS."

VECTOGRAPH: (If available) Test on the 20/40 (V O C S R K 4) line of the A.O. Vectographic slide. Report any suppression, and which eye is suppressing. If there is no suppression, state so. If not available, put "Not Available".

RED LENS TEST: (If available – Required for USAF) Test all 9 position of gaze, just like the cover test. Report any diplopia. If no diplopia is reported, state so.

4^{Δ} BASE OUT TEST: This test is not always applicable and may be left blank if not used. Prism introduced over either eye to look for suppression. Can augment the diagnosis of microstrabismus.

NOHOSH = **N**o **O**bvious **H**eterotropia **o**r **S**ymptomatic **H**eterophoria. Answer this question if the subject is NPQ (Not Physically Qualified for SNA (Student Naval Aviator), but would consider applying for the SNFO (Student Naval Fight Officer) program.

PROVIDER PHONE NUMBER: Indicate **both** DSN (military) and commercial.

Acronyms/definitions:
NAMI: Naval Aeromedical Institute (Pensacola, FL)
AFVT: Armed Forces Vision Tester
SNA: Student Naval Aviator
SNFO: Student Naval Flight Officer
Verhoeff: Specialized manual stereo tester.

12.15 CORNEAL REFRACTIVE SURGERY (PRK/LASIK)

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS:

Definitions:

Corneal Refractive Surgery (CRS): A laser is used to reshape the anterior corneal surface reducing refractive error and reliance on spectacles or contact lenses. A "wavefront-guided" (WFG) or "custom" procedure uses wavefront analysis technology, and may improve the visual outcome of the procedure.

Photorefractive Keratectomy (PRK) or Laser-Assisted Epithelial Keratectomy (LASEK): Laser energy is applied to the anterior corneal surface after the epithelium is temporarily displaced or removed. No corneal flap is created. PRK variants include LASEK (epithelium is preserved), and Epi-LASIK (epithelial flap is created). Pain can be moderate to severe, and visual recovery can take months.

Laser in-situ keratomileusis (LASIK): A cornea stromal flap is created with a surgical blade or infrared laser after which, an excimer laser is used to reshape the exposed corneal stroma. The corneal flap is then repositioned. Pain is minimal and vision recovery is much faster than PRK.

All forms of refractive surgery are disqualifying for aviation duty, but waivers are readily granted if the member meets all waiver guide policy guidelines. Designated members who undergo refractive surgery shall be grounded at the time of surgery, but a grounding physical is not required. Designated members shall not return to flight duty until a Local Board of Flight Surgeons (to include one eye provider) recommends a waiver via an Aeromedical Summary (AMS) and issues a ninety-day temporary aeromedical clearance notice.

Both PRK and LASIK are waiverable at this time (see specific sections below).

All other forms of refractive surgery, or any vision or corneal manipulation or surgery, including **RK** (radial keratotomy), **LTK** (laser thermal keratoplasty), **ICR** (intracorneal ring), **ICL** (intraocular corrective lens), and clear lens extraction, are **permanently disqualifying (CD/WNR)** for all aviation duty Class I, II and III personnel. The prior use of orthokeratology (rigid contact lens corneal reshaping) is NCD provided that it is permanently discontinued prior to obtaining flight status and all appropriate refractive standards are met with stable topography.

PRK AND LASIK GENERAL GUIDELINES (applicants and designated personnel)

1. Post-operatively, the member must still pass all MANMED vision standards for their class or applicant status, and must wear corrective lenses while flying, if required, to achieve the vision standard.
2. Refractive stability and a satisfactory postoperative slit lamp exam are required. Trace, stable, peripheral haze that is not visually significant, is not a hindrance to waiver. Brightness acuity testing is required for any corneal haze.
3. There must be no symptoms or conditions that would be cause for concern during flight duties, including, but not limited to: post-operative discomfort requiring ongoing care, moderate or severe dry eye requiring the use of artificial tear drops more than 4 times per day or punctal plugs, recurrent corneal erosions, or visually significant glare, haloes or starbursts.
4. A subsequent PRK or LASIK enhancement or "touch-up" must meet the same timeframe and clinical guidelines, and requires a second waiver submission package and AMS.
5. Wavefront-guided LASIK ("Custom LASIK") is preferred in aviation personnel, as custom treatment may increase visual acuity and final vision outcomes, but in no way is required for a waiver recommendation, as not all patients are candidates for custom treatments. LASIK may reduce the risk of significant haze symptoms, which can occur after PRK. LASIK also reduces the operational down-time before a waiver application may be submitted for designated aviation personnel. The final decision of performing PRK or LASIK is made by the operating ophthalmologist with the patient's informed consent.
6. Copies of pre-operative, and post-operative examination paperwork, including the laser treatment reports, are required for waiver considerations. NAMI may request additional information as deemed medically necessary to make a waiver determination.
7. For PRK and LASIK waiver renewal, submission is as stated in the member's BUMED waiver letter. All new refractive surgery waiver approvals will usually only require routine five-year submission.

Applicants only:

1. **Applicants** may not have more than 3D of pre-operative cylinder and 3.5D of pre-op anisometropia, and must satisfy the above general guidelines, as well as the following guidelines:
   a. **SNA applicants** shall not exceed pre-operative refractive limits of +3.00 to -8.00 (SE) for either PRK or LASIK, and must additionally have a post-operative cycloplegic refraction using cyclopentolate performed at a military installation.
   b. **Class II & III applicants:** pre-operative refractive error shall not exceed +6.00 to -8.00 (SE) for PRK or LASIK.
   c. **Civilian applicants** must obtain PRK or LASIK at their own expense at a civilian refractive surgery center. DoD instruction 6130.03, enclosure 4, requires a six month minimum wait time before submitting LASIK or PRK waiver requests for civilian accessions. All paperwork and operative reports must be available and submitted for waiver consideration.
   d. **Active duty applicants** with a normal and stable post-operative course who are applying for aviation programs (i.e. STA-21, UAV operator, NFO/SNFO to SNA transition, etc.), may be considered for waivers at 3 months, with due consideration for all MANMED and ARWG policies and guidelines.
   e. **Active duty applicants** may have astigmatism correction up to 6D of cylinder, per FDA limits on the respective laser platform utilized. ***Programs leading to a commission must still adhere to the 3D cylinder limit.***
   f. **Active duty aviation students** (SNA, SNFO, etc.) who are authorized to undergo refractive surgery by the aviation training command may be considered for waivers at

3 months. Active duty members require treatment at a military refractive surgery center. Aviation students may have astigmatism correction up to 6D of cylinder, per FDA limits on the respective laser platform utilized.

Active duty aviation personnel only:
Designated aviation personnel must satisfy all the above general guidelines and the following guidelines:

1. A PRK waiver request may be submitted after the following wait periods:
   a. myopia -6.00 diopters or less spherical equivalent (SE): 3 months
   b. myopia greater than -6.00 diopters SE: 6 months
   c. hyperopia SE: 6 months
2. A LASIK waiver request may be submitted after the following wait periods:
   a. myopia correction up to -11.5D SE: 2 weeks
   b. hyperopia up to +4D SE: 4 weeks
   c. hyperopia greater than +4D SE and up to +6D SE: 8 weeks
3. If still requiring prescription topical medication (artificial tears, or cyclosporine drops excluded) then restriction of flight activities to the local area is recommended.
4. Class I aviators, specifically, must undergo PRK or LASIK treatment at one of the USN designated refractive surgery centers which have Navy ophthalmology staffing (includes Tripler AMC, Keesler AFB, or Wilford Hall). Check for a current listing if considering a non-Navy facility since staffing may change.
5. Class II, III, and other active duty flight personnel (e.g. UAV personnel, select passengers) may undergo PRK or LASIK at any DoD refractive surgery center.
6. For PRK, pre-operative refractive limits are per the FDA limits for the particular refractive laser platform utilized, for already designated personnel within their aviation class. For LASIK, waivers may be granted for myopia up to -11.5D spherical equivalent (SE), hyperopia up to +6.00D (SE), and up to 6D of cylinder (astigmatism correction).
7. For both PRK and LASIK, the PRK AMS template (available on the NAMI waiver guide website) may serve as a Local Board of Flight Surgeons, requiring review and endorsement by two flight surgeons, plus an eye care provider (military optometrist or military ophthalmologist), and commanding officer cognizance. A ninety-day aeromedical clearance notice may be issued at that time, pending BUPERS waiver approval. Submit the AMS and waiver package immediately to NAMI to avoid unnecessary delays in obtaining BUPERS final approval.
8. No deployment for at least three months following PRK and one month following LASIK surgery (per NAVMED POLICY 08-008, dtd 10 JUN 2008). Post-operative operational training requirements (such as CS gas, pepper spray, water survival training, etc.) may be performed per ophthalmologist guidance.

Select Reserve designated aviators:
Reservists must satisfy all the above general guidelines and the following guidelines:
1. May obtain PRK or LASIK at their expense from civilian sources of care.
2. A pre-operative evaluation is strongly encouraged to be submitted to NAMI Ophthalmology before corneal refractive surgery is performed. Contact NAMI Ophthalmology at 850-452-2933 or usn.pensacola.navmedotcnamefl.list.nami-ophthal@mail.mil.
3. Final approval to proceed with PRK or LASIK requires written permission from the unit commander and unit flight surgeon.

REFRACTIVE SURGERY DISCUSSION:

The goal of corneal refractive surgery is to reduce or eliminate dependence on spectacles or contact lenses, which can be bothersome at times while flying. Refractive surgery has been studied extensively in the aviation environment and has yielded highly satisfying results. More than 95% of Naval Aviators reported "increased effectiveness" after undergoing refractive surgery.

Wavefront guided (WFG), or "custom" refractive surgery has been evaluated by the Naval Refractive Surgery Center and yielded results that are superior compared to conventional treatment. Based on this analysis, aviation personnel should undergo a wavefront-guided or custom procedure, if at all possible. Some patients are not candidates for a wavefront-guided treatment or LASIK for various reasons, and conventional or PRK treatment remain viable options.

As with any surgical procedure, there are inherent risks, such as quality of vision deficits (e.g. halos and glare at night), haze, flap complications and persistent eye discomfort (e.g. dry eye or recurrent erosions). A detailed description of the risks, benefits, and alternatives should be discussed and consented between the patient and their refractive surgeon.

Undergoing PRK or LASIK does not guarantee qualification for aviation. The member must meet pre-operative standards in MANMED and this waiver policy guide. Post-operatively the applicant must meet all MANMED vision standards appropriate to their aviation class.

When obtaining corneal refractive surgery it is incumbent upon the member and the member's commanding officer and flight surgeon to be aware of corneal refractive surgery waiver recommendations at the time of the surgery and subsequent submission. Rapidly evolving technology results in changes to waiver guidelines when appropriate. Every effort will be made to publish new regulations widely, but the only valid source of current recommendations shall remain the Manual of the Medical Department. When in doubt, NAMI ophthalmology remains available for consultation through phone or email: 850-452-2933; usn.pensacola.navmedotcnamefl.list.nami-ophthal@mail.mil

ICD-9 CODES:
P1177/H1177 PRK
P1171/H1171 LASIK

The following table outlines recommended wait times for activities after refractive surgery. Please contact your local Eye Provider or the NAMI Eye Department for more information.

***NOTE: ICLs are NOT approved for any class of Naval Aviation, including Unmanned Aerial System Operators.

LASIK: Laser-Assisted In-Situ Keratomileusis
PRK: PhotoRefractive Keratectomy
ICL: Intraocular Corrective Lens (*** not approved for flight duties)

	ICL***	LASIK	PRK
Showering or washing face.	No restriction. Note: You should always avoid getting water in the eyes, and pat the eyes dry (do not rub the eyelids)		
Air travel as a passenger	3 days		5-7 days (after removal of bandage contact lens)
Aerobic activity (walk, run, bike, exercise machines) or weight training. Notes: Avoid getting sweat, dust, or wind in eyes.	2 weeks	As soon as pain and light sensitivity have resolved: 1-2 days.	As soon as pain and light sensitivity have resolved: 3-5 days.
Bending over (toe touches, sit-ups)	2 weeks	No restrictions.	
Contact sports: Martial arts, basketball, boxing, wrestling	1 month. Note: There is a lifelong risk of opening surgical wounds with trauma to the eye. If you resume these activities, you must wear eye protection.		1 month. Optional eye protection should always be considered in contact sports.
Exposure to hot tubs, pools, lakes, ocean, river	1 month Note: Risk of infection from contaminated water		
Wearing eye make-up, including camouflage face paint	2 weeks Note: Infection risk from contaminated make-up. When make-up use is resumed, start with new, freshly opened products. Old eye makeup should be discarded.		
Working in a dusty or dirty environment: outdoor rifle range, deploying to the field, gardening	1 month	2 weeks	1 month
CS exposure (gas chamber) or OC spray (pepper spray) exposure	3 months		6 months
Driving an automobile or motorcycle with goggles or face shield	When patient meets the visual acuity requirements, and feels comfortable.		
Wearing UV protection (sunglasses)	Wear UV protection whenever practical.		Full time first month, as much as possible the 2nd-4th months, and whenever practical afterwards.

12.15A LASIK IN DESIGNATED AVIATORS STUDY

Last Revised: APR 15 Last Reviewed: APR 15

Class I, Class II: The LASIK Study for designated Class I and Class II personnel has been closed. Be aware that Class I personnel are required to have their LASIK procedure performed at one of the DoN Refractive Surgery Centers (including Tripler AMC and Keesler AFB, which have Navy ophthalmology support). Class II personnel may have LASIK performed at any DoD refractive surgery center, being mindful of current refractive policy limits for waivers. For designated personnel previously enrolled in the study, annual submission is required for renewal with supporting documentation per the LASIK study protocol.

12.15B LASIK IN STUDENT AVIATORS STUDY

Last Revised: APR 15 Last Reviewed: APR 15

WAIVER: The LASIK Study for Student Naval Aviators Study has been closed to new enrollees; but, LASIK is still waiverable for new candidates and students in all aviation classes. Contact Information: usn.pensacola.navmedotcnamefl.list.nami-ophthal@mail.mil, Contact Phone: 850-452-2933.

Discussion: "All-laser" LASIK is preferred, which utilizes two types of lasers: one to create the LASIK flap and another to perform the corneal vision correction. The laser flap is preferred over a metal keratome blade to reduce the risk of operative complications and enhance post-op stability. "Wavefront-guided" or custom LASIK is preferable, if available, and the patient is a candidate for such after evaluation by their surgeon. "All-laser, custom LASIK" gives a better visual outcome over conventional treatments. This has been borne out by repeated Navy research studies. Please note that no specific method of LASIK is mandatory for waiver consideration, as long as all pre- and post-op criterion and vision standards are met in Chapter 12.15 of this waiver guide.

ICD-9 CODES:
P1171/H1171 LASIK

12.16 NAVAL AVIATION CONTACT LENS POLICY

Last Revised: MAR 15 | Last Reviewed: Apr 2015

All classes of Naval aviation personnel shall be allowed to wear contact lenses during duty involving flight when the following requirements have been met as outlined below, and allowed by local commander's policy in theater. A notation from the flight surgeon authorizing contact lens use is required on the aeromedical clearance notice (up-chit) DD2992. Contact lens use is not considered disqualifying (NCD). A waiver for their use is not required.

REQUIREMENTS:

1. Visual requirements specific to each class and service group must continue to be met while wearing contact lenses.
2. Near visual acuity must be 20/20 in each eye. Presbyopic personnel may use spectacles over their contacts to achieve this standard.
3. There must be no symptoms incompatible with safe flight, e.g. fluctuating vision, reduction in vision at night or under glare conditions, or discomfort.
4. Must have worn contact lenses on a daily basis without complication for a minimum of one month before their use can be authorized on the "up-chit".
5. The prescribing eye doctor must note in the patient's record that a good fit has been achieved and that no further changes are planned.
6. SCLs are not to be worn overnight while in flight training or flight status unless operationally mandated. If extended contact lens wear (greater than 24 hours) is an operational requirement, lenses may be worn for a maximum of seven consecutive days. Personnel are encouraged to limit extended wear to the shortest period possible. A minimum 12 hour recovery period, during which no contact lenses are worn, shall follow each extended wear period. Rigid gas permeable lenses shall not be used overnight.
7. During aviation duties, it is the responsibility of all contact lens wearers to carry clear spectacles in a readily accessible protective case which correct the wearer's vision to all applicable standards.
8. Follow-up examinations for personnel wearing contact lenses shall be conducted at least annually by a Navy optometrist or ophthalmologist.

APPROVED CONTACT LENSES:

1. Only nationally available, FDA approved lenses and solutions are allowed.
2. Lenses of first choice shall be FDA approved silicone hydrogel contact lenses. Rigid gas permeable lenses are permissible, but strongly discouraged.
3. The following are NOT authorized:
   a. Bifocal/multifocal contact lenses.
   b. Cosmetically tinted contact lenses.
   c. Sports tinted contact lenses (e.g. amber or green).
   d. Contact lens wear for corneal refractive therapy (ortho-K).
4. The following are only authorized with an appropriate waiver:
   a. Combinations of rigid and soft contact lenses.
   b. Contact lens use for therapeutic reasons such as keratoconus or basement membrane dystrophies.

For any other questions regarding specific brands of contact lenses or waiver issues, please contact:

Phone: NAMI Eye Department at 850-452-2933
Email: usn.pensacola.navmedotcnamefl.list.nami-ophthal@mail.mil

12.17 ALLERGIC CONJUNCTIVITIS

Last Revised: APR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: The condition can cause blurred vision, ocular itching, burning, tearing/discharge, eyelid edema, and photophobia. These signs and symptoms, along with the use of medications with unacceptable side effects, have the potential for in-flight incapacitation and prolonged periods of grounding.

WAIVER: Chronic and perennial allergic conjunctivitis is CD for all applicants according to the MANMED. Seasonal allergic conjunctivitis in designated personnel is NCD. The member shall be grounded while symptomatic. A waiver is not required if the member is treated with an approved medication. If the condition is associated with rhinitis, see chapter 6.1, ALLERGIC/VASOMOTOR RHINITIS.

TREATMENT: Mild symptoms of allergic conjunctivitis may be relieved by cool compresses and artificial tears to flush away the allergens. Moderate to severe symptoms may require, in addition to cool compresses and artificial tears, ophthalmic antihistamines and/or mast cell stabilizers. **Only prescription ophthalmic antihistamines and mast cell stabilizers are approved for waivers**.

OTC or prescription ophthalmic vasoconstrictors, decongestants, NSAIDS, and corticosteroids are not approved. Note that ophthalmic antihistamines containing vasoconstrictors and/or decongestants are not approved. If necessary for severe seasonal allergic conjunctivitis, non-sedating oral antihistamines may also be used, see 6.1 ALLERGIC/VASOMOTOR RHINITIS for an approved list of medications.

DISCUSSION: Two forms of allergic conjunctivitis are quite common: seasonal (SAC) and perennial (PAC). SAC coincides with pollen blooms (e.g., ragweed, trees, grasses).
PAC may occur at any time or even year round (e.g., exposure to ubiquitous cat dander, chemicals or dust). The most effective treatment is elimination or avoidance of the potentially offending allergen, although this may not always be possible or practical.
Due to the potential chronicity of allergic conjunctivitis, long term use of medication may be necessary to keep the member asymptomatic for aviation duties, including nasal and inner ear functionality. The flight surgeon should be cognizant that the aviator or aircrew member may have residual allergy symptoms such as itchy, tearful eyes, runny nose, sneezing, scratchy throat and other allergic symptoms which would preclude flight until effectively treated. Ophthalmic antihistamines and/or mast cell stabilizers have minimal side effects and are approved for use in aviation personnel. Contact lenses may exacerbate the condition and should not be worn until the member is asymptomatic.

ICD-9 CODES:
372.14 Chronic Allergic Conjunctivitis
372.05 Acute Atopic Conjunctivitis

12.18 CENTRAL SEROUS RETINOPATHY

Last Revised: MAR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Central serous retinopathy (CSR) is a unilateral, localized detachment of the retina in the macular region which may cause decreased or dim vision, distortion or miniature appearance of objects, and/or washed out color vision.

WAIVER: CSR is considered disqualifying (CD). Waivers will not be considered for applicants (CD/WNR), but may be considered for designated personnel. Evaluation by an optometrist or ophthalmologist is required with an annual submission.
Local boards are authorized for initial cases of CSR once condition has resolved (cleared by optometry/ ophthalmology), if less than 60 days has elapse since diagnosis, best corrected visual acuity has returned to the aviator's specific class standard, the aviator is asymptomatic to visual disturbances, and no metamorphopsias are noted on Amsler Grid testing. Recurrent cases of CSR require a new waiver to be submitted for review and approved by NAMI for each new episode (no local boards authorized). **A grounding physical is required if more than 60 days has elapsed since diagnosis without resolution.**

INFORMATION REQUIRED:

1. Slit lamp examination of the macula with 78/90 diopter fundus lens
2. Amsler grid, documenting any metamorphopsia
3. Optical coherence tomography reports (submit color scans: from diagnosis to resolution)
4. Humphrey Visual Field 10-2 (only required if laser treatment was performed)
5. Fluorescein angiography (optional, at the discretion of the treating ophthalmologist, submit if performed and photos available)

TREATMENT: CSR is self-limiting with a good prognosis. Eye exams should be performed every 4-6 weeks until the condition has resolved and vision has stabilized and returned to baseline. Ocular coherence tomography should be performed upon diagnosis and after subjective/objective findings have resolved. In certain cases, laser photocoagulation may be considered to enhance recovery, but may leave a small permanent blind spot.

DISCUSSION: Central serous retinopathy can be visually debilitating to a patient's central vision and results in normal to decreased visual acuity ranging from 20/25 to 20/200. This condition usually occurs in males (10:1), 20 to 50 years old, and is associated with type-A personalities and increased stress levels. Typically patients recover visual acuity, but a small percentage of patients may not return to 20/20. Resolution usually occurs over a course of 4-6 months, with continuing improvement in visual acuity over 24 months. Prognosis is worse for patients with recurrent or prolonged disease. Laser photocoagulation may be considered for occupational reasons, if CSR occurs in the contralateral eye, or if no resolution has occurred in more than 6 months. Laser intervention may shorten duration by up to 2 months, but typically has no effect on the final visual acuity outcome.

ICD-9 CODES:
362.41 Central Serous Retinopathy

12.19 PIGMENT DISPERSION SYNDROME

Last Revised: MAR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Pigment Dispersion Syndrome (PDS) is a bilateral condition characterized by the liberation of pigment granules from the posterior iris which deposit on the anterior cornea, iris, and trabecular meshwork. PDS has the potential to increase intraocular pressure, leading to secondary glaucomatous damage to the optic nerve and reducing peripheral vision. The classic "triad" of PDS consists of pigment on the corneal endothelium (Krukenberg Spindle), trabecular meshwork pigmentation, and transillumination defects (TID) of the iris.

WAIVER: Any clinical finding of a Krukenberg spindle, trabecular meshwork pigmentation, or iris transillumination defects warrants a diagnosis of PDS, which is considered disqualifying (CD) for all aviation personnel.

Waivers are considered for designated personnel if intraocular pressure (IOP) is 22 mmHg or less in each eye, taking into account corneal thickness (corrected IOP), with no more than 4 mmHg difference between the eyes, normal Humphrey 24-2 visual fields, no glaucomatous changes present in the optic disc, and no treatment (pressure lowering drops/laser) is indicated. ***Local boards are authorized for designated personnel with normal corrected IOP, as long as no treatment is indicated, and no signs of glaucoma are present on ophthalmologic examination (normal visual fields, normal optic nerve appearance).***

Applicants presenting with a Krukenberg spindle or trabecular meshwork pigmentation, but without transillumination defects, will be considered for a waiver if the corrected IOP is 22 mmHg or below in each eye and no laser or medical treatment is indicated. Applicants with transillumination defects or a corrected IOP above 22 mmHg in either eye will not be considered for a waiver (CD/WNR) due to the high rate of conversion to pigment dispersion glaucoma in future years.

Waiver submission is required on a routine basis. If the corrected IOP is above 22 mmHg, then annual submission with a complete glaucoma screening is required. If corrected IOP measurements are above 22 mmHg by applanation tonometry on two separate occasions, or if laser/medical treatment is required for management of PDS, then the diagnosis should be converted to pigmentary dispersion glaucoma (PDG - see Glaucoma chapter 12.8).

INFORMATION REQUIRED:

Initial Waiver:

1. Eye exam by a Navy optometrist or ophthalmologist
2. IOP measurement by applanation tonometry (Goldmann)
3. Central corneal thickness measurement (Pachymetry) with IOP correction factor
4. Automated visual field (24-2 SITA)
5. Optic nerve evaluation with comment on health of neural rims, with color disc photos uploaded into AERO
6. Slit lamp examination with comment on anterior segment findings related to PDS
7. Gonioscopy to document trabecular meshwork pigmentation

Waiver Continuance:

1. Eye exam by a Navy optometrist or ophthalmologist.
2. IOP measurement with applanation tonometry (Goldmann)

3. Automated visual field (24-2 SITA)
4. Optic nerve evaluation with comment on health of neural rims, with color disc photos uploaded into AERO
5. Slit lamp examination with comment on anterior segment findings related to PDS
6. Gonioscopy, if performed

TREATMENT: Besides annual monitoring of PDS, treatment is usually not initiated if IOP is 22 mmHg or less, and there are no signs of glaucomatous changes. However, any glaucomatous changes or elevation of IOP may cause the eye provider to recommend pressure-lowering medications or laser treatments (See Glaucoma chapter, 12.8 for discussion on waivers for glaucoma).

DISCUSSION: Pigment dispersion syndrome (PDS) is a bilateral condition that typically occurs in young adult males (2:1) under the age of 45. PDS is characterized by liberation of pigment granules from the posterior iris, depositing in the anterior chamber structures. It can appear asymmetric between the eyes.

Deposition of this pigment occurs on the posterior corneal surface ('Krukenberg spindle' on the endothelium) and in the anterior chamber angle trabecular meshwork (TM). Pigment in the TM is deposited in a homogenous pattern, unlike other entities that can cause TM pigmentation (uveitis, exfoliation syndrome, melanoma, IOL-iris chaffing). Fine pigment granules can also been seen on the anterior iris surface and the anterior lens capsule. Pigment liberation occurs as a result of the posterior pigment epithelium of the iris rubbing against the crystalline lens zonules. Slit-like transillumination defects (TID) will be seen in a radial pattern in the mid-periphery of the iris when a bright light is shown through the pupil, best seen in a very dark room in the slit lamp. Pigment liberation can also occur due to ocular trauma or surgery, but TI defects will rarely be seen. The typical patient with PDS is a young, white male who is myopic with a slightly concave iris posture. It is uncommon in persons with African or Asian ancestry, but occurs in up to 2% of the Caucasian population. It appears to have incomplete penetration by way of autosomal dominant inheritance.

PDS can lead to pigment dispersion glaucoma (PDG), which is a type of secondary open-angle glaucoma. Conversion of PDS to PDG occurs in approximately 20% of PDS patients within 10 years of initial diagnosis. PDG is diagnosed when the classical triad of PDS is present (Krukenberg spindle, iris trans-illumination defects, and trabecular meshwork hyperpigmentation), along with progressive optic nerve cupping, glaucomatous visual field changes, or ocular hypertension. Treatment should be begun if the IOP is elevated, even without optic nerve degeneration or visual field abnormalities, to reduce the risk of future optic nerve damage and vision loss.

ICD-9 CODES:
364.53 Pigment Dispersion Syndrome / Pigmentary Iris Degeneration / Translucency of Iris

12.20 PERIPHERAL RETINAL DEGENERATION AND RETINAL HOLE

Last Revised: MAR 15 Last Reviewed: APR 15

AEROMEDICAL CONCERNS: Peripheral retinal degeneration and retinal holes are significant risk factors for retinal detachment, which can cause a painless, sudden loss of vision that may permanently impact peripheral and central vision. Retinal degenerations are commonly seen in highly myopic individuals and the increased risk of retinal detachment remains elevated even after corneal refractive surgery is performed.

WAIVER: Any peripheral retinal degeneration or retinal hole is considered disqualifying (CD). A diagnosis of "white without pressure" is a descriptive term for the appearance of the retina and is Not Considered Disqualifying (NCD). Guidance for designated aviation personnel and applicants are as follows:

- **Peripheral Retinal Degeneration** (Lattice degeneration, paving stone degeneration, snail track degeneration) – Annual waiver with Dilated Fundus Exam (DFE). Local boards are authorized after DFE is preformed to assess stability and rule out retinal detachment. Applicants may be considered for waivers through the NAMI waiver process.

- **Peripheral Retinal Hole** – Ophthalmology consult is required prior to waiver consideration. If the hole is considered stable with no sub-retinal fluid and treatment is not indicated, retinal holes may be considered for an annual waiver with DFE (performed by optometry or ophthalmology). Holes treated with laserpexy may be considered for an annual waiver with DFE after one month follow-up time has elapsed and the surgeon has determined stability. ***Local boards are authorized after ophthalmology determines fitness for full duty if less than 60 days has elapse since diagnosis and treatment.*** Applicants may be considered for waivers through the NAMI waiver process.

- **Retinal Tear/Detachment** – CD, ***no local boards authorized***. See Retinal Detachment Chapter (12.7) for more information and waiver guidance for applicants and designated aviation personnel.

INFORMATION REQUIRED:

1. Eye exam with DFE by Eye Care provider (Ophthalmology consult required for retinal holes) with comment on long-term prognosis
2. Detailed retinal drawings or photographs

TREATMENT: Patient education and monitoring with a comprehensive eye exam, including dilated fundus examination, is the most common course of action for patients with peripheral retinal degenerations and retinal holes. Patients with retinal holes should be further evaluated with scleral depression to ensure the stability of the hole and determine presence or absence of shallow retinal detachment. Most small, stable holes are monitored annually, but may require prophylactic laser treatment to reduce the risk of future detachment. Patients should be aware of the signs and symptoms of retinal detachment, including an increase of flashing lights, floaters, or blurry or obscured areas of vision beginning in the periphery. The patient should be educated to return to the clinic for a repeat dilation immediately if they experience these symptoms.

DISCUSSION: Peripheral retinal degenerations (specifically lattice and snail-track degenerations) are vitreoretinal changes in the retina and overlying vitreous usually located in the far periphery. The involved retina thins and becomes fibrotic, resulting in vitreous pockets (lacuna) forming above the affected areas of the retina. Lattice degeneration is clinically prevalent in 10% of patients and is usually non-pigmented, but may become hyperpigmented in 30% of cases. Half the cases of lattice are bilateral, symmetrical, and refractive error does not play an important factor in the development (seen in 15% of high myopic patients). Snail track lesions occur in up to 80% of eyes with lattice degeneration and can be associated with myopia. Although 30% of retinal detachment patients have a predisposed peripheral retinal degeneration, the clinical rate of detachment is only 0.5%. There is no evidence that prophylactic therapy reduces the risk of future retinal detachment.

Thinning of the retina may lead to the formation of atropic holes or retinal breaks in 25% of patients, but the frequency of retinal detachment as a result of retinal holes is low (3-14%). Most atrophic holes do not require any treatment since they are not associated with vitreous traction. However, upon discovery of atrophic holes, a consultation to an ophthalmologist is indicated especially with patients who have high myopia, those who are active in contact sports, or if there is a family or personal history of retinal detachment.

Retinal ‘white without pressure’ (WWOP) is an optical phenomenon in which vitreous traction changes the retinal coloration upon examination. WWOP is usually bilateral and observed in 5% of patients over 20 years of age, but roughly 66% in patients over 70 (30% of the total population). White without pressure is an incidental finding and there is no associated risk of retinal holes, tears, or breaks with this condition.

ICD-9 CODES:
361.31 Round hole of the retina without detachment
362.60 Peripheral retinal degeneration, unspecified
362.61 Paving Stone Degeneration
362.63 Lattice Degeneration

13.0 ORTHOPEDICS

Last Revised: April 2016 Last Reviewed: April 2016

In general, any condition which results in surgery will require a package to be submitted with all available documentation (including operative reports) for review of waiver consideration via AERO.

13.1 ABNORMAL SPINAL CURVATURE

Last Revised: September 15 Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NCD	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
WR	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
WNR	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
LBFS	**N/A**	**No**	**No**	**No**	**No**	**No**	**No**
EXCEPTIONS	**None**						
LIMDU/PEB	**If LIMDU/PEB has been held, Grounding PE and AMS should be submitted when board written. Results of this board must be included in waiver package. Member not eligible for waiver until returned to Full Duty by Board.**						

Key	
Yes	**For: 1) Scoliosis of the thoracic or lumbar spine over 20 degrees; 2) Thoracic kyphosis over 40 degrees; and 3) Lumbar lordosis > 50 degrees for applicants and for designated personnel > 55 degrees (all measured by Cobb angle)**
+/-	**Depends upon whether listed requirements met, waiver may or may not be recommended ("Case-by-Case" basis)**

AEROMEDICAL CONCERNS: Excessive kyphosis, scoliosis, lordosis, or combinations of them may subject the intervertebral disks to excessive Gz+ loads during ejection. In a classic review by Griffin, the incidence of spinal fractures during ejection seat operations was found to be associated with the posture adopted at the time of ejection. Spinal fractures were noted to occur more frequently when pilots were in slight flexion to initiate pan handle-activated mechanisms, but less frequently when they used a face-curtain system that permitted an induced extension of the spine [1]. It is therefore reasonable to assume that pre-existing spinal deformities similarly expose the pilot to increased risk. Symptomatic conditions may cause distracting backache during prolonged restriction in a confined cockpit and subjection to vibration or excessive G forces.

Abnormal spinal curvature beyond 30 degrees poses risk for ejection injury. The center of gravity of the upper torso lies in front of the spine. Whenever loads are applied along the spinal axis, as in ejection, a bending movement is produced which increases the likelihood of a compression fracture. While a waiver is possible for designated aircrew, there is little point in considering a waiver for applicants as initial training will involve ejection seat aircraft. The long term outcome in cases of scoliosis up to 30 degrees is very favorable, but above 30 degrees is uncertain. Note that there is a 3-5 degree error in measurements taken by the Cobb method.

WAIVER: Scoliosis of the thoracic or lumbar spine over 20 degrees, as measured by the Cobb method, is disqualifying with no waiver for applicants, but can be waived up to 30 degrees on a case-by-case basis in designated personnel. Thoracic kyphosis over 40 degrees is CD, but can

be waived up to 45 degrees in designated personnel. Waiver is not normally recommended when there is: 1) recurrent uncontrollable pain; 2) interference with function; 3) a neurologic abnormality; or 4) when the condition is progressive. Lumbar lordosis greater than 50 degrees is disqualifying with no waiver for applicants, but may be waived up to 55 degrees in designated personnel [2 and 3]. On a case-by-case basis, both applicant and designated ATC personnel and UAV operators may be waived up to 30 degrees of thoracic or lumbar scoliosis, which is the standard for general duty, non-aviation personnel. Initial applicants must meet DoD and Department of the Navy Standards as set forth in references [2] and [3] and conditions that do not meet these requirements are Considered Disqualifying, Waiver Not Recommended (CD, WNR).

DIAGNOSIS/ICD-9 Codes:
737 Abnormal Spinal Curvature
737.0 Kyphosis
737.2 Lordosis
737.3 Kyphoscoliosis
737.31 Scoliosis, within standards

SERVICE MEMBER MUST HAVE COMPLETED AND/OR PROVIDED PRIOR TO INITIATING WAIVER

- Released from care of orthopedic surgeon, sports medicine physician, osteopathic physician, chiropractic physician, or pain management specialist care with recommendation(s) for the return to flight status with no restrictions - Must be documented on last clinical note (electronic or paper). Further, this consult must state that the spine is asymptomatic, stable, and requires no surgical or other invasive intervention.
- If any of the above noted specialty providers document physical limitations, a complete picture of the patient's level of physical activity and limitations must be included in the documentation.
- Any surgery/procedure note(s) (electronic or paper) utilized in the treatment of the back pain must be documented.
- Must have completed any course of physical therapy/rehabilitation prescribed by the above noted specialty providers and have received an end of care summary, including any post-care recommendations.
- Copies of prior PEB, FNAEB, or HFB if related to this diagnosis. If placed on LIMDU / PEB or if anticipate grounding for greater than 60 days, present to Flight Surgeon for Grounding Physical.
- Provide administrative information (by electronic or paper form) to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **CURRENT PHYSICAL LIMITATIONS**: Curvature of the spine must not interfere with function or wear of the military uniform (i.e. significant shoulder asymmetry) or flight equipment (i.e. gibbus deformity with thoracic kyphosis). In addition, the member must be able to demonstrate the ability to perform all required flight duties without assistance or need for pain medication.
- **TREATMENT**: Scoliosis, if caused by leg length discrepancy, may be improved with a trial of a heel lift on the affected side. Occasional OMT/Manual medicine and/or heel lift therapy when successful is NCD. Surgical treatment is disqualifying. A lower extremity scanogram may disclose the site and extent of a leg length discrepancy.
- **MEDICATIONS**: For designated personnel with abnormal spinal curvature requiring low dose NSAIDs (ibuprofen or naproxen only) or acetaminophen who can maintain close supervision by

a Flight Surgeon may be considered for waiver on a case-by-case basis. Any other medication use will require request for waiver. Designated personnel with degenerative disc disease requiring low dose NSAIDs or acetaminophen who can maintain close supervision by a Flight Surgeon may be considered for waiver on a case by case basis. Must not require controlled substances or muscle relaxants to control pain.
- **SPECIAL TEST STANDARDS/FINDINGS/LEVELS**:
- Documentation of the patient's ability to pass a USN PRT or Marine PFT (as applicable); including a report of the score from each section of the most recent test.
- Orthopedic consultation with measurement of any scoliosis by the Cobb method. Films should be taken in a standing position, and the measurements made by the radiologist or orthopedist.
- Subtle EKG abnormalities, RVH, R-axis deviation, RSR' are associated with idiopathic scoliosis. Cardiology consultation may be required if these are noted.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

How Condition Was Discovered: Mechanism of injury, date of injury, and whether first time or recurrent.
Aviation History: Type of aircraft and type of egress.
Physical Exam: Document any visible asymmetry of the spine; any tenderness on palpation; ability to and degree of flexion/extension, rotate L/R, and side bend L/R; motor, sensory, and reflex findings of related extremities; muscle strength testing of related extremities; results of straight leg test (for lumbar spine).
Studies: Document results of all x-rays, CT scans, and MRI scans obtained in the evaluation of this condition. Report the measurement of the scoliosis by the Cobb method (as noted above). Include EKG results in conjunction with this exam to confirm that the EKG findings discussed above do not exist. Include actual films if measured angle greater than 15 degrees.
Discussion: Brief summary of why this member is WR based on Aeromedical Waiver Guide standards.
Recommendation: NPQ but AA and any caveats for follow on care
Procedure: Upload any operative notes (if applicable).
Medications: Document no longer using any medication for pain. However, for designated personnel with an occasional requirement for continued use of medication for pain, the ONLY acceptable medications for PRN use are acetaminophen, ibuprofen or naproxen.
Consults: Up load final orthopedic, osteopathic, chiropractic, or physical therapy end of care notes (as applicable).

FOLLOW-UP REQUIREMENTS	If the service member becomes symptomatic and in accordance with applicable periodic flight physical requirements.
EXAM	Documentation of a serial exam of the spine as described in "Physical Exam" section (above). Note: No serial radiological studies are required for asymptomatic scoliosis, kyphosis, or lordosis.

References:

[1] Griffin, C. (1975, November). *Proceedings of the Royal Society of Medicine*, 68 (11). London, England.
[2] Under Secretary of Defense for Personnel and Readiness. (2011, September 13). Section 17 -Spine and Sacroiliac Joints, Enclosure (4), DoD Instruction 6130.03 (Change 1) - *Medical Standards for Appointment, Enlistment, or Induction in the Military Services*, pp 29-30. U.S. Department of Defense. Washington, DC.
[3] Navy Bureau of Medicine. (2012, May 2). Article 15-48 – Spine and Sacroiliac Joints, Chapter 15 – Physical Examinations and Standards, NAVMED P-117 (Change 140) - *Manual of Medicine*, pp. 15-36 – 15-37. U.S. Department of the Navy. Washington, DC.

13.2 ANKYLOSING SPONDYLITIS

AEROMEDICAL CONCERNS: Cramped cockpit conditions for prolonged periods may exacerbate the eventual disability. Spinal rigidity in advanced cases is incompatible with ejection, may interfere with emergency ground egress, and can cause restriction in peripheral scan by impairing mobility. Concomitant iritis occurs in between 10 and 25% of cases.

WAIVER: An established diagnosis with symptoms is CD. Waiver is possible in early cases with normal mobility and no complications.

INFORMATION REQUIRED:

1. Orthopedic or rheumatology evaluation

TREATMENT: The cornerstone of treatment while continuing a flying career is a regular exercise routine which the patient must follow scrupulously. Physical rehabilitation may be necessary following flare-ups. Long term maintenance therapy with non-steroidal anti-inflammatory drugs is usually not considered for waiver.

DISCUSSION: Sacroiliitis is often the earliest manifestation of the disease, and can be noted on an AP view of the pelvis. The HLA-B27 gene is present in 90% of Caucasians and 50% of African Americans with ankylosing spondylitis. The ESR and C-reactive protein are usually elevated. Clinical diagnosis should be suspected with a history of chronic back pain, loss of motion of lumbar spine, limited chest expansion, and radiographic evidence of sacroiliitis. Complications include cardiac conduction defects, aortic incompetence, uremia arising from amyloidosis, and chest rigidity giving rise to ventilation/perfusion abnormalities. Spinal cord damage can arise from fractures of the rigid cervical spine, and spontaneous subluxation at the atlantoaxial joint with quadriplegia has been described.

ICD-9 CODE:
720.0 Ankylosing Spondylitis

13.3 CHRONIC BACKACHE

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NCD	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
WR	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
WNR	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
LBFS	**N/A**	**No**	**No**	**No**	**No**	**No**	**No**
EXCEPTIONS	**Somatic dysfunction which is amenable to OMT/Manual medicine, unless persistent, is NCD.**						
LIMDU/PEB	**If LIMDU/PEB has been held, Grounding PE and AMS should be submitted when board written. Results of this board must be included in waiver package. Member not eligible for waiver until returned to Full Duty by Board.**						

Key	
Yes	**If chronic and/or recurrent, if exacerbated by flying, if the member has required hospitalization, or if the member requires regular medication for treatment**
+/-	**Depends upon whether listed requirements met, waiver may or may not be recommended ("Case-by-Case" basis)**

AEROMEDICAL CONCERNS: Chronic back pain, somatic dysfunction, and/or osteoarthritis of the spine and/or pelvis can make it difficult to remain seated for long periods and can hamper performance. If symptoms are chronic and/or recurrent, exacerbated by flying, if the member has required hospitalization, or if the member requires regular medication beyond occasional Flight Surgeon approved NSAIDs (ibuprofen or naproxen only) or acetaminophen, then the condition is CD.

Most back pain is believed to be caused by biomechanical derangement of the spine and/or sacroiliac joints when harder tissue encroaches on soft nerve tissue causing symptoms of pain, spasms, and numbness. This type of back pain is also known as somatic dysfunction and can sometimes be reduced or alleviated by physicians with training in OMT/Manual medicine. Muscular weakness is not generally found in the diagnosis of somatic dysfunction. "However, more than 85% of patients who present to primary care have low back pain that cannot reliably be attributed to a specific disease or spinal abnormality"[1]. Low back pain has been observed to occur more frequently in helicopter pilots than fixed-wing pilots. A Norwegian Air Force Study reported a 2-year prevalence of low back pain in helicopter pilots that was 32% greater than fixed-wing controls [2]. Further, a 2011 survey of 648 U.S. Navy helicopter pilots from 43 different Navy Helicopter Squadrons found that 71% of participants experienced back pain on at least 50% of their flights and 34% admitted that the pain had affected their situational awareness" [3]. A similar study of British Royal Air Force (RAF) aviators found that 13% of RAF pilots between 20 and 50 experienced low back pain every time that they flew [4 and 5].

WAIVER: Waiver may be recommended when the pain is controlled by conservative, non-pharmacologic means, and is not associated with an organic cause. Designated personnel with osteoarthritis requiring low dose NSAIDs who can maintain close supervision by a Flight Surgeon may be considered for waiver on a case by case basis. Somatic dysfunction which is amenable to OMT/Manual medicine, unless persistent, is NCD. Initial applicants must meet DoD and Department of the Navy Standards as set forth in references [6] and [7] and conditions

that do not meet these requirements are **Considered Disqualifying, Waiver Not Recommended (CD, WNR).**

DIAGNOSIS/ICD-9 Codes:
721.9 Chronic Backache
724.2 Lumbago
724.3 Sciatica
739.1 Somatic Dysfunction, C-spine region
739.2 Somatic Dysfunction, T-spine region
739.3 Somatic Dysfunction, L-spine region
739.4 Somatic Dysfunction, Sacroiliac region
739.8 Somatic Dysfunction, Rib cage
846 Sprains and Strains, Sacroiliac Region
847.2 Sprains and Strains, Lumbar Region

(Note: The above list of diagnoses is representative, though not exhaustive. All diagnoses for back pain not listed above or described elsewhere in this guide shall also be considered under "Chronic Backache".)

SERVICE MEMBER MUST HAVE COMPLETED/PROVIDE PRIOR TO INITIATING WAIVER

- Orthopedic surgeon, sports medicine, osteopathic, chiropractic, rheumatological, and/or pain management specialist recommendation(s) for the return to flight status with no restrictions - Must be **documented** on last clinical note (electronic or paper). Further, this consult must state that the member is asymptomatic, stable, may resume full unrestricted activity, and is not anticipated to require surgical or other invasive intervention during his/her future period of military service.
- If any of the above noted specialty providers document physical limitations, a complete picture of the patient's level of physical activity and limitations must be included in the documentation.
- Any surgery/procedure note(s) (electronic or paper) utilized in the treatment of the back pain must be documented.
- Must have completed course of physical therapy/rehabilitation and provide end of care summary, including any post-care recommendations.
- Copies of prior PEB, FNAEB, or HFB if related to this diagnosis. If placed on LIMDU / PEB or if anticipate grounding for greater than 60 days, present to Flight Surgeon for Grounding Physical.
- Provide administrative information (electronic or paper) to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **CURRENT PHYSICAL LIMITATIONS**: Member must be able to demonstrate full active range of motion of the spine without assistance or need for pain medication.
- TREATMENT: Somatic dysfunction which is amenable to OMT/Manual medicine, unless persistent, is NCD. Waiver may be recommended when the pain is controlled by conservative, non-pharmacologic means, and is not associated with an organic cause.
- **MEDICATIONS**: For designated personnel with chronic backache requiring low dose NSAIDs (ibuprofen or naproxen only) or acetaminophen who can maintain close supervision by a Flight Surgeon may be considered for waiver on a case-by-case basis. Must not require controlled substances or muscle relaxants to control pain.

- **SPECIAL TEST STANDARDS/FINDINGS/LEVELS**: Documentation of the patient's ability to pass a USN PRT or Marine PFT (as applicable); including a report of the score from each section of the most recent test.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

How Condition Was Discovered: Mechanism of injury, date of injury, and whether first time or recurrent.
Aviation History: Type of aircraft and type of egress.
Physical Exam: Document any visible asymmetry of the spine; any tenderness on palpation; ability to and degree of flex/extend, rotate L/R, and side bend L/R (include number of degrees for each); motor, sensory, and reflex findings of related extremities; muscle strength testing of related extremities; and results of straight leg test (for lumbar spine).
Studies: Results of all x-rays, CT scans, and MRI scans obtained in the evaluation of this condition.
Discussion: Brief summary of why this member is WR based on Aeromedical Waiver Guide standards.
Recommendation: NPQ but AA and any caveats for follow on care.
Procedure: Up load any operative/other procedural notes (if applicable).
Medications: Document no longer using any medication for pain. However, for designated personnel with an occasional requirement for continued use of medication for pain, the ONLY acceptable medications for PRN use are acetaminophen, ibuprofen or naproxen.
Consults: Up load final orthopedic, osteopathic, chiropractic, rheumatological, and/or pain management consult(s) report and physical therapy end of care notes (as applicable).
Other: If LIMDU/PEB has been held, results of this board must be included in waiver package.

FOLLOW-UP REQUIREMENTS	If the service member becomes symptomatic and in accordance with applicable periodic flight physical requirements.
EXAM	Documentation of a serial exam of the spine as described in "Physical Exam" section (above). Note: No serial radiological studies are required unless the service member is symptomatic.

References:

[1] Chou, R., Qaseem, A., Snow, V., Casey, D., Cross, T., Shekelle, P., and Owens, D. (2007). Diagnosis and treatment of low back pain: A joint clinical practice guideline from the American College of Physicians and the American Pain Society. Annals of Internal Medicine, 147, pp. 478-491. Retrieved from: http://www.healthquality.va.gov/guidelines/Pain/lbp.

[2] Hansen, O and Wagstaff, A. (2001, March). Low Back Pain in Norwegian helicopter aircrew. Aviation, Space, and Environmental Medicine, 72(3), pp. 161-164. Retrieved from: http://www.ncbi.nlm.nih.gov/pubmed/11277279

[3] Phillips, A. (2011, March). The scope of back pain in Navy helicopter pilots. Naval Post Graduate School, Monterey, CA. Retrieved from: http://edocs.nps.edu/npspubs/scholarly/theses/2011/March /11Mar_Phillips.pdf.

[4] Fitzgerald, A. and Crotty, J. (1971). Royal Air Force Institute of Aviation Medicine. Report # 505. London, England.

[5] Griffin, C. (1975, November). Proceedings of the Royal Society of Medicine, 68 (11). London, England.

[6] Under Secretary of Defense for Personnel and Readiness. (2011, September 13). Section 17 -Spine and Sacroiliac Joints, Enclosure (4), DoD Instruction 6130.03

(Change 1) - Medical Standards for Appointment, Enlistment, or Induction in the Military Services, pp. 29-30. U.S. Department of Defense. Washington, DC.
[7] Navy Bureau of Medicine. (2012, May 2). Article 15-48 – Spine and Sacroiliac Joints, Chapter 15 – Physical Examinations and Standards, NAVMED P-117 (Change 140) - Manual of Medicine, pp. 15-36 – 15-37. U.S. Department of the Navy. Washington, DC.

13.4 INTERVERTEBRAL DISC DISEASE

Last Revised: April 16 | Last Reviewed: April 16

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	
NCD	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	
WR	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	
WNR	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	
LBFS	**N/A**	**No**	**No**	**No**	**No**	**No**	
EXCEPTIONS	**In those who have not undergone discectomy and do not have radicular symptoms, the condition is NCD. Waivers for multi-level discectomy are not likely, but may be considered on a case-by-case basis.**						
LIMDU/PEB	**If LIMDU/PEB has been held, Grounding PE and AMS should be submitted when board written. Results of this board must be included in waiver package. Member not eligible for waiver until returned to Full Duty by Board.**						

Key	
+/-	**Depends upon whether listed requirements met, waiver may or may not be recommended ("Case-by-Case" basis)**

AEROMEDICAL CONCERNS: Discomfort or pain from intervertebral disc disease can make it difficult to remain seated for long periods and can hamper performance. In addition, forces of ejection, excess G forces, and catapult launches and arrested landing can exacerbate this condition.

In the United States, the most common diagnosis in patients with low back pain is disc degeneration [1]. Ninety-three percent of lumbar disc herniations occur at the L4-L5 and L5-S1 levels [2]. Cervical symptoms may arise as a result of high-G maneuvering, particularly in crew members other than the pilot in control of the aircraft. Conservative therapy with NSAIDs, PT, and OMT/manual medicine is often effective in managing symptoms. Invasive non-surgical measures, such as spinal epidural injection(s) by pain management specialists after accurate diagnosis has been made, present the next level of treatment. Surgical treatment of selected cases where root compression is symptomatic and progressive is superior to non-surgical management in treating radiculopathy [3]. Operative vs. non-operative outcomes after five years have demonstrated essentially the same outcome. Acute onset of a neurological deficit requires prompt orthopedic or neurosurgical assessment.

DIAGNOSIS/ICD-9 Codes:

722 .0 HNP without myelopathy, Cervical
722.11 HNP without myelopathy, Thoracic
722.10 HNP without myelopathy, Lumbar
722.71 HNP with myelopathy, Cervical
722.72 HNP with myelopathy, Thoracic
722.73 HNP with myelopathy, Lumbar
722.4 Degenerative disc disease, Cervical
722.51 Degenerative disc disease, Thoracic
722.52 Degenerative disc disease, Lumbosacral
P80.5 Discectomy
P80.51 Discectomy by laminectomy
P80.59 Intervertebral disc destruction, NEC

P81.00 Spinal fusion, unspecified
P81.02 Anterior cervical fusion
P81.03 Posterior cervical fusion
P81.06 Anterior lumbar fusion
P81.08 Posterior lumbar/lumbosacral fusion

WAIVERS:
Applicants*:* A history of symptomatic herniated nucleus pulposus (HNP) with or without surgery is disqualifying. Waivers may be considered on a case-by-case basis. With few exceptions, multi-level discectomies should be considered to be permanently disqualifying. Initial applicants must meet DoD and Department of the Navy Standards as set forth in references [4] and [5] and conditions that do not meet these requirements are **Considered Disqualifying, Waiver Not Recommended (CD, WNR)**.

Designated Personnel*:* In designated personnel who are currently asymptomatic, the condition is CD but is usually considered for a waiver. Students already under instruction may also be considered for a waiver. All Dispositions and waiver requests must be based upon the following criteria, defined by region:

Cervical:

1. **Without radicular symptoms**: Clinical presentation is neck pain, occasional spasms, and/or occasional crepitus. Radiographs show narrowing, osteophytes, or are normal. Treatment is symptomatic with NSAIDs, analgesics and cervical traction. OMT/Manual medicine by an experienced physician may also be helpful. Condition is typically seen in the 4th decade of life. **Aeromedical disposition is Considered Disqualifying, Waiver Recommended (CD, WR)**.
2. **With radicular symptoms**: Clinical presentation is similar to that described above, but also includes motor, sensory, and/or DTR changes consistent with radiculopathy. Levels usually are C-4/5, C-5/6 (most common) C-6/7, or C-7/T-1. Radiographs/MRI may show hard disks, foraminal narrowing, and/or disk space narrowing. Treatment is same as above. Failure to respond to conservative therapy and/or progressive symptoms may necessitate neurosurgical consultation. Surgical treatments are generally anterior cervical fusion (ACF) and/or posterior cervical laminectomy/foramenotomy. ACF may be performed with graft only, or with graft plus internal fixation.

Aeromedical disposition:

1. **Symptomatic patient without surgery: Considered Disqualifying, Waiver Not Recommended (CD, WNR)**
2. **Surgically treated**:
   a. One level corrected by ACF, 6 months post op, pain free, and with no radicular symptoms. Radiographs demonstrate healing with no instability in flexion and extension views. **CD, WR, *including rotary wing and ejection seat aircraft****.*
   b. TWO levels corrected by ACF or one level total disc arthroplasty, 6 months post op, pain free, and with no radicular symptoms. Radiographs demonstrate healing with no instability in flexion and extension views. ***CD, WR, excluding ejection seat aircraft (waivers considered on a case-by case basis for rotary wing aircraft)****.*

Note: With one cervical level fused mid-cervical spine, expect a 5 degree loss of rotation and a 15 degree loss with two levels fused. Flexion/extension is generally not compromised.

***Lumbosacral**:*

1. **Without radicular symptoms**: Also see section 13.3 above, titled CHRONIC BACK PAIN. Clinical presentation is low back and/or sacroiliac joint area pain with occasional spasms. Sacroiliac joint dysfunction may have subjective symptoms of radicular-like symptoms in the pelvic girdle and/or lower lumbar spine area but symptoms generally do not extend below the knee. Clinically, no neurological deficits are demonstrated. Radiographs upon initial presentation without recent trauma are rarely helpful. Radiographs may show narrowing of disk spaces and/or osteophytes or be normal. Treatment is symptomatic with NSAIDs, analgesics, and traction. OMT/Manual medicine by experienced physician may be helpful.
2. **With radicular symptoms**: Presentation is as noted above, but with the presence of radiculopathy. Neurological examination demonstrates motor, sensory, or DTR changes and/or positive straight leg raise. MRI or myleogram demonstrates HNP with nerve root impingement consistent with the observed neurological deficit. All patients should undergo a period of symptomatic treatment.

Aeromedical disposition:

1. **Symptomatic patient without surgery: Considered Disqualifying, Waiver Not Recommended (CD, WNR)**
2. **Asymptomatic patient with radicular history over the previous year (treated either operatively or non-operatively): Considered Disqualifying (CD, WR), including rotary wing and ejection seat aircraft**.

Notes: An MRI diagnosis of herniated disc or bulging disc at any level of the spine, in the absence of clinical findings, is meaningless. Twenty to thirty percent of ASYMPTOMATIC people have herniated disks by MRI. Spinal strengthening and range of motion routines with non-impact aerobic training are to be initiated as soon as allowed by the operating surgeon. Following successful surgical or conservative treatment, waiver is possible at six weeks if the following conditions are met:

SERVICE MEMBER MUST HAVE COMPLETED AND/OR PROVIDED PRIOR TO INITIATING WAIVER

- Be released from care of orthopedic surgeon or neurosurgeon with recommendation(s) for the return to flight status with no restrictions - **Must be documented** on last clinical note (electronic or paper). Further, this consult must state that the member is asymptomatic, stable, and is not anticipated to require further surgical or other invasive intervention during their future period of military service.
- If any of the above noted specialty providers document physical limitations, a complete picture of the patient's level of physical activity and limitations must be included in the documentation.
- Any surgery/procedure note(s) (electronic or paper) utilized in the treatment of the back pain must be documented.
- Must have completed any course of physical therapy/rehabilitation prescribed by the above noted specialty providers and have received an end of care summary, including any post-care recommendations.
- Be able to pass the USN PRT or USMC PFT (minus sit ups for lumbar patients).
- Have copies of prior PEB, FNAEB, or HFB if related to this diagnosis. If placed on LIMDU / PEB or if anticipate grounding for greater than 60 days, present to Flight Surgeon for Grounding Physical.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

STANDARDS & REQUIREMENTS TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

- **CURRENT PHYSICAL LIMITATIONS**:
  - Be essentially pain free with no medications other than Flight Surgeon approved NSAIDs and/or acetaminophen.
  - Have good flexibility and range of motion.
- **TREATMENT**: If surgically fused, post-operative flexion and extension x-rays must also be submitted as evidence of stability.
- **MEDICATIONS**: For designated personnel with intervertebral disc disease requiring low dose NSAIDs (ibuprofen or naproxen only) or acetaminophen who can maintain close supervision by a Flight Surgeon may be considered for waiver on a case-by-case basis. Must not require controlled substances or muscle relaxants to control pain.
- **SPECIAL TEST STANDARDS/FINDINGS/LEVELS**: Documentation of the patient's ability to pass a USN PRT or Marine PFT (as applicable); including a report of the score from each section of the most recent test.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY FLIGHT SURGEON

How Condition Was Discovered: Mechanism of injury, date of injury, and whether first time or recurrent.
Aviation History: Type of aircraft and type of egress.
Physical Exam: Document any visible asymmetry of the spine; any tenderness on palpation; ability to flex/extend (include number of degrees for each), rotate L/R, and side bend L/R; motor, sensory, and reflex findings of related extremities; muscle strength testing of related extremities; results of straight leg test (for lumbar spine).
Studies: Results of all x-rays, CT scans, and MRI scans obtained in the evaluation of this condition.
Discussion: Brief summary of why this member is WR based on ARWG standards
Recommendation: NPQ but AA and any caveats for follow on care
Procedure: Up load any operative notes (if applicable).
Medications: Document no longer using any medication for pain. However, for designated personnel with an occasional requirement for continued use of medication for pain, the ONLY acceptable medications for PRN use are acetaminophen, ibuprofen or naproxen.
Consults: Up load final orthopedic or neurosurgical consult reports and physical therapy end of care notes (as applicable).
Other: If LIMDU/PEB has been held, results of this board must be included in waiver package.

FOLLOW-UP REQUIREMENTS	If the service member becomes symptomatic and in accordance with applicable periodic flight physical requirements.
EXAM	Documentation of a serial exam of the spine as described in "Physical Exam" section (above). Note: No serial radiological studies are required unless the service member is symptomatic.

References.

[1] United States Bone and Joint Initiative. (2011). *The burden of musculoskeletal disease in the United States*, p. 24. The Burden of Musculoskeletal Diseases in the United States Organization. Rosemont, IL. Retrieved from: http://www.boneandjointburden.org/pdfs/BMUS_chpt2_spine.pdf

[2] Weinstein, J., Lurie, J., Tosteson, T., Tosteson, A., Blood, E., Abdu, W., Herkowitz, H., Hilibrand, A., Albert, T., and Fischgrund, J. (2008, December 1). *Spine*, 33 (25), pp. 2789-2800. Philadelphia, PA.
[3] Barth, M., Weiss, C., and Thome, C. (2008). Two-year outcome after lumbar microdiscectomy versus microscopic sequestrectomy: Part 1: Evaluation of clinical outcome. *Spine*, 33 (3), pp. 265-272. Philadelphia, PA.
[4] Under Secretary of Defense for Personnel and Readiness. (2011, September 13). Section 17 -Spine and Sacroiliac Joints, Enclosure (4), DoD Instruction 6130.03 (Change 1) - *Medical Standards for Appointment, Enlistment, or Induction in the Military Services*, pp. 29-30. U.S. Department of Defense. Washington, DC.
[5] Navy Bureau of Medicine. (2012, May 2). Article 15-48 – Spine and Sacroiliac Joints, Chapter 15 – Physical Examinations and Standards, NAVMED P-117 (Change 140) - *Manual of Medicine*, pp. 15-36 – 15-37. U.S. Department of the Navy. Washington, DC.

13.5.1 KNEES: LIGAMENTS

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X		
NCD						X	X
WR	X	X	X	X	X		
WNR	X **						
LBFS	No	Yes*	Yes*	Yes*	Yes*	N/R	N/R
EXCEPTIONS	History of sprains and minor tears that return to full normal functional stability and strength through conservative care are **NCD Designated and Applicant** Isolated Grade 1 PCL injury with documented functional stability and no avulsions- **NCD Designated** ***** Only if grounded for less than 60 days ** if conservatively treated and functional limitations persist						
LIMDU/PEB	Usually not required unless significant trauma resulting in multiple ligament injuries and recovery > 3 months						

AEROMEDICAL CONCERNS: The ligaments of the knee are the primary means of joint stability while at the same time allowing simultaneous rotation and translation. A functionally stable, strong and painless knee with a full range of active motion is required for those on flight status in Class 1 and Class 2 as well as all applicants. This is a necessary for aircrew to enter, operate, maneuver around and egress aircraft in a safe manner. A stable knee is essential in performing emergency egress procedures and successful outcomes in survival situations.

The ACL is the primary restraint to anterior translation of the tibia. ACL tears can be an isolated injury but about 40-80% may have associated meniscal injury. Less frequently they are associated with additional ligament injuries of the MCL, LCL or PCL. The majority of young active patients will develop functional instability of the knee if left to conservative treatment. This is due to the stretching of secondary restraints of which includes the menisci. Functional instability symptoms include buckling, shifting, giving way, recurrent or chronic effusions, inability to pivot and feeling of looseness. For these reasons, ACL reconstruction is essential for those on Class 1 and Class 2 flight status. Generally, a torn ACL is **CD WNR** if treated conservatively and **CD WR** if treated surgically and return of normal stability. Up to 15% of ACLR can have recurrent instability (failure of reconstruction) so clinical and functional testing are necessary after surgical treatment and rehabilitation prior to waiver request.

In contrast, PCL isolated tears (Grade I) may be treated conservatively the majority of the time if the patient has a functionally stable knee after completing rehabilitation. An isolated PCL tear does not cause significant functional knee instability. A waiver may be granted if the member has no functional instability (able to enter, maneuver, and egress their type aircraft).

The most commonly injured ligament is the medial collateral ligament (MCL) complex, but this is usually a strain (Grade I and II) and are **NCD** after healing and return to full function. Grade III MCL injuries are commonly associated with an ACL injury or other multi-ligament tear and may need surgical intervention. Multi-ligament injuries require surgical treatment and are **CD WR** only when stability, range of motion, strength and pain free function return.

DIAGNOSIS/ICD-9 Code:

717.84 Posterior Cruciate Ligament disruption, old
717.83 Anterior Cruciate Ligament disruption, old
844.0 Sprain and strains of knee and leg; lateral collateral ligament of knee
717.81 Old disruption of knee ligament; lateral collateral ligament

844.1 Sprain and strains of knee and leg; medial collateral ligament of knee
717.82 Old disruption of knee ligament; medial collateral ligament
P80.26 Knee Arthroscopy
For PLC list 717.81 or code for specific structures injured

SERVICE MEMBER - MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from Orthopedic after care with recommendation of return to full duty with no physical limits or restrictions.
- Service member will e-mail or provide the flight surgeon with administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service. This information is required in AERO as part of the waiver.

STANDARDS & REQUIRMENTS - TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

CURRENT PHYSICAL LIMITATIONS: Patient must be Fit for Full duty with no limitations including flight duty.
RADIOLOGY FINDINGS: MRI Report of the knee.
SPECIALTY EVALUATIONS: ORTHOPEDIC- Surgery/Procedure Note (electronic or paper). Orthopedic evaluation must state that the knee is asymptomatic, rehabilitation complete, and if surgery was performed, the successful outcome of the surgery. Evaluation must include a complete knee physical documentation. This should include ROM, strength, stability assessment to include Lachman test, Pivot Shift tests, Posterior Drawer test at 90^0 flexion, and Posterior Sag test and Varus/Valgus test.
PHYSICAL THERAPY/REHAB**:** Physical Therapy/Rehabilitation discharge note documenting functional stability and normal strength of involved leg.
SPECIAL TEST STANDARDS/FINDINGS/LEVELS: Ability to ingress, egress, use rudders and brakes without limitations.
MEDICATIONS: Must not require medication to control pain

AEROMEDICAL SUMMARY - REQUIRED DOCUMENTATION BY FLIGHT SURGEON

How Condition Was Discovered: Mechanism of injury, grade of injury, date of injury, and whether first time or recurrent.
Aviation History: Type of aircraft, type of egress.
Physical Exam: Lachman, Pivot Shift test, Medial and Lateral Stability, absence of swelling or effusion, and active range of motion (Do not document “Full Range Of Motion (FROM)”, be specific → hyperextension/neutral/full flexion.
Labs And X-ray Data: MRI report.
Procedure: Upload Op Note, if Op Note not available then detail surgery performed, type of graft used, and any untreated injuries found prior or during surgery.
Discussion: Brief summary of why this member should have a WR based on AMRWG standards and their functional capability. Include specific functional picture as it relates to their specific aircraft and egress.
Recommendation: NPQ but AA and any caveats for follow on care
Medications: Document no longer using any medication for tolerating pain. Patient may be on PRN NSAIDs, but not daily. Continued pain three months after surgery can be indicative of a missed additional injury.
Consults: Upload final Ortho consult and Physical therapy summary of care note (may include: Isokinetic muscle testing with dynamometers (Isok) or One Leg Jump Test). Navy or USMC PFA testing: PASSED.

FOLLOW UP REQUIREMENTS	Five-Year Physical
EXAM	Lachman, Pivot Shift test, Posterior Drawer test at 90^0 flexion, Posterior Sag test, McMurray's test, Medial and Lateral Stability, absence of swelling or effusion, absence of tenderness, and full active range of motion without locking (hyperextension/neutral/full flexion - Example 5/0/130).

13.5.2 KNEES: MENISCAL INJURIES

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X*	X*	X*	X*		
NCD						X	X
WR	X	X	X	X	X		
WNR							
LBFS	No	Yes**	Yes**	Yes**	Yes**	N/R	
EXCEPTIONS	* Lateral or Medial **Bucket-Handle, Radial, Parrot Beak** tears are **CD if symptomatic**. Other isolated (no ligament tears) degenerative meniscal tears treated conservatively that are asymptomatic are **NCD.** Surgically treated tears (repaired or debrided) can be considered **NCD**, if the patient is cleared by ortho and is pain free and has no functional deficit or limitations. **Applicants** who have a history of meniscal injury are **CD** and require MRI of the knee to determine level of degeneration and whether there are other occult injuries. ** Only if grounded for less than 60 days						
LIMDU/PEB	Usually not required unless significant trauma resulting in meniscus and ligament injuries.						

AEROMEDICAL CONCERNS: The menisci of the knee act primarily as load bearing structures to decrease joint contact forces across the joint. Secondarily, they function to stabilize the knee, especially to resist the tendency for the tibia to subluxate forward when joint load is applied. Acute injury (tear) of the menisci can occur with axially load, rotational or translational force to the knee. Chronic tears occur with age and are very common in over 35 yr olds with minimal force. Chronic tears also occur with ligament deficient knees due to increased stress as a secondary restraint. Acute and chronic tears of either menisci can cause pain, limitation in motion, buckling, swelling, catching and weakness. A functional knee is necessary for those in aviation that have to enter and egress their aircraft, especially in emergency egress situations.

DIAGNOSIS/ICD-9 Code:

717.0 Internal Derangement of Knee
717.30 Medial Meniscal Derangement
717.40 Lateral Meniscal Derangement
717.2 Derangement of Posterior Horn of Medial Meniscus
836.0 Tear of Medial Cartilage or Meniscus of knee, current Bucket Handle Tear
836.2 Other Tear of Cartilage or Meniscus of knee, current

SERVICE MEMBER - MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from Orthopedic after care with recommendation of return to full duty with no physical limits or restrictions.
- Service member to e-mail or provide flight surgeon with administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service. This information is required in AERO as part of the waiver.

STANDARDS & REQUIRMENTS - TO BE MET PRIOR TO SCHEDULING WAIVER EXAM WITH FLIGHT SURGEON

CURRENT PHYSICAL LIMITATIONS: Patient must be Fit for Full duty with no limitations including flight duty.
RADIOLOGY FINDINGS: MRI Report of the knee if treated conservatively.

SPECIALTY EVALUATIONS: ORTHOPEDIC- Surgery/Procedure Note (electronic or paper). Orthopedic evaluation must state that the knee is asymptomatic, rehabilitation complete, and if surgery was performed, the successful outcome of the surgery. Evaluation must include a complete knee physical documentation. This should include ROM, strength, stability assessment to include Lachman test, Pivot Shift tests, Posterior Drawer test at 90^0 flexion, and Posterior Sag test and Varus/Valgus test. Negative McMurray sign and no meniscal jointline tenderness. No chronic effusions.
PHYSICAL THERAPY/REHAB**:** Physical Therapy/Rehabilitation discharge note documenting functional stability and normal strength of involved leg.
SPECIAL TEST STANDARDS/FINDINGS/LEVELS: Ability to ingress, egress, use rudders and brakes without limitations.
MEDICATIONS: Must not require medication to control pain

AEROMEDICAL SUMMARY - REQUIRED DOCUMENTATION BY FLIGHT SURGEON

How Condition Was Discovered: Mechanism of injury, grade of injury, date of injury, and whether first time or recurrent.
Aviation History: Type of aircraft, type of egress.
Physical Exam: Lachman, Pivot Shift test, Medial and Lateral stability, absence of locking, absence of swelling or effusion, and active range of motion.
Procedure: Upload Op Note, if Op Note not available then detail surgery performed, extent of tear seen during surgery, and any untreated injuries found prior or during surgery.
Labs And X-ray Data: MRI report.
Discussion: Brief summary of why this member should have a WR based on AMRWG standards and their functional capability. Include specific functional picture as it relates to their specific aircraft and egress. If treatment conservative, a risk assessment of the patient's potential for locking and any other physical limitation should be included.
Recommendation: NPQ but AA and any caveats for follow on care
Medications: Document no longer using any medication. Patient may be on PRN NSAIDs, but not daily. Continued pain six months after surgery can be indicative of a missed additional injury or failed healing of a tear if surgically repaired.
Consults: Upload final Ortho consult and Physical therapy summary of care note (if consulted). If report not available, document reason. Navy or USMC PFA testing: PASSED after recovery.

FOLLOW UP REQUIREMENTS	**Five-Year Physical**
EXAM	Lachman, Pivot Shift test, Posterior Drawer test at 90^0 flexion, Posterior Sag test, McMurray's test, Medial and Lateral Stability, absence of swelling or effusion, absence of tenderness, and full active range of motion without locking.

13.6 ORTHOPEDIC HARDWARE, RETAINED

Last Revised: (GS/FT) September 14 Last Reviewed: September 14

AEROMEDICAL CONCERNS: Discomfort due to retained hardware and risk of refracture are safety of flight and mission completion concerns.

WAIVER: ***Please submit all information listed below so that a determination can be made whether or not a waiver is required for retained hardware.*** Retained hardware in the spine is CD in applicants, no waiver. Designated personnel may be considered strictly on a case-by-case basis. See Section 13.4 for guidance related to hardware in the cervical spine related to fusion or disk replacement. Retained hardware in the upper and lower extremities may be NCD provided there has been resolution of the underlying orthopedic problem, that the hardware is not subject to trauma, is intact and in the intended location, and does not weaken the bony structure. ***Please submit all information listed below so that a determination can be made whether or not a waiver is required for retained hardware.***

INFORMATION REQUIRED:

1. Orthopedic consultation
2. X-rays (actual films are required, not just reports)

TREATMENT: Removal may be a consideration when the retained hardware is associated with the problems noted above.

DISCUSSION: Often the underlying orthopedic condition is disqualifying and of greater concern. Retained bioelectric devices (implanted bone stimulators) imply the persistence of a disqualifying condition and are CD, no waiver. If the device has been "curative" then it is no longer required and should be removed. Hardware implanted as a component of a prosthetic joint (arthroplasty) is CD, but may be waived in designated personnel (not applicants). Most implanted hardware (screws, plates, staples, wires) are used as part of an open reduction and internal fixation of a fracture. After the fracture has healed, the hardware has done its job, and should be removed if it causes discomfort, is easily accessible, and there is minimal morbidity associated with the removal. Intramedullary rods are typically placed in long bone fractures (femur, tibia, radius, ulna) for stable internal fixation. Because of its anatomic position, these devices are typically permanent implants and removal is not warranted after fracture healing. Hardware which is subcutaneous (i.e. screws in the medial malleolus or olecranon process of the elbow) may cause pain and chronic inflammatory changes warranting elective removal. Clavicle fractures are often fixed with plate and screws which are subcutaneous and may cause discomfort due overlying shoulder straps, particularly in tactical pilots. Elective removal should be considered. Some types of hardware (metallic bone anchors) are used to affix soft tissue to bone (i.e. knee ligament and rotator cuff repair, shoulder capsulorraphy). Removal of these is generally not indicated. Pedicle screws, rods, circlage wires, and fixation plates are subject to breaking as a result of metal fatigue over time and may require observation.

ICD-9 CODE:
V54.90 Orthopedic Hardware, Retained

13.7 SHOULDER DISLOCATION

AEROMEDICAL CONCERNS: Dislocation of the shoulder in flight is a safety of flight issue and may adversely affect rapid egress and survival, particularly in the event of a water landing.

WAIVER: More than one episode of dislocation is CD for both applicants and designated personnel. Recurrent instability, if surgically corrected, is CD regardless of interval since repair, but may be considered for a waiver. If corrected surgically and heals without complications and full range of motion, the aviator may request a waiver.

INFORMATION REQUIRED:

1. Orthopedic consult
2. Physical therapy consult documenting full range of motion

TREATMENT: Surgical correction and rehabilitation. Member should also be taught a method for self-reduction.

DISCUSSION: The aeromedical concerns are obvious. Initially, annual submission will be required to document the absence of symptoms and recurrence. If the shoulder remains stable for more than one year post-op, less frequent submission may be requested.

ICD-9 CODES:
718.31 Recurrent Shoulder Dislocation
P81.82 Repair of Recurrent Shoulder Dislocation

13.8 SPINAL FRACTURES

AEROMEDICAL CONCERNS: An unstable spine can result in sudden spinal cord injury. Spinal fractures may be associated with spinal cord, nerve root, or plexus injuries. There are significant clinical implications related to whether the fractures occur in the cervical, thoracic, or lumbar spine. Statistically, compression fractures cluster at the thoraco-lumbar junction with T12 being the most common vertebral body involved, followed by L1 and T11.

WAIVER:

Cervical: Cervical fractures are CD and require waiver, regardless of extent. **Spinous process fractures not involving the lamina, pedicle, or vertebral body are NCD.** A 6 month period of grounding is required for patients with small anterior chip fracture or compression fractures of less than 25%. At 6 months, if the patient is pain-free, has full ROM, no instability on lateral views, and has no radicular symptoms, he will be considered for a waiver for non-ejection-seat aircraft only. At 12 months, if all the above criteria are still met, waiver will be considered for ejection-seat aircraft. Cervical spine fractures with more than 25% compression, with evidence of instability on lateral views, or with radicular symptoms will only be considered on a case by case basis.

Thoracic: A three month period of grounding for a single compression fracture with less than 50% compression or a single wedge fracture with no scoliosis on AP views. At 3 months, if the patient is pain free and with no instability, a waiver will be considered for non-ejection seat aircraft only. At 12 months, waiver will be considered for ejection-seat aircraft if all of the above criteria are still met. Thoracic spine fractures with more than 50% compression, with evidence of scoliosis, or more than one compression fracture are NPQ with a waiver considered on a case by case basis.

Lumbar: A three month period of grounding is required for a single compression fracture of less than 50% or a single wedge fracture with no scoliosis on an AP view. After a 3 month period of grounding, a waiver will be considered for non-ejection seat aircraft only providing the patient is pain free, no instability, no spondylolysis or spondylolisthesis, and no radicular pain. At 12 months, waiver will be considered for ejection-seat aircraft providing all of the above criteria are still met. If more than 50% compression, instability present on x-ray, radicular symptoms are present, or there is an associated HNP, then the patient is NPQ with waiver possible only on case by case basis.

INFORMATION REQUIRED:

1. Orthopedic or neurosurgical consultation
2. All X-rays
3. MRI scan of regional neuroanatomical structures may also be required.

TREATMENT: Stable fractures without neurological injury respond well to conservative management. Those injuries requiring surgical decompression and/or stabilization usually leave the member with permanent disabilities incompatible with return to DIFOPS.

DISCUSSION: In C-spine injuries, the key element in determining aeromedical disposition is stability of the spine. Often times, the bony injuries heal with no residual instability. Ligamentous injuries, in contrast, may heal with various degrees of instability. Early on,

instability is detectable by obtaining lateral views in flexion and extension of the C-spine. Chronic instability results in degenerative changes such as disc space narrowing and asymmetry. Also, osteophytic changes and foraminal narrowing are seen in the oblique views. The common wedge or chip fracture, often seen at the C4-6 level with no instability noted, has an excellent prognosis. Lumbar compression/wedge fractures generally heal with no instability. Purely ligamentous injuries of the L-spine are uncommon, however, there is potential for degenerative disc disease which could lead to herniation. Spinal compression fractures are a common ejection injury (20 - 30% of ejections), with most fractures occurring between T9 and L1. For this reason, all survivors of ejections should undergo complete spine x-rays. Finding a compression fracture on x-ray often raises the question of the age of the fracture. Widening of the paraspinous line on x-ray and symptoms appropriate to the location of the identified fracture are indicative of an acute injury. A radioisotope bone scan may remain "hot" for up to two years post compression fracture. Once healed, the damaged area does not appear to be unduly susceptible to repeat fracture. The USAF has records of six pilots with compression fractures who ejected a second time without suffering injury. One aviator ejected four times without subsequent injury. Patients with persistent pain after fracture healing and no other radiological evidence of disease or trauma may benefit from OMT/Manual medicine consultation. C-spine treatment and evaluation should only be undertaken by the most experienced physicians. Somatic Dysfunction with traumatic fractures occurs frequently. C-spine treatment and evaluation should only be undertaken by the most experienced physicians.

ICD-9 CODES:
805 Spinal Fractures
805.0 Fracture of Cervical spine, closed, without spinal injury
805.2 Fracture of Thoracic spine, closed
805.4 Fracture of Lumbar spine, closed

13.9 SPONDYLOLYSIS

AEROMEDICAL CONCERNS: This condition can be a cause of low back pain, but may also cause instability leading to spondylolisthesis. Often patients are asymptomatic and the condition is noted as an incidental finding. Distracting axial or radicular pain is incompatible with safe flight operations.

WAIVER: CD with no waiver for non-designated personnel. For designated personnel, a waiver may be considered on an individual basis.

INFORMATION REQUIRED:

1. Orthopedic, neurological or neurosurgical consultation.
2. X-rays.
3. CT and MRI scans may also be required in patients with radicular symptoms.

TREATMENT: Conservative treatment may achieve temporary relief of symptoms, however upon resumption of vigorous physical activities symptoms usually return.

DISCUSSION: The defect in the pars interarticularis (neck of the "Scotty dog") may be acquired from acute trauma, or more commonly, may result from chronic stress (stress fracture). Rarely is it of congenital origin. These occur primarily at L5-S1 and somewhat less at L4-L5. There is an inherited proclivity for the condition (dominant transmission) with an incidence that increases with age up to the end of the fourth decade. It exists in about 5% of the general population, but is much higher in certain races (Japanese, Eskimo) where it may be as high as 45%. Instability of the posterior spinal elements is associated with the development of spondylolisthesis, which is frequently progressive. This condition is likely to be accelerated by the physiological stressors of military flight activities.

ICD-9 CODE:
721.9 Spondylolysis

13.10 SPONDYLOLISTHESIS

AEROMEDICAL CONCERNS: Spondylolisthesis is unlikely to cause incapacitation in flight but, if symptomatic, will cause considerable distraction. Theoretically, spondylolisthesis could cause severe problems on ejection.

WAIVER: CD with no waiver for non-designated personnel. For designated personnel, asymptomatic grade I spondylolisthesis is CD but may be considered for a waiver. Higher grades of spondylolisthesis or symptomatic grade I sponylolisthesis are also CD, but waivers may be considered on an individual basis. Patients who have had successful surgery and are currently asymptomatic may also be considered for waiver on a case by case basis.

INFORMATION REQUIRED:

1. Orthopedic consult
2. Neurology consult
3. Rheumatology consult
4. OMT/Manual medicine consult (if available)

TREATMENT: Treatment includes education in proper body mechanics and use of the back, along with a program of daily back exercises.

DISCUSSION: Aircrew who has frequent symptoms should not continue to fly. Further slipping of the vertebra (usually L5) can occur with exposure to excessive gravitational forces, ejection, or even during normal activities on the ground. Aviators with infrequent symptoms who do not require surgery may still be restricted from ejection seat aircraft or carrier catapult launches and traps.

ICD-9 CODES:
738.4 Acquired spondylolisthesis
756.12 Congenital spondylolisthesis
756.18 Traumatic spondylolisthesis

14.0 PSYCHIATRY

Last Revised: Feb 2015 Last Reviewed: Feb 2015

This section provides guidance on various psychiatric disorders likely to be seen in the military aviation community, the associated effects on aviation duties, and guidelines for requesting a waiver as applicable. The disorders are addressed in the following pages in the same sequence as found in the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5), and as outlined below.

First, some general guidelines for submitting psychiatric waivers:

General waiver submission advice for most timely processing of requests:

1. Properly label uploaded documents for AERO waiver submissions (e.g., do not bundle psychiatry records with PRK notes, ONLY upload PDF files).
2. Make sure the waiver package is complete, that is, it should contain all requested information ("See AHLTA" is not sufficient) the submitting Flight Surgeon should upload all supporting documentation so that the package can be reviewed as a stand-alone document. If an AHLTA note is significant it should be uploaded to AERO.
3. Make sure the waiver package is internally consistent, or please explain any discrepancies in the Aeromedical Summary (AMS).

Information required for all psychiatric waivers:

1. Flight surgeon narrative summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, "See AHLTA records." Please also include items not in AHLTA (e.g., civilian medical records, legal records where applicable).
3. A current psychiatric evaluation to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

The above four items are the minimum required. Many psychiatric waivers will need additional items, as listed for each specific condition below. Again, this is just an overview.

REMEMBER: IF THE ESTABLISTMENT OF THE DIAGNOISIS AND ACHEIVEMENT OF MAINTENANCE PHASE OF TREATMENT WILL TAKE GREATER THAN 60 DAYS, A GROUNDING PHYSICAL IS REQUIRED AT THE TIME OF DIAGNOSIS AND THEN A LOCAL BOARD OF FLIGHT SURGEONS IS NOT APPROPRIATE TO BE CONVENED.

This section of the ARWG will outline guidance for DSM-5 diagnoses in the following order:

1. Neurodevelopmental Disorders (e.g., Specific Learning Disorders, Attention Deficit/Hyperactivity Disorder)
2. Schizophrenia Spectrum and Other Psychotic Disorders
3. Bipolar and Related Disorders
4. Depressive Disorders

5. Anxiety Disorders
6. Obsessive-Compulsive and Related Disorders
7. Trauma and Stressor-Related Disorders (e.g., Posttraumatic Stress Disorder, Acute Stress Disorder, Adjustment Disorder)
8. Somatic Symptom and Related Disorders
9. Feeding and Eating Disorders (e.g., Anorexia nervosa, Bulimia)
10. Sleep-Wake Disorders
11. Sexual Dysfunctions and Paraphilias
12. Disruptive, Impulse-Control, and Conduct Disorders
13. Substance-Related and Addictive disorders (e.g., Alcohol Use Disorder, Gambling Disorder)
14. Personality Disorders
15. Other Conditions that May Be a Focus of Clinical Attention

NOTA BENE: WHENEVER DESIGNATED AVIATION PERSONNEL ARE PSYCHIATRICALLY HOSPITALIZED, NO MATTER WHAT THE ULTIMATE DIAGNOSIS IS DETERMINED TO BE, A GROUNDING PHYSICAL SHOULD BE SUBMITTED.

Because this document does not include all psychiatric disorders, flight surgeons are encouraged to contact NAMI Psychiatry Department (850-452-2783) for specific assistance as needed.

It is highly recommended that flight surgeons become familiar with the following instructions and guidelines as well. The documents highlighted below are some of the more relevant sources of information to assist in the performance of aeromedical duties. However, it remains the professional obligation of flight surgeons to keep up to date on any newly published instructions, and to continually expand awareness of other existing pertinent publications.

- **Assistant Secretary of Defense/Health Affairs (ASD/HA) Memorandum (November 7, 2006), "Policy Guidance for Deployment-Limiting Psychiatric Conditions and Medications"** – This document provides guidance for deployment, and continued service in a deployed environment, for military personnel who experience psychiatric disorders and/or who are prescribed psychotropic medications.

- **DoDINST 6490.07 (February 5, 2010), "Deployment-Limiting Medical Conditions for Service Members and DoD Civilian Employees"** – This instruction expands upon the ASD/HA Memo above. Enclosure 3, "Medical Conditions Usually Precluding Contingency Deployment," is especially relevant for flight surgeons in the consideration of mental health disorders and psychiatric treatments, and the associated impact of such in an operational setting.

- **DoDINST 6490.08 (August 17, 2011), "Command Notification Requirements to Dispel Stigma in Providing Mental Health Care to Service Members"** – This instruction establishes policy, assigns responsibilities, and prescribes procedures for healthcare providers for determining command notification requirements. It also provides guidance to help achieve balance between service members' confidentiality rights and commanders' right to know for operation and risk-management decisions. The instruction states that healthcare providers shall notify the commander concerned when a service member meets any of the instruction's nine delineated criteria for mental health and/or substance misuse conditions or related circumstances. A few of the criteria covered include those listed as: harm to self, harm to others, harm to mission,

special personnel, and, acute medical conditions interfering with duty. The instruction contains discussion and examples for each of the criteria that warrant command notification. It also covers the appropriate manner in which disclosures should be made.

- **DoDINST 6490.04 (March 4, 2013), "Mental Health Evaluations of Members of the Military Services"** – This instruction establishes policy, assigns responsibilities, and prescribes procedures for the referral, evaluation, treatment, and medical and command management of service members who may require assessment for mental health issues, psychiatric hospitalization, and risk of imminent or potential danger to self or others.

Flight surgeons are also encouraged to help expand the awareness and understanding of aeromedical issues/concerns/disposition by sharing relevant ARWG sections with local medical staff and specialists. Close collaboration with non-aeromedical colleagues not only ensures that the operational service member receives appropriate treatment and disposition but also improves cooperation between local medical and line units; these measures ultimately optimize force readiness and effectiveness.

14.1 NEURODEVELOPMENTAL DISORDERS (E.G., SPECIFIC LEARNING DISORDER, ATTENTION DEFICIT/ HYPERACTIVITY DISORDER)

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Specific Learning Disorders may be associated with underlying abnormalities in cognitive processes, including deficits in specific academic abilities, visual perception, or linguistic processes. Depending on the severity of the disorder, these deficits may jeopardize both safety and mission execution in the highly dynamic aviation environment. Attention Deficit/Hyperactivity Disorder (ADHD) involves a persistent pattern since childhood of problems in such areas as attention, vigilance, organization, impulse control, set shifting, dual tasking, working memory, and both verbal and visual memory. Depending on the severity of the disorder, aeromedical concerns include safety of flight, mission completion, and crew coordination. Current use of either non-stimulant or **s**timulant medication to treat ADHD is incompatible with aviation duty, and waivers are not granted in such cases.

DIAGNOSIS/ICD-9 Code:
314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly inattentive presentation
314.01 Attention-Deficit/Hyperactivity Disorder, Combined presentation
314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly hyperactive/impulsive presentation
315.00 Specific Learning Disorder with impairment in reading
315.1 Specific Learning Disorder with impairment in mathematics
315.2 Specific Learning Disorder with impairment in written expression

WAIVER:
Specific Learning Disorders: History of a learning disorder is not necessarily disqualifying. The severity and nature of the disorder should be documented. Any residual problems or history of a persistent learning disorder requires a neuropsychological evaluation.

Attention Deficit/Hyperactivity Disorder: A diagnosis of ADHD at any time of life is considered disqualifying. Applicants with ADHD who have not taken medication for 12 months and who demonstrate no symptoms may be considered for a waiver.

INFORMATION REQUIRED:
Specific Learning Disorder:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, and current level of functioning.
2. Childhood medical and school records documenting the diagnosis and any academic interventions.
3. Grade school report cards, high school, and college transcripts (if applicable).
4. If absence of academic/functional impairment cannot be determined from available records, a neuropsychological evaluation, conducted by a credentialed neuropsychologist is required.

Attention-Deficit/Hyperactivity Disorder (for a summary please see Table 1):

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. For non-college graduates and graduates of non-traditional colleges/universities (e.g., internet degree), a comprehensive mental health evaluation which includes the following:
   - Review of report cards, high school transcripts and college transcripts (if applicable)
   - Review of Individual Education Plans (if applicable)
   - Review of Childhood Medical Records relevant to ADHD
   - Standard elements of mental health evaluations (substance use history, social history, mental health and medical history, family mental health and medical history, legal history, mental status examination)
   - Evaluation must be performed by a clinical psychologist or psychiatrist
   - If the mental health evaluation substantiates the diagnosis of childhood ADHD or cannot definitely rule it out, a neuropsychological evaluation is required (see below under #5 for requirements).
3. For traditional college graduates (i.e., campus based full-time education) who did not require (or use) either medication or academic accommodations for the entire college experience, no mental health evaluation is required. The service member must provide:
   - Childhood medical and school records documenting the diagnosis and any academic interventions
   - College transcripts
   - Letter from the college/university academic learning center (or equivalent) stating that the service member was never evaluated for or provided academic accommodations during their entire college experience. If the service member transferred to/from another college at any time, letters from both academic centers are required.
   - A member statement attesting to the fact that he/she did not use or require medications for ADHD throughout college.
4. Given that there are no available academic accommodations at the U.S. Naval Academy, USNA Midshipmen in the senior year must provide:
   - Childhood medical and school records documenting the diagnosis and any academic interventions
   - College transcript
   - A member statement attesting to the fact that he/she did not use or require medications for ADHD throughout college.
5. For college graduates who required and/or utilized ADHD medication (stimulant or non-stimulant) and/or academic accommodations at any time while in college, a neuropsychological evaluation is required which includes:
   - Administration of the full current edition of the Wechsler Adult Intelligence Scale with all index scores
   - Verbal and Visual Memory Testing (i.e., current Wechsler Memory Scale Logical Memory, California Verbal Learning Test-II, Rey Complex Figure Test or equivalents)
   - Vigilance Testing (i.e., Conner's Continuous Performance Test-II, Aviation Vigilance Test or equivalent)
   - Testing of Executive Function (FOUR of the following are required: Trail Making A and B, Wisconsin Card Sorting Test or Booklet Category Test, Paced Auditory Serial Addition Test, Iowa Gambling Task, Stroop Color and Word Test, Tower of London-Drexel).

- ADHD Self Report Measures
- Alcohol Screening (Alcohol Use Disorders Identification Test or equivalent)
- Depression Screening (Beck Depression Inventory-II or equivalent)
- Personality Testing (Minnesota Multiphasic Personality Inventory-II, Personality Assessment Inventory or equivalent)
- Standard elements of mental health evaluations (substance use history, social history, mental health and medical history, family mental health and medical history, legal history, mental status examination)
- Evaluation must be performed by a credentialed neuropsychologist
- Evaluation must be performed when the service member is off of ADHD medications

Table 1: Requirements for Specific Learning Disorder/ADHD Waivers by Service Member Category

	MH Evaluation	College Transcripts	Letter from University	Member Statement	NP Evaluation
No College Degree	Yes	No	No	No	If Specific Learning Disorder/ADHD cannot be ruled out by MH Exam
Traditional College Degree with no meds or academic accommodations	No	Yes	Yes	Yes	No
Traditional College Degree with meds or academic accommodations	No	Yes	No	No	Yes
Non-Traditional College Degree	Yes	Yes	No	No	If Specific Learning Disorder/ADHD cannot be ruled out by MH Exam
USNA Midshipmen	No	Yes	No	Yes	No

14.2 SCHIZOPHRENIA SPECTRUM AND OTHER PSYCHOTIC DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Symptoms of aeromedical concern include eccentric behavior, illogical thinking, hallucinations, social withdrawal, and the risk of suicide. Recurrence is abrupt, unpredictable, and incapacitating in aviation. Increased vulnerability to stress is considered lifelong in these disorders. Among patients with schizophrenia, one third will lead somewhat normal lives, one third will continue to have significant symptoms, and one third require frequent hospitalization and chronic care. Fifty per cent of patients with schizophrenia make a suicide attempt, and ten per cent will succeed. The majority of patients with these disorders require Physical Evaluation Boards due to their incompatibility with general military duty. Antipsychotic medications and close psychiatric follow-up care are incompatible with aviation duty.

DIAGNOSIS/ICD-9 Code:
295.40 Schizophreniform Disorder
295.70 Schizoaffective Disorder
295.90 Schizophrenia
296.24 Major Depressive Disorder, single episode with psychotic features
296.34 Major Depressive Disorder, recurrent with psychotic features
297.1 Delusional Disorder
298.8 Brief Psychotic Disorder
298.9 Unspecified Schizophrenia Spectrum/Other Psychotic Disorders

The above diagnoses are CD for aviation, with no waiver considered. Service members should be referred to a Physical Evaluation Board for determination of fitness for general duty/retention.

WAIVER:
Substance/Medication-Induced Psychotic Disorder: Substance-induced Psychotic Disorder with clear evidence from the history, physical examination, or laboratory findings that the disturbance is etiologically related to medication use is NCD when resolved, as long as the "substance" inducing psychosis was not alcohol or illicit drugs.

Psychotic Disorder Due To Another Medical Condition: NCD when resolved if the precipitating organic factors are identified and considered not likely to recur. Physical illness or other disorders causing persistent delirium are permanently disqualifying and should be referred to a medical board.

INFORMATION REQUIRED:
1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records including treatment summary).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

14.3 BIPOLAR AND RELATED DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Bipolar spectrum disorders are especially concerning due to lack of insight and impaired reality-testing, often coupled with compromised judgment and poor treatment compliance. Lifetime prevalence of Bipolar I disorder is estimated at about 1% of the general population. Prevalence of Bipolar II disorder, characterized by episodes of hypomania instead of mania, is 0.8%. As with most psychiatric conditions, the prevalence is undoubtedly much lower among designated aviation personnel. The mean age of onset for Bipolar I disorder is 18 years of age, but onset throughout the life cycle is possible, including cases with first diagnosis well into the seventh and eighth decades of life (although in many such cases, thorough exploration of the past history reveals earlier mild, forgotten or undiagnosed episodes of depressed or abnormally elevated mood). Many individuals do well between episodes, but as many as 30% have severe inter-episode occupational impairment; some of this is attributable to persistent cognitive dysfunction, even during periods of normal mood. After an initial manic episode, more than 90% of individuals will have recurrent episodes of mood disturbance, either manic or depressive or both. If the initial episode included psychotic features, subsequent episodes are more likely to be psychotic as well. Onset of manic episodes is typically rapid, i.e. over hours or days. All Bipolar and Related Disorders are disqualifying for aviation duty, and waivers are not granted. The service member should be referred to a Physical Evaluation Board for determination of fitness for general duty/retention.

DIAGNOSIS/ICD-9 Code:
296.41 Bipolar I disorder, mild, most recent episode manic
296.42 Bipolar I disorder, moderate, most recent episode manic
296.43 Bipolar I disorder, severe, most recent episode manic
296.44 Bipolar I disorder, with psychotic features
296.51 Bipolar I disorder, mild, most recent episode depressed
296.52 Bipolar I disorder, moderate, most recent episode depressed
296.53 Bipolar I disorder, severe, most recent episode depressed
296.89 Bipolar II disorder
301.13 Cyclothymic disorder

14.4 DEPRESSIVE DISORDERS

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Depressive disorders are associated with decreased concentration, inattention, indecisiveness, fatigue, insomnia, agitation, and sometimes psychosis, all of which are incompatible with aviation duties. Risk of suicide is 15 per cent, the highest of all psychiatric disorders. Thirty per cent of dysthymic patients develop subsequent depression or mania. Fifty to 75 per cent of affected patients have a recurrent episode. There is a strong association with substance abuse. However, it should be noted that acute major depression is treatable in 80 per cent of patients, and waivers for single episodes of depression will be considered.

DIAGNOSIS/ICD-9 Code:
296.21 Major Depressive Disorder, Single episode, mild
296.22 Major Depressive Disorder, Single episode, moderate
296.23 Major Depressive Disorder, Single episode, severe
311 Other Specified Depressive Disorder

The above diagnoses are disqualifying for aviation. Waiver may be requested when the member has been completely asymptomatic in a “Fit for Full Duty” status for a minimum of six months after completion of all treatment, including both medication and psychotherapy.

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

Substance/Medication-Induced Depressive Disorder: Substance-induced Depressive Disorder with clear evidence from the history, physical examination, or laboratory findings that the disturbance is etiologically related to medication use is NCD when resolved, as long as the "substance" inducing depressive disorder was not alcohol or illicit drugs.

Depressive Disorder Due To Another Medical Condition: NCD when resolved if the precipitating organic factors are identified and considered not likely to recur. Physical illness or other disorders causing persistent delirium are permanently disqualifying and should be referred to a medical board.

Further recurrences are CD, waiver not recommended**. A history** of recurrent mood disorders is disqualifying as well. Many diagnoses may not reveal a recurrent nature by name alone. These include:

DIAGNOSIS/ICD-9 Code:
296.31 Major Depressive Disorder, Recurrent episode, mild
296.32 Major Depressive Disorder, Recurrent episode, moderate
296.33 Major Depressive Disorder, Recurrent episode, severe
300.4 Persistent Depressive Disorder

14.5 ANXIETY DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: The symptoms associated with anxiety disorders may produce sudden and dangerous distraction in flight with autonomic symptoms as well. Panic attack episodes are particularly hazardous due to the risk that symptoms that can appear unexpectedly and lead to sudden incapacitation. Service members with Panic Disorder and Generalized Anxiety Disorder may complain of palpitations, dizziness, headaches, shortness of breath, tremulousness, and impaired concentration and memory. Panic disorder has a high rate of recurrence, and is associated with increased mortality from cardiovascular disease and suicide. The medications used to treat these disorders are incompatible with flying status. Behavioral therapy, including relaxation, biofeedback, and anxiety management, is permitted in a flying status if the symptoms are so mild that it does not meet the criteria for Panic Disorder.

DIAGNOSIS/ICD-9 Code:
300.00 Other Unspecified Anxiety Disorder/Unspecified Anxiety Disorder
300.01 Panic Disorder
300.02 Generalized Anxiety Disorder
300.22 Agoraphobia
300.23 Social Anxiety Disorder
300.29 Specific Phobia

The above diagnoses are all CD for aviation. Waiver may be requested when the member has been completely asymptomatic in a “Fit for Full Duty” status for a minimum of one year after completion of all treatment, including both medication and psychotherapy

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

Substance/Medication-Induced Anxiety Disorder: Substance-induced Anxiety Disorder with clear evidence from the history, physical examination, or laboratory findings that the disturbance is etiologically related to medication use is NCD when resolved, as long as the "substance" inducing anxiety was not alcohol or illicit drugs.

Anxiety Disorder Due To Another Medical Condition: NCD when resolved if precipitating organic factors identified and not likely to recur. Physical illness or other disorders causing persistent delirium are permanently disqualifying and should be referred to a medical board.

14.6 OBSESSIVE-COMPULSIVE DISORDER AND RELATED DISORDERS

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Service members with Obsessive Compulsive Disorder complain of obsessional thoughts and/or compulsive behavior. Those with Body Dysmorphic Disorder are preoccupied with perceived defects or flaws in appearance not significantly observable to others. Both are aeromedically disqualifying, as they create substantial distractions in attention, and may be associated with high levels of anxiety and depression.

DIAGNOSIS/ICD-9 Code:
300.3 Obsessive Compulsive Disorder
300.7 Body Dysmorphic Disorder
312.38 Trichotillomania

The above diagnoses are all CD for aviation. Waiver may be requested when the member has been completely asymptomatic in a “Fit for Full Duty” status for a minimum of one year after completion of all treatment, including both medication and psychotherapy

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

Substance/Medication-Induced Obsessive-Compulsive and Related Disorder: Substance-induced Obsessive-Compulsive and Related Disorder with clear evidence from the history, physical examination, or laboratory findings that the disturbance is etiologically related to medication use is NCD when resolved, as long as the "substance" inducing Obsessive-Compulsive and Related Disorder was not alcohol or illicit drugs.

Obsessive-Compulsive and Related Disorder Due To Another Medical Condition: NCD when resolved if the precipitating organic factors are identified and considered not likely to recur. Physical illness or other disorders causing persistent delirium are permanently disqualifying and should be referred to a medical board.

14.7 TRAUMA AND STRESSOR-RELATED DISORDERS

Last Revised: Feb 2015 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Trauma and Stressor-Related Disorders are often associated with decreased concentration, inattention, depression, insomnia, fatigue, indecisiveness, anxiety, and impairment of occupational or social functioning, all of which are incompatible with aviation duties.

DIAGNOSIS/ICD-9 Code:
308.3 Acute Stress Disorder
309.81 Posttraumatic Stress Disorder

The above diagnoses are all CD for aviation. **For Posttraumatic Stress Disorder**, a waiver may be requested when the member has been completely asymptomatic in a "Fit for Full Duty" status for a minimum of one year after completion of all treatment, including both medication and psychotherapy. **For Acute Stress Disorder**, a waiver may be considered if the member has remained asymptomatic in a "Fit for Full Duty" status for a minimum of six months after completion of all treatment, including both medication and psychotherapy.

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, "See AHLTA records." Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

Adjustment Disorders involve a response to an identifiable stressor, and can result in significant emotional and behavioral symptoms, such as depressed mood, anxiety, fatigue, changes in social relationships, problems with concentration, attention, and decision-making, and at least temporary functional impairment.

These include:
DIAGNOSIS/ICD-9 Code:
309.0 Adjustment Disorder With depressed mood
309.24 Adjustment Disorder With anxiety
309.28 Adjustment Disorder With mixed anxiety and depressed mood
309.3 Adjustment Disorder With disturbance of conduct
309.4 Adjustment Disorder With mixed disturbance of emotions and conduct
309.9 Adjustment Disorder Unspecified

Adjustment Disorder is temporarily considered disqualifying for aviation until resolved. Adjustment disorders diagnosed by mental health personnel are not considered resolved until a mental health provider makes that statement in the service member's health record.

The current policy is to submit a grounding physical once the diagnosis is established. Once the condition is resolved, a new physical and AMS must be submitted in AERO with all supporting documentation for the member to be returned to flight status (since the member must be returned to flight duty by the waiver authority after a grounding physical). An Adjustment Disorder which resolves within 60 days is NCD while one which takes longer to resolve will remain CD, with waiver required for return to duty involving flying. Aeromedical clearance, with or without a waiver, depending on the duration of the Adjustment Disorder, must be requested when the member is completely asymptomatic in a “Fit for Full Duty” status after completion of all treatment, including both medication and psychotherapy.

It should be noted that multiple Adjustment Disorders warrant further scrutiny to discern possible underlying characterologic psychopathology**.**

14.8 SOMATIC SYMPTOM AND RELATED DISORDERS

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: These disorders often have a chronic course and service members make repeated visits to physicians due to multiple physical or somatic complaints. The psychotropic medications used in somatoform disorders are incompatible with aviation status. Service members with Factitious Disorders may seriously injure themselves, and are at extreme risk in the aviation environment. These individuals also have a high risk of substance abuse over time. Treatment offers little hope of return to flight status in factitious disorders, as these individuals are rarely motivated for psychotherapy, and generally change physicians when confronted.

WAIVER: These disorders are CD, and may be referred to a Medical Board for treatment. Waivers may be considered for those cases that are successfully treated and remain asymptomatic and off medications for one year in a full duty status.

DIAGNOSIS/ICD-9 Code:
300.11 Conversion Disorder
300.19 Factitious Disorder
300.7 Illness Anxiety Disorder
300.82 Somatic Symptom Disorder
300.89 Other Specified Somatic Symptom and Related Disorder/Unspecified Somatic symptom and Related Disorder
316 Psychological Factors Affecting Other Medical Conditions

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. All relevant general medical records (once again, “See AHLTA” will not suffice).
4. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
5. Include a copy of any and all Medical Boards which have been written for the member (if applicable).

14.9 FEEDING AND EATING DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Eating disorders can cause potentially life-threatening metabolic alkalosis, hypochloremia, and hypokalemia, which can have drastic implications for aviation safety. Anxiety and depressive symptoms are common, and suicide is also a risk. Relapse rate is high. Follow-up studies of Anorexia Nervosa have revealed that approximately 30 per cent recover completely, 30 per cent are partially improved, 30 per cent are chronically ill, and 10 per cent have died. Many of these patients also have persistent mood, anxiety and personality disorders. Anorexia Nervosa is potentially fatal in five to 12 per cent of cases. Bulimia Nervosa is often associated with alcohol abuse. Treatment is very difficult and involves intensive long term therapy, group therapy, and possibly pharmacotherapy, all of which are incompatible with aviation duty.

WAIVER: Eating Disorders are CD for aviation. Waiver may be considered on a case-by-case basis if the service member is off medication, asymptomatic, and out of active treatment for a minimum of one year. In general a NAMI Psychiatry evaluation will be required.

DIAGNOSIS/ICD-9 Code:
307.1 Anorexia Nervosa
307.51 Bulimia Nervosa
307.51 Binge-Eating Disorder
307.59 Other Specified Feeding or Eating Disorder/Unspecified Feeding or Eating Disorder

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.
4. Include a copy of any and all Medical Boards which have been written for the member (if applicable).
5. Service members must meet the minimum aviation weight standards.

14.10 SLEEP/WAKE DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Sleep/Wake Disorders frequently result in demonstrable deficits in cognitive and psychomotor performance, and thus have a critical effect on aviation safety. Generally, these cases are referred to Neurology, but because there is often an association between disorders of sleep architecture and timing and underlying psychiatric disorder, cognitive disturbance, or other pathology, these conditions may be addressed by aeromedical mental health professionals as well.

WAIVER: See Neurology Section of ARWG.

DIAGNOSIS/ICD-9 Code:
307.45 Circadian Rhythm Sleep-Wake Disorders
307.46 Sleepwalking type/Sleep terror type Parasomnias
307.47 Nightmare Disorder
327.42 Rapid Eye Movement Sleep Behavior Disorder
333.94 Restless Legs Syndrome
347 Narcolepsy
780.52 Insomnia Disorder
780.54 Hypersomnolence Disorder

INFORMATION REQUIRED: See Neurology Section of ARWG.

14.11 SEXUAL DYSFUNCTIONS AND PARAPHILIAS

Last Revised: Jul 14 Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Generally, sexual dysfunctions such as sexual desire/arousal/orgasm disorders do not affect aviation performance. The paraphilias, however, such as exhibitionism and fetishism, may impact aviation performance. Individuals with these disorders may exhibit compulsive behavior and poor impulse control, and repeatedly engage in risk-taking behavior, which generally only increases when the individual feels stressed, anxious, or depressed. Certain legal ramifications may cause the person to be inattentive to detail and a safety risk. The legal consequences generally preclude treatment within the military.

WAIVER: Sexual Dysfunctions may be NCD if they do not impact aviation performance. The treatment of sexual desire/aversion/arousal/pain/orgasm disorders generally involves behavioral techniques which should not preclude aviation duty. However, use of medication is incompatible with aviation duty. In contrast, paraphilias are generally CD. Treatment of paraphilias is typically less successful and generally requires intensive long-term interventions. Waiver requests are handled on a case-by-case basis by NAMI Psychiatry after the service member has completed treatment and been asymptomatic for one year. Factors that will be considered in waiver requests include the type of paraphilia, duration and frequency, type of treatment required, and the adequacy of follow-up care. However, many cases are handled by administrative disposition due to the legal implications and impact on good order and discipline.

SEXUAL DYSFUNCTIONS

DIAGNOSIS/ICD-9 Code:
302.70 Unspecified Sexual Dysfunction
302.71 Male Hypoactive Sexual Desire Disorder
302.72 Erectile Disorder
302.72 Female Sexual Interest/Arousal Disorder
302.73 Female Orgasmic Disorder
302.74 Delayed Ejaculation
302.75 Premature (Early) Ejaculation
302.76 Genito-Pelvic Pain/Penetration Disorder
302.79 Other Specified Sexual Dysfunction

PARAPHILIAS

DIAGNOSIS/ICD-9 Code:
302.2 Pedophilic Disorder
301.3 Transvestic Disorder
302.4 Exhibitionistic Disorder
302.81 Fetishistic Disorder
302.83 Sexual Masochism Disorder
302.84 Sexual Sadism Disorder
302.89 Frotteuristic Disorder
302.9 Unspecified Paraphilic Disorder

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.

14.12 DISRUPTIVE, IMPULSE-CONTROL, AND CONDUCT DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: These disorders involve an inability to resist acting on an impulse that is dangerous to the service member or others, and that is characterized by a sense of pleasure when gratified. Such impulsive or stereotyped behavior may lead to aviation safety problems. Differential diagnosis should include substance abuse, temporal lobe epilepsy, head trauma, bipolar disorder, and antisocial personality disorder. The diagnosis is usually not made if the behavior occurs only in the context of another disorder such as schizophrenia, bipolar disorder, or adjustment disorder. Psychotropic medications used with Intermittent Explosive Disorder are incompatible with aviation duty. Kleptomania is generally treated with behavior therapy.

WAIVER: Impulse Control Disorders are CD for aviation. Waiver requests are handled on a case-by-case basis, and questions should be referred to NAMI Psychiatry via email, telephone consultation or referral for formal evaluation.

DIAGNOSIS/ICD-9 Code:
312.32 Kleptomania
312.33 Pyromania
312.34 Intermittent Explosive Disorder
312.89 Other Specified Disruptive, Impulse-Control, and Conduct Disorder
312.9 Unspecified Disruptive, Impulse-Control, and Conduct Disorder

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. A current psychiatric evaluation is required to document complete, sustained remission of all symptoms.

14.13 SUBSTANCE-RELATED AND ADDICTIVE DISORDERS

Last Revised: Oct 2015 Last Reviewed: Oct 2015

AEROMEDICAL CONCERNS: The consumption of alcoholic beverages is a widely accepted practice in our society, and most people are able to drink moderately and responsibly without any adverse effects. In addition to its use as a “social lubricant,” alcohol used in moderation may even confer modest health benefits. A minority of drinkers, however, suffer from an alcohol use disorder which, unless properly treated, presents an unacceptable risk to aviation safety. Alcohol is a sedative and hypnotic drug that has both acute and chronic effects on cognitive and physical performance. Cognitive effects include impairment of short-term memory, degradation of reasoning and decision-making, and inattentiveness. Psychomotor dysfunction includes an increase in reaction time and procedural errors. These damaging effects can occur at low blood alcohol levels (0.02 mg/dl), or after as little as a single standard drink. In addition, after moderate alcohol consumption, these effects can persist for many hours even after the blood alcohol level has returned to zero. Alcohol can also cause problems with visual acuity, oculovestibular dysfunction (positional alcohol nystagmus), and vertigo. This susceptibility persists long into the "hangover" period. In addition, alcohol reduces Gz tolerance by 0.1-0.4 G. Acute alcohol intoxication can also produce ataxia, vertigo, nausea, and dysrhythmias that usually disappear quickly but can leave moderate conduction delays for up to one week (the "holiday heart" syndrome). Aviation duties involve highly demanding cognitive and psychomotor tasks, frequently performed in an inhospitable environment, so it is not difficult to see how the presence of an untreated Alcohol Use Disorder with impaired control over drinking, or even the injudicious use of alcohol by non-alcoholic individuals, introduce a potentially lethal risk to the safety-sensitive occupation of flying.

Gambling Disorder also involves an inability to resist acting on impulse that may lead to aviation safety problems. Individuals with Gambling Disorder are generally preoccupied with gambling, irritable or distracted when attempting to cut down or stop gambling, and lie to conceal the extent of involvement with gambling. Gambling Disorder is generally treated with behavior therapy. A solid aftercare program, similar to that required for Alcohol Use Disorder, is required for a waiver.

HISTORY OF ALCOHOL RELATED INCIDENT: (Applicants and Designated Personnel): Any history of an Alcohol Related Incident (e.g. DUI, Minor in Possession/Underage Drinking, Open Container, Drunk and Disorderly, etc.) requires due diligence to rule out a possible Alcohol Use Disorder or a pattern of hazardous use requiring early intervention. To that end, all Police / Arrest Reports and Court Records of the incident(s) are required, as are certificates of completion of any court-directed alcohol education or alcohol treatment program(s). Upload these documents into AERO with the Physical. Also required is an AMS with a detailed history of events surrounding the incident. An alcohol related incident in the absence of a diagnosed Alcohol Use Disorder is not considered disqualifying.

DIAGNOSIS/ICD-9 Code:
305.00 Alcohol Use Disorder, Mild
303.90 Alcohol Use Disorder Moderate
303.90 Alcohol Use Disorder Severe
291.9 Unspecified Alcohol-Related Disorder
312.31 Gambling Disorder

ABSTINENCE: Abstinence is required of all aeronautically designated personnel or students (aviators, aircrew, air traffic controllers, unmanned aerial vehicle operators, hypobaric chamber inside observers, and instructors) diagnosed with Alcohol Use Disorder per BUMEDINST 5300.8 as follows:

- Navy/Marine Corps active/reserve serving in a flying status involving operational or training flights (DIFOT)
- Duty in a flying status not involving flying (DIFDEN) orders
- Personnel serving as hypobaric chamber inside observers
- Instructors under hazardous duty incentive pay (HDIP) orders
- Civilian DON employees including non-appropriated fund employees and contract employees involved with frequent aerial flights or air traffic control duties

PREVIOUS DIAGNOSIS OF ALCOHOL USE/GAMBLING DISORDER:
If the member has a previous diagnosis of Alcohol Abuse or Dependence (DSM-III through DSM-IV-TR) or Alcohol Use Disorder (DSM-5) or Gambling Disorder and a waiver has not been granted, follow the guidelines for *New Diagnosis of Alcohol Use or Gambling Disorder* (outlined below)

If the member has a previous diagnosis of Alcohol Abuse or Dependence or Alcohol Use Disorder or Gambling Disorder and has been granted a waiver, follow the guidelines for *Annual Waiver Continuance Process* (outlined below).

NEW DIAGNOSIS OF ALCOHOL USE DISORDER OR GAMBLING DISORDER: Flight Surgeon must submit grounding physical to NAMI Code 53HN. Waiver is possible 90 days after the service member has:

1. Successfully completed Outpatient, Intensive Outpatient, or Residential treatment (the appropriate level of treatment will be determined by the treatment facility, using the current edition of the American Society of Addiction Medicine treatment criteria, The ASAM Criteria).
2. Maintained a positive attitude and an unqualified acknowledgment of the alcohol use/gambling disorder.
3. Remained abstinent from alcohol without the need for amethystic medications.
4. Fully complied with aftercare requirements post-treatment during the minimum of 90 days (see below).

AFTERCARE REQUIREMENTS: The member must document participation in an organized alcohol recovery program (for Alcohol Use Disorder, Alcoholics Anonymous (AA), including "Birds of a Feather" for pilots and cockpit crew members; for Gambling Disorder, may use a combination of Gamblers Anonymous (GA) and AA, e.g., when there are not sufficient GA meetings available locally to satisfy the requirement), and meet with designated professionals for the following specified timeframes:

Aftercare Timeframe

Professional /Meetings	First Year	Second/Third Year	Fourth Year +
Flight Surgeon	Monthly	Quarterly	Annually
DAPA/SACO	Monthly	Monthly	No formal requirement
Psychiatrist/Psychologist/Licensed Clinical Social Worker	Annually	Annually	No formal requirement
Alcoholics Anonymous (or for Gambling Disorder, Gamblers Anonymous)	3x weekly	1x weekly	Strongly recommended but not required

INITIAL WAIVER PROCESS: As with any other waiver, the member should initiate the request. *In the waiver request letter, the member must acknowledge the specific aftercare requirements listed above.* Further, the member must provide specific evidence of current compliance. This will avoid claims that the member was never advised of all the requirements for requesting and maintaining an alcohol waiver.

INFORMATION REQUIRED:

1. Complete flight physical, including Mental Status Exam.
2. Flight Surgeon's narrative (AMS) to include:
   a. Detailed review of all factors pertaining to the diagnosis, including events preceding and after the initial clinical presentation.
   b. Statements concerning safety of flight, performance of duties, potential for recovery, and any symptoms of co-occurring disorders or significant stressors.
   c. Documentation of compliance with aftercare requirements including abstinence and AA/GA attendance.
3. Outpatient/Intensive Outpatient/Residential treatment summary.
4. DAPA's statement documenting aftercare including AA/GA attendance.
5. Psychiatric evaluation by a privileged psychiatrist, clinical psychologist or licensed clinical social worker—this should be completed at the 90-day mark following successful completion of the appropriate level of treatment.
6. Commanding officer's endorsement on command letterhead.
7. Signed member statement. The following paragraph must be included in the member's request (Nota bene: member's statement should not contain only the following statement, but also demonstrate unqualified acknowledgment of the condition and give evidence of a positive attitude towards recovery). In the case of Gambling Disorder, please substitute the appropriate verbiage.
   "I have read and received a copy of BUMEDINST 5300.8 series. I understand that I must remain abstinent. I must meet with my flight surgeon monthly for the first year, then quarterly for the next two years of aftercare. I must meet with the DAPA monthly and receive an annual mental health evaluation for the first three years of aftercare. And I must document required attendance at alcoholics anonymous (AA)."
8. Internal Medicine evaluation (if indicated).

ANNUAL WAIVER CONTINUANCE PROCESS:

1. During first three years of aftercare
   a. Complete long-form flight physical (SF 88 and SF 93 or DD2807/2808).
   b. Flight Surgeon's statement (must address the following)

(1) Safety of flight, performance of duties, potential for sustained recovery, and any symptoms of co-occurring disorders
(2) Documentation of compliance with aftercare requirements including abstinence and AA attendance.

c. DAPA's statement documenting aftercare including AA attendance.
d. Psychiatric evaluation by a privileged psychiatrist, clinical psychologist or licensed clinical social worker.

2. After three years of aftercare
   a. Short-form flight physical (NAVMED 6410/10)
   b. Flight Surgeon's statement (must address the following)
      (1) Safety of flight, performance of duties, potential for sustained recovery, and any symptoms of co-occurring disorders.
      (2) Documentation of member's continued abstinence

NONCOMPLIANCE OR AFTERCARE FAILURE: The following guidance pertains to any member in denial of an alcohol or gambling problem, failing to abstain, or not compliant with all aftercare requirements as enumerated above. These members are to be considered NPQ and the following actions shall be performed:

1. Ground the member immediately! Grounding period is a minimum of 6-12 months.
2. Submit grounding physical to NAMI Code 53HN (MED-236).
3. Re-evaluation by Flight Surgeon, DAPA, and Alcohol Treatment Facility to determine potential for re-treatment.

NOTE: The member's command must recommend a revocation of the current waiver in accordance with BUMEDINST 5300.8 series. If member requests waiver after the 6-12 month grounding period, please follow the Initial Waiver Process (above). Please discuss these waiver requests with NAMI Psychiatry Department Code-321 before submission. NAMI will review these waiver requests on a case by case basis.

DISCUSSION: Use the current American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (as of this writing, DSM-5) criteria to diagnose Substance-Related and Addictive Disorders. It should be noted that no difference exists in the waiver process or aftercare requirements for a member diagnosed with Alcohol Abuse versus Alcohol Dependence (categories used in earlier editions of the DSM). The evidenced-based aftercares requirements (outlined above) will help a member diagnosed with Alcohol Use Disorders maintain long-term sobriety/abstinence in the interest of aviation safety.

HISTORY OF ALCOHOL USE DISORDER TREATMENT:

BUMEDINST 5300.8 was written in the early 1990s, prior to widespread acceptance of ASAM's Patient Placement Criteria. At that time the Navy had a three-tier system of alcohol treatment:

Level I - PREVENT/IMPACT for an alcohol related incident or prevention.
Level II - OUTPATIENT for a diagnosis of Alcohol Abuse.
Level III - INPATIENT for a diagnosis of Alcohol Dependence.

In the late 1990s the Navy adopted the ASAM criteria, then in its second edition, "ASAM PPC-2," as part of a "continuum of care" model of treatment. One feature of this model is the use of multiple dimensions of disease severity and level of function, rather than mere diagnostic categories, as the basis for assignment of patients to specific levels of treatment. The importance of this to the aviation waiver process was that aviation personnel with either Alcohol

Abuse or Alcohol Dependence could be treated at any of the three new treatment levels, and upon successful completion, be eligible for waivers. While the fine print of the ASAM Criteria has evolved over the years, the levels of treatment have remained essentially the same since first adopted:

Level 0.5 – IMPACT/"Prime for Life" (USMC). Early intervention service for individuals at risk of developing a Substance-Related or Addictive Disorder, usually recommended after a single ARI; analogous to the civilian "DUI school." This is not considered adequate for anyone meeting diagnostic criteria for a Substance-Related or Addictive Disorder and hence is not sufficient for waiver eligibility.

Level 1 – OUTPATIENT.
Level 2 - INTENSIVE OUTPATIENT.
Level 3 – RESIDENTIAL.
Level 4 – MEDICALLY MANAGED INTENSIVE INPATIENT. (Rarely necessary for military aviation personnel.

Once again, with the release of DSM-5, the previous categories of Alcohol Abuse and Alcohol Dependence were subsumed under the new heading of Alcohol Use Disorder, with severity specifiers of Mild, Moderate and Severe. Depending upon the multidimensional assessment by the treatment facility, a patient with a given degree of severity might be appropriate for Level 1, 2, or 3; any of these will be acceptable for a waiver upon successful completion and demonstrated compliance with the other waiver elements described above.

TOBACCO USE DISORDER AND SMOKING CESSATION:

305.1 (Z720.1)	**Tobacco Use Disorder, Mild**
303.1 (F17.200)	**Tobacco Use Disorder Moderate**
303.1 (F17.200)	**Tobacco Use Disorder Severe**

Tobacco use in any form, while Not Considered Disqualifying for Duty Involving Flying, should nonetheless be discouraged, as the evidence for adverse health effects is overwhelming and there can be no doubt that many, if not most, regular users meet DSM-5 criteria for Tobacco Use Disorder. Happily, many patients are able to quit without pharmacologic intervention once equipped with the knowledge and behaviors needed to abstain. For those who do require pharmacologic support, the following aeromedical guidelines apply.

Nicotine replacement therapy (transdermal and gum) is approved with the following stipulations:

NICORETTE GUM®: NCD if the following conditions are met:

1. Enrolled in formal organized stop smoking program.
2. Close observation by flight surgeon.
3. No adverse effects.
4. Duration of use does not exceed three months.

NICOTINE TRANSDERMAL SYSTEM (NICODERM®): NCD. Aviators should be grounded for 48 hours following application of first patch.

All other medications for tobacco cessation are not approved for use by personnel on active flight status, so require grounding during treatment. This can often be planned to coincide with

non-flying periods. Guidance for timing of return to flight is based on the elimination half-life of the drug being used, as follows:

VARENICLINE (CHANTIX®): Varenicline has an elimination half-life of 24 hours, so individuals should be grounded for one more week after finishing Chantix

BUPROPION (ZYBAN®, WELLBUTRIN®): Bupropion is cleared more quickly, but only about 1% is excreted unchanged in the urine; the rest is metabolized to three major active metabolites, threohydrobupropion, erythrohydrobupropion and hydroxybupropion, which accumulate to levels much higher than the parent compound and can have extended half-lives of as long as 43 hours. Individuals taking bupropion should therefore be kept down for two weeks following completion of treatment.

14.14 PERSONALITY DISORDERS

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Aeronautical adaptability involves a person's coping mechanisms, personality style, and defense mechanisms. Personality Disorders as well as maladaptive personality traits may lead to flight safety problems. Such traits in an applicant may interfere with adaptation to the rigors of aviation training, and in designated aviation personnel may affect flight performance and the ability to tolerate the stress and demands of operational training and deployment, maintain safety in aviation environments, and interact in a harmonious way with other crew members. Certain personality traits may produce thrill seeking behavior, conflicts with authority, emotional lability, indecisiveness, questionable judgment, poor impulse control, or inflexibility, and are incompatible with the safe performance of aviation duty. Treatment of personality disorders requires long term intensive psychotherapy, which is incompatible with aviation duty.

WAIVER: Aviation personnel are considered to be Not Aeronautically Adaptable (applicants) or Not Aeronautically Adapted (designated) if diagnosed as having a Personality Disorder or prominent maladaptive personality traits affecting safety of flight, mission completion, or crew coordination. Because personality traits are enduring patterns of thinking, feeling and behaving that are relatively stable over time, once an individual is found to be NAA this finding is usually permanent. Therefore, no waivers can be considered for aeronautical adaptability. Questions regarding the aeronautical adaptation of designated aviation personnel should be referred to NAMI Psychiatry; most cases will require in-person evaluation at NAMI.

DIAGNOSIS/ICD-9 Code:
301.0 Paranoid Personality Disorder
301.20 Schizoid Personality Disorder
301.22 Schizotypal Personality Disorder
301.4 Obsessive Compulsive Personality Disorder
301.50 Histrionic Personality Disorder
301.6 Dependent Personality Disorder
301.7 Antisocial Personality Disorder
301.81 Narcissistic Personality Disorder
301.82 Avoidant Personality Disorder
301.83 Borderline Personality Disorder
301.89 Other Specified Personality Disorder
301.9 Unspecified Personality Disorder

INFORMATION REQUIRED:

1. Flight surgeon Aeromedical Summary (AMS) documenting all prior symptoms, absence of persistent features, course of the disorder, medication use, and current level of functioning.
2. All mental health notes including treatment summary (e.g., mental health evaluation, treatment summary/termination notes). Please do not simply state, “See AHLTA records.” Please also include items not in AHLTA (e.g., civilian medical records, legal records).
3. In most cases when evaluation of designated aviation personnel suggests that an individual is no longer AA, collateral sources of history will be requested to assess the impact of the Personality Disorder or maladaptive personality traits on interpersonal and

occupational functioning, with special emphasis on flight safety, mission completion, and crew coordination.

14.15 OTHER CONDITIONS THAT MAY BE A FOCUS OF CLINICAL ATTENTION

Last Revised: Jul 14 | Last Reviewed: Feb 2015

AEROMEDICAL CONCERNS: Conditions such as relational problems, housing and economic problems, abuse and neglect, educational and occupational problems, or other problems related to the social environment (previously called V Codes in the DMS-IV-TR) may come to the attention of a flight surgeon or other clinician though they may not necessarily constitute a clinical disorder. Such issues may prompt a visit to a provider, result from another mental disorder, or potentially cause or worsen a mental disorder, and subsequently, may interfere with safe or effective flying. These conditions are not necessarily disqualifying, but flight surgeons are encouraged to pay attention to possible underlying psychopathology and maladaptive personality traits.

SUICIDE ATTEMPT: It should be noted that suicide attempt by itself is a behavior, not a DSM-5 psychiatric diagnosis. Waivers are based on the psychiatric diagnosis of which the suicide attempt is a manifestation. For example, if the suicide attempt was a manifestation of an Adjustment Disorder, the service member would be PQ when the Adjustment Disorder is fully resolved. If the suicide attempt was the manifestation of a Personality Disorder, the service member is NAA. Recurrent suicide attempts, however, may be disqualifying regardless of the diagnosis. There is a risk that a person may make an attempt which would compromise the safety of others (pilots sometimes use their aircraft as the instrument of suicide).

15.0 RESPIRATORY

Last Reviewed: December 13 | Last Revised: December 13

15.1 ASTHMA

AEROMEDICAL CONCERNS: Asthma symptoms can rapidly progress from minimal to totally disabling. Exposure to dust, smoke or fumes can provoke attacks in susceptible individuals. Positive pressure breathing, breathing cold or dry air, and +Gz exposure can stimulate bronchospasm in individuals with hyperreactive airways.

WAIVER: Any history of asthma, to include childhood asthma and exercise-induced asthma, is considered disqualifying (CD) for aviation duties and training, even if the disease is very mild.

APPLICANTS: Waivers for applicants with a history of asthma may be *considered* if all of the following criteria are met, with complete documentation submitted to Code 42:

1. The individual is currently asymptomatic and has been asymptomatic for a minimum of five years without medication use or prescriptions filled.
   a. Depending on the needs of the Navy, asthma that is symptomatic/requires medication use into adulthood (≥18 yo) is generally not considered for waiver in untrained personnel.
2. Baseline pulmonary function testing (PFT) within 1 year of waiver application is normal.
3. Methacholine challenge test within 1 year of waiver application is within normal limits and not suggestive of bronchial hyperresponsiveness.
4. Completed Navy ARWG Asthma worksheet reviewed with patient and signed by submitting FS/AME. (form follows this section)

A history of inhaler use that is clearly not suggestive of asthma is NCD. ***A complete asthma worksheet submitted with the flight physical may be sufficient. Further records, testing, and consultation may be required by NAMI on final review.***

DESIGNATED PERSONNEL: Asthma is CD for designated aviation personnel. A history of childhood asthma that was previously waived requires a new waiver should the individual develop recurrent symptoms or require medication. Waivers may be considered based on severity of disease, response to therapy and evidence of adherence to the proper components of care. Moderate and severe asthma not readily controlled with therapy will not be waived. ***A Local Board of Flight Surgeons may NOT be used to provide temporary flight clearance for asthma.***

INFORMATION REQUIRED:

1. Aeromedical Summary (AMS) addressing the four components of care (below)
   a. For tobacco users, documentation of smoking cessation is required
2. Family practice (FP), Internal Medicine (IM), or Pulmonology evaluation
3. Results of pulmonary function testing
   a. NOTE: Spirometry must be within normal limits and without obstruction at time of waiver application.
4. Allergy consult and results of allergen testing (e.g. skin testing, RAST testing) for personnel with persistent asthma in whom AIT may be beneficial (e.g. patients with allergic rhinitis, seasonal asthma, difficult to avoid triggers).

RENEWAL REQUIREMENTS:

1. AMS addressing the four components and any interval changes
   a. In prior smokers, documented abstinence is required.
2. FP, IM, or Pulmonology evaluation with comments on stability.
3. Annual PFTs when clinically indicated or directed by waiver requirements.

Four Components of Asthma Care (AMS should address them all)

1. **Asthma Severity and Control:** The AMS must classify *severity* using most current asthma guidelines (i.e. intermittent, mild persistent, moderate persistent, or severe persistent) and comment on *impairment* (frequency of attacks, nighttime symptoms, and functional limitations to daily activities). The AMS should also note the level of control (lifetime history of hospitalizations, number of emergency room and clinic visits related to asthma in the past 12 months, frequency of rescue inhaler usage).
2. **Patient Education:** The AMS must contain comments on patient education about both the asthma and the medications used to control it.
3. **Environmental Factors and Comorbid Conditions:** The AMS should comment on any work or home related stimuli affecting the member's asthma.
4. **Medications:** The AMS should include all medications (including those used "as needed") noting frequency of use of each medication. Records should be reviewed to ensure compliance with required therapy. Evidence of non-compliance may warrant grounding. ***All aviation personnel with asthma must carry a rescue inhaler while flying.***

DISCUSSION: The diagnosis of asthma is based primarily on history, with the aid of the physical exam and pulmonary function testing (PFT) demonstrating reversible airway obstruction. Regarding methacholine challenge testing (MCCT), it is currently required for all applicants with a known or questionable history of asthma in order to exclude current bronchial hyperresponsiveness. In designated personnel, bronchoprovocation studies (e.g. MCCT) may not be necessary to establish a diagnosis of asthma, particularly those with classic symptoms or documented reversible airway obstruction. MCCT is most useful in symptomatic patients when asthma is suspected, but spirometry is normal or shows borderline obstruction. In borderline cases, a negative MCCT can help to rule out asthma. In asymptomatic patients, a negative MCCT does not rule out a *remote* history of asthma and/or seasonal asthma. When referring patients with remitted childhood asthma for pulmonary testing, avoid testing in the setting of a recent (within two weeks) respiratory infection to minimize confusion and ensure reliable results are obtained.

When diagnosing and treating asthma in aviation personnel, the FS/AME should reference and be familiar with the **Asthma Guidelines from the National Heart, Lung, and Blood Institute**. Links to applicable documents can be found at the NAMI website.

Waiverable Medications in Designated Personnel: Any of these medications may be waived within the context of overall severity and control.
-Short-acting beta agonists -e.g. albuterol, levalbuterol
-Inhaled corticosteroids (ICS) e.g. fluticasone, budesonide
-Long-acting beta agonists (when combined with ICS) –e.g. salmeterol, formoterol
-Leukotriene Receptor Antagonists –e.g. montelukast

Personnel requiring immunomodulators (omalizumab), methylxanthines (theophylline) or systemic corticosteroids for control are NPQ with no waiver recommended.

ICD-9 CODES:
493.0 Extrinsic Asthma
493.1 Intrinsic Asthma
493.9 Asthma, Unspecified (use for Exercise Induced Asthma)

15.2 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

AEROMEDICAL CONCERNS: Chronic obstructive pulmonary disease (COPD) results in a reduction in maximum oxygen uptake and exercise tolerance. Cerebral hypoxia can adversely affect psychomotor skills, memory, judgment and cognition. Decrements in judgment and the ability to perform complex tasks are also caused by carbon dioxide retention that can occur in COPD. Sudden incapacitation as a result of pneumothorax can occur if a bulla ruptures.

WAIVER: Waivers will not be considered in Applicants. COPD is CD for class I and II. Per MANMED, mild COPD is NCD for class III, whereas moderate to severe COPD requires a waiver. A waiver is highly unlikely for class I and II, but may be considered for designated personnel on a case-by-case basis if there is no cardiovascular decompensation, exercise tolerance is unimpaired, and there are no bullae evident on CT. Aviation personnel meeting these criteria will be restricted from high-performance aircraft.

INFORMATION REQUIRED:

1. Internal medicine or pulmonology consultation
2. High-resolution CT of the chest
3. Complete PFT including pre- and post- bronchodilator
4. Resting oxygen saturations/ABGs
5. Echocardiogram
6. Documentation of smoking cessation

NOTE: Moderate-Severe COPD should be referred to a medical board

TREATMENT: Short-acting bronchodilators and long-acting bronchodilators, anti-muscarinics or beta agonists, either alone or in combination with inhaled corticosteroids, will be considered on a case-by-case basis depending on flying class, symptom control, and disease severity. Vaccination against pneumococcus, annual influenza immunization, and treatment aimed at weight loss (if overweight) are encouraged. ***Smoking cessation is required.***

DISCUSSION: The lower limit of oxygenation needed to permit adequate cerebral oxygenation is a PaO2>65 mm Hg at sea level. The corresponding lower limits for successive 1000 ft increments to 8000 ft are 61, 58, 55, 52, 50, 48, 46 and 45 mm Hg. Obesity or tight fitting clothing can reduce lung volumes leading to hypoventilation and ventilation/perfusion imbalance. Patients with COPD are also at increased risk of acute chest infections, further complicating care in the operational setting. Symptoms will be expected when the forced expiratory volume at 1 second (FEV1) reaches 50% of that predicted by sex and age. While the normal FEV1 declines at about 30 ml/year, the reduction in smokers can reach 90 ml/year. Of all patients, up to 50% will have persistent, productive cough, up to 25% will be moderately disabled with recurrent chest infections and increasing absences from work, and up to 25% will be severely disabled within 10 years.

ICD-9 CODE:
496 Chronic Obstructive Pulmonary Disease

15.3 PNEUMOTHORAX

AEROMEDICAL CONCERNS: Acute pneumothorax may cause acute chest pain and dyspnea during flight, worsening as ambient pressure falls. Tension pneumothorax is a life threatening condition that, although rare, will cause hypoxia arising from ventilation/perfusion imbalance and cardiovascular compromise.

WAIVER:

Traumatic Pneumothorax: Traumatic or surgical pneumothorax during the preceding year is CD. Waivers are considered on a case by case basis during the first year following the injury after complete healing and when the member is determined to be fit for full duty by the pulmonologist or surgeon.

Spontaneous Pneumothorax: Primary spontaneous pneumothorax is CD. A waiver can be considered based upon the guidelines below. A subsequent occurrence of spontaneous pneumothorax is CD. No waiver will be recommended unless surgical or chemical pleurodesis has been performed.

Applicants:

- ***Single episode of spontaneous pneumothorax:*** The applicant may be considered for waiver of standards one year after the resolution of the pneumothorax if treated solely with chest tube reinflation. High resolution CT scan must prove no pathology (blebs or underlying parenchymal disease) and pulmonary function tests must be within normal limits. If treated surgically or chemically, a waiver may be considered six months following resolution, provided the required studies are normal. All applicants must first be granted a waiver for commissioning before an aviation waiver can be considered. The commissioning waiver document must be submitted to NAMI with the aviation waiver request. Altitude chamber runs are not required for disposition and/or waiver recommendation.
- ***Recurrent spontaneous pneumothorax:*** Permanently disqualifying. No waivers will be recommended unless chemical or surgical pleurodesis has been performed resulting in a normal high-resolution chest CT scan and normal Pulmonary Function Testing (PFT).

Designated:

- ***Single episode of spontaneous pneumothorax:*** A waiver request may be submitted **t**hree months after resolution of the condition. The **s**ubmission must include the required information. For designated personnel who undergo chemical or surgical pleurodesis, a waiver request may be submitted three months after resolution of the condition. An altitude chamber run is not required for disposition and/or waiver recommendation.
- ***Recurrent spontaneous pneumothorax:*** CD, waiver not recommended. Waivers may be considered only after definitive treatment (chemical or surgical pleurodesis) to prevent recurrence. Designated personnel who undergo chemical or surgical pleurodesis may be returned to flying status after three months

INFORMATION REQUIRED:

1. Thin cut, high-resolution chest CT scan demonstrating full lung expansion and no pathology that could predispose to recurrence
2. Normal Pulmonary Function Test results
3. Thoracic surgery consultation (in recurrent cases, or in cases with structural abnormalities)

FOLLOWUP: None required.

TREATMENT: All recognized forms of treatment (chemical or surgical pleurodesis) are acceptable for waiver consideration. Recurrence rate after chemical pleurodesis is higher than after thoracotomy and pleural abrasion.

DISCUSSION: Over 90% of patients presenting with spontaneous pneumothorax are under 40 years old, with 75% being younger than 25. In women, there is often a relationship to menstruation. Onset of spontaneous pneumothorax is accompanied by chest pain in 90% of cases and by dyspnea in 89%. Tension pneumothorax develops in 5% and hemopneumothorax in 2.5%. Recurrence rates in patients who have not had definitive treatment have been reported to be from 28% for PSP and 43% for SSP. In one series of patients followed for 10 years without surgery, ipsilateral recurrence followed in 50% of the patients, with 62% happening in the first 2 years. A study published in JAMA 1990 found that most recurrences occur within the first six months. Another study reported a recurrence rate of 30% after a first spontaneous pneumothorax, 50% after a second episode, and 80% after a third. The contralateral risk was reported as 5.2% to 14.6%. Recurrence depends on the procedure used for treatment. Thoracoscopic pleurodesis has recurrence rates less than 7% while chemical pleurodesis has been reported to have a recurrence rate of 9% to 12% depending on the agent used. Thoracotomy with pleural abrasion has rates ranging from 1 to 3.6%. The U.S. Air Force has reviewed patients exposed to chamber flight before return to flying duties. Their analysis revealed that no episodes were eliminated and there was no value in predicting later recurrence. Of note, they required a much longer grounding period before testing, so their data may not be directly comparable to our requirements.

ICD-9 CODES:
512.8 Pneumothorax
860 Any Traumatic or Iatrogenic pneumothorax

15.4 SARCOIDOSIS

AEROMEDICAL CONCERNS: The protean manifestations of sarcoidosis can involve almost any organ system. Cardiac sarcoidosis, while uncommon, is associated with a restrictive cardiomyopathy and sudden death from arrhythmias. Patients with pulmonary infiltration may have symptoms of restrictive lung disease, which may be distracting in flight. Uveitis can cause permanent visual damage. Nervous system involvement can also occur. Hypercalcemia can predispose the aircrew member to renal stones.

WAIVER:

Applicants: CD, waiver not recommended.

Designated personnel: CD, waiver considered on case-by-case basis with depending on stage, clinical presentation, and flying class/platform. Contact NAMI Internal Medicine for guidance.

INFORMATION REQUIRED (minimum):

1. Pulmonary or Internal Medicine consult
2. Ophthalmology consult
3. CXR and chest CT with IV Contrast
4. Pulmonary function tests
   a. Spirometry
   b. Lung volume
   c. Diffusion
5. Serum calcium
6. 24hr urine calcium
7. ECG
8. 24 hour holter monitor

FOLLOW-UP: Annual submission required with monitoring requirements at a minimum:

1. Chest X-ray
2. PFT's
3. ECG
4. Serum calcium
5. Eye exam

DISCUSSION: The incidence is highest in the 20-35 age group. Up to 50% present with abnormal radiographic findings (usually bilateral enlargement of hilar nodes) or nonspecific respiratory symptoms. Between 10 and 50% will have erythema nodosum, which is more commonly seen in females. Uveitis can be seen in 15 to 25% of patients, and superficial node enlargement is seen in about 30% of Europeans with sarcoidosis and up to 80% of African Americans. The spleen is palpable in 10 to 25% of patients, with massive splenomegaly present in 3%. Up to 30% of cases with acute sarcoidosis will have abnormal thallium scans suggesting myocardial involvement. Liver biopsy will show sarcoid granulomas in 70% of cases without evidence of altered liver function. Nervous system involvement is demonstrable in 10% but may be subclinical in a greater percentage. Osteolytic or osteosclerotic bone lesions are also present in 10% of cases. Most cases (80%) with hilar adenopathy resolve spontaneously

within 2 years, but there is a 5-10% chance of developing progressive pulmonary fibrosis and a 6-7% eventual mortality in those with radiologically evident pulmonary sarcoidosis. The presence of ocular involvement or chronic tonsillitis has been reported to be associated with a poorer prognosis. High levels of serum interferon-gamma (IFNg) before treatment are associated with a more favorable prognosis. Healed myocardial granulomas may lead to arrhythmias, and patients in remission who have had myocardial involvement remain at risk for sudden death. MRI scan may eventually prove to be the method of choice for identifying cardiac sarcoid granulomas.

ICD-9 CODE:
135 Sarcoidosis

16.0 UROLOGY

Revised: January 16 Reviewed: January 16

16.1 CONGENITAL ABNORMALITIES OF THE KIDNEYS

Revised: September 15 Reviewed: September 15

This section is meant to address congenital abnormalities commonly encountered in aerospace medicine, however, it is not meant to be an all-inclusive list. Waivers for conditions not specifically listed will be considered on case-by-case basis in designated personnel only.
Significant changes: 1). Deleted requirement for 24 hour urine collection for creatinine clearance

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case [1]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waiver considered only on a case-by-case basis.
2. Waivers can be recommended if asymptomatic, normal renal function, and not requiring medical/surgical therapy.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Current or history of this condition is disqualifying. Polycystic kidney disease may be associated with hypertension, berry aneurysms of the cerebral arteries, renal stones, infection, or hematuria. Simple retention cysts in the renal cortex may be susceptible to trauma. Medullary sponge kidneys can be associated with hematuria and formation of calculi. Large polycystic kidneys are not compatible with high performance flying because G forces cause the kidney to pull on the pedicle that may result in bleeding. Pain that may be associated with many of the above can be suddenly incapacitating during flight.

Diagnosis/ICD-9 CODE:
753.0 Renal agenesis and dysgenesis (absence of kidney, atrophic kidney)
753.11 Congenital single renal cyst
753.12 Polycystic kidney unspecified type
753.17 Medullary sponge kidney
753.3 Other specified anomalies of kidney (horseshoe kidney)

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Nephrology and Urology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Nephrology and Urology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Nephrology and Urology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (if applicable, electronic or paper).

- Copies of prior PEB if related to diagnosis.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Specialist Evaluation: Urology or nephrology follow-up
Labs: As recommended by specialist
Imaging: As recommended by specialist
Flight Surgeon Comment: With respect to symptoms, need for any therapy including medications, adverse effects of therapy

APPENDICIES

References:

Davis, J. R., Johnson, R., Stepanek, J., & Fogarty, J. A. (Eds.). (2008). Fundamentals of Aerospace Medicine. Philadelphia: Lippincott Williams & Wilkins.

National Kidney Foundation. (2002). *KDOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification, and Stratification*. Retrieved from http://www2.kidney.org/professionals/KDOQI/guidelines_ckd/toc.htm

16.2 HEMATURIA

Revised: September 15 | Reviewed: September 15

Significant changes: 1). Added CD/NCD determination for blood in urine

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case by case [1]	case by case [1]	case by case [1]	case by case [1]	case by case [1]	case-by-case [2]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waiver considered on case by case basis after work-up complete and etiology discovered.

AEROMEDICAL CONCERNS: The condition or associated underlying condition(s) can adversely affect the flight performance, mission, or safety. Current hematuria, pyuria, or other indicators of urinary tract disease are disqualifying. Hematuria may be a sign of significant underlying renal and/or urinary system disease.

Diagnosis/ICD-9 CODE:
599.72 Microscopic hematuria

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

To determine if the blood in urine is CD or NCD:

1. Screen with dipstick.
2. If positive, ensure no exercise for 48 hours and member is well-hydrated, then repeat.
3. If there are 3 or more RBCs on microscopy, screen for benign causes: infection, menstruation, vigorous exercise, viral illness, trauma, or recent urological procedures, and repeat screen after benign cause removed; if none, hematuria is CD and requires urology consultation and waiver.
   a. Obtain urine culture, CMP, and CT of the abdomen/pelvis with and without contrast (r/o GU mass) and send these results with member for urologic consultation.
      (1) If there is contraindication to CT such as CKD, contrast allergy, or pregnancy, a magnetic resonance urography with and without contrast is an acceptable alternative.
   b. If an etiology for hematuria is discovered, a waiver for that condition will also be required.

If the blood in urine is found to be CD, the following must also be true prior to waiver submission:

- Released from *urology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).

- If *urology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Urology* recommendation for follow on care is **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (if applicable, electronic or paper).
- Copies of prior PEB if related to diagnosis.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Specialist Evaluation: Urology follow-up
Labs: as indicated by specialist
Imaging: as indicated by specialist
Flight Surgeon Comment: with respect to symptoms, need for any therapy including medications, adverse effects of therapy

APPENDICIES

References:

Davis, J. R., Johnson, R., Stepanek, J., & Fogarty, J. A. (Eds.). (2008). Fundamentals of Aerospace Medicine. Philadelphia: Lippincott Williams & Wilkins.

American Urological Association. (2012). *Diagnosis, Evaluation and Follow-up pf Asymptomatic Microhematuria (AMH) in Adults: AUA Guideline*. Retrieved from http://www.auanet.org/education/guidelines/asymptomatic-microhematuria.cfm

16.3 PROSTATITIS

Revised: September 15 | Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case by case [1]	case by case [1]	case by case [1]	case by case [1]	case by case [1]	case-by-case [2]
WNR	X						
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waiver can be recommended if asymptomatic and normal renal function

AEROMEDICAL CONCERNS: The condition or its treatment can adversely affect the flight performance, mission, or safety. Current acute prostatitis or chronic prostatitis is considered disqualifying. Prostatitis may be acute or chronic and may involve symptoms such as severe perineal discomfort, backache, urgency and frequency of micturition which can be extremely distracting in the cockpit. The side effects of some medications are not compatible with flying.

Diagnosis/ICD-9 CODE:
601.0 Acute prostatitis
601.1 Chronic prostatitis

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *IM or urology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *IM or urology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *IM or urology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (if applicable, electronic or paper).
- Copies of prior PEB if related to diagnosis.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Specialist Evaluation: IM or urology follow-up
Labs: As indicated by specialist
Imaging: As indicated by specialist
Flight Surgeon Comment: With respect to symptoms, need for any therapy including medications, adverse effects of therapy

APPENDICIES

References:

Meyrier, A., & Fekete, T. (2015). Chronic bacterial prostatitis. In S. Calderwood, and A. Bloom (Eds.), *UpToDate*. Retrieved from http://www.uptodate.com/contents/chronic-bacterial-prostatitis?source=search_result&search=prostatitis&selectedTitle=2%7E95

16.4 BENIGN PROSTATIC HYPERTROPHY

Revised: September 15 Reviewed: September 15

Significant changes: 1). Added AUA-SI score sheet and incorporated into CD/NCD differentiation. 2). Changed consultation requirement to IM or urology

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
NCD							
WR	case by case [2]	case by case [3]	case by case [3]	case by case [3]	case by case [3]	case by case [3]	case by case [3]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. The condition is considered disqualifying based on the clinical/treatment criteria detailed below.
2. Waivers are considered on a case-by-case basis if AUA-SI <8 and not requiring medications.
3. Waiver s are recommended if symptoms are controlled on acceptable therapy as detailed below.

AEROMEDICAL CONCERNS: The condition or its treatment can adversely affect the flight performance, mission, or safety. The conditions associated with significant BPH, include symptoms, sequelae, and treatments that are considered disqualifying. Current significant BPH and its treatments are considered disqualifying. BPH is a universal condition in men as they age and is initially characterized by a decrease in the force of the urine stream beginning as men reach their 40's or 50's. In the older aviator, BPH may result in urethral obstruction to the extent that they experience bladder emptying difficulty and urinary frequency, have increased risks of prostatitis with a longer and more complicated recovery, and interrupted sleep cycles from nocturia that can contribute to fatigue. The two primary classes of medications used in the non-surgical management of BPH have varying side effects; postural hypotension, reduced G-tolerance and visual changes are among the most significant aeromedical concerns. Many of the non-selective alpha-1 adrenergic antagonists act on vascular receptors resulting in postural hypotension, dizziness and visual changes which are incompatible with aviation duty. Urologic subtype selective alpha-1 adrenergic antagonists, which act on subtype alpha-1 adrenergic receptors specific to the prostate smooth muscle, provide symptomatic relief while minimizing other adrenergic side effects. Medications such as decongestants may exacerbate bladder emptying difficulties due to increased urethral constriction. Other medications can compete with hepatic cytochrome P450 elimination of BPH medications resulting in delayed clearances and increased side effects.

Diagnosis/ICD-9 CODE:
600.0 Hypertrophy (benign) of prostate

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

To determine if BPH is CD or NCD:

1. BPH is NCD if:
   a. AUA-SI score is <8 AND
   b. DRE is not concerning AND
   c. PSA is within reference range AND

d. Watchful waiting (per AUA guidelines) is the chosen treatment
2. BPH is CD if:
   a. AUA-SI is ≥8 OR DRE is concerning OR PSA is above reference range

If BPH is CD as above, the following will also apply to designated personnel:
1. IM or Urology consultation required
2. After surgical treatment, including open prostatectomy, transurethral (such as TURP/TUMT/TUVP), and transrectal procedures by urologic surgeons and specialists, full post procedure recovery with symptom resolution is achieved and member is found fit for full duty and cleared to return to normal activities by the surgeon. Operative reports must be submitted in support of waiver request.
3. After non-surgical management of BPH with approved medications as listed below, symptom resolution is achieved on stable dose of medication without adverse effects for a minimum of 30 days before applying for a waiver.
   a. Non-selective alpha-1 adrenergic antagonists: doxazosin (Cardura®), prazosin (Minipress®), terazosin (Hytrin®) are CD, no waiver recommended.
   b. Selective alpha-1 adrenergic antagonists: alfuzosin (UroXatral®), tamsulosin (Flomax®), silodosin (RAPAFLO®) are CD, waiver not considered for Service Group 1 or 2, or tactical NFO personnel. Senior officers (LCDR and above) may be waived to Service Group 3 or Class II flying duties in non-tactical aircraft. Designated Naval aircrew will be considered for waiver. Aviation personnel on these medications – alfuzosin, tamsulosin, silodosin - should not pull more than 2.5 Gs, so requests for waivers should state "transport/maritime/helo aircraft only." Air traffic controllers will usually be waived if they meet requirements. Patients are required to be on a final stable dose for 30 days without adverse side effects prior to waiver request/submission.
   c. 5-alpha reductase inhibitors: dutasteride (Avodart®), finasteride (Proscar®) are CD: waivers are possible after 30 days on a final stable dose, without adverse side effects.
4. Any interruption in medication treatment will require a non-flying status until 30 days after the member is back on a stable therapeutic dose.

In addition to above, the following must also be true prior to waiver submission:

- Released from *IM or Urology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *IM or Urology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *IM or Urology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (if applicable, electronic or paper).
- Copies of prior PEB if related to diagnosis.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER
All associated documentation. Include the American Urological Association – Symptom Index (AUA-SI) – uploaded to AERO.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Specialist Evaluation: IM or urology follow-up
Labs: As indicated by specialist
Imaging: As indicated by specialist
Flight Surgeon Comment: With respect to symptoms, need for any therapy including medications, effectiveness of therapy, adverse effects of therapy, AUA-SI score sheet

APPENDICIES

References:

American Urological Association. (2014). *American Urological Association Guideline: Management of Benign Prostatic Hyperplasia (BPH)*. Retrieved from https://www.auanet.org/education/guidelines/benign-prostatic-hyperplasia.cfm

16.5 REITER'S DISEASE

Revised: September 15	Reviewed: September 15
Significant change: please see section titled Reactive Arthritis in Miscellaneous Section	

16.6 RENAL STONES

Revised: January 16 Reviewed: January 16

Significant changes: 1). Deleted requirement for 3 sets of blood chemistries (not supported by clinical guideline); 2). Added Sodium, potassium, pH to 24 hour urine determinations (per clinical guideline); 3). Retained stones in designated clarified: WNR; 4). Added IM or Urology consult to designated work-up; 5). Deleted recurrent stone in designated as a reason to find NCD; 6). Added follow-up requirements 1-4 for waiver renewal.

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case by case [1]	case by case [2,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Waivers are considered on a case-by-case basis; waivers are generally not recommended for:
   - Recurrent stones <60 months apart
   - Cysteine stones
   - Hypercalciuria (absorptive, type one and type three)
   - Retained stones (collecting system)
2. Waivers are generally recommended if asymptomatic and stone was:
   - Calcium oxalate, calcium phosphate, uric acid, struvite stone
   - Recurrence greater than 12 months
3. Waivers are considered, but generally not recommended for:
   - Cysteine stones
   - Hypercalciuria (absorptive, type one and type three)
   - Retained stones (collecting system)

AEROMEDICAL CONCERNS: The condition is known to produce unpredictable symptoms that can adversely affect the flight performance, mission, or safety. Current or history of a urinary tract stone formation is considered disqualifying. In-flight incapacitation secondary to the pain of renal colic is the major concern. Renal colic has been associated with USAF, IATA, and US airline pilot distraction/incapacitation. The majority of renal stones is associated with dehydration and occurs as single episodes. Retained, asymptomatic stones are a concern because approximately 1/3 of those will become symptomatic in the future.

Diagnosis/ICD-9 CODE:
592.0 Calculus of kidney
592.1 Calculus of ureter
98.51 Procedure code for Extracorporeal shockwave lithotripsy of the kidney, ureter and/or bladder

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

Applicant:
1. Stone free for 1 year prior to waiver application date
2. Urinalysis. See Metabolic Workup Worksheet

3. Blood chemistries. See Metabolic Workup Worksheet
4. 24 hour urine metabolic workup. See Metabolic Workup Worksheet
5. Stone analysis (if stone recovered)
6. Urology consult
7. Non-contrast (stone protocol) CT
8. KUB is required at the time of application to an aviation training program

Designated:

1. Urinalysis. See Metabolic Workup Worksheet
2. Blood chemistries. See Metabolic Workup Worksheet for required labs.
3. Non-contrast (stone protocol) CT
4. 24 hour urine metabolic workup. See Metabolic Workup Worksheet
5. Stone analysis (if stone recovered)
6. IM or Urology consult
7. An episode may be considered NCD only IF…
   a. This is FIRST stone AND
   b. The stone is SINGLE AND
   c. There is NO retention of stone (confirmed by imaging) AND
   d. All labs on Metabolic Workup Worksheet are NORMAL (as the ranges are defined on the worksheet) AND
   e. Spontaneous passage of stone
   f. THEN this episode of stone is NCD for designated personnel
8. Member must be grounded for:
   a. 2 weeks following spontaneous passage
   b. 4 weeks following stone manipulation/lithotripsy
   c. 12 weeks following open surgery and must be found fit for full duty by urology (GROUNDING PHYSICAL REQUIRED SINCE MINIMUM IS GREATER THAN 60 DAYS). Cannot be returned to flight until waiver granted by PERS / CMC

Unless stone is NCD, in designated, as above, the following must also be true prior to waiver submission:

--Released from *IM or Urology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).

--If *IM or Urology* recommend restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).

--*IM or Urology* recommendation for follow on care **documented** on last clinical note (electronic or paper).

--Surgery/Procedure Note (if applicable, electronic or paper).

--Copies of prior PEB if related to diagnosis.

--Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.
Include the Renal Stone Metabolic Worksheet (WS-RENAL) – uploaded to AERO.

FOLLOW UP REQUIREMENTS	**Annual Submission**

1. Brief summary of previous stone history, work-up and prevention steps.

2. Flight Surgeon comment with respect to symptoms, interval history of additional kidney stone(s), detailed account of additional episode(s), and treatment and prevention steps taken for additional episodes (Urology consult included). Nephrology consultation if not obtained previously and there has been a recurrence of stone.
3. Radiologic evidence demonstrating no new stones and no growth or movement of retained parenchymal stones, if present. A KUB is recommended for routine follow-up in the absence of symptoms during the waiver period. A non-contrast (stone protocol) CT may be necessary if the patient has a history of radiolucent stones (such as uric acid stones) or if the patient has experienced symptoms.
4. If member is on prevention medication or the initial 24-hour urine stone risk analysis was abnormal, then an annual 24-hour urine to monitor impact of intervention is required.

APPENDICIES

References:

American Urological Association. (2014). *Medical Management of Kidney Stones: AUA Guideline*. Retrieved from https://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Davis, J. R., Johnson, R., Stepanek, J., & Fogarty, J. A. (Eds.). (2008). Fundamentals of Aerospace Medicine. Philadelphia: Lippincott Williams & Wilkins.

16.7 PROTEINURIA

Revised: September 15 | Reviewed: September 15

Significant changes: 1). Added CD/NCD determination for protein in urine

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case by case [1,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]	case by case [2,3]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Per nephrology recommendation.						

1. Waiver considered on a case-by-case basis if: Protein excretion < 1 gram/day
   Kidney function is normal
   No systemic disease (including hypertension)
2. Waiver considered on a case-by-case basis if: Hypertension is well controlled
   Kidney function is normal
   Protein excretion is < 2 grams/day
3. Waiver will not be recommended for daily protein excretion > 2 grams/day

AEROMEDICAL CONCERNS: The condition, its sequelae, or its treatment can adversely affect the flight performance, mission, or safety. Current or history of proteinuria (greater than 200 mg/24 hours, or a protein to creatinine ration greater than 0.2 in a random urine sample) is disqualifying. The underlying processes that cause proteinuria can lead to renal insufficiency or failure presenting with signs and symptoms that may include fatigue, susceptibility to infection, edema, and electrolyte disturbances. The underlying processes that cause proteinuria may render the member unfit for military aviation duties.

Diagnosis/ICD-9 CODE:
791.0 Proteinuria

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

To determine if protein in urine is CD or NCD:

1. Screen with a urine dipstick.
2. If the dipstick is positive, ensure no exercise for 24 hours and the member is well-hydrated, then repeat.
3. If the repeat dipstick is positive, then obtain a microscopic analysis to rule out false-positive conditions such as infection or stones that can increase numbers of red or white blood cells in urine.
4. If these conditions above are ruled out, then obtain two random urine protein/creatinine ratios temporally separated by 1-2 weeks.
   a. A first morning urine sample is preferred, but not required (patient collects at home then drops off at laboratory)
   b. If the ratio of either is ≥ 0.2, then the condition is CD; the member should be grounded and referred to Nephrology for further evaluation
   c. If the ratio of BOTH are < 0.2 mg, condition is NCD

If protein in urine is found to be CD, then the following must also be true prior to waiver submission:

- Released from *nephrology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *nephrology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Nephrology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (if applicable, electronic or paper).
- Copies of prior PEB if related to diagnosis.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

1. Brief summary of previous proteinuria history, work-up, and prevention steps.
2. Flight surgeon comment with respect to symptoms, current therapy including medication and prevention steps to halt progression, and stability of proteinuria.
3. Nephrology follow-up consultation report.
4. Reports of imaging and lab tests recommended by Nephrology.

APPENDICIES

References:

Davis, J. R., Johnson, R., Stepanek, J., & Fogarty, J. A. (Eds.). (2008). Fundamentals of Aerospace Medicine. Philadelphia: Lippincott Williams & Wilkins.

National Kidney Foundation. (2002). *KDOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification, and Stratification*. Retrieved from http://www2.kidney.org/professionals/KDOQI/guidelines_ckd/p5_lab_g5.htm

17.0 MISCELLANEOUS CONDITIONS

Last Revised: March 2016 Last Reviewed: March 2016

17.1 ALLERGIC REACTIONS TO INSECTS

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case [1]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Applicants with a history of cutaneous or mild systemic reactions must have received VIT and be on a stable maintenance dose prior to submitting an application for a waiver. Applicants with severe allergic reactions will not be considered for waiver until they have completed a minimum of three years of VIT and have demonstrated a documented negative repeat skin test.
2. The decision for waiver will be made on a case-by-case basis after review of all the available documentation.

AEROMEDICAL CONCERNS: Any history of systemic or anaphylactic reaction to insect venom, foods, or food additives is considered CD for all DIF. Systemic or significant local reactions to insect bites or stings may lead to incapacitation in as little as three to five minutes. This type of rapid incapacitation is incompatible with aviation duty without successful diagnosis and treatment. Desensitization with Allergy or Venom-Specific Immunotherapy requires specialty-specific care, more aggressive initial therapy, and then regular dosing over years. The initial treatment and maintenance dosing must be done at a qualified facility with the ability to handle severe reactions. These medications have specific storage and transport requirements. These requirements may prevent operational duties in some areas/locations and must be considered.

DISCUSSION: Venom-Specific Immunotherapy (VIT) is required for all adult individuals experiencing systemic or anaphylactic reactions. Cutaneous systemic reactions prior to the age of 16 do not require treatment with VIT and do not require a waiver. These individuals have a minimal risk of systemic reaction as an adult (approximately 10%). However, anaphylactic reactions in individuals less than 16 years of age require allergy/immunology consult and skin testing. If positive, VIT is required for a career in aviation. Carrying an emergency anaphylactic kit (Epi Pen) does not preclude a member from consideration for a waiver. In some instances, it may be required to carry Epi Pen in the performance of aviation duty. The requirement to carry an emergency anaphylactic kit will be based on the severity of the reaction and the recommendation of the Allergy/Immunology specialist.

A generalized reaction to 100 wasps is a normal response, which does not fulfill the criteria of the generalized reaction described above. Anaphylaxis from a single sting is different matter.

Diagnosis/ICD-9 CODE:
989.5 Toxic effect of venom
V15.6 Personal history of poisoning presenting hazards to health
V07.1 Need for desensitization to allergens

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from A*llergy/Immunology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Allergy/Immunology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Allergy/Immunology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB.
- Member must be up-to-date with VIT.
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history.
Specialist Evaluation: Allergy/Immunology, unless otherwise specified by code 53HN.

17.2 BREAST IMPLANTS AND SURGERY

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
NCD							
WR	X[2]	X[2]	X[2]	X[2]	X[2]	X[1]	X[1]
WNR							
LBFS	No	Yes	Yes	Yes	Yes	Yes	Yes
EXCEPTIONS							
LIMDU/PEB	Not required.						

1. Any history of chest wall (including breasts) surgery during the preceding **6 months** is considered disqualifying. After 6 months, the condition is not considered disqualifying if there have been no complications and the member remains asymptomatic. Beyond the 6 months, the retained breast implants are NCD, if stable, uncomplicated, and asymptomatic.
2. Waivers may be considered only after **6 weeks** following surgery provided full recovery without complication.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Complications from breast surgery include infection, abscess, wound separation, and pneumothorax. Long-term effects include chronic pain from scarring, chest muscle function, repeat surgery, or breast dysfunction after implant. Waivers may be considered after full recovery from surgery (at least 6 weeks). For implants, it is possible shifting of implants may occur during high G flight and may compromise the surgical result early after surgery, or later cause distraction and/or pain during flight.

Waiver Comments:

1. The history of breast surgery and retained implants are NCD, if it has been more than **6 months** since the surgery and the member is asymptomatic with no complications and no physical limitations.
2. Waivers are considered after completing **6 weeks** postoperative.
   a. Fully recovered, no limitations, cleared by surgeon for full duty.
3. Waivers are considered for designated aviators.

Diagnosis/ICD-9 CODE:

85.31 Unilateral reduction mammoplasty
85.32 Bilateral reduction mammoplasty
85.4 Mastectomy
85.41 Unilateral simple mastectomy
85.42 Bilateral simple mastectomy
85.50 Augmentation mammoplasty, NOS
85.53 Unilateral breast implant
85.54 Bilateral breast implant

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Surgical Specialist's* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If the *Surgical Specialist* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).

- *Surgical Specialist's* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Surgery/Procedure Note (if applicable, electronic or paper).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation: Surgical report and postoperative care notes included release to full duty.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Specialist Evaluation: Surgical specialist initially then as required, Women's Health Specialist thereafter.
Labs: As recommended by specialist
Imaging: As recommended by specialist
Flight Surgeon Comment: With respect to symptoms, any limitation, or any need for additional surgery or therapy including medications.

APPENDICIES

Breast cancer and its surgical/medical treatment are covered in the Malignancy section of the ARWG.

17.3 HEAT EXHAUSTION/STROKE

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	History of heat stroke or history of recurrent heat exhaustion (3x/24 months) should be referred to the PEB for disposition (SECNAVINST 1850.4 series, encl (8)).						

1. See waiver comments 1, 2, and 3 below.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Heat injuries alter performance and/or can result in serious medical complications. The recurrence of heat exhaustion/heat stroke while in the aviation/operational environment is possible with a history of heat injury. The sequelae of some heat injuries can limit operational capability.

WAIVER COMMENTS:

1. Heat Cramps, single or multiple episodes: NCD
2. Heat Exhaustion: NCD, unless severe or recurrent. Any history of 3 or more episodes is CD.
3. Heat Stroke: any history is CD. Waivers are considered on a **case-by-case** basis. Waiver disposition may be favorable if the following conditions are met:
   a. No evidence of a congenital predisposing condition (i.e., anhidrosis).
   b. An identifiable situational stressor led to the episode, such as dehydration, coexisting infectious disease, medication effect, fatigue, sleep deprivation, or lack of acclimatization.
   c. No residual injury exists.
   d. A minimum of three months have passed since the episode of heat stroke.
   e. Evidence of normal heat tolerance after recovery from the heat stroke episode.
   f. Individuals who fail to meet these criteria will remain NPQ with no waiver recommended. Recurrent episodes of heat stroke are CD, with waiver unlikely.

INFORMATION REQUIRED:

1. Severe or recurrent heat exhaustion or one episode of heat stroke will require evaluation by NAMI Internal Medicine

DISCUSSION: Heat stress and heat injury continue to be significant environmental hazards in military aviation. Exertional heat stroke (EH) is a state of extreme hyperthermia that occurs when excess heat generated by muscular exercise exceeds the body's ability to dissipate it. Loss or significant alteration of consciousness in the circumstances of physical exertion in hot weather should be considered heat stroke unless another cause is obvious.

Studies show that exertional heat stroke in a young, healthy (military) individual result from situational factors; an intrinsic predisposition to heat intolerance is extremely rare. Dehydration, febrile or infectious illness, skin disorders, poor physical fitness and obesity are well-accepted

factors predisposing to heat intolerance. Some of these factors may result in only temporary heat susceptibility while others can lead to permanent heat intolerance.

Diagnosis/ICD-9 CODES:
992.0 Heat stroke
992.2 Heat cramps
992.5 Heat exhaustion unspecified

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *internal medicine or neurology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *internal medicine or neurology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Internal medicine or neurology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	**Annual Submission**

Flight Surgeon comment regarding interval history.

17.3A RHABDOMYOLYSIS

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	PEB may be required for exertional rhabdomyolysis when associated with heat stroke (SECNAVINST 1850.4 series, encl (8))						

1. See waiver comments below.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. Any history of this condition is disqualifying. The physiologic changes that occur in rhabdomyolysis may be precipitated by and severely compounded in the aviation environment and related duties involving flight. Symptoms may include muscular pain, muscular weakness, and fatigue. Decreased situational awareness and cockpit distraction are of major concern. Additionally, unrecognized rhabdomyolysis may progress to renal failure, shock, cardiac arrhythmias, and death.

WAIVER COMMENTS: The history of a single episode of uncomplicated rhabdomyolysis is CD for all aviation classes, including applicants; if the condition fully resolves within three months without sequelae, waivers are recommended on a case-by-case basis.

Any history of rhabdomyolysis is CD. Waivers are considered on a case-by-case basis in DESIGNATED members only. Waivers are considered under the following conditions:

1. No evidence of a congenital predisposing condition (e.g., myophosphorylase deficiency, sickle cell trait).
2. An identifiable situational stressor led to the occurrence, such as extreme physical exertion, trauma or muscle compression, dehydration, electrolyte abnormality, coexisting infectious disease, toxin exposure, medication effect, or fatigue.
3. No residual organ injury or damage is present.
4. A minimum of three months has passed since the episode of rhabdomyolysis.

DISCUSSION: Rhabdomyolysis is a syndrome characterized by muscle necrosis and release of intracellular muscle constituents into the circulation. The disease process can range from mild, asymptomatic enzyme elevations to life-threatening cases involving cardiac arrhythmias, disseminated intravascular coagulation, acute renal failure, and death. The classic presentation of rhabdomyolysis includes myalgias, myoglobinuria causing reddish to brown urine, and elevated serum muscle enzymes. Diagnosis is based upon fractionated serum skeletal muscle creatine kinase levels, which may exceed 100,000 IU/L, and appropriate clinically correlated history. While no specific cutoff for creatine kinase level is used to diagnose rhabdomyolysis, a serum level 5 times greater than baseline is the generally accepted level. Additional predisposing conditions and causal factors include prolonged unconsciousness resulting in extended dorsal muscle compression, struggling against restraints, episodes of near drowning,

burns, sepsis, torture victims, high-voltage electrical injuries, compartment syndrome, hyperthermia, hypothermia, prolonged tourniquet application, seizures, sporadic extreme physical exertion (i.e., ultra-marathoners), dehydration, inappropriate nutritional supplement use, and pre-existing electrolyte abnormalities.

Diagnosis/ICD-9 CODES:
728.88 Rhabdomyolysis
791.3 Myoglobinuria

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *Internal Medicine* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *Internal Medicine* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Internal Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	**Routine Submission**

Flight Surgeon comment regarding interval history.

17.4 HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION

Last Revised: March 2016 Last Reviewed: March 2016

Significant changes: 1) HIV waivers considered on case-by-case basis for designated personnel in Class II, III, IV

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR					Case-by-case	Case-by-case	Case-by-case
WNR	X	X	X	X			
LBFS		No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	PEB is not required for uncomplicated HIV seropositivity. Complicated cases may require PEB IAW SECNAVINST 1850.4 series, encl (8).						

AEROMEDICAL CONCERNS: Previously recommended management of HIV infection included monitoring CD4 cell decline and starting antiretroviral therapy when a specific threshold was reached. Today, the U.S. Department of Health and Human Services now recommends starting treatment as soon as infection is diagnosed. Mostly due to earlier treatment, aeromedically concerning manifestations of HIV infection such as encephalopathy, opportunistic infections, and opportunistic malignancies rarely develop in those whose infection is identified and treated early. As such, uncomplicated cases of HIV seropositivity may be considered for waivers with appropriate monitoring. Since 2013, the U.S. Navy allows those infected with HIV without complications, the opportunity to deploy and PCS overseas and serve aboard large platform ships to a limited number of specific locations.

MEDICAL THERAPY: All personnel requesting a waiver as well as those previously granted a waiver must be free of any side effects related to their treatment including, but not limited to medication changes or dosage adjustments. Any complications of treatment shall be brought to the immediate attention of NAMI Internal Medicine.

A GROUNDING PHYSICAL AND AMS SHALL BE SUBMITTED UPON CONFIRMATION OF MEMBER WITH HIV SERO-POSITIVE LABORATORY TESTING

Diagnosis/ICD-10 CODE:
Z21 Asymptomatic HIV infection status

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Complete initial evaluation required by SECNAVINST 5300.30 series and released from *infectious diseases* care with recommendation of return to full duty and no restrictions **documented** on last clinical note (electronic or paper).
- If *infectious diseases* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Infectious diseases* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- CogScreen-AE completed (full neuropsychological battery testing might also be required as indicated by CogScreen-AE results).
- Navy HIV Evaluation and Treatment Unit (HETU) comprehensive psychosocial evaluation.
- Achieve an undetectable blood viral load using FDA-approved agents recommended by U.S. Department of Health and Human Services, excluding efavirenz.
- Copies of any prior PEB.

- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.
AMS must include: "No aeromedically significant adverse effects due to antiretroviral therapy."
Flight Surgeon Comment: Safer sex counseling completed and documented in AMS

FOLLOW UP REQUIREMENTS	**Annual Submission**

Specialist Evaluation: --Infectious diseases follow-up visits every 6 months, submitted annually
--Navy HETU psychosocial evaluation
Labs: As recommended by specialist
CogScreen-AE
Flight Surgeon Comment: Safer sex counseling completed and documented in AMS

Prior to screening for deployment, OCONUS or SeaDuty assignments, members must submit a request to update their waiver provisions to consider the requirements for the specific duty location requested.

APPENDICIES

References:

1. MILPERSMAN 1300-1300. (2013). Assignment of personnel with bloodborne pathogens (BBP). Retrieved from http://www.med.navy.mil/sites/nmcphc/Documents/nbimc/MILPERSMAN-1300-1300.pdf
2. DoDI 6485.01 – HIV in Military Service Members
3. SECNAVINST 5300.30E - Management of Human Immunodeficiency Virus, Hepatitis B Virus and Hepatitis C Virus Infection In The Navy And Marine Corps
4. BUMEDINST 1300.2A – Suitability Screening
5. U.S. Department of Health and Human Services. (2015). Clinical guidelines portal. Retrieved from https://aidsinfo.nih.gov/guidelines

17.4.1 TRUVADA® PRE-EXPOSURE PROPHYLAXIS (PREP) TO PREVENT HIV INFECTION

Last Revised: September 15	Last Reviewed: September 15
Significant changes: 1) new addition to ARWG	

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	Case-by-case	Case-by-case	Case-by-case	Case-by-case	Case-by-case	Case-by-case	Case-by-case
WNR							
LBFS		No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not required.						

AEROMEDICAL CONCERNS: Truvada® is FDA-approved to be used by HIV-negative persons to prevent HIV infection. Several pharmaceutical resources list aeromedically significant potential adverse effects such as nausea and dizziness. However, in a poll of Navy infectious diseases staff physicians, these potential adverse effects are either not seen in clinical practice or would manifest within 14 days of medication use, thereby allowing cessation of therapy in those affected.

Diagnosis/ICD-9 CODE:
Z79.899 Long term use of medications

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *infectious diseases* care with recommendation of return to full duty and no restrictions **documented** on last clinical note (electronic or paper).
- If *infectious diseases* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Infectious diseases* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Labs: HIV antibody and viral load (PCR) (negative), serum creatinine (normal), other screening tests deemed necessary by treating physician.
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.
AMS must include: "No significant adverse effects due to Truvada during a 14-day grounding period."
Flight Surgeon Comment: Safer sex counseling completed and documented in AMS

FOLLOW UP REQUIREMENTS	Annual Submission

Specialist Evaluation: ID or internal medicine or family medicine follow-up
Labs: HIV antibody test every 3 months; serum creatinine every 6 months

Flight Surgeon Comment: Safer sex counseling completed and documented in AMS

APPENDICIES

References:

- Grant, R., et al. (2010). Preexposure Chemoprophylaxis for HIV Prevention in Men Who Have Sex with Men (iPrEx). *NEJM*.
- Lexicomp Online®, Hudson, Ohio: Lexi-Comp, Inc.; October 22, 2015.

17.5 LYME DISEASE

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not Required.						

1. Waiver considered on a case-by-case basis.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. This condition is disqualifying for aviation. Early infection with *Borrelia burgdorferi* generally results in the characteristic cutaneous rash known as erythema migrans. Later in the course of the disease, chronic meningitis, polyneuropathy or Bell's palsy can develop. Months to years later, arthritis can be the predominant feature. Note that all these conditions can appear in any order and at any time during the course of the infection. *B. burgdorferi* can also cause a myo/pericarditis, conjunctivitis, and retinal hemorrhage or detachment.

Diagnosis/ICD-9 CODE:
088.81 Lyme disease

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- *Infectious Diseases Specialist* evaluation **documented** on last clinical note (electronic or paper).
- *Infectious Diseases Specialist* evaluation with recommendation of return to flight status, no restrictions, and world-wide deployability **documented** on last clinical note (electronic or paper).
- If *Infectious Diseases Specialist* recommends restrictions, then documentation of physical limitations and expected duration (permanent vs temporary).
- *Infectious Disease Specialist* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	Routine Submission

Flight Surgeon comment regarding interval history.
Specialist Evaluation: Infectious diseases or internal medicine, unless otherwise specified by code 53HN.

APPENDICIES

References:

Centers for Disease Control & Prevention. *Lyme disease*. Retrieved from http://www.cdc.gov/lyme/

17.6 MOTION SICKNESS/AIR SICKNESS

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X [1]	X [1]	X [1]	X [1]	X [1]	X
NCD							
WR	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]	case-by-case [2]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS	SNA, SNFO (CNATRA Instruction 6410.2 series) [3]						
LIMDU/PEB	Not Required.						

1. Recurrent, incapacitating, or persistently requiring premedication is disqualifying.
2. Waivers for the recurrent/persistent condition are unlikely. Some waivers are considered on a case-by-case basis.
3. Many student aviators (SNA, SNFO) experience transient motion sickness that will desensitize and resolve with continued flying and/or interventions according to CNATRA Instruction 6410.2 series. This transient condition is NCD, if fully resolved. It is CD when the condition is intractable/ persisting despite interventions.

AEROMEDICAL CONCERNS: The condition or its sequelae can adversely affect the flight performance, mission, or safety. A history of motion sickness resulting in recurrent incapacitating symptoms or symptoms of such severity to require pre-medication, in the previous 3 years, is disqualifying. Symptoms can include sweating, nausea, drowsiness, lethargy, apathy, headache, and vomiting. This spectrum can range from distraction to prostration while flying. Motion sickness's systemic symptoms and cognitive degradation can occur with or without vomiting. The condition can be associated with a prolonged (hours) recovery of normal function following the discontinuation of the inciting conditions. The condition is difficult to treat. Most anti-nausea medications induce somnolence and are used only in accordance to Navy Instruction. Non-medicinal treatments include relaxation, cool air, diet, biofeedback methods, and exposure desensitization. Exposure desensitization takes a variable amount of time (days or weeks) for each individual and some never desensitize. Underlying neurological, vestibular, or psychological conditions should be considered in persistent cases of motion sickness.

SNAs and SNFOs (CNATRA personnel): The condition is common among students in training and some experienced aviation personnel returning to flight after a prolonged period of no flying. Many student aviators will experience varying degrees of transient motion sickness in the naval flight training environment. Most of these students will desensitize after several flights with/without minor intervention. Others will require additional treatment or desensitization training. The condition is NCD for student aviators when it is transient, resolving spontaneously or when addressed according to the CNATRA Instruction 6410.2 series. The condition is CD when intractable, persisting despite intervention.

Diagnosis/ICD-9 CODE:
994.6 Motion sickness

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- *Squadron Flight Surgeon evaluation IAW CNATRA Instruction 6410.2 series* evaluation **documented** on last clinical note (electronic or paper).
- *Squadron Flight Surgeon evaluation IAW CNATRA Instruction 6410.2 series* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.
Include the Motion Sickness Worksheet (QS-MS) – uploaded to AERO.

FOLLOW UP REQUIREMENTS	Annual Submission

Flight Surgeon comment regarding interval history.

APPENDICIES

References:

Chief of Naval Air Training. *Airsickness handout*. Retrieved from http://www.cnatra.navy.mil/tw4/flightmedicine/docs/airsickness_recommendations.pdf

Chief of Naval Air Training. *CNATRA instruction 6410.2 series*. Retrieved from http://www.cnatra.navy.mil/pubs/folder2/6410.2A.pdf

17.7 BONE MARROW DONATION

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not Required.						

1. A minimum of 30 days grounding is required after donation (no waiver). See waiver comments below.

AEROMEDICAL CONCERNS: Bone marrow donation is certainly one of the most altruistic forms of giving to another individual. However, there are significant donor concerns. Bone marrow donation will ground the aviator for at least 30 days and has the potential for complications that could restrict deployment or even end a flying career. Depending on how well the human leukocyte antigens (HLA) are matched, up to 5% of the recipients will require a second donation that will further restrict the deployability of the aviator donor. If an aviator is contemplating a donation, the Flight Surgeon needs to counsel the donor regarding the risks involved and the Commanding Officer needs to be aware of the 30 day minimum grounding with the potential for longer grounding. CO approval for donation is required.

WAIVER COMMENTS: Not considered disqualifying and waiver not required, provided:

1. Minimum of 30 days has elapsed since the bone marrow donation
2. Post-donation symptoms have resolved
3. Hematocrit is greater than or equal to 38% for males, 35% for females
4. The remaining Complete Blood Count (CBC) with differential is within normal limits.

Post-donation CBC may take up to six months to return to normal. A waiver for designated members is required if post-donation symptoms persist or if CBC results do not return to normal after six months. Waivers will not be considered for applicants.

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- *Hematology/Oncology or Internal Medicine* evaluation with recommendation of return to flight status, no restrictions **documented** on last clinical note (electronic or paper).
- *Hematology/Oncology or Internal Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- If H*ematology/Oncology or Internal Medicine* recommends restrictions, then documentation of physical limitations and expected duration (permanent vs temporary).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP	Routine Submission

REQUIREMENTS	

Flight Surgeon comment regarding interval history.

17.8 MALARIA

Last Revised: September 15 | Last Reviewed: September 15

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	Not Required.						

1. Waiver considered on a case-by-case basis.

AEROMEDICAL CONCERNS: The condition, its treatment, or its sequelae can adversely affect the flight performance, mission, or safety. Active disease is considered disqualifying until resolved. Prophylactic medications have restrictions and require an initial grounding period. Malaria is an important parasitic disease in humans and is endemic in over 100 countries. Over 3 billion people are at risk of developing malaria and 1-2 million die each year. This translates to about 150 to 300 deaths each and every hour. Although it is rare in the United States, it is of particular concern for military members who are traveling to endemic regions of the world. Additionally, the military accounts for 90% of the malaria cases imported into the United States.

The primary concern for the military member and aviator is prevention of the disease. In addition to vector control and personal protective measures, chemoprophylaxis is indicated for areas with endemic malaria. The primary drugs used in the prophylaxis of malaria are chloroquine, doxycycline, and atovaquone/proguanil (Malarone). Chloroquine and doxycycline require an 48 hour initial grounding period to assess tolerance and idiosyncratic reaction, while Malarone requires a 24 hour initial grounding period for the same reason.

Primaquine is only be used in special circumstances where chloroquine, doxycycline, or Malarone are clearly contraindicated and requires a 48 hour initial grounding period. Mefloquine is uncommonly used due to potential neuropsychiatric side effects. As such, Mefloquine requires grounding for the entire time the member is taking this medication.

The following guidance applies only to aeromedical disposition. Treatment of malaria should be accomplished under close supervision of infectious diseases or other appropriate specialists as circumstances dictate. Proper chemoprophylaxis is determined by the appropriate Fleet, Force, or Unit Medical Officer. If flight surgeons have questions regarding proper chemoprophylaxis they are encouraged to call the Navy Environmental and Preventive Medicine Unit (NEPMU) in their region or the Centers for Disease Control (CDC) and to check with the appropriate Combatant/Component Command regarding the preferred drugs for chemoprophylaxis for their region.

Diagnosis/ICD-9 CODE:
V07.39 Need for other prophylactic chemotherapy

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- *Infectious Diseases or Internal Medicine* evaluation with recommendation of return to flight status, no restrictions **documented** on last clinical note (electronic or paper).

- *Infectious Diseases or Internal Medicine* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- *Infectious Diseases or Internal Medicine* recommends restrictions, then documentation of physical limitations and expected duration (permanent vs temporary).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	**Routine Submission**

Flight Surgeon comment regarding interval history.

APPENDICIES

References:

Centers for Disease Control and Prevention. *Malaria*. Retrieved from http://www.cdc.gov/malaria/

Navy and Marine Corps Public Health Center. *Pocket Guide to Malaria Prevention and Control*. Retrieved from http://www.med.navy.mil/sites/nmcphc/Documents/Forms/DispForm.aspx?ID=4100

17.9 URTICARIA, ANGIOEDEMA & ANAPHYLASIS

Last Revised: September 15	Last Reviewed: September 15
Significant changes: 1) New addition to ARWG.	

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR	X[1]	X[2]	X[3]	X[3]	X[3]	X[3]	X[3]
WNR							
LBFS	No	No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	May be required when the condition is severe, unresponsive to therapy, and interferes with the satisfactory performance of duty. (SECNAVINST 1850.4 series, encl (8)).						

1. Waiver can be recommended, if the reaction trigger is identified and avoidable, not associated with anaphylaxis, limited to skin manifestation, and currently asymptomatic without need for therapy.
2. Waiver can be recommended, if not associated with anaphylaxis and limited to skin manifestation, either asymptomatic or controlled with ARWG-approved medications, and condition and therapy do not interfere with wearing of oxygen mask.
3. **Waiver can be recommended, if the condition is limited to skin manifestation, is either asymptomatic or controlled with ARWG-approved medications, and both the condition and therapy do not interfere with wearing of oxygen mask.**

AEROMEDICAL CONCERNS: These conditions or their sequelae can adversely affect the flight performance, mission, or safety. Any history of anaphylaxis, including but not limited to idiopathic and exercise induced, anaphylaxis to venom including stinging insects, food or food additives, or to natural rubber latex, is disqualifying. Any history of angioedema including hereditary angioedema is disqualifying. Any current or history of chronic/recurrent urticaria is disqualifying. Urticaria and angioedema can both be caused by mast cells and basophils in tissue which release mediators causing the reaction. The reaction may include circumscribed, raised, erythematous plaques (also called hives, welts, or wheals), pruritus, swelling of lips or other oral structures. Urticaria is typically more superficial than angioedema; the latter caused by mast cells and basophils deeper in skin structures. Urticaria may be acute or chronic; acute suggests condition has been present for less than 6 weeks. Potential triggers of urticarial and angioedema include infections, IgE-mediated allergic reactions, drugs, stinging insects, latex, food or food additives. Angioedema may also be caused by bradykinin and reaction may take days to weeks to manifest such as in the case of angiotensin-converting enzyme inhibitor-induced angioedema. Masks have been known to cause urticara (see references) and the primary aeromedical concerns are: impairment in wearing the oxygen mask, distracting pruritus, and compromise of airway in case of involvement of oral structures.

Diagnosis/ICD-9 CODE:
V13.3 Personal History of Disease of Skin and Subcutaneous Tissue
708.0 Allergic Urticaria
708.1 Idiopathic Urticaria
708.8 Other Specified Urticaria
708.9 Unspecified Urticaria

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *allergy/immunology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).

- If *allergy/immunology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *Allergy/immunology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	

If chronic urticaria, annual submission with AMO comment addressing symptoms and any need for therapy. If history of and resolved, routine submission with AMO comment addressing symptoms and any need for therapy.

APPENDICIES

References:

Bingham, C.O. (2014). New onset urticaria. In S. Saini & J. Callen (Eds.), *UpToDate*. Retrieved from http://www.uptodate.com/home

Carter, D., Grossman, A., Pokroy, R., Azaria, B., & Goldstein, L. (2006). Evaluation of systemic allergy in a jet aviator. *Allergy and Asthma Proceedings, 5*, 429-430.

Gan, W., Koh, C., & Low, R. (2010). Contact urticaria from an oxygen mask in a military pilot. *Aviation, Space, and Environmental Medicine, 81*, 785-788.

Zuraw, B., & Bingham, C.O. (2014). An overview of angioedema: Clinical features, diagnosis, and management. In S. Saini (Ed.), *UpToDate*. Retrieved from http://www.uptodate.com/home

17.10 REACTIVE ARTHRITIS, CONJUNCTIVITIS, URETHRITIS

Last Revised: September 15	Last Reviewed: September 15
Significant changes: 1) Changed name from Reiter's Disease to reactive arthritis, conjunctivitis, urethritis	

	Applicant	Class I			Class II	Class III	Class IV
		SG 1	SG 2	SG 3			
CD	X	X	X	X	X	X	X
NCD							
WR		case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]	case-by-case [1]
WNR	X						
LBFS		No	No	No	No	No	No
EXCEPTIONS							
LIMDU/PEB	May be required when the condition is severe, unresponsive to therapy, and interferes with the satisfactory performance of duty. (SECNAVINST 1850.4 series, encl (8)).						

1. Waiver are considered on a case-by-case basis for designated personnel

AEROMEDICAL CONCERNS: The condition or its treatment can adversely affect the flight performance, mission, or safety. Current or history of this condition is considered disqualifying. The arthritis and conjunctivitis can be distracting in flight. Further, the condition can be difficult to manage and may require medical therapy that is not approved for aviation or that requires special aeromedical considerations.

Diagnosis/ICD-9 CODE:
099.3 Reactive Arthritis, Conjunctivitis, Urethritis

SERVICE MEMBER MUST COMPLETE PRIOR TO INITIATING WAIVER

- Released from *IM or Rheumatology* care with recommendation of return to flight status and no restrictions **documented** on last clinical note (electronic or paper).
- If *IM or Rheumatology* recommends restrictions, then documentation of physical and/or mental limitations and expected duration (permanent vs temporary).
- *IM or Rheumatology* recommendation for follow on care **documented** on last clinical note (electronic or paper).
- Copies of any prior PEB
- Surgery/Procedure Note (if applicable, electronic or paper).
- Email or provide administrative information to include command UIC, command address, personal address, phone number, designator, flight hours (total and last 6 months), primary aircraft flown, and years of service.

AEROMEDICAL SUMMARY REQUIRED DOCUMENTATION BY AEROMEDICAL OFFICER

All associated documentation.

FOLLOW UP REQUIREMENTS	Annual Submission

Specialist Evaluation: IM or rheumatology follow-up
Labs: As recommended by specialist
Imaging: As recommended by specialist
Flight Surgeon Comment: With respect to symptoms, need for any therapy including medications, effectiveness of therapy, adverse effects of therapy

APPENDICIES

References:

Yu, D. T. (2015). Reactive arthritis. In J. Sieper, and P. Romain (Eds.), *UpToDate*. Retrieved from http://www.uptodate.com/contents/reactive-arthritis?source=search_result&search=reactive+arthritis&selectedTitle=1%7E105

18.0 MEDICATIONS

Last Reviewed: Dec 15 Last Revised: Dec 15

Note: Any medication not listed in this section is not approved for aviation. Contact NAMI Code 53HN if further guidance is needed.

18.1 NATOPS ON MEDICATIONS

General NATOPS (OPNAVINST 3710.7 series, chapter 8) includes the following statements on medications (Drugs):

Taking drugs prescribed by competent medical authority shall be considered sufficient cause for recommendation of grounding unless their use is specifically approved by a Flight Surgeon (or Aeromedical Examiner or Aeromedical Physician Assistant), or a waiver for specific drug use has been granted by CHNAVPERS or the Commandant of the Marine Corps. Consideration shall be given to the removal of ground support personnel from critical duties, for the duration of the drug effects, if appropriate. Medications such as antihistamines, antibiotics, tranquilizers, sleeping pills, etc., shall be discarded if all are not used during the period of medication.

Because of the possibility of adverse side effects and unpredictable reactions, the use of over-the-counter drugs by flight personnel is prohibited unless specifically approved by a Flight Surgeon (or Aeromedical Examiner or Aeromedical Physician Assistant). Ground support personnel shall be briefed on the hazards of self-medication and should be discouraged from using such drugs.

In general, all medications require temporary grounding unless specifically described here as NCD for flight duties.

18.2 ANTIMICROBIAL

Last Reviewed: Dec 15 | Last Revised: Dec 15

All antibiotics *other than the following very specific exceptions* require grounding (CD). The listed exceptions do not forgive you from doing something obviously inadvisable such as allowing a sick person to fly.

Aviation personnel on the following approved antibiotics may be considered for an up chit prior to the completion of the course of therapy as long as the condition being treated has resolved in all significant aspects with no adverse reaction that might compromise safety of flight or mission completion.

ANTI-BACTERIAL MEDICATIONS:

ANTI-MALARIALS:

Refer to Aeromedical Reference and Waiver Guide (ARWG) section 17 on Malaria.

FLUOROQUINOLONES:

CIPROFLOXACIN: NCD.

ISONIAZID: No waiver needed when used for TB prophylaxis as long as the member remains under close evaluation by flight surgeon. This medication causes occasional liver damage, especially above age 35. All personnel are to be monitored in accordance with current preventive and occupational medicine guidelines.

MACROLIDES:

ERYTHROMYCIN: NCD- including long-term, low-dose use for acn**e.**

NITROFURANTOIN: CD. Waiver considered if under close observation of flight surgeon. Adverse effects include pneumonitis or peripheral neuropathy.

PENICILLINS:

AMPICILLIN, **AMOXICILLIN**, **PENICILLIN VK**, **AUGMENTIN**, **DICLOXACILLIN:** NCD.

SULFONAMIDES:

BACTRIM/SEPTRA: CD. Waivers will be considered for long term use.

TETRACYCLINES:

TETRACYCLINE, DOXYCYCLINE: NCD. (Including long-term use for acne).

MINOCYCLINE: CD. Prohibited due to possible vestibular side effects.

ANTI- FUNGAL MEDICATIONS:

GRISEOFULVIN: CD. Waivers are considered if under close observation by local flight surgeon. Watch for bone marrow suppression.

ITRACONAZOLE (SPORANOX): NCD. While not approved for chronic use, itraconazole has a safer profile than ketoconazole, and need not be used on a chronic basis to be effective. Recommended use in aviation personnel is to administer in week-long pulses each month for four to six cycles. Aviators should be grounded for the first 48 hours of each cycle.

Since it is not administered chronically, such as griseofulvin, a waiver is not required. The recommended initial treatment is over a weekend to allow return to flight duties the following Monday, thus minimizing flight schedule loss.

TERBINAFINE (LAMISIL): N**CD. Requires a 72-hour grounding period.** Terbinafine has a safer profile than ketoconazole and has a lower relapse rate than itraconazole. The recommended use in aviation personnel is to administer daily for twelve weeks. Aviators should be grounded for the first 72 hours and a waiver is not required when no side-effects exist and appropriate monitoring is performed. The recommended initial treatment is over a weekend to allow return to flight duties the following Monday, thus minimizing flight schedule loss.

ANTI-VIRAL MEDICATIONS:

ACYCLOVIR, VALACYCLOVIR: CD for continuous therapy. Waivers are considered for suppressive/prophylactive therapy. Intermittent therapy does not require a waiver. The patient should be grounded and monitored for side effects for a minimum of 3 days during the initial treatment or upon initiation of suppressive therapy. The need for suppressive therapy should be reassessed on an annual basis. Topical acyclovir is NCD.

OSELTAMIVIR (TAMIFLU), ZANAMIVIR (RELENZA)- NCD, Requires a 72-hour grounding period. These medications are indicated for prophylaxis and treatment of influenza A and B viruses. They can decrease the severity, duration and complications of influenza illnesses. These medications require a 72-hour grounding period following initiation of treatment to assess for adverse side effects. In the absence of flu symptoms and adverse side effects from the medications, flight duties may resume following the 72 hour grounding period. Reducing the initial grounding period to 48 hours may be considered for operational requirements with NAMI consultation.

TRUVADA® (EMTRICITABINE + TENOFOVIR) PRE-EXPOSURE PROPHYLAXIS: CD, waivers considered for specific use on a case-by-case basis. See entry in Miscellaneous section for details.

18.3 ANTI-HYPERLIPIDEMICS

EZETIMIBE (ZETIA): NCD. A waiver is not required. An initial grounding period for 72 hours is required to assess for idiosyncratic reactions. If used in combination with HMG-CoA reductase inhibitors, refer to the waiver guide section on Hyperlipidemia for additional guidance.

FIBRIC ACIDS:

FENOFIBRATE (TRICOR); GEMFIBROZIL (LOPID): CD. Fenofibrate (Tricor) and gemfibrozil (Lopid) are both considered disqualifying. A waiver may be considered after a 14-day ground trial of the medication without side-effects. Fenofibrate is preferred over gemfibrozil due to fewer side effects. Prior to initiating treatment, baseline lab studies must be obtained to include: lipid panel, liver function testing (ALT/AST/ALK PHOS), CBC, FBS, and CPK. These tests are to be repeated at three months, six months and then annually if the values remain stable. Evaluate for muscle aches (myalgias) at follow-up exams and measure CPK levels if clinically indicated. If fibric acid is used in combination with an HMG-CoA reductase inhibitor, refer to the waiver guide section on Hyperlipidemia for further guidance.

NIACIN: CD. No waiver.

RESINS:

CHOLESTYRAMINE: NCD if tolerated without side effects.

STATINS:

PRAVASTATIN, SIMVASTATIN, LOVASTATIN, ATORVASTATIN: NCD. HMG Co-A reductase inhibitors (pravastatin, simvastatin, lovastatin, atorvastatin, etc.) are all NCD and a waiver is not required. Refer to ARWG section on hypercholesterolemia for additional guidance. Lipid panel, liver function tests (ALT/AST/ALK PHOS), CBC, and CPK are recommended at baseline, 3, and 6 months, then annually. Liver enzyme elevations above three times normal are disqualifying.

18.4 ANTI-HYPERTENSIVES

Last Reviewed: Dec 15 | Last Revised: Oct 15

ACE INHIBITORS (ACE-I):

CD. The entire family (captopril, enalapril, lisinopril, etc.) is CD, but waiverable. The member must be grounded upon initiation of treatment. Waiver will be considered after 30 days of treatment if member's hypertension is controlled on a stable dosage of medication without evidence of side effects. If local pharmacy policy requires changing from one ACE-I to another, advise Code 53HN of the change. Refer to ARWG section on hypertension for additional guidance.

ANGIOTENSIN RECEPTOR BLOCKERS (ARB):

CD. These agents may be used if member does not tolerate an ACE-I or has some other specific medical indication for its use. The same guidelines used for ACE-I appl**y.**

ANTIADRENERGIC AGENTS:

DOXAZOSIN, PRAZOSIN, others in class**:** CD. No Waiver. Call NAMI Code 53HN for further guidance.

BETA BLOCKERS (for hypertension only):

CD. Beta blockers are not considered for waivers for Service Groups I or II personnel. Senior officers (LCDR and above) may be waived to Service Group 3 or Class II flying duties in non-tactical aircraft. All SG 1, SG 2, or tactical NFOs are considered NPQ, no waiver recommended. Designated Naval Aircrew will be considered for a waiver. Aviation personnel on beta blockers should not pull more than 2.5 Gs, so requests for waivers should state "transport/maritime/helo aircraft only." Air traffic controllers are usually waived. When beta blockers are used, preference shall be given to cardioselective agents such as atenolol.

CALCIUM CHANNEL BLOCKERS:

AMLODIPINE (NORVASC): CD. A second generation calcium channel blocker, AMLODIPINE may be considered for waiver for use in the control of hypertension only after failure to control the condition on other approved agents. These cases must be reviewed individually by NAMI prior to issuance of an Aeromedical Clearance notice. Local Board is not authorized to issue a clearance notice for AMLODIPINE use.

NIFEDIPINE (PROCARDIA): CD. No Waiver.

COMBINATION AGENTS:

CD. Combination agents may be used if the individual agents themselves are recommended for waiver. Follow the restrictions and guidelines outlined for each individual agent.

THIAZIDE DIURETICS:

HYDROCHLOROTHIAZIDE (for Hypertension): CD. HYDROCHLOROTHIAZIDE (HCTZ), with or without triamterene or potassium replacement, can be used as a first line agent for treatment of hypertension in designated personnel. ACE inhibitors are preferred as they have a low incidence of aeromedically significant side effects and are generally well tolerated. See hypertension section of ARWG for waiver criteria and further guidance.

18.5 IMMUNIZATIONS

GROUNDING FOR VACCINATIONS:

OPNAVINST 3710.7 series requires a 12 hour grounding period following immunizations unless otherwise specified in this document. The specific guidelines and grounding periods for each vaccination are described below. As per MANMED Article 15-77, the administration of routine immunizations that require a temporary grounding, do not require issuance of an Aeromedical Grounding Notice. This is a “self-limited” grounding period allowed in the absence of adverse side effects.

VACCINE ADVERSE EVENT REPORTING SYSTEM (VAERS)

The Vaccine Adverse Event Reporting System (VAERS) is used to report adverse events or reactions to all vaccines. VAERS, the primary U.S. vaccine safety monitoring system, encourages reporting of any unexpected or serious event occurring after any vaccination as well as adverse events occurring in persons following close contact with a vaccine recipient. An adverse event is any clinically significant medical event that occurs following administration of a vaccine. A VAERS report should be submitted even if it is not certain that the event was caused by the vaccine. Web reporting is available at http://vaers.hhs.gov/.

ANTHRAX

BACKGROUND: Human anthrax vaccine was developed in England and the U.S. in the 1950s and early 1960s. The vaccine is U.S. Food and Drug Administration (FDA)-licensed and has been routinely given in the U.S. since 1970.

The vaccine has an excellent safety record. The most common side effects reported are mild discomfort (localized swelling and redness at the site of injection), joint aches, and in a few cases, nausea, loss of appetite, and headaches. There is no evidence from records at the Michigan Biologic Products Institute (which is the only U.S. producer of the vaccine) that the vaccine is associated with permanent local or systemic effects.

DOSAGE AND ADMINISTRATION: The current dose schedule for the U.S. vaccine consists of 6 shots given over an 18 month schedule and an annual booster thereafter.

Contraindications for use are sensitivity to vaccine components (formalin, aluminum hydroxide, benzethonium chloride) and/or history of clinical anthrax. Pregnant women should not receive this vaccine until after delivery. The vaccine should be stored at refrigerator temperature (not frozen).

A 12 hour grounding period is recommended for the anthrax vaccination.

CHOLERA

Sale of the only licensed cholera vaccine in the United States has been discontinued, and the CDC does not currently recommend the vaccine for travelers because of the brief and incomplete immunity it offers. In lieu of vaccination, proper hygiene and food and water precautions should be carefully emphasized.

DIPHTHERIA TETANUS (DT) AND TETANUS TOXOID

This vaccine is used to prevent bacterial elaboration of toxins resulting in muscular spasm/lockjaw, which is usually found in the setting of a contaminated wound. These vaccines are toxoids and are both known to be 95% efficacious. They are given every 10 years, however if a suspicious wound is encountered, the standard is to revaccinate if more than 5 years has elapsed since the last vaccination. The dose is 0.5 cc IM. Adverse events include frequent local reactions. Hypotonic, hyporesponsive episodes, seizures, and acute encephalopathy have been reported on rare occasions. A 12 hour grounding period is recommended for this vaccination.

HEPATITIS A

This is an inactivated virus vaccine which is given as a 1.0 cc dose IM, with a booster dose 6 to 12 months later. Protective levels of antibodies are detectable in 80 to 98% of recipients 15 days after the first dose, and in 96% after one month. Protection is expected to last 20 years. No significant adverse events have been reported, although some recipients experience local injection site soreness. Transient systemic symptoms are uncommon. In the USA, the presence of anti-HAV antibodies indicating past infection and probable immunity increases from about 10% in young children to about 75% in adults more than 50 years old. A 12 hour grounding period is recommended for this vaccination.

HEPATITIS B

This is an inactivated virus vaccine which is given as a 1.0 cc IM dose, with boosters at one and 6 months. Current CDC recommendations are to immunize everyone 18 years of age or younger and adults over 18 who are at risk. The at-risk population includes health care and public safety worker who might have contact with blood or body fluids, people who have more than one sex partner in six months, sex contacts of infected people, people who inject illegal drugs, hemodialysis patients, and household contacts of people with chronic HBV infection. Contraindications to vaccination include a history of allergic reaction to either baker's yeast or the hepatitis B vaccine. Mild soreness at the injection site is seen in approximately one out of 11 children and adolescents and one out of four adults, and mild to moderate fever is seen in up to one out of 14 children and one out of 100 adults. A 12 hour grounding period is recommended for this vaccination.

INFLUENZA

INJECTABLE INACTIVATED INFLUENZA VACCINE

This vaccine is composed of inactivated whole or disrupted influenza viruses and changed annually to reflect antigenic changes in the A and B strains of the virus that is in circulation. Immunity after the standard 0.5 cc IM dose lasts about six months, so annual administration is required, ideally before the start of flu season. The vaccine is indicated in the elderly (>65), residents of chronic care facilities, those with cardiac, pulmonary or immunosuppressive diseases such as cancer and DM, and close contacts of those at risk. All active duty Navy and Marine Corps personnel are required to have one dose of this vaccine each year. The only contraindication is a bona fide history of generalized allergic reaction to the vaccine, eggs, or egg components. Effectiveness varies with how closely vaccine strains match the strains in the community, generally about 60-85%. A mild local reaction is the most common adverse effect, although some individuals have a transient mild "viral syndrome." A 12 hour grounding period is recommended for this vaccination.

FLUMIST

All active duty Navy and Marine Corps personnel are required to have one dose of influenza vaccine (IM or intranasal spray) each year. FluMist® (Influenza Virus Vaccine Live, Intranasal), is composed of live, attenuated influenza virus (LAIV) that is administered by nasal spray. It is used for the prevention of Influenza A and B in healthy adults under age 50 who are not pregnant. The 0.5mL dose is given as a 0.25mL spray in each nostril.

The immunization is less effective in those with pre-existing nasal congestion. The dose should be repeated if the patient sneezes following administration. Immunity after the standard intranasal dose declines during the year, so annual administration is required—ideally, before the start of "flu season." There appears to be an increase in protective antibodies over time with subsequent doses. Effectiveness varies according to how closely the strains used to make the vaccine match those in the community.

The onset of symptoms after immunization usually occurs within the first 24 hours, with most symptoms presenting by the third day. The duration of symptoms is typically 1-2 days. The most common adverse effects include:

- headache 40%
- sore throat 28%
- tiredness 26%
- myalgias 17%
- cough, nasal congestion, and rhinitis 9-45%
- Less common adverse effects include chills, abdominal pain, diarrhea, vomiting, and otitis media.

A "self-limited" grounding period of 72 hours after immunization is required to assess for symptom severity. Commanding officers may return aeronautically designated personnel to duty involving flight operations in less than 72 hours on the recommendation of a flight surgeon when necessary to meet "real world" operational commitments. The presence and severity of symptoms may require the grounding of some personnel for greater than 72 hours. To minimize operational impact, commands may elect to stagger the administration of the vaccine to their personnel. For example, a command might elect to vaccinate 50% of eligible personnel one week and the remaining personnel the following week. Another option would be to schedule immunizations immediately prior to a period when no flights are scheduled (e.g., just prior to a holiday weekend).

Additional information is available via the CDC website at,
http://www.cdc.gov/flu/professionals/vaccination/

ANTIVIRAL MEDICATIONS:

OSELTAMIVIR (TAMIFLU), ZANAMIVIR (RELENZA)-
NCD, Requires an initial 72-hour grounding period. See Antimicrobial Section 18.2.

JAPANESE ENCEPHALITIS (March 2010)

Japanese Encephalitis (JE), a mosquito-borne arboviral infection, is the leading cause of viral encephalitis in Asia with over 50,000 sporadic and epidemic cases reported annually. Two inactivated virus vaccines are currently available, JE-Vax, licensed in 1993, and Ixiaro, licensed in 2009.

JE-VAX. JE-Vax is administered as a 1.0 mL SC dose with an effectiveness of 80-90%. Intradermal dosing at two sites is as immunogenic as a single SC dose. Three doses during a 30 day period (days 0, 7, and 30) provides the longest immunogenic protection. A booster given at one year will significantly increase antibody titers, which may then persist for several years. An abbreviated schedule of immunizations given on days 0, 7, and 14 may be used if significant time constraints exist.

JE-Vax is associated with a moderate frequency of local and mild systemic side effects. About 20% of recipients experience local redness, swelling, or tenderness, and systemic side effects (fever, headache, malaise, and rash) have been reported in about 10% of vaccine recipients. An additional pattern of adverse reactions characterized by generalized urticaria and/or angioedema, and rarely respiratory distress or collapse, has been reported. These reactions occurred after a longer interval and usually after the first or second dose. The median time to onset of symptoms after the first dose is 12 hours, and 88% of reactions occur within 3 days. The interval after the second dose is longer, with a median time of 3 days and possibly as long as two weeks. After reviewing the experiences of I-MEF personnel during the first several years of use, the original 3-5-3 day grounding regimen appears excessive based upon the actual observed incidence of reactions. **A 24 hour grounding period is recommended after each dose providing that aviators are formally briefed about possible delayed reactions.** Individuals who have a past history of urticaria or hypersensitivity phenomena should remain under the previous guidelines (3-5-3 grounding).

JE-Vax is no longer produced. The DoD stockpile is projected to be exhausted in April 2010 and has an expiration date of May 2011. Ixiaro is an available alternative to JE-Vax.

Ixiaro. Ixiaro is administered as a 0.5 mL IM dose. Two doses are given 28 days apart (days 0 and 28). The protective antibody response is 95% at six months and 83.4% at 12 months. Ixiaro is associated with a moderate frequency of mild systemic and local side effects. About 20% of recipients experience headache, 15% experience myalgia, and 50% experience mild local reactions in rates comparable to placebo. **A 12 hour grounding period is recommended for this vaccination.**

Summary- Either JE-Vax or Ixiaro can be used for aviators as described above. JE-Vax will become unavailable by May 2011 unless a shelf-life extension is approved. Ixiaro is likely to have less serious adverse events than JE-Vax. Ixiaro requires only two doses, and requires a 12-hour grounding period instead of 24-hours for JE-Vax. Ixiaro is the preferred vaccine for aviation, especially when the duration of the grounding period impacts mission accomplishment.

MEASLES/MUMPS/RUBELLA (MMR)

This vaccine, composed of live, attenuated viruses, is indicated in adults born after 1956 without a history of documented measles or measles/mumps vaccination. Some people vaccinated before 1980, especially if before 14 months of age, may be inadequately protected and now require revaccination. Contraindications include pregnancy, immunosuppression (except HIV), recent IG administration, or anaphylactic reactions to the immunization, eggs, or neomycin. Efficacy is 95% for all three components. Serious adverse events are rare, but include acute encephalopathy, parotiditis, and orchitis. Transient arthralgias may occur in up to half of first-time recipients, but arthritis and arthropathy are rare. About 5-15% of vaccine recipients have fever up to 21 days post-vaccination and 5% may develop a rash. One study assessed the incidence of adverse events after revaccination. This study noted local injection site discomfort

and flu-like symptoms amongst 6.6% and 3.4% of male and female students respectively. The 4% rate of joint related complaints after revaccination was less than that found after primary vaccination. A 12 hour grounding period is recommended for this vaccination.

MENINGOCOCCAL

Each year, approximately 2,600 people contract meningococcal disease. Of these, 10 to 15% die. Of those who live, another 11 to 19% lose their arms or legs, become deaf, have problems with their nervous system, become mentally retarded, or suffer from seizures or strokes. The meningococcal vaccine is a polysaccharide vaccine that can prevent 4 types of meningococcal disease including 2 of the 3 most common in the United States and a type that causes epidemics in Africa. It is administered as a 0.5 cc SC dose, and is recommended for all children at their preadolescent visit, military recruits, college freshman living in dormitories, microbiologists who might be exposed to the bacteria, anyone with an immune system disorder, asplenic patients, people who might have been exposed to meningitis during an outbreak, and anyone traveling to or living in a part of the world where meningococcal disease is common. Approximately half of vaccine recipients experience mild side effects, such as pain or redness at the injection site. A small percentage of patients also develop fever. Although rare, serious allergic reactions can develop within a few minutes to hours of vaccination. Of note, a few cases of Guillain-Barre syndrome have been reported among people who received the MCV4 vaccine, however there is currently not enough information to determine if this was caused by the vaccine. A 12 hour grounding period is recommended for this vaccination.

PLAGUE

This vaccine is composed of a suspension of killed bacteria, and is given as a dose of 1.0 cc IM. It is used in laboratory workers and travelers to endemic areas. The vaccine is given as a series with a primary dose as above, then 0.2 cc IM doses at 4 weeks and 6 months. Boosters are given every 6 to 12 months as long as exposure continues. There is a 90 to 93% antibody response however efficacy is uncertain. Up to 10% of recipients will develop local reactions. Sterile abscesses and hypersensitivities have also been reported.

PNEUMOVAX (PPV23)

This vaccine was designed to decrease the risk of pneumococcal infection in susceptible individuals such as military recruits, asplenic patients, immunosuppressed individuals, and those over 65. This preparation consists of purified polysaccharide coats of 23 serotypes and is considered to be 60 to 80% efficacious, reducing serious sequelae of infection by about 50%. In asplenic patients it is about 13 -33% effective in producing a two-fold increase in antibody titer. The dose is 0.5 cc IM or SC, and a booster is recommended in high-risk (transplant, nephrotic syndrome, asplenic) individuals at 6 years. Pneumovax has been associated with a 50% local reaction rate, an arthus-like reaction with booster doses, and rarely, anaphylaxis. A 12 hour grounding period is recommended for this vaccination.

POLIO

The inactivated polio virus (IPV) is given as a dose of 0.5 cc IM or SC. The use of oral polio vaccine (OPV) is no longer recommended. Travelers to endemic areas who have received primary immunization during childhood should consider a single booster (IPV) in adulthood, while those who were never vaccinated should be vaccinated according to current CDC guidelines. A 12 hour grounding period is recommended for this vaccination.

SMALLPOX

BACKGROUND: The World Health Organization effectively used smallpox vaccine to eradicate natural smallpox from the planet however regimes hostile to the United States may possess strains of the smallpox virus for use as a biological weapon. While routine vaccination is not recommended for the general population, military and other personnel who serve in high risk parts of the world may receive smallpox vaccine to protect them from the disease in the event of a biological attack.

Expect more side effects within the vaccinated population than normally seen with other vaccines. One expert stated that approximately 10% of vaccine recipients may have side effects significant enough to cause possible distraction during flying activities. The time range for development of side effects varies from day 0 until day 14, with most occurring within 3 to7 days post-vaccination.

Grounding Period: In **view of the complications seen with the smallpox vaccination, a 24 hour grounding period is required.** It is recognized that complications from the immunization are most likely in the 3 to 7 day period post immunization. For this reason, close observation and follow-up is recommended by the Designated Aeromedical personnel or health care provider. Personnel should be specifically briefed to report any symptoms or complications during this 3 to 7 day period and to have them evaluated. Depending on the severity, the Flight Surgeon (or Aeromedical Examiner or Aeromedical Physician Assistant) may ground the aviator until symptoms have resolved.

ADDITIONAL INFORMATION: Please review the attached "Smallpox Fact Sheet - Information for Clinicians" and visit the CDC web site and military smallpox website (http://www.vaccines.mil/) for additional information. Use the CDC Smallpox Adverse Event Reporting web site to report any adverse events resulting from the administration of the smallpox vaccination.

TYPHOID AND ORAL TYPHOID:

Vaccine is made of a killed suspension of the bacteria, or a new oral 4 dose preparation. The injection is a 0.5 cc IM dose at zero and four weeks with about 50-76% efficacy, and protection for travelers to endemic areas lasts only a few months. This is contrasted with the oral form, which is equally efficacious but confers immunity to the 21a strain that lasts for years (booster required at least every 4 years). It is given every other day before meals for a total of 4 doses, and must be kept refrigerated. Errors in compliance reached 30% of individuals in one study, so direct observation may be the way to go. Adverse reactions to typhoid injections include frequent fever, local swelling and pain, and consequently require a 12 hour downing period. There are no reactions reported to the oral typhoid, therefore no grounding is necessary.

YELLOW FEVER:

This vaccine is used to prevent infection with this flavivirus and its subsequent jaundice, hemorrhage, and albuminuria in travelers to endemic areas (e.g. South America and Africa). It is given as a 0.5 cc SC dose. Booster vaccinations are recommended every 10 years. Efficacy is noted to be high, but adverse side effects include encephalitis/encephalopathy (though fewer than one in a million cases), and anaphylaxis in those individuals allergic to eggs. A 12 hour grounding period is recommended for this vaccination.

COMBINED ADMINISTRATION OF VACCINATIONS:

A number of these vaccines can be given together. Generally, any live virus vaccine can be given with any killed agent or toxoid as long as they are given at the same time and in different anatomic locations. For example, typhoid may be given with either plague or yellow fever. Hepatitis A and yellow fever may be given in the same session. One exception to this is cholera and yellow fever. Administration of these vaccines within 3 weeks of one another results in a poor antibody response. Unless there is insufficient time, 3 to 4 weeks between live virus vaccinations should be sought for maximal antibody production. If possible, vaccines frequently associated with systemic side effects (cholera, typhoid and plague) should not be given simultaneously so that toxicities will not overlap and that a causative agent can be determined should a reaction occur.

PREGNANCY AND VACCINATIONS:

Refer to specific immunization guidelines for vaccination recommendations and precautions during pregnancy.

GROUNDING FOR VACCINATIONS:

OPNAVINST 3710.7 series requires a 12 hour grounding period following immunizations unless otherwise specified in this document. The specific guidelines and grounding periods for each vaccination are described above. As per MANMED Article 15-77, the administration of routine immunizations that require a temporary grounding, do not require issuance of an Aeromedical Grounding Notice. This is a “self-limited” grounding period allowed in the absence of adverse side effects.

18.6 MISCELLANEOUS MEDICATIONS

Last Reviewed: Dec 15 | Last Revised: Oct 15

ALLOPURINOL: CD. Waivers are recommended to SG3, Class II, or Class III. Re-evaluation for upgrade from SG3 to SG1 is considered in 3 months if member remains asymptomatic and on a stable dose of medication.

ANTIHISTAMINES (SEDATING):
CD. The member should be grounded for the duration of therapy**.**

ANTIHISTAMINES (NON-SEDATING):
NCD. Allegra and Claritin are NCD if given in accordance with the Allergic/Vasomotor Rhinitis section of the Waiver Guide. Refer to this section for additional restrictions and clarification. Zyrtec, although considered by some to be non-sedating, still has a moderate sedating effect and is therefore not approved (CD) for use in aviation personnel.

CLOMIPHENE (CLOMID): CD- No Waivers.

CONTRACEPTIVES:

DEPO-PROVERA : NCD. Any grounding period at discretion of the local Flight Surgeon to assure tolerance.

LEVONORGESTEROL (NORPLANT): NCD. Any grounding period at discretion of the local Flight Surgeon to assure tolerance.

PROGESTASERT IUD: NCD. Any grounding period at discretion of the local Flight Surgeon to assure tolerance.

DECONGESTANTS: CD. Requires temporary grounding while in use.

FINASTERIDE (PROPECIA/PROSCAR):
CD. A waiver can be considered after a two week grounding. If the patient remains asymptomatic, a LBFS may issue an up chit. **Finasteride** may be utilized for prostatic hypertrophy or alopecia. DoD pharmacy does not allow prescriptions of **finasteride** for hair loss.

H2 BLOCKERS:

RANITIDINE, CIMETIDINE, FAMOTIDINE: CD. A waiver is required for any chronic use. Refer to the Gastroenterology Waiver Guide section on reflux esophagitis for additional information.

INHALED STEROIDS: CD. Decisions are individualized. Any chronic use requires a waiver. Call NAMI Code 53HN for additional guidance.

ISOTRETINOIN (ACCUTANE, AMNESTEEM, CLARAVIS, SOTRET): CD. No waiver. Resumption of flight status is permitted after member is off medication for 3 months, has a normal slit lamp exam, and triglyceride levels are documented as normal. Cystic acne, if severe enough to need Accutane, may be disqualifying. The 3 month delay after

cessation of treatment also allows for an evaluation of how the member does without the medication.

LEVOTHYROXINE (SYNTHROID): CD. A waiver may be requested when member is clinically and chemically euthyroid on stable dosage.

LINDANE (KWELL): NCD**.** Requires a 48-hour grounding period. Kwell can be absorbed in variable amounts and give some significant CNS side effects. Aviation personnel must be grounded for 48 hours after the compound is washed off.

MESALAMINE (ASACOL, ROWASA, ETC.): CD. A major advantage of mesalamine is that it avoids some side effects associated with the sulfapyridine moiety of sulfasalazine. Waiver will be considered after maintaining clinical remission for one month without evidence of side effects.

MINOXIDIL (TOPICAL): CD. No Waiver.

NEDOCROMIL (TILADE): CD. Tilade may be considered for waiver for in designated aviation personnel for the preventive treatment of mild to moderate asthma or cold-induced and exercise-induced bronchospasm. Member will be eligible for waiver consideration and return to flight status at a minimum two weeks after remaining symptom free on a stable dose of medication with demonstrated normal pulmonary function tests. Waivers are restricted to non-high performance aircraft.

NASAL STEROIDS:

FLONASE, NASONEX, RHINOCORT: NCD. Refer to the Allergic/Vasomotor Rhinitis section of the Waiver Guide under Ear/Nose/Throat for additional restrictions and clarification**.**

SMOKING CESSATION:

NICORETTE GUM: NCD if the following conditions are met:

1. Enrolled in formal organized stop smoking program.
2. Close observation by flight surgeon.
3. No adverse effects.
4. Duration of use does not exceed three months.

NICOTINE TRANSDERMAL SYSTEM (NICODERM): NCD. Aviators should be grounded for 48 hours following application of first patch.

All other medications for tobacco cessation are not approved for use by personnel on active flight status, so require grounding during treatment. This can often be planned to coincide with non-flying periods. Guidance for timing of return to flight is based on the elimination half-life of the drug being used, as follows:

VARENICLINE (CHANTIX®): Varenicline has an elimination half-life of 24 hours, so individuals should be grounded for one more week after finishing Chantix

BUPROPION (ZYBAN®, WELLBUTRIN®): Bupropion is cleared more quickly, but only about 1% is excreted unchanged in the urine; the rest is metabolized to three major active

metabolites, threohydrobupropion, erythrohydrobupropion and hydroxybupropion, which accumulate to levels much higher than the parent compound and can have extended half-lives of as long as 43 hours. Individuals taking bupropion should therefore be kept down for two weeks following completion of treatment.

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS):

ASPIRIN: NCD for occasional analgesic use or at cardioprotective dosing. Other chronic use is CD and requires a waiver.

IBUPROFEN/NAPROXEN: NCD. Medication can be used for short term use under direct supervision of Flight Surgeon. Any chronic or high dose use is disqualifying. If recommending that an aviator continue to fly during treatment, consider the underlying reason for its use. It may be the condition which is disqualifying.

INDOCIN: CD. No waiver. Ground during medication use and for two weeks after medication is completed.

PHOSPHODIESTERASE INHIBITORS (PDI):

SILDENAFIL (VIAGRA), VARDENAFIL (LEVITRA), TADALAFIL (CIALIS):

1. Long-acting PDI, tadalafil (Cialis): CD. No Waivers

2. Short-acting PDI: sildenafil (Viagra), vardenafil (Levitra): CD. Waivers possible for:
   a. Initial Applicants – considered on a case-by-case basis
   b. Designated Personnel – may request waiver after evaluation for the cause of ED.

3. Information Required:
   a. AMS – history, physical, lab, prior treatment course, side effect.
   b. Consultation – Urology, Internal or Family Medicine – Must evaluate causes of ED including co-morbid conditions such as cardiovascular (hypertension, atherosclerosis, or hyperlipidemia), diabetes mellitus, depression and alcoholism
   c. An exercise stress test should be completed prior to waiver submission whenever indicated. If test is not performed, reasons should be substantiated in AMS or by consultants.

4. Follow-up: annual – to assess efficacy, side effects, and significant changes in health status including medications

5. Treatment:
   a. Must be free of side-effect for 2 doses after beginning medication before returning to flying duty
   b. No flying duties within 12 hours of last dose (medicine use to briefing time)

6. Links:
   a. Diagnostic evaluation: **Link to diagnostic evaluation** **(**http://www.aafp.org/afp/2000/0101/p95.html)
   b. Precautions**: Link to precautions** (http://www.aafp.org/afp/1999/0915/p1159.html)
   c. Medications: sildenafil (**Viagra®)** , vardenafil (**Levitra®**)

PROBENECID:

CD. Waiver is required for any long term treatment.

PROTON PUMP INHIBITORS:

OMEPRAZOLE, LANSOPRAZOLE, RABEPRAZOLE: CD. Waiver required for chronic use. Refer to the Gastroenterology Waiver Guide section on reflux esophagitis for additional information.

SUCRALFATE (CARAFATE):

NCD when used in dosages of 1 gm bid or less. However, the diagnosis of peptic ulcer disease is certainly CD and requires a waiver.

SULFASALAZINE (AZULFIDINE):

CD. Waiver considered after maintaining clinical remission for one month without evidence of side effects.

TAMOXIFEN: CD. No Waiver.

TOPICAL COMPOUNDS:

As a general rule, medications applied to the surface of the body which are not absorbed to any significant extent are NCD. However, please see notes on Kwell. The recommended initial treatment is over a weekend to allow return to flight duties the following Monday, thus minimizing flight schedule loss.

19.0 NUTRITIONAL AND ERGOGENIC SUPPLEMENTS

19.1 AIRCREW GUIDANCE AND POLICY

This document is a major revision and update from the previous policy. It is intended to be a succinct guide that creates an informed and realistic policy based on the latest scientific literature and lessons learned from the fleet. This document covers, at the time of this writing, the most relevant over-the-counter supplements encountered by persons engaging in flight duties. It is a living document in the sense that it will provide practical “rules of engagement” for Flight Surgeons (or Aeromedical Examiner or Aeromedical Physician Assistant) and their patients, but be aware that new products are constantly being brought to market and many are not specifically covered in this document.

The Naval Aerospace Medical Institute (NAMI) does not have the capability to systematically evaluate, test, monitor and provide post approval surveillance for the human use of dietary supplements. The FDA has this responsibility. However, based upon the millions of people consuming food supplements and the low adverse outcome rate, there is no sound evidence suggesting that most common dietary supplements pose a significant aeromedical risk. NAMI accepts that some dietary supplements may be safe for consumption but others do pose a real and preventable aeromedical risk. This policy strives to set common sense and reasonable restrictions while continuing to prohibit the consumption of substances that are known to be dangerous.

In the military, all personnel are “tactical” athletes as they regularly participate in physical training in a variety of disciplines. An athlete’s ability to sustain consistent intensive training and competition without succumbing to chronic fatigue, injury, and illness is influenced not only by the types of foods eaten, but also by the amount and timing of food intake. Many believe that a normal diet will not suffice for optimum performance and decide to use dietary supplements as part of their regular training or competition.

A dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. The "dietary ingredients" in these products may include vitamins, minerals, herbs or other botanicals, amino acids, and substances such as enzymes, organ tissues, glandular extracts, and metabolites. Dietary supplements can also be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gelcaps, liquids, or powders. Supplements commonly used include vitamins, minerals, protein, and various other ‘‘ergogenic’’ compounds.

Congress has defined the term "dietary supplement" in the Dietary Supplement Health and Education Act (DSHEA) of 1994 and considers dietary supplements as foods and not drugs. Information on the efficacy and safety of many, if not most, of these products is limited. In some cases, evidence is lacking entirely. In other cases, the cited so called ‘‘evidence’’ comes from studies of isolated lab tissues exposed to amounts of the supplement that are unrealistic. In Naval Aviation, it is the job of Flight Surgeons (FS), Aviation Medical Examiners (AME), Aeromedical Physician Assistants (APA), Aerospace and Operational Physiologists (AOP) and other Aviation Medical Officers (AMO) to inform, educate and regulate the use of nutritional supplements as a method of exercising Operational Risk Management.

19.2 GENERAL DIETARY SUPPLEMENTATION GUIDELINES

- FS, AME, APA and/or AOP should inform aircrew that the U.S. Food and Drug Administration (FDA) does not regulate dietary supplements in the same way it regulates medicines. The FDA does not test dietary supplements or authorize their use prior to their being marketed. A dietary supplement can be sold with limited or no research on how well it works. The FDA can order the removal of a dietary supplement from the marketplace if it feels that it is unsafe for consumers.

- FS, AME, APA and/or AOP should educate aircrew that dietary supplements may cause side effects, trigger allergic reactions, or interact with prescription and nonprescription medicines or other supplements they might be taking. A side effect or interaction with another medicine or supplement may make other health conditions worse. FS, AME and/or AOP should recommend that aircrew members avoid starting a new non-prohibited substance within 24-hours before flying. This is especially important when an aircrew member is consuming supplements above the Food and Drug Administration Recommended Daily Allowance.

- FS, AME, APA and/or AOP should inform all personnel to not assume that the ingredients listed on the supplement label are present in the amounts stated unless marked with USP or CL seals. There are no regulated manufacturing standards in place for many herbal compounds, and some marketed supplements have been found to be contaminated with toxic metals or other drugs. Be aware that herbal supplements sometimes include anabolic steroids, ephedrine, caffeine, and other substances that may not be listed on the label and may cause a failure of drug testing and/or damage a person's health. Herbs can be especially dangerous when taken with certain prescription drugs or over-the-counter medications. Some supplements have been found to exceed the maximum limits for substances such as arsenic, cadmium, lead and mercury.

- FS, AME, APA and/or AOP should educate all personnel that so-called "muscle building" anabolic herbs are unlikely to have any effect on muscles. The plant steroids/sterols found in many of these herbs cannot be converted by the human body into testosterone or other anabolic steroids. If it sounds too good to be true, it probably is. Don't expect herbal supplements to take the place of quality training as a means of improving performance.

- FS, AME, APA and/or AOP should warn all personnel to not consume Energy Beverages or Pre-workout supplements with stimulants and/or vasodilators before, during or after strenuous activities. Some of the deaths allegedly due to energy drinks occurred when a person consumed energy drinks before and/or after performing strenuous activities.

19.3 FLIGHT SURGEON, AVIATION MEDICAL EXAMINER AND AEROMEDICAL PHYSICIAN ASSISTANT RESPONSIBILITIES

- Shall not recommend the consumption of dietary supplements for medical conditions, performance enhancement or health maintenance. Should the member choose to consume allowed dietary supplements, the FS/AME/APA shall record such use in the aircrew member's health record, typically at their annual flight physical. A simple statement like, "uses dietary supplements and has been informed of the policy" and a list of the supplements is sufficient. If usage or maximum dosage limit recommendations are provided by the FS/AME/APA, those should be documented as well.

- Shall screen aircrew members for those potential diseases in accordance with the current clinical practice guidelines and the Aeromedical Reference and Waiver Guide (AWRG) if they report use of dietary substances for a specific health disorder.

- Shall authorize only allowed dietary supplement products that have the United States Pharmacopeia (USP) Verified Dietary Supplement Ingredient Mark, Consumer Lab (CL) seal of approval, or come from a reputable manufacturer. These trademarked seals are not to be confused with any company or group that manufactures nutritional supplements that use "USP" or "CL" in their name.

- Shall include information about an aircrew member's dietary supplement use in the medical portion of any mishap investigation.

- Personnel inadvertently consuming these prohibited substances should be removed from aviation duty for a minimum of 24 hours after the last use of the substance. Before being returned to aviation duty, the FS/AME/APA should examine the aircrew member and ensure that they are safe for aviation duties.
  - The aircrew members shall be symptom-free of the acute effects of the prohibited substance. If indicated by the clinical situation and setting, appropriate toxicological studies and consultations shall be obtained.
  - The event shall be documented in the member's health record and the on the next flight physical.
  - The aircrew member should be counseled and educated on this policy and NATOPS by the examining FS/AME/APA.

19.4 DIETARY SUPPLEMENT POLICY

CLASS A Substances for Flying Classes I, II, III, and IV: Use requires documentation at annual flight physical. Use of these substances within the limits noted is NCD.

These are substances for which there is strong evidence of safety and/or efficacy. Limitations on quantity and type of each dietary supplement shall be discussed and documented at the time of the annual physical as described below. Keep in mind that natural products are not always necessarily safe and dosages can be important. It is important to ensure that dosages follow relevant directions on product labels.

1. **"Sports" or "Recovery" drinks without prohibited ingredients (*not to be confused with "Energy" beverages or pre-workout supplements*).**
   For training periods that will exceed one hour of duration, sports drinks can help prevent dehydration and restore important minerals lost through perspiration and produce better hydration than water alone. The proper CHO ratio for sports drinks is 6-8%.

2. **Protein supplementation including the use of individual amino acids (except where specifically identified), derivatives, metabolites and combinations such as essential amino acids (EAAs) or branched chain amino acids (BCAAs).**
   For those individuals who decide to use protein supplementation, it is recommended that exercising individuals need approximately 1.4 to 2.0 grams of protein per kilogram of (fat free) bodyweight (BW) per day.
   Note: Protein bars are typically formulated with trace amounts of glycerol (a Class C supplement). Glycerol in this form (when taken as part of a protein bar) does not cause any significant blood sugar response and seems to be eliminated from the body mostly unused. This product is authorized for use by aircrew.

3. **Vitamins, Minerals and Essential Nutrients**
   An essential nutrient is a nutrient required for normal body functioning that either cannot be synthesized by the body at all, or cannot be synthesized in amounts adequate for good health, and thus must be obtained from a dietary source. Categories of essential nutrients include vitamins, dietary minerals, essential fatty acids, and essential amino acids. Intake should not exceed tolerable upper intake level (UL) as determined by the Institute of Medicine (IOM). UL is the maximum amount of daily vitamins and minerals that you can safely take without risking an overdose or serious side effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Note: Essential nutrients are defined by the collective physiological evidence for their importance in the diet and are listed in US government approved tables for Dietary Reference Intake.

4. **Caffeine (including guarana, kola nut, cocoa beans)**
   Intake should be limited to not more than 450 mg per day. Limit caffeine intake to no more than 250 mg over a short time (30 minutes) as this may cause caffeine intoxication.

CLASS B Supplements for Flying Classes I, II, III and IV: Use not prohibited but information is required. Flight Surgeon, AME or APA approval and documentation at the annual flight physical is required for use. Use of these substances within the limits noted is NCD.

These are substances for which evidence of risk is minimal. Use requires consultation with a Flight Surgeon/AME/APA and documentation in the medical record. The Flight Surgeon/AME/APA should counsel the member on any specific dosage limits for aircrew, possible risks, benefits, and side effects.

1. **Glucosamine (glucosamine sulfate, glucosamine hydrochloride, or N-acetyl-glucosamine) with or without chondroitin**
   Dosage should not exceed 1500 mg per day for glucosamine and 1200 mg per day for chondroitin.
   Warning: There are several reports showing that taking chondroitin with glucosamine increases the effect of warfarin on blood clotting. This can cause bruising and bleeding that can be serious.
   Grounding: 24 hour local grounding after first dose.

2. **Saw Palmetto (Serenoa repens)**
   Dosage for the liposterolic extract of saw palmetto berries (containing 85–95% fatty acids and sterols) is up to 320 mg daily.
   Grounding: 24 hour local grounding after first dose.

3. **Creatine (phospohcreatine, creatine monohydrate)**
   Warning: During creatine supplementation, water intake should be >64 ounces per day and sufficient to maintain proper hydration level. Creatine functions by drawing water from the rest of the body and holding it in the muscles. During creatine use, the need to drink more water than normal is needed. Some individuals may experience gastrointestinal symptoms, including loss of appetite, stomach discomfort, diarrhea, or nausea. Diabetes medications, acetaminophen, and diuretics may have interactions with creatine and should not be used together. Taking caffeine with creatine can increase the risk of side effects.
   Grounding: 24 hour local grounding after first dose and if experiencing GI symptoms.

4. **Melatonin**
   For sleep disturbance or jet lag and upon permission from Flight Surgeon/AME/APA, up to 5 mg may be taken at bedtime. It should not be taken for longer than 2 weeks.
   Grounding: At a minimum, 24 hour local grounding after dose. Member should be free from "sleep hangover" symptoms before flying duties.

5. **Ginger**
   For motion sickness and upon permission from Flight Surgeon/AME/APA, 250 mg up to 1 g may be taken prior to situations where motion sickness may be an issue. Dosage not to exceed a total of 4 g daily.
   Grounding: None.

CLASS C Supplements for Flying Classes I, II, III and IV: Not authorized for use. Use of these substances is CD.

Dietary Supplements and other preparations containing the following incapacitating or dangerous substances shall not be used by aircrew. There are no regulated manufacturing standards in place for many herbal compounds and some marketed supplements have been found to be contaminated with toxic metals or other drugs. Many of these substances have either (1) proven to be hazardous or (2) have not been proven to be safe with no clear proven benefit.

In addition to the supplements listed below, any supplement not listed in this guide should be classified as Class C. A supplement is of particular concern if its effects can be shown (or suspected) to lead to sedation, lead to excitation (stimulant), lead to hallucinations, have cardiovascular or hemodynamic effects (vasodilatation, vasoconstriction, hypertension, hypotension, tachycardia, etc), or act as or block neurotransmitters. Supplements containing known (or suspected) toxic compounds are also of particular concern. Personnel taking these substances should be removed from aviation duty for a minimum of 24 hours and until effects are no longer evident.

Special Note:
Energy Beverages / Energy Shots: Class C. For the purposes of this guide, Energy Beverages (EBs) are beverages that (typically) contain as main ingredients caffeine, taurine, glucuronolactone, B vitamins, guarana, l-carnitine, sugars, antioxidants, and trace minerals. Energy shots are 2-3 oz beverages that contain as much caffeine as regular energy drinks as well as mega doses of vitamins and other compounds such as taurine, l-tyrosine, phenylalanine, and guarana. The negative effects of excess caffeine have been proven, but the positive effects of many of the other additives, such as taurine and glucuronolactone, remain unproven, as does the combined effect of these ingredients. The active ingredient of concern for this product line is caffeine and other methylxanthines. Some EBs, mixes, or energy shots have up to 500 mg of caffeine per bottle . Aside from the main ingredient (caffeine), most other ingredients tend to be below the quantity expected to deliver therapeutic benefits or cause adverse reactions. EBs have been shown to increase heart rate, blood pressure, and can have a net dehydrating effect. There have been several case reports of seizures and caffeine-associated deaths when EBs are paired with exercise or intense physical activity. Research (at the time of this publication) indicates that while EBs may increase gross motor reflex reaction time, fine motor skills and cognitive processing accuracy may be impaired and extend the time it takes to complete a complicated, precise tasks correctly. EBs and derivatives (shots, gels, gum, chews, inhalers, nasal sprays, etc.) are not authorized for use by personnel on flight status who are actively performing duties in an aircraft. Personnel consuming EBs should be grounded for at least 24 hours before resuming flight duties.

19.5 CLASS C SUPPLEMENT LIST BY EFFECT

This list is not all-inclusive and is presented for informational purposes only. It contains commonly known and marketed supplements.

Sedation:

- Effects may be additive with other over-the-counter or prescription agents with sedative properties.
- The duration of action is unpredictable.
- **Plant products known or likely to be sedatives:** *indicates anticholinergic properties
  - *Valeriana officinalis (Valerian)*
  - *Rauwolfia serpentina (Indian Snakeroot)*
  - *Atropa belladonna (Deadly Nightshade)**
  - *Chelidonium majus (Celandine)*
  - *Humulus lupulus (Hops)*
  - *Conum maculatum (Hemlock)*
  - *Lycopodium serratum (Jin Bu Huan)*
  - *Papaver somniferum (Opium Poppy)*
  - *Passiflora incarnata (Passion Flower)*
  - *Scutellaria laterfoloia (Skullcap)*
  - *Lactuca virosa (Wild Lettuce)*
  - *Aconitum napellus (Wolfsbane)*
  - *Hyoscyamus niger (Henbane)**
  - *Datura stramonium (Jimson Weed)**
  - *Scopolia carniolica (Scopolia)**

Hallucination:

- **Plant products known or suspected to cause hallucinations or altered sensorium:**
  - *Psilocybe semilanceata (magic mushrooms)*
  - *Exchscholzia californiica (California Poppy)*
  - *Piper methysticum (Kava-Kava)*
  - *Mandragora officinarum (Mandrake)*
  - *Myristica fragrans (Nutmeg) in large quantities*
  - *Cantharanthus roseum (Periwinkle)*
  - *Datura stramonium (Thorn Apple)*
  - *Corynanthe yohimbe (Yohimbe Bark, Yohimbine HCL)*

Cardiovascular Effects:

Cardiac glycosides

- May precipitate dysrhythmias; especially when found in association with electrolyte abnormalities such as would occur with poor hydration status (digitalis family).
- **Plant products known to contain cardiac glycosides or cardioactive substances:**
  - *Digitalis purpura (Purple Foxglove)*
  - *Urginea maritima (Squill)*
  - *Cystisus scoparius (Broom)*
  - *Convallaria majalis (Lilly of the Valley)*
  - *Adonis vernalis (Pheasant's Eye)*

- *Strophanthus kombe (Strophanthus)*
- *Scilla maritima (White Squill)*
- *Digitalis lanata (Yellow Foxglove)*

Stimulants:

- Contain sympathomimetic agents that directly stimulate the heart and blood vessels.
- Implicated in deaths due to stroke or heart attack attributed to precipitous increases in pulse rate and blood pressure.
- **Substances known to be potent cardiovascular stimulants:**
  - *Ephedra sinica (Ma-Huang, Ephedra, Ephedrine)*
  - *Citrus aurantium (Bitter Orange, Synephrine)*
  - *Sida cordofolia (bala, malva branca, country mallow, heart-leaf sida or flannel weed)*
  - *Pelargonium graveolens (geranamine, geranium oil)*
  - *Evodiae fructus (evodiamine, Evodia, Evodia Lepta, Wu-Chu-Yu)*
  - *Coryanthe Yohimbe (Yohimbe, Yohimbine, Yohimbine HCl, 11-hydroxy Yohimbine, Alpha Yohimbine HCl, Yohimbinum Muriaticum):*

  Note: Yohimbe has been linked to reports of severe side effects including irregular/rapid heartbeats, kidney failure, seizure, and heart attacks.
  - *Methylhexanamine (MHA, dimethylamylamine, DMAA, 1,3-dimethylamylamine):*

  Note: Vasoconstrictor which can elevate blood pressure and may lead to shortness of breath and MI. Formerly patented as a nasal decongestant, it is similar in structure to ephedrine and amphetamine.
  - *Norcoclaurine HCL (higenamine, Norcoclaurine):*

  Note: Beta-2 adrenergic agonist and is found in a variety of plants including *Nandina domestica* (fruit), *Aconitum carmichaelii* (root), *Asarum heterotropioides, Galium divaricatum* (stem and vine), *Annona squamosa*, and *Nelumbo nucifera* (lotus seeds). Has been traditionally been used as an anti-asthmatic.

Hypotensive Agents:

- These substances may relax blood vessels and lower blood pressure. Such products would potentially affect Gz tolerance
  - *Pinus pinaster (Pycnogenol, Pine Bark extract)*
  - *Coenzyme Q* (CoQ10, ubiquinone, ubidecarenone) with or without niacin (vitamin B3, nicotinic acid and vitamin PP).

  Note: CoQ10 has the potential to lower systolic blood pressure by up to 17 mm Hg and diastolic blood pressure by up to 10 mm and should not be used by any person who experience >4Gz forces.

Diuretic Agents:

- These herbs may have effects on water balance and may affect blood pressure. Commonly used for weight loss.
  - *Taraxacum officinale*
  - *Verbena officinalis*
  - *Lithospermum officinale*
  - *Equisetum arvense*
  - *Arctostaphylos uva-ursi*
  - *Arctium lappa*
  - *Silene saxifrage*

Hepatotoxins:

- A number of plants elaborate pyrollizidine alkaloids, known to cause harm to the liver
- Damage is often irreversible, and may result in permanent disability or death.
- **Substances known or believed to be toxic to the liver:**
  - *Senecio spp. (Thread Leafed Groundsel and Life Root)*
  - *Larria tridentata (Chaparral)*
  - *Symphytum officinale (Comfrey)*
  - *Teucrium spp. (Germander)*
  - *Usnic Acid (Usnea)*

Other Adverse Effects and Drug Interactions:

- **Substances known or believed to have adverse effects and drug interactions:**
  - *Hypericum perforatum* (St John's Wort, Tipton's Weed, Chase-devil, Klamath weed)

Other Nutritional Supplements of Concern:

- *Pangamic Acid* (*Vitmain B15*): Pangamic acid is considered UNSAFE. There is no standard chemical identity for pangamic acid. Chemicals found in some formulations of pangamic acid may cause cancer.
- *Ginkgo biloba:* Ginko contain components that can trigger side effects and interact with other herbs, supplements, or medications. May enhance bleeding due to blood thinning action and may lower blood pressure and cause gastrointestinal distress, headaches, skin reactions, and dizziness.
- *Ginseng:* There are four common ginsengs; American, Chinese, Siberian (Eleuthoro Root) and Indian (Ashwagandha). Most supplements that list ginseng refer to Panax ginseng (AKA Asian ginseng, Chinese ginseng and Korean ginseng). This type of ginseng should not be confused with American ginseng or Siberian ginseng, which are entirely different herbs and have differing uses, dosing schedules and effects. Panax ginseng may have interactive effects with commonly prescribed medications.

  Warfarin/Blood Thinning Medications: Research studies in humans do not show this herb to affect blood clotting. However, studies done in laboratory settings show it to reduce blood clotting.

  Diabetic Medications/Insulin: Ginseng may lower blood sugar levels.

  Hypertension: Ginseng has been reported to increase blood pressure at a low dose but can decrease blood pressure at higher doses.

  Autoimmune: Ginseng seems to stimulate the immune system. In people with an immune disorder such as multiple sclerosis (MS), rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), psoriasis or ezcema (ectopic dermatitis) it may worsen the condition.

  Due to the wide variety of cardiovascular, neurologic and immune system effects, dosage effects and the multiple varieties of ginseng marketed, ginseng is not approved for use by aircrew.
- *Chromium Picolinate, Phosphate salts, Vanadyl sulfate:* May affect insulin sensitivity and blood sugar levels leading to hypoglycemia.
- *Echinacea*: Echinacea seems to activate chemicals in the body that decrease inflammation, which might reduce cold and flu symptoms. Laboratory research suggests that echinacea can stimulate the body's immune system. However, side effects include fever, nausea, vomiting, unpleasant taste, stomach pain,

diarrhea, sore throat, dry mouth, headache, numbness of the tongue, dizziness, insomnia, disorientation, and joint and muscle aches. Additionally, echinacea might decrease how quickly the body breaks down caffeine. Taking echinacea along with caffeine might cause too much caffeine in the bloodstream and increase the risk of side effects.

- *Glycerol* : Glycerol has been used to increase hydration within cells, allowing tissues to remain hydrated during prolonged endurance exercise, when taken in combination with ample amounts of water. Glycerol can cause side effects including headaches, dizziness, bloating, nausea, vomiting, thirst, and diarrhea.

19.6 GENERAL GUIDANCE FOR NEWLY DEVELOPED DIETARY SUBSTANCES

The Federal Food, Drug, and Cosmetic Act requires manufacturers and distributors that market dietary supplements that contain "new dietary ingredients" to notify the Food and Drug Administration about these ingredients. According to this act, the manufacturer must “provide a history of use or other evidence of safety establishing that the dietary ingredient, when used under the conditions recommended or suggested in the labeling of the dietary supplement, will reasonably be expected to be safe.” To date, the FDA has not published guidance defining the specific information that these submissions must contain.

When faced with a new supplement that has ingredients that are not covered by this guide, the Flight Surgeon/AME/APA should advise the member that use is prohibited in aircrew. The number of new supplements coming to market and varieties of new formulations prohibit effective evaluation of the aeromedical safety of the entire range of supplements available. However, flight surgeons or other aeromedical officers with questions about specific supplements may forward available information on the product to the Naval Aerospace Medical Institute. Additions and updates to supplement policy will be made based on questions from the Fleet indicating a need for policy on a particular product.

Some of the considerations used in evaluating a new supplement include:

- What information is provided on the container?
- What are the claims and are they potentially hazardous during flying duties?
- Are the servings/doses standardized (CL or USP validated)?
- Does the label or advertisement contain references?
- Does the supplement act to sedate, excite (stimulant), cause or is suspected to cause changes in perceptions, cause cardiovascular or hemodynamic effects (vasodialation, vasoconstriction, hypertension, hypotension, tachycardia, etc), or block or affect neurotransmitters? Does it contain known (or suspected) toxic compounds?
- What are the potential interactions with other supplements or medications?
- What literature or publications are available indicating safety?

19.7 ADDITIONAL RESOURCES

- U.S. Army Public Health Command
  http://phc.amedd.army.mil/topics/healthyliving/n/Pages/default.aspx

- The Center for Food Safety and Applied Nutrition
  http://www.fda.gov/Food/default.htm

- Office of Dietary Supplements
  http://ods.od.nih.gov

- Medline Plus
  http://www.nlm.nih.gov/medlineplus/medlineplus.html

- ConsumerLab.com
  http://www.consumerlab.com/

- Gatorade Sports Science Institute
  http://www.gssiweb.com/

- Human Performance Resource Center
  http://hprc-online.org/

- WebMD Vitamins & Supplements
  http://www.webmd.com/vitamins-supplements/default.aspx

- Institute of Medicine (IOM)
  http://www.iom.edu/

- Council for Responsible Nutrition
  http://www.crnusa.org/

- Nutrition.Gov
  http://www.nutrition.gov/dietary-supplements

- Unites States Department of Agriculture/National Agricultural Library
  http://fnic.nal.usda.gov/dietary-supplements

19.8 PRINTED RESOURCES

- PDR for Nutritional Supplements
  Sheldon Saul Hendler, PhD, MD, FACP, FACN, FAIC
  David Rorvik, MS
  Publisher: Thomson Healthcare; 1st Edition (March 15, 2001)
  ISBN-10: 1563633647
  ISBN-13: 978-1563633645

- PDR for Herbal Medicines
  Thomson Healthcare
  Publisher: Thomson Reuters; Fourth Edition (September 15, 2007)
  ISBN-10: 1563636786
  ISBN-13: 978-1563636783