



***7<sup>th</sup> Annual***

# **Primary Care Symposium**

**“Building the Foundation of Medical Care for the Fleet and Families”**

Department of Medicine  
Naval Medical Center San Diego  
13 MAY 2016

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## ***Orthopaedics for the Primary Care Provider***

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(All .pdf documents available in original format on symposium webpage)

**Program Learning Objective:**

Provide current evidence based review on fundamental primary care topics to aide in providing outstanding care to our fleet and families.

**Welcome from the director:**

**On behalf of the Department of Medicine, I would like to welcome you to the 7th Annual Primary Care Symposium at the Naval Medical Center San Diego! We have been working hard to arrange a stimulating and pertinent series of lectures directed toward busy primary care providers. I hope the discussions today will answer difficult clinical questions and assist in daily care of your patients.**

**I hope that the sessions today can be interactive, and allow you time to ask our local experts your tough clinical questions. Please participate in the hands-on lunch session to put the presented material to practice. Also – please make sure to visit the expo in classrooms 5/6 to see many of the resources available at NMCSO.**

**Your feedback at the end of the meeting is very important. Please complete your online evaluations to ensure this conference continues to meet your needs and expectations.**

**Mark P. Tschanz DO, MACM, FACP  
LCDR, MC, USN  
Course Director**

## Schedule of Events

0700 – 0730: Registration/coffee

0730 – 0745: **CO's Welcome**

0745 – 0845: **Dr. Drew White: *Urticaria in the Clinic***

0845 – 0900: Break

0900 – 0945: **CDR Gilbert Seda: *Update on Sleep Medicine***

0945 – 1030: **CDR Sean Wise: *Dizziness - Common Disorders and Treatments***

1030 – 1045: Break

1045 – 1215: **CDR Jacqueline Vanmoerkerque and LCDR Lucas McDonald: *Orthopaedics for the Primary Care Provider***

1215 – 1300: Lunch (provided by Navy Chapter of American College of Physicians)

**Classroom 4: Hands-on Sports Medicine and PT techniques**

1300 – 1400: **LCDR Nancy Miller and LCDR Mark Tschanz: *Evolving Trends in Hypertension Management***

1400-1415: Break

1415-1430: **CDR Gilbert Seda: *Update on Lung Cancer Screening***

1430 – 1530: **LCDR Carrick Burns: *Dermatologic Pearls for Primary Care***

## CME CREDITS/CONTACT HOURS ONLINE

**“ONLY PHYSICIANS CAN CLAIM AMA PRA CATEGORY 1 CREDIT™”**

- a. URL CME Link Login: <https://cmetracker.net/NMCSD/Login?FormName=GetCertificate>
- b. Military E-mail Address and Password
- c. CME Activity Code: 8448
- d. Cut-off Date to Claim CME Credits: June 13, 2016

**NOTE:** New Users – Will only need to create a Password **ONCE**. All users **must use** the **same password** when signing in to access the following functions: Certificate, Transcript, Profile, Activity Catalog and Registration.

### A. Instructions/Steps to Claim CME Credits, Contact Hours or Certificate (Documentation) of “Participation.”

1. Login: <https://cmetracker.net/NMCSD/Login?FormName=GetCertificate>
2. Follow the steps on the CME Certificate screen page. Info required is above
3. "Sign In"
4. Evaluation screen page is next. Complete the Evaluation. Make sure to select appropriate “target audience” on the evaluation to receive the assigned credits and Click on “Submit Response.” (Must be done to receive CME Credits or Contact Hours or Certificate of Participation).
  - AMA PRA Category 1 Credit(s)™ - Physicians ONLY
  - CE Contact Hours – Non Physicians (Nurses, other health care providers **if** applicable)
  - Documentation (Certificate) of Participation – Non Physicians

**NOTE: NOT** all CME activities are assigned CE Contact Hours. Please contact the activity coordinator for information.

5. Certificate Preparation screen page is next. Follow steps to “Claim Credits, Contact Hours or Certificate of Participation” and Click on “Continue.”
6. On the next screen page Click on “Display Certificate” to view the Certificate and Click on “Print Certificate” if you want a copy or
7. Click on “Close” and “Done” to exit.
8. If you don't want to display/view the certificate simply click on “Done” button.

### **Course director comments:**

Please attempt to follow the above instructions to claim credit. If unsuccessful, please email me and I can assist. Your timely and thoughtful completion of the course evaluation and 45-day follow-up survey is **CRITICAL** to providing you the content and format to meet your clinical needs. Please include your general feedback on any free-text portion of the evaluation, or email me with your comments or concerns.

# 7<sup>th</sup> Annual Primary Care Symposium

Department of Medicine

Naval Medical Center San Diego

<b>Commander:</b>	CAPT Jose A. Acosta, MC, USN
<b>Executive Officer:</b>	CAPT Cynthia A. Kuehner, NC, USN
<b>Director of Medical Services:</b>	CAPT Stephen P. Arles, MC, USN
<b>Chairman of Medicine:</b>	CAPT Alfred F. Shwayhat, MC, USN
<b>Division Officer:</b>	LCDR Daryl B. Fick, MC, USN
<b>Symposium Director:</b>	LCDR Mark P. Tschanz, MC, USN

**Coffee provided by the Internal Medicine Officers' Mess.**

**Lunch provided by the Navy Chapter of the American College of Physicians.**

The course director has no relevant financial relationships with any commercial supporters.











## Urticaria and Angioedema

May 2016

Drew White, MD  
Scripps Clinic  
San Diego, CA



### What is a hive?

- Pruritic, erythematous, cutaneous elevation of the skin that blanches with pressure. (dilated blood vessels and edema)



### Urticaria or not?



### Distribution

- Urticaria – virtually any part of the body
- Angioedema – not characteristic in dependent areas, asymmetrically distributed, transient
  - Face, tongue, extremities, genitalia





### Acute Urticaria

- Most likely caused by allergic reaction to food, drug or viral infection
- Must differentiate from anaphylaxis
- Simple way is to identify another organ system which is affected (anaphylaxis)
- Or time course of urticaria



### Acute Urticaria

- Seasonal pattern – occurs in atopic individuals (pollens etc.)
- Contact urticaria (dog lick)
- Drugs – can be immediate or up to 10 days later
- Foods – immediate, not a cause of chronic urticaria
- Viral illness

### Bizarre Anaphylaxis #1

- Mosquito anaphylaxis



- Galindo, P A. Gomez, E. Borja, J. Feo, F. Garcia, R. Lombardero, M. Barber, D. Mosquito bite hypersensitivity. *Allergologia et Immunopathologia*. 26(5):251-4, 1998 Sep-Oct

### Chronic vs Acute Urticaria

Urticaria > 6 weeks = chronic

Chronic urticaria very unlikely to establish cause

Approx 90-95% patients with chronic urticaria have no identifiable cause

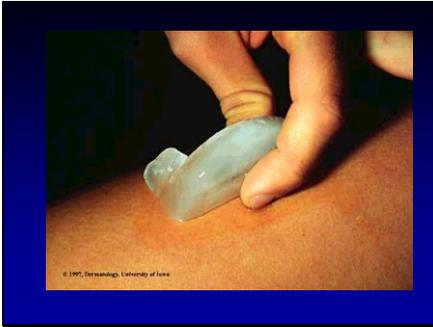
## Physical Urticarias

- Triggered by environmental factors
- Dermatographism is most common affecting 2-5% of the general population
  - Trauma induced reaction causing histamine release
- Abnormal circulating factor confers pressure sensitivity to dermal mast cells.

## Cholinergic urticaria

- 1-3mm wheals surrounded by erythematous flares
- Seen after increase in core body temp commonly in young adults
- Develop after strenuous exercise, hot bath, emotional stress
- Progression to exercise induced anaphylaxis is reported





### Delayed Pressure Urticaria

- Swelling 4-6 hours after pressure applied to skin
- Palms, soles, buttocks commonly involved
- Other symptoms include malaise, fever, chills, arthralgias, headache, leukocytosis
- Poor response to antihistamines
- Can accompany chronic idiopathic urticaria

### Cold Urticaria

- Urticaria may develop within minutes on areas directly exposed to cold or on rewarming
- Ingestion of cold water → lip swelling
- Death has been reported with swimming, diving or whole body immersion



### Solar Urticaria

- Urticaria develops within 1-3 minutes of exposure to light
- Lesions last 1-3 hours
- Six subtypes which are triggered by specific wavelengths of light

## Bizarre Anaphylaxis #2

### • Triatoma Anaphylaxis

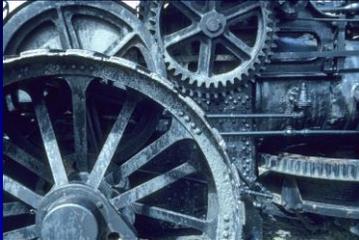
- Moffitt JE, Venarske D, Goddard J.
- Yates AB, deShazo RD. Allergic reactions to *Triatoma* bites.
- *Annals of Allergy, Asthma, & Immunology*. 91(2):122-8; 2003 Aug.



## H. pylori

- Systematic Review:
- Critical review of the 10 positive studies leads to an overall low grade for this intervention.
- 9 completely negative studies
- “evidence that H. pylori eradication leads to improvement in chronic urticaria is weak and conflicting....”
- Shakouri et al, *Curr Opin Allergy Clin Immunol* 2010

## Mechanisms



## Case Report

- 43 yo male allergist at Scripps Clinic
- 5/07 developed R L5 dermatome zoster
- At this same time developed persistent urticaria without angioedema
- Responded well to cetirizine 10mg daily, but recurs >36hrs without dose
- Went into remission 5/08

## Disproven

- Psychophysiologic reactions
- Food allergies
- Adverse reactions to food additives
- Cutaneous fungal infections (id reactions)
- H. pylori (for the most part....)

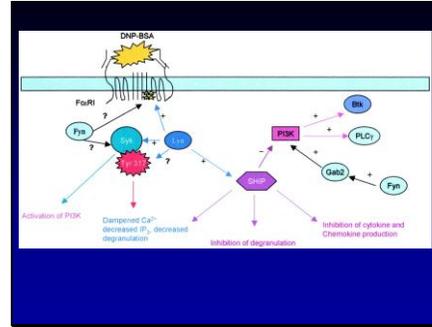
## What do you think is going on?

- Chronic VZV infection?
- Zoster and CU totally unrelated?
- Zoster somehow changed the functionality of basophils and mast cells?
- Zoster (through molecular mimicry) led to autoimmune IgG to mast cell/basophil?

## Thyroid autoimmunity

- Autoimmune urticaria associated with autoimmune thyroiditis.
- 27% in CAU vs 11% in CU (n= 288) with anti-thyroid peroxidase abs.<sup>1</sup>
- ASST and anti-FCεR1alpha ab were equally likely whether or not thyroid autoantibodies present.<sup>2</sup>
  - (+antithyroid ab = coin flip that ASST or anti-FCεR1alpha ab present)
- Presence of thyroid autoantibody does not predict autoimmune "signature"

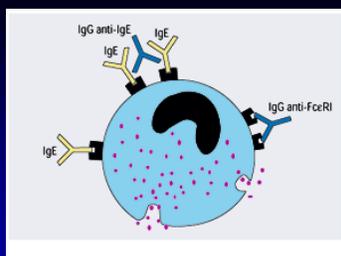
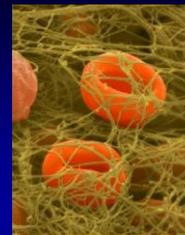
1. J Allerg Clin Immunol. 2003;112:218
2. Mozaena et al, J Invest Derm. 2010



## Current concepts in CU

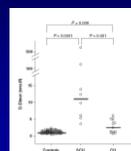
- Autoimmune
- Basophil Dysregulation
- Coagulation Pathway

## Coagulation System

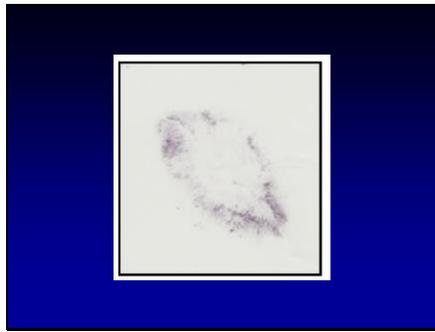
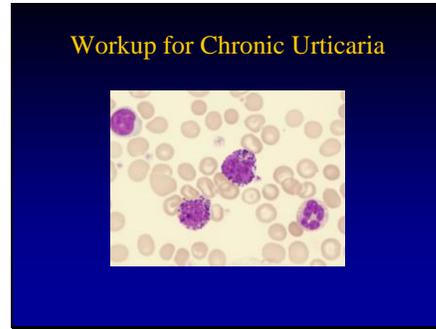
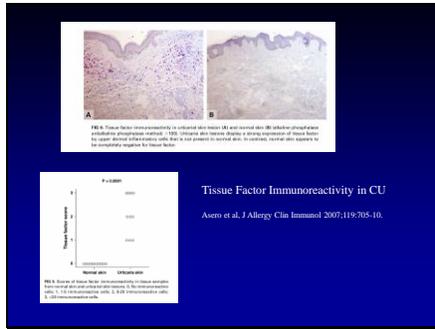


## D dimer

- Severe chronic urticaria is associated with elevated plasma D-dimer



Ascro et al. Allergy 2008;63:176-180.



**Table II.** Principal cutaneous diseases that can manifest with urticarial lesions

Common
Urticarial dermatitis
Contact dermatitis (irritant or allergic)
Arthropod bite reactions
Exanthematous drug eruption
Mastocytosis (children)
Autoimmune bullous diseases
Subepidermal—bullous pemphigoid, gestational pemphigoid, linear IgA dermatosis, epidermolysis bullosa acquisita, and dermatitis herpetiformis of Duhring
Intraepidermal—pemphigus herpetiformis
Pruritic urticarial papules and plaques of pregnancy
Small-vessel vasculitis (urticarial vasculitis)
Rare
Autoimmune progesterone/estrogen dermatitis
Intestinal granulomatous dermatitis
Eosinophilic cellulitis (Wells syndrome)
Neutrophilic eccrine hidradenitis
Urticaria-like follicular mucinosis

## Bizarre Anaphylaxis #3

ABC News....

- "...Fifteen-year-old Christina Desforges of Saguenay, Quebec, died last week after kissing her boyfriend, who had eaten a peanut butter sandwich hours earlier. He passed along traces of peanuts to Desforges, who was severely allergic, and she immediately became short of breath. She was given a shot of adrenaline to counteract the symptoms, but that did not help. She died of respiratory failure in a Quebec City hospital."

- ## 2 Strategies
- History and physical
  - CBC, ESR
  - CBC, ESR, LFT's, P2, Complement, Cryoglobulin
  - RF, ANA, dsDNA
  - Hep B, RPR, ASO, Strongyloides, UA
  - RAST for inhalants, foods, IgE
  - stool for O+P, occult blood
  - Throat culture, vaginal swab for candida
  - CXR, sinus x ray, dental films
  - Skin biopsy
  - Provocation for physical urticaria
  - All drugs changed to alternative
  - Elimination diet (salicylates, dyes, benzozites, sorbic acid, sodium glutamate, sulfites, antioxidants, sodium nitrate, parabens, vasoactive amines, histamine liberators, sugar, yeast, spices, coffee, crustaceans, fish, meat, eggs, milk, potato x 3 weeks
  - Oral food or drug rechallenge when indicated.

- 220 patients
- Bottom line, 1 patient with a parasitic infection, not suspected by the dermatologist would have been picked up.

• Kozel MM. Arch Dermatol 1998;134:1575-1580

### How NOT to practice allergy

- 25 yo male presents to the allergy clinic with RLQ pain, + rebound and fever
- Allergist orders STAT RAST panel
  - Peanut 0.53kU/L
- Diagnosed with “Allergic Appendicitis” and sends patient home with EpiPen and peanut avoidance...

### Workup for Chronic Urticaria

- Verify it is urticaria, bx if necessary.
- Exclude or evaluate for physical urticarias
- Medication review (NSAIDs, etc)
- Review patient perception of triggers
  - Then test to exclude (skin prick test/RAST)
- Thorough review of symptoms
- Consider the following tests:
  - CBC, ESR, Thyroid studies, H. pylori, ASST, “therapeutic blood draw”

### Interpreting Allergy Tests

- Called “RAST” by convention
- Technically a newer generation FELA
- Reports <0.10 → >100.0
- Several foods have positive predictive values
  - Peanut - >19 = 95% PPV

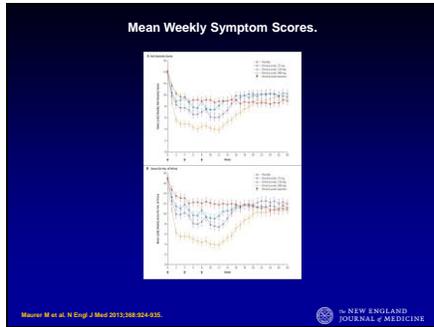
### Specialized Testing

- Basophil Histamine Release testing is done
- Basophil Activation Tests
- Limited Clinical Utility
- Please do not order a RAST panel.....

### Interpreting Allergy Tests

- Take a history
- If history not consistent with IgE mediated allergy (headache, fatigue, abdominal discomfort, brain fog, fibromyalgia, constipation, poor growth)
- DO NOT ORDER RAST!!
- 
- 30 second allergy consult – “can you eat peanuts? Yes?, You aren’t allergic to peanuts. Nice to meet you....”

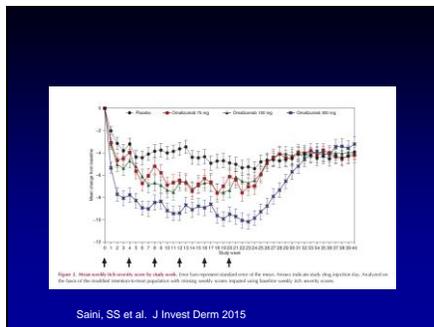




## Bizarre Anaphylaxis #5

### Autoimmune progesterone dermatitis and its manifestation as anaphylaxis: a case report and literature review

Snyder, Joy L, Krishnaswamy, Guha. Autoimmune progesterone dermatitis and its manifestation as anaphylaxis: a case report and literature review. *Annals of Allergy, Asthma, & Immunology*. 90(5):469-77; 2003 May.



## Angioedema

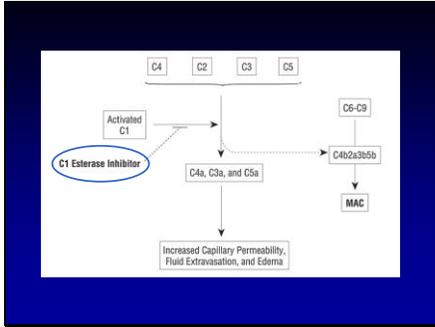
## Results

- N= 20
- Significant improvement at 2 weeks, 16 weeks in all parameters (p ~0.003)
- Symptom free days at 16 weeks (p=0.0004)
- Basophils became “responders” by 4 weeks.
- All changes reverted back after omalizumab stopped.

• Abstract – Gober et al. J Allergy Clin Immunol. 2008;121(2):S147.

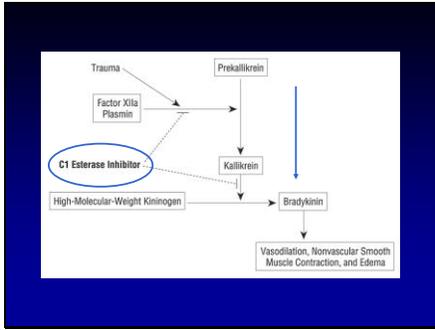
## Angioedema

- Angioedema in the absence of Hives →
- Inherited Angioedema
- Acquired Angioedema
- Isolated Idiopathic Angioedema
- ACEI/ARB related Angioedema



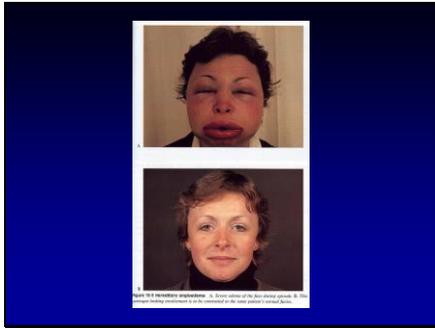
### Hereditary Angioedema

- Edema of any part of body
- Recurrent abdominal pain (70-80%)
  - Uncommon in other causes of angioedema
  - 1/3 with HAE undergo needless surgery for abdominal attack
- Laryngeal involvement – occurs in 1/2



### Hereditary Angioedema

- Autosomal Dominant
- Present in the first and second decade of life



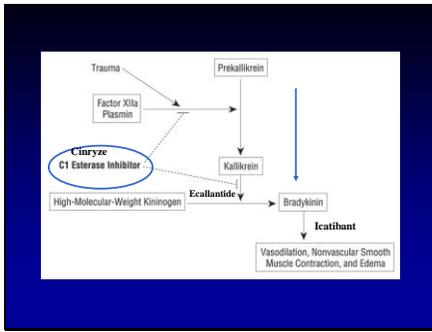
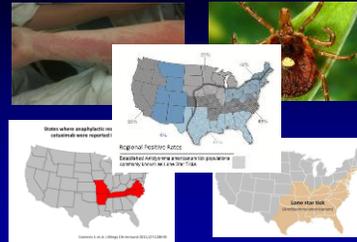
### Hereditary Angioedema

- Type 1 – deficiency of C1 INH
  - Not necessarily a complement mediated phenomenon.
  - Related to C1 INH dependent bradykinin breakdown.
  - Will see Low C4, low C2 (during attack), and low C1 INH level (normal C1)

## Therapy

- Acute – Steroids, Epi, antihistamines unlikely to have ANY effect.
  - Trach kit to bedside, supportive tx
  - FFP has a role, but in rare cases can worsen attack
  - C1 inhibitor
  - Ecallantide
  - Icatibant
- Danazol or Stanozolol – attenuated androgens which up regulate synthetic capability of hepatic cells.

## Bizarre Anaphylaxis #6

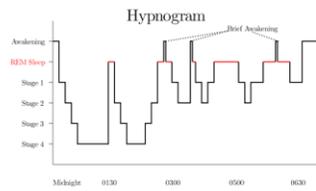




## Introduction to Sleep Disorders for the Primary Care Provider

Gilbert Seda, MD, PhD  
CDR MC USN  
Pulmonary & Critical Care Medicine  
Naval Medical Center San Diego  
May 13, 2016

## Sleep Architecture



## Disclosure

- I have no personal conflicts of interest or relevant financial relationships to disclose
- Views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Defense, nor the U.S. Government
- Some non-FDA approved treatments will be discussed

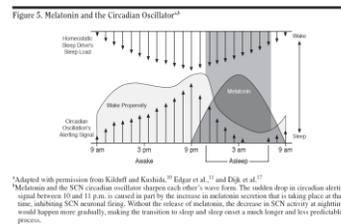
## How much sleep is normal?

- No exact number
- Range is 6-9 hours with significant individual variability
- >10 hours seen in long sleeper
- <5 hours probably abnormal with symptoms of sleep deprivation

## Objectives

- Normal Sleep Physiology
- Insomnia
- Obstructive Sleep Apnea
- Restless Legs Syndrome
- Narcolepsy
- Somnambulism

## Sleep Regulation



### Case 1

27 year old female PO2 with BMI=24 reports trouble staying asleep for the past 3 years since returning from IA deployment. She has been going to bed earlier every night at 2100 and falls asleep within 30 minutes. She awakens at 0500 but feels unrefreshed. She estimates she gets 4-5 hours sleep per night. She does not nap and wakes 3-4 times per night tossing turning. Sometimes she awakens gasping and anxious. She thinks she snores softly sometimes. She does not use caffeine, tobacco or alcohol. Her Epworth is 7/24.

### Chronic Insomnia Disorder icisd-3

- Difficulty initiating or maintaining sleep or waking up earlier than desired
- Adequate opportunity for sleep,
- Associated with daytime impairments such as fatigue, irritability, school/work impairments
- Present for over 3 months
- Symptoms at least 3 times per week
- No other disorder to explain symptoms
- Co-morbid with other conditions (depression)

What is the best diagnostic test for this patient?

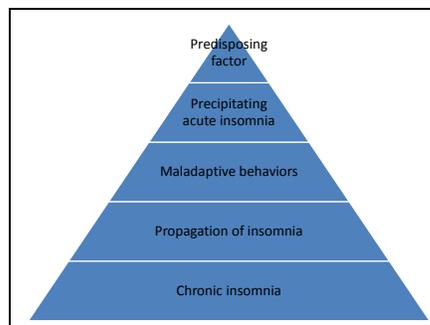
- A. Multiple sleep latency testing
- B. Sleep diary
- C. Psychomotor vigilance test
- D. Facility-based polysomnogram
- E. Unattended Sleep Study (Home Sleep Test)

### Epidemiology

- 50 percent of primary care patients have occasional insomnia
- 10-30 percent of primary care patients have chronic insomnia
- More prevalent in women than men
- Increases with age and medical co-morbidities
- Disorder of increased arousal

What treatment would be most beneficial?

- A. Wake-promoting agent such as modafinil 100 mg twice daily
- B. Sleep-promoting agent such as zolpidem 5 mg at bedtime
- C. Sleep restriction by having the patient go to bed later than 2300
- D. Melatonin agonist such as ramelteon 8 mg at 1800
- E. Sleep hygiene instructions

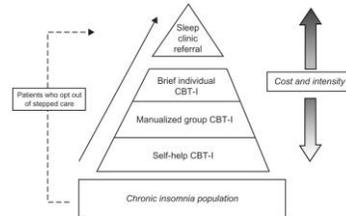




## Behavioral Therapy

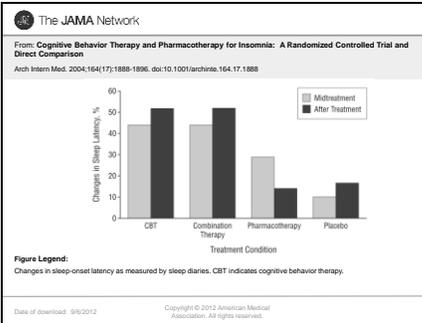
- Relaxation training
  - Progressive muscle relaxation
  - Guided imagery
  - Abdominal breathing

## Stepped Care Model



## Cognitive behavioral therapy for insomnia (CBT-I)

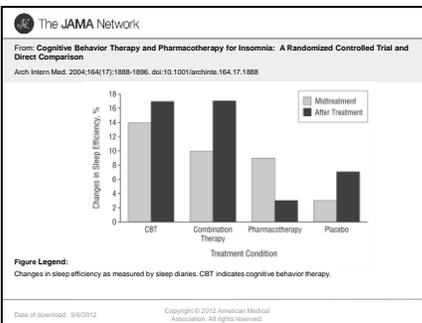
- Common cognitive distortions are identified and addressed in the course of treatment. These include:
  - “I can’t sleep without medication,”
  - “I have a chemical imbalance,”
  - “If I can’t sleep I should stay in bed and rest,”
  - “My life will be ruined if I can’t sleep.”
  - “I need medication for deeper sleep”



## Non-Pharmacologic Treatments

Technique	Goal	Method
Stimulus Control Therapy*	Strengthen bed and bedroom as sleep stimuli	If unable to fall asleep within 20 min, get out of bed and repeat as needed
Relaxation Therapies*	Reduce arousal and decrease anxiety	Biofeedback, progressive muscle relaxation
Restriction of Time in Bed (Sleep Restriction)	Improve sleep continuity by limiting time spent in bed	Decrease time in bed to equal time actually asleep and increase as sleep efficiency improves
Cognitive Therapy	Dispel faulty beliefs that may perpetuate insomnia	Talk therapy to dispel unrealistic and exaggerated notions about sleep
Paradoxical Intention	Relieve performance anxiety	Try to stay awake
Sleep Hygiene Education	Promote habits that help sleep; eliminate habits that interfere with sleep	Promote habits that help sleep; eliminate habits that interfere with sleep
Cognitive Behavioral Therapy*	Combines sleep restriction, stimulus control, and sleep hygiene education with cognitive therapy	Combines sleep restriction, stimulus control, and sleep hygiene education with cognitive therapy

\* Standard therapy (high clinical certainty).  
Data from Mergenthaler T, Kraemer M, Alavi C, et al. Proven parameters for the psychological and behavioral treatment of insomnia are updated. An American Academy of Sleep Medicine report. Sleep. 2006;29(11):1475-78.



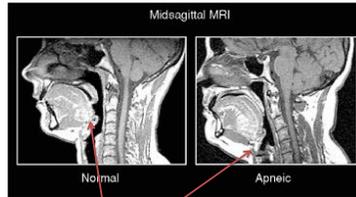
## Pharmacologic Therapy

- Most efficacy studies are short-duration (2-5 weeks) Longer studies have looked at zaleplon<sup>1</sup> and ramelteon<sup>2</sup>
- FDA indications: all agents are for **short-term use** except Eszopiclone, zolpidem extended-release, and ramelteon

<sup>1</sup> Ancoli-Israel S, et. Al., Long-term use of sedative hypnotics in older patients with insomnia. *Sleep Med.* 2005;6:107-113

<sup>2</sup> DeMicco M, et. Al., Long-term therapeutic effects of ramelteon treatment in adults with chronic insomnia: a 1 year study. *Sleep.* 2006;29(suppl):A234

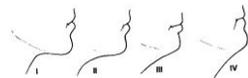
## Difference in Static Airway Anatomy in Patients with OSA



Note: inferior hyoid location and angled orientation of the genioid

## Sedating low-dose antidepressants trazodone, amitriptyline, nortriptyline

- **Not recommended** as first line therapy for insomnia (consider after CBTi and two BzRAs)
- Poor efficacy data
- High side-effect profile
  - Weight gain
  - Daytime sedation
- Tolerance, rebound insomnia
- Ineffective alone in depression and insomnia



Cervicomental angle predicts OSA as well as neck circumference >17"/43 cm in men

## Insomnia Summary

- Chronic insomnia is a behavioral problem and generally responds well to behavioral treatment
- Pharmacotherapy alone is not as effective and benefits are not sustained long-term

*Ann Intern Med.* Published online 3 May 2016 doi:10.7326/M15-2175

## STOP-BANG Sleep Apnea Questionnaire

Chang F et al. *Anesthesiology*. 2003 and BJA 2002

STOP		
Do you <b>SNORE</b> loudly (louder than talking or loud enough to be heard through closed doors)?	Yes	No
Do you often feel <b>Tired, fatigued, or sleepy during daytime</b> ?	Yes	No
Has anyone <b>OBSERVED</b> you stop breathing during your sleep?	Yes	No
Do you have or are you being treated for high blood <b>PRESSURE</b> ?	Yes	No
BANG		
<b>BMI</b> more than 35kg/m <sup>2</sup> ?	Yes	No
<b>AGE</b> over 50 years old?	Yes	No
<b>NECK</b> circumference > 16 inches (40cm)?	Yes	No
<b>GENDER</b> , Male?	Yes	No
TOTAL SCORE		

High risk of OSA: Yes 5 - 8  
Intermediate risk of OSA: Yes 3 - 4  
Low risk of OSA: Yes 0 - 2

### The Epworth Sleepiness Scale (ESS)

How likely are you to do off or fall asleep in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to think out how they would have affected you. Use the following scale to choose the most appropriate number for each situation:

0 = would never do so  
 1 = slight chance of dozing  
 2 = moderate chance of dozing  
 3 = high chance of dozing

SITUATION	CHANCE OF DOZING (0-3)
Sitting and reading	
Watching television	
Sitting inactive in a public place (eg. a theater or meeting)	
As a passenger in a car for an hour without a break	
Lying down to rest in the afternoon when circumstances permit	
Sitting and talking to someone	
Sitting quietly when a bench without alcohol	
In a car, while stopped for a few minutes in the traffic	
<b>TOTAL SCORE</b>	

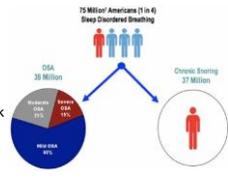
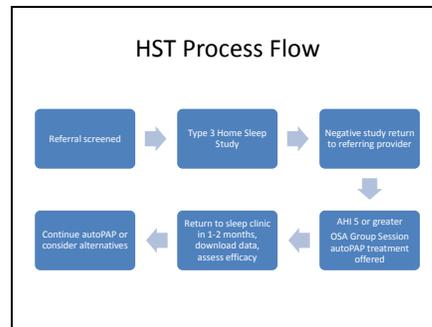
**SCORE MEANS:**  
 1-4    Congratulations, you are getting enough sleep!  
 5-8    Your score is average  
 9 and up    Very sleepy and should seek medical advice



- ### Mechanisms
- Anatomic factors
  - Loss of airway dilator muscle tone
    - Damage due to vibration
    - Fatigue due to increased tone during wake
  - Loss of lung volume (FRC) from obesity, supine position
  - Ventilatory control instability with cycling loss of airway tone and drive causing central apnea
  - Arousal threshold

### Prevalence of OSA

- Overall prevalence of OSA **10-25%** (30+ million Americans)
- **Males are affected more commonly (2x risk)**
- Obesity (body-mass index >30) increases risk **4-fold**
- Increases after menopause in women
- Runs in families

- ### Risk factors
- Male gender RR=2
  - Obesity RR=4
  - Age (highest increase from age 40-60)
  - Blacks tend to have higher risk of OSA than whites
  - Asians tend to have more OSA lower BMI than whites
  - Daytime sleepiness (Epworth) is not strongly correlated with OSA
  - No screening tool is available to exclude OSA

### Home Sleep Testing

- ECG channel
- 2 nasal airflow channels
- 2 effort channels (chest and abdomen)
- Blood oxygen level
- Heart rate
- Snore
- Position



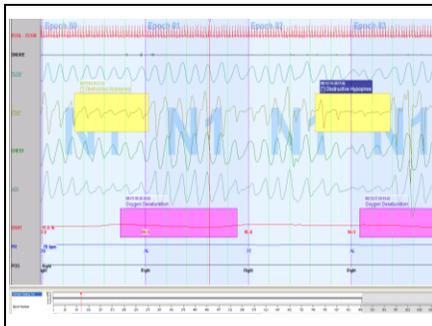
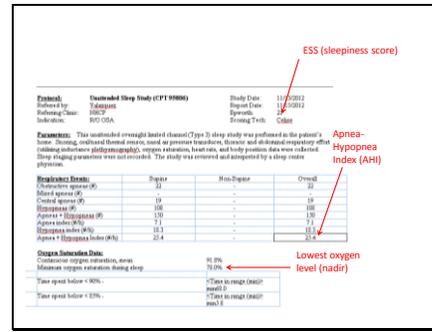
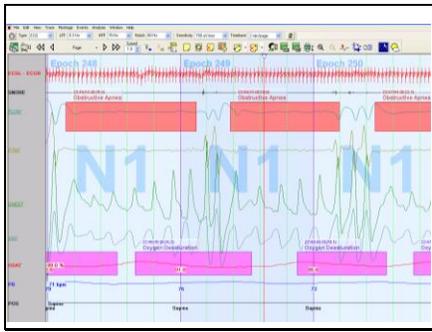
## Definitions

- Apnea: cessation of breathing for >10 seconds  
May be central, obstructive or mixed
- Hypopnea: decreased flow >30% for >10 seconds leading to a drop in SpO2 4% or an arousal
- Respiratory effort related arousals (RERA): arousals associated with decreased flow not meeting criteria for hypopnea
- AHI: (apnea hypopnea index) number of breathing problems divided by the hours of sleep or recording time (RDI)

## Apnea-hypopnea index (AHI)

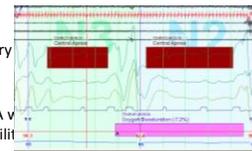
- AHI is all the apneas+hyponeas divided by the recording time
- For example: (17 apneas + 66 hypopneas)/7 hours recording = AHI of 11.8
- AHI<5 is considered **normal**

AHI	SEVERITY	TREATMENT
5-14	MILD	OPTIONAL
15-30	MODERATE	RECOMMENDED
>30	SEVERE	HIGHLY RECOMMENDED



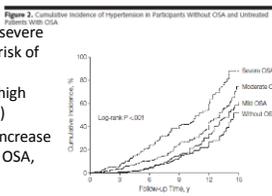
## Central Apnea

- Apnea: stopped breathing for ten seconds or more without respiratory effort
- Can be seen after arousals or in OSA v respiratory instability



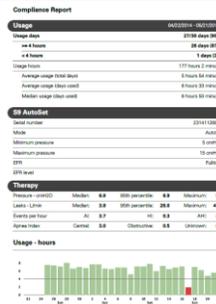
## Moderate-Severe OSA

- Moderate and severe OSA increases risk of developing hypertension (high blood pressure)
- No significant increase seen with mild OSA, however



Marin, JAMA, May 2012; 307,20

Data download example

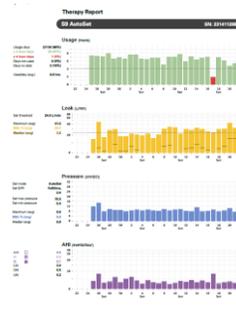


## Moderate-Severe OSA in Women

- OSA with AHI>10 associated with 2.76x increased risk of stroke or heart disease (CI 1.35-5.62) after adjustment for age, BMI, HTN, diabetes, atrial fibrillation in women
- CPAP treatment seems to reduce this risk

Campos-Rodriguez, AJRCCM, June 15, 2014

Data download example



## Continuous Positive Airway Pressure (CPAP)

- The most effective treatment for OSA is continuous positive airway pressure (CPAP)
- A machine is used to generate air pressure to maintain airway patency during sleep
- It usually takes some effort to acclimate to CPAP but it is generally well-tolerated
- Side effects include dry nose or mouth, gas or bloating, mask discomfort

## Oral Appliance Therapy (OAT)

- Custom-fitted dental device
- Advances mandible during sleep to open airway
- Suitable for mild-moderate OSA
- Reduces snoring



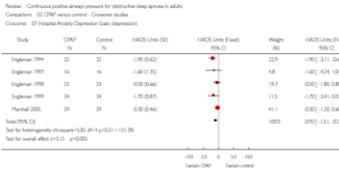
## Oral appliances

- Fitted by sleep dentists
- Gradual adjustment increases advancement of jaw
- Takes 2-3 weeks to fabricate and a few weeks for adjustments



## CPAP has a modest effect on anxiety and depression

### Analysis 02.07 Comparison 02 CPAP versus control - Crossover studies, Outcome 07 Hospital Anxiety Depression Scale (Depression)



## CPAP vs OAT

### CPAP

- Slightly cumbersome
- Requires electricity
- Monitors and adjusts pressure depending on apneas and hypopneas
- Objective data
- Recommended for severe OSA
- Rapid issue



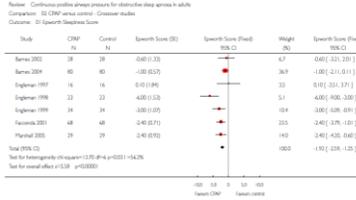
### OAT

- Portable
- No need for electricity
- No need for supplies
- No monitoring of apneas during sleep
- Subjective data
- Not recommended for severe OSA
- May take a few weeks to fabricate



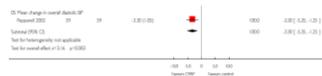
## CPAP improves ESS 2-3 points Also improves MSLT and MWT

### Analysis 02.01 Comparison 02 CPAP versus control - Crossover studies, Outcome 01 Epworth Sleepiness Score



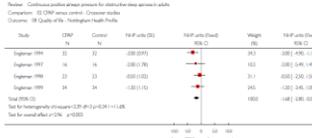
## CPAP has modest impact on BP

- CPAP improves diastolic BP -3.3 mm Hg
- CPAP improves systolic BP -3.4 mm Hg
- CPAP improves nocturnal MAP -4.20 mm Hg

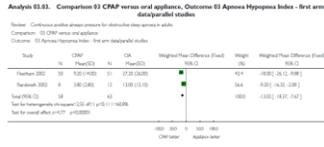


## CPAP improves Quality of Life

### Analysis 02.08 Comparison 02 CPAP versus control - Crossover studies, Outcome 08 Quality of Life - Nottingham Health Profile



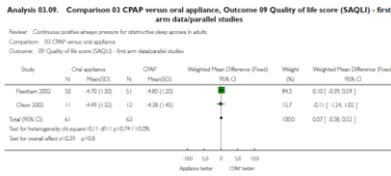
## CPAP better at lowering AHI than Oral Appliance



## Summary

- Home testing and Lab testing strategies have similar outcomes in managing OSA
- CPAP is the best tolerated, most effective therapy for OSA
- Oral appliance is a good alternative treatment for mild-moderate OSA
- Surgery is reserved for special cases

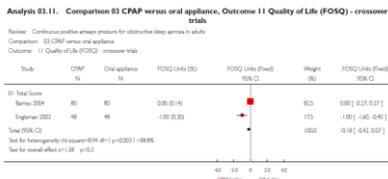
## CPAP and Oral Appliance have similar impact on Quality of Life



## Restless Legs Syndrome (RLS)

- Clinical diagnosis (PSG not required)
- Should cause sleep disturbances
- Associated with mood disorders
- Family history often positive (50%)
- Associated with periodic limb movements but not required for diagnosis
- Arms often affected as well as legs
- **RLS-WED is not diagnosed by a sleep study (PSG not required)**

## CPAP and Oral Appliance have similar impact on Quality of Life



## RLS Diagnostic Criteria

- Uncomfortable sensation in legs
- Urge to move legs
- Worse at rest, improves with movement
- Worse at night (circadian pattern)
- Causes significant impairment of sleep or other functioning
- Exclude other causes (neuropathy, nervous foot tapping, cramps, myalgias)
- **40% of people without RLS-WED will report some urge to move their legs at night**

## RLS

- U – Uncomfortable feeling in extremities
- R – Rest makes symptoms worse
- G – Getting up and moving makes symptoms better
- E – Evening symptoms are worse

## RLS-WED Treatment

- Iron replacement (ferritin >75 mcg/L, transferrin 20-50%)
- Dopaminergic agents
  - Pramipexole
  - Ropinirole
  - Rotigotine
  - Warn about **impulsivity** and nausea
- Gabapentin extended release
- Relaxation techniques, massage, warm baths, external counter pulsation
- Opioids

## RLS-Risk Factors

- Family history (single nucleotide polymorphisms-SNPs)
- Iron deficiency (ferritin <50 mcg/L)
- Antidepressants (except bupropion)
- Antihistamines TCAs
- Dopamine antagonists (risperidone)
- Pregnancy (2-3x) increases with parity
- Chronic kidney disease (2-5x)
- Gastric bypass

## Question 2

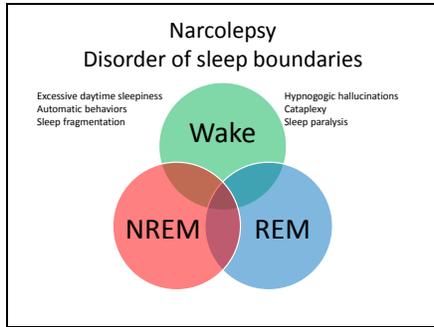
- A 26 year-old man BMI=28 with excessive daytime sleepiness for six years is referred for snoring. He undergoes a home sleep test which shows AHI=6 per hour, nadir O2 saturation 86% and is diagnosed with mild OSA. He is treated with auto-titrating CPAP and feels better initially but hyper-somnolence returns. His adherence with CPAP is good and residual AHI is 0.9 on CPAP. He reports taking naps in parking lot after driving to work and consumes 600 mg caffeine daily to stay awake. He has no cataplexy. He reports kicking and restless sleep and awakens 3-5 times per night.

## Pathophysiology

- Decreased CNS iron levels in substantia nigra
- Decreased dopaminergic activity
- Increased glutamate activity or imbalance
- Genetic factors (BTBD9, MEIS1, MAP2K5/LBXCOR may alter iron homeostasis)

## What is the next step?

- Polysomnogram with 4 limb leads to assess for periodic limb movement disorder
- Add modafinil for excessive daytime somnolence refractory to CPAP
- Perform in-lab PSG and CPAP titration
- 1-2 week sleep diary followed by CPAP titration and MSLT
- Maintenance of wakefulness test after overnight use of CPAP to document hyper-somnolence



- ### Cataplexy
- Duration seconds to minutes with subsequent full recovery
  - Complete collapse uncommon
  - Not always reproducible, may be worse after sleep deprivation
  - Partial weakness (jaw dropping, knees giving out) common
  - May present 3-5 years after onset of daytime sleepiness
  - Almost always HLA DQB1-0602 positive

- ### Hypersomnolence in Narcolepsy
- Epworth scores typically range 18-24/24
  - Often predates cataplexy
  - Transient improvement with sleep and naps
  - **Naps are often required before noon**
  - Urge to sleep occurs without warning or prodrome (sleep attacks)

- ### Narcolepsy Type 2
- Daily irrepresible need for sleep for at least 3 months
  - No cataplexy
  - Mean sleep latency <8 minutes and 2+ sleep onset REM periods, one which may be on PSG
  - Hypersomnolence not explained by another disorder
  - **Note: Anyone who is sleep-deprived can meet the sleep test criteria above**

- ### Cataplexy
- Suggestive of narcolepsy (Type 1)
  - Loss of bilateral muscle tone
  - Fully conscious
  - Triggered by strong emotion, most commonly laughter but also anger, excitement and surprise
  - Spares eye and respiratory muscles
  - Reflexes absent

- ### Narcolepsy treatment
- Strategic naps
  - Modafinil 200-400 mg daily in split doses
  - Armodafinil 150-250 mg daily (R-enantiomer, slightly longer effect)
  - Sodium oxybate for cataplexy (69-85% reduction) and EDS (Standard)
  - TCA, SSRI, SNRI (venlafaxine) for cataplexy (Guideline)
  - Methylphenidate (Concerta) 18-54 mg (Guideline)

### Sleepwalking (Somnambulism)

- 4% Adults, 22% lifetime prevalence
- Leaving the bed during N3 sleep (first half of the night)
- May have multiple episodes per night
- More complex and goal-directed behavior than in confusional arousals but similar in nature
- Typical duration <10 minutes
- Little or no recall

### Military Service and Hypersomnia

- "To constitute a physical disability, the medical impairment or physical defect must be of such a nature and degree of severity as to interfere with the member's ability to adequately perform his or her duties."
- Narcolepsy generally mandates a PEB
- Sleep apnea and idiopathic hypersomnolence may mandate a PEB depending on severity, response to treatment, and patient's occupation
- Sleepwalking does not merit PEB and is disqualifying for military service (ADSEP)

### Sleepwalking (Somnambulism)

- Increase seen with z-drugs (zolpidem), stimulants, antihistamines, SSRIs.
- Increase seen with N3 sleep rebound after sleep deprivation
- Increase with stress, illness, anxiety, alcohol use, bladder distension
- Increase with sleep fragmentation from other sleep disorders (OSA)

### Somnambulism Treatment

- Reassurance and address contributing factors
- Safety (lock keys, firearms, windows)
- Gently guide patient back to bed
- Scheduled awakenings
- Adequate sleep duration
- Avoid antihistamines
- Medications generally not used but can consider TCAs.

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## 2016 Hypertension Update

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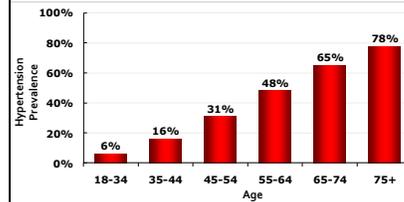
## Classification of Hypertension

BP Classification	Systolic BP (mmHg)	Diastolic BP (mmHg)	Treatment
Normal	< 120	And < 80	Lifestyle modification
Pre-hypertensive	120-139	Or 80 - 89	Lifestyle modification
Hypertensive	> 140	> 90	Lifestyle modification +/- Medication

## Disclosures

- We have no relevant financial disclosures
- The opinions expressed are our own, not those of the United States Navy

## Prevalence of Hypertension in the United States by Age Group\*



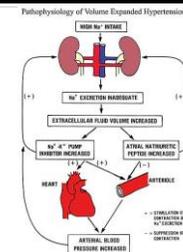
\*Based on data from the 1999-2004 National Health and Nutrition Examination Survey. Hypertension is defined as blood pressure  $\geq 140/90$  mm Hg or as receiving antihypertensive treatment.  
Fitzell JE, et al. Hypertension. 2005;44:139-44.

## Objectives

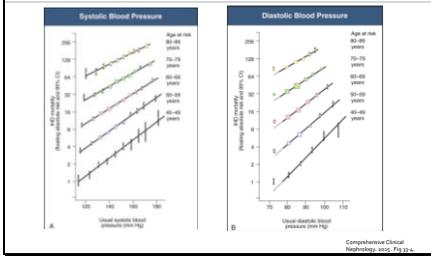
- After this program, you should be able to:
  - State emphatically that treating hypertension is important (and explain why)
  - Explain the guideline-driven approach to the diagnosis of hypertension
  - Select a target blood pressure for specific patients in your population
  - Choose the most effective treatment options for your patient and describe the evidence supporting your decision

## Pathogenesis of Hypertension

- Volume expansion from high sodium, low potassium diet
- Renal compensatory factors
- Genetic factors limiting sodium excretion
- Vascular factors increase peripheral resistance
- "Reset" normal pressure



## Ischemic Heart Disease



## Treatment Works

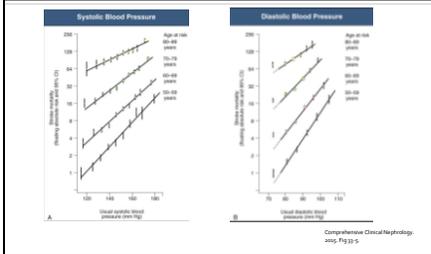
Meta-analysis: 68 RCTs; 245,885 pts; 4.3y FU

- SBP/DBP by 10/5 mm Hg for 5 years:

Complication	% Risk Reduction	NNT x 5 years
CVD Events	27%	40
Heart Failure	45%	81
Stroke	32%	58
MI	18%	160
Mortality	11%	125
Dementia	??	??

J Hypertension 2014; 32:2285

## Stroke Mortality



## HTN Treatment and Control

- NHANES – improved, yet disappointing:

	1980	2012
Aware	51%	83%
Treated	31%	77%
Controlled (<140/90)	10%	54%
- Blacks		41%
- Hispanics		34%

Circulation 2015; 131:e86  
JACC 2012; 60:599  
JAMA 2010; 303:2

## Effects of Treatment

- Reduction of events:
  - Stroke: 35-40%
  - Myocardial infarction: 20-25%
  - Heart failure: over 50%
- Treatment of 11 patients with Stage I hypertension over 10 years will prevent one death

Neal B, et al. Lancet. 2000;356:1955-64.  
Ogden LG, et al. Hypertension. 2000;35:539-43

## Diagnosis of Hypertension

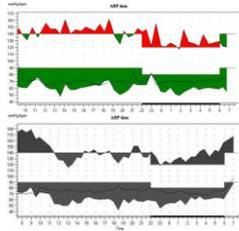
- 2015 USPSTF Guidelines
  - "Convincing evidence" that ambulatory monitoring is best method to diagnose HTN
  - Home monitoring is better than office monitoring
  - At minimum, confirm in office with 2 measurements/day at least a week apart

Population	Recommendation	Grade (Strength of Evidence)
Adults aged 18 years or older	The USPSTF recommends screening for high blood pressure in adults aged 18 years or older. The USPSTF recommends obtaining measurements outside of the clinic setting for diagnosis and confirmation before starting treatment (see the Clinical Considerations section).	A

Ann Intern Med 2015;163:778-86

## Ambulatory Blood Pressure Monitor

- Definitions:
  - HTN: > 135/85 mmHg
  - Normal: < 130/80 mmHg
  - Daytime: < 135/85 mmHg
  - Nighttime: < 120/70 mmHg
- Available by consult to nephrology or cardiology



## Treatment of Hypertension

- Lifestyle modifications
- Pharmacotherapy

## Initial Evaluation

- History and physical
- Chemistry panel
  - Sodium, potassium, bicarbonate
  - Creatinine
  - Glucose
  - +/- Uric acid
- Lipid panel
- Urinalysis +/- albumin/creatinine ratio
- Electrocardiogram

## Lifestyle Modification

Modification	Recommendation	Average Systolic BP Reduction Range Achieved with Interventions *
Weight reduction	Maintain normal body weight (BMI = 18.5-24.9 kg/m <sup>2</sup> )	5-20 mm Hg/10 kg
DASH eating plan	Adopt a diet rich in fruits, vegetables, and low-fat dairy products with reduced content of saturated and total fat	5-14 mm Hg
Dietary sodium reduction	Reduce dietary sodium intake to 100 mmol/day (2.4 g sodium or 6 g sodium chloride)	2-6 mm Hg
Regular physical activity	Regular aerobic physical activity (e.g., brisk walking) at least 30 minutes, most days of the week	4-9 mm Hg
Moderation of alcohol consumption	Men: limit to 2 drinks 1 per day, women and lighter-weight persons: limit to 1 drink per day	2-4 mm Hg

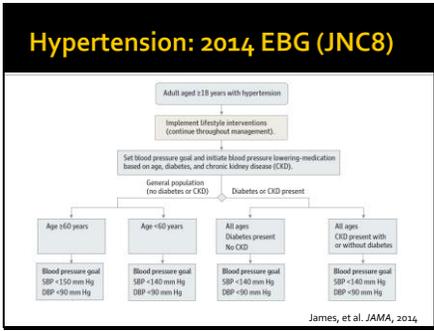
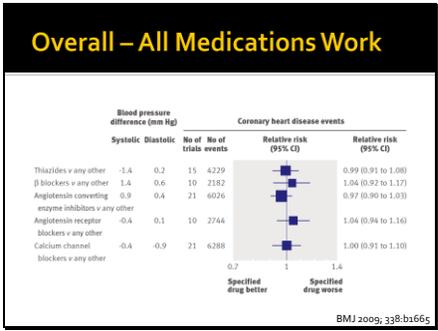
Comprehensive Clinical Nephrology, 2003, Table 25-1

## Clues to Possible Secondary HTN

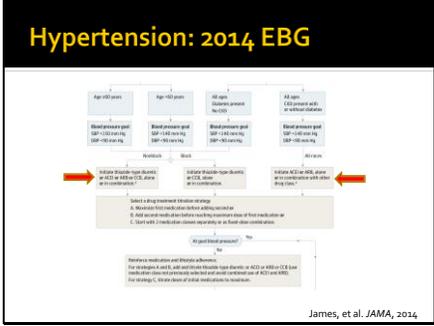
- Severe or resistant hypertension
- Acute rise in BP
- Age < 30 yrs
- Flushing
- Headaches
- Palpitations
- Weight changes
- Sleep disturbances
- Hypokalemia
- Hypercalcemia
- Abnormal creatinine, hematuria, proteinuria

## Medication Options

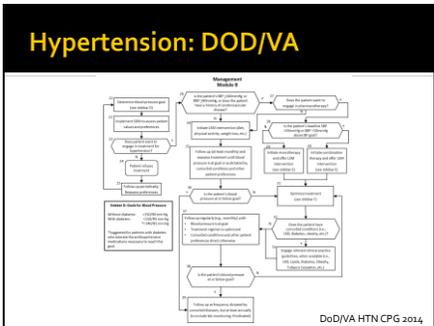
Diuretics	Adrenergic blocker	Vasodilators
<b>Thiazides</b> Chlorthalidone Indapamide Metolazone Hydrochlorothiazide	<b>Peripheral</b> <b>β<sub>1</sub>-blockers</b> Guanafendil Guanethidine Reserpine	<b>Direct</b> Hydralazine Minoxidil
<b>Loop</b> Bumetanide Furosemide Toremdide	<b>Central</b> <b>α<sub>1</sub>-agonists</b> Clonidine Guanabenz Guanfacine Metyldopa	<b>Calcium channel</b> <b>blockers</b> Amlodipine Felodipine Isradipine Nicardipine Nifedipine Nisidipine Diltiazem Verapamil
<b>Aldosterone</b> <b>blockers</b> Spironolactone Eplerenone	<b>α<sub>2</sub>-blockers</b> Doxazosin Prazosin Terazosin	<b>ARB</b> Candesartan Eprosartan Irbesartan Losartan Olmesartan Telmisartan Valsartan
<b>Potassium</b> <b>sparing</b> Amiloride Triamterene	<b>Combined</b> Carvedilol Labetalol Nebivolol	<b>Direct renin</b> <b>antagonists</b> Acikazen



- ### Treatment Summary
- While controversy abounds...ANY treatment reaching goal is critical
    - Consider thiazide, ACE-I, or CCB first line
    - Consider thiazide or CCB in black patients
    - Consider ACE in diabetic/CKD patients
  - Not recommended: beta-blockers, hydralazine, clonidine until 3 first line options exhausted



- ### Guideline Updates
- VA/DoD HTN CPG 2014
  - JNC-8 Panel. JAMA 2014; 311:507
  - JNC-8 Minority Panelists. Ann Int Med 2014; 160:449
  - AHA/ACC/CDC Advisory. J Am Coll Card 2014; 63(12):1230
  - Am Society of Hypertension. J Clin Hypertens 2014; 16:34
  - Canadian Hypertension Education Program. Can J Card 2014; 30:485
  - Joint British Societies 3. Heart 2014; 100 (Suppl 2):1
  - ESH/ESC. J Hypertens 2013; 31:1281
  - Japanese Society of Hypertension. Hypertension Res 2014; 37:253
  - KDIGO Blood Pressure Work Group. Kid Int 2012; Suppl 2
  - ADA. Diabetes Care 2015; 38 (Suppl 1):S49
  - Taiwan Hypertension Society. J Clin Med Assoc; on-line 12/26/2014



## Guideline Comparison

	2014 EBG	2014 DOD-VA CPG
<b>Starting treatment:</b>		
Age over 60, no DM	> 150/90 mmHg	> 160 mmHg (SBP)
Age 18 – 59, no DM	> 90 mmHg (DBP)	> 90 mmHg (DBP)
Age 18 +, with DM	> 140/90 mmHg	
<b>Goals on treatment:</b>		
Age over 60, no DM	< 150/90 mmHg	< 150 mmHg (SBP)
Age 18 – 59, no DM	< 140/90 mmHg	< 90 mmHg (DBP)
Age 18 +, with DM	< 140/90 mmHg	< 150/85 mmHg (strong) < 140/85 mmHg (weak)

- DoD-VA CPG recommends thiazide diuretic as first-line therapy

James, et al. *JAMA*, 2014  
DoD/VA HTN CPG 2014

## SPRINT

- RCT: 9361 patients with SBP > 130 mmHg and "elevated cardiovascular risk", age >50
  - Target BP < 120 mmHg versus <140 mmHg
  - Primary Outcome: MI, CVA, HF, death from CVD cause
  - 2.8 versus 1.8 drugs to reach goal
- Trial stopped early: less primary outcome in intensive arm
  - 1.65 %/year versus 2.19%/year

SPRINT. *NEJM*. Online 11/9/2015

## Hypertension Management

- Why the drastic change from past guidelines?
  - Framing of the clinical question
  - Literature search limitations
  - Trial data: SHEP, MRC, EWP, HYVET, STOP-HTN, ALLHAT, Syst-Eur
- **But WAIT!** SPRINT Trial – intensive versus standard BP control in patients >50!

## SPRINT – Medication Usage

Medication	Intensive Control (%)	Usual Control (%)
ACE-I/ARB	76.7	55.2
Diuretic	67	42.9
Calcium Channel Blocker	57.1	35.4
Beta Blocker	41.1	30.8
4+ medications	24.3	6.9

SPRINT. *NEJM*. Online 11/9/2015

## ACCORD-BP

- RCT: 4733 patients with SBP > 130 mmHg and diabetes mellitus type II; age >40 (55 no CAD)
  - With CAD, or 2+ risk factors
  - Target BP < 120 mmHg versus <140 mmHg
  - Primary Outcome: MI, CVA, death from CVD
  - 3.4 versus 2.1 drugs to reach goal
- **No significant difference** in primary outcome
  - 1.87 %/year versus 2.09%/year

Cushman. *NEJM*. 2010;362:1575-85

## SPRINT

- My thoughts:
  - Stopped early...maybe before harms of intensive treatment were clear
    - **More hypotension, electrolyte abnormality, renal failure, syncope**
  - Was heart failure effected by diuretic use?
  - 25% RR reduction, but small absolute risk reduction
  - Overall high risk group (ASCVD risk of 20%)

SPRINT. *NEJM*. Online 11/9/2015

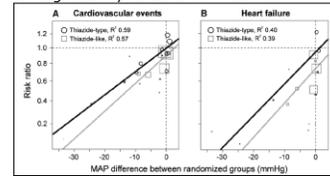
## HOPE-3

- RCT: 12,705 patients with at least one CAD risk factor; age > 55 (men), >65 (women)
  - Excluded patients with known CAD
  - Candesartan/HCTZ (16/12.5 mg) versus placebo
  - Primary Outcome: MI, CVA, death from CVD
- No significant difference in primary outcome
  - 4.1% versus 4.4% (p=0.40; CI 0.79-1.10)
- No benefit to addition of for empiric treatment in at-risk group

HOPE3. NEJM. Online 4/2/2016

## My Conclusion

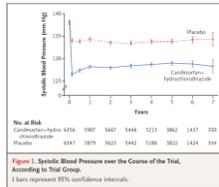
- Chlorthalidone (thiazide-type diuretic) effective at reducing CVD beyond BP reduction



Hypertension. 2015;65:1033-44

## HOPE-3

- Benefit seen in pre-specified subgroup: BP >143.5 mmHg
- Benefit seen from addition of rosuvastatin



HOPE3. NEJM. Online 4/2/2016

## Treatment Pearls (or thoughts)

- Consider ambulatory monitoring for diagnosis and treatment effect
- Diuretic (chlorthalidone) should be 1<sup>st</sup> or 2<sup>nd</sup> line.
- Treatment goals will remain controversial. Benefit is greatest at highest starting BP.
- EVERYONE should feel comfortable with medication titration (at every encounter)

## My Conclusions

- Intensive control (<120 mmHg) likely to benefit some moderate to high risk, older patients
- Benefit to intensive control small, **greatest benefit is to reduction less than 150 mmHg**
- Side effects and harms of intensive control will likely limit wide-spread adoption
- Remember the importance of appropriate diuretic use

## Thank You For Your Time!



**NMCS D Primary Care  
Symposium:  
Lung Cancer Screening**

Gilbert Seda, MD, PhD  
CDR MC USN  
Pulmonary & Critical Care Medicine  
Naval Medical Center San Diego  
May 13, 2016

**Prognosis is Poor in Advanced Stage Disease**

- The prognosis of advanced stage disease is poor, with less than 20% survival at 5-years for stage III & IV patients. J Thorac Oncology 2007;2:706.

**Disclosure**

I have no financial conflicts of interest related to this topic.

My thanks to CDR Davis who prepared all of these slides.

**Lung cancer is lethal**

- Lung Cancer is the world's leading cause of cancer-related death (18% of all cancer-related deaths) Global cancer statistics. Cancer J Clin. 2011;16(12):69
- Lung cancer **KILLS MORE PEOPLE** in the USA than prostate, colon, and breast cancer **COMBINED!!** US Cancer Statistics

**General Epidemiology**

- Cancer is the leading cause of death for people in the US under age 85.
- Lung cancer is the most common cancer in the world, with an estimated 1.6 million new cases diagnosed annually. Global cancer statistics. Cancer J Clin. 2011;16(12):69
- Lung cancer is the 3<sup>rd</sup> most common cancer in the United States, and an estimated 0.5 – 2.2% of the population born today will develop lung cancer.
  - American Cancer Society estimates 221,000 cases diagnosed in 2015. Ann Intern Med 2013;159:611.
- When caught early, treatment success is high (> 75% five year survival for stage IA NSCLC). Chest 2006;130:1211.
- A majority (75%) of patients present with advanced stage disease. Chest 2006;130:1211.

**Lung Cancer and Tobacco**

- 85-90% of all lung cancer is associated with tobacco exposure. Chest 2003;123(1 Suppl):21S.
- Tobacco use by a spouse increases risk by 30% in non-smokers. JAMA 1994;271(22):1702.

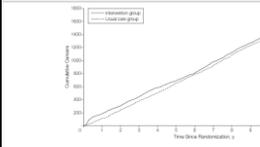


- The military has supported the tobacco industry for decades.
- Tobacco is associated with lung cancer.
- We smoke > than the general population.
- Incidence of lung cancer higher in MHS?




## PLCO

Figure 2. Lung Cancer Incidence by Year



**Comments:**

- Incidence of lung cancer similar in control & intervention groups.
  - Int: 60.6 for 6 years
  - UC: 60.8 for 6 years
- Smokers had higher incidence of cancer (rate per 100,000):
  - Never smokers: 3
  - Former smokers: 23
  - Current smokers: 83

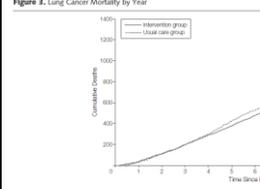
## Screening by CXR

- BLUF:**
  - 6 randomized controlled trials of using CXR to screen for lung cancer.
  - 1 non-randomized controlled trial
  - None of them demonstrated clear mortality benefit
- Mayo Lung Project
- PLCO Cancer Screening Trial  
*NZSA, 2011, 8/6/17, 1865-787?*



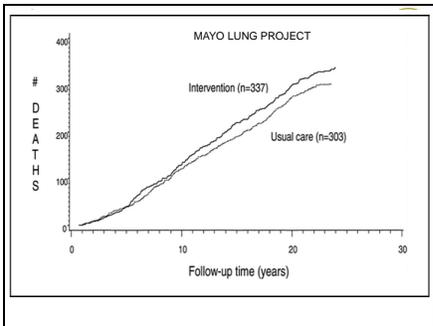
## PLCO

Figure 3. Lung Cancer Mortality by Year



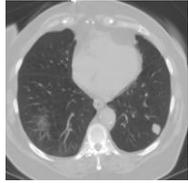
**Comments:**

- Despite a higher incidence of earlier stage cancers in the screening group, there was no mortality benefit to screening (either initially or during the follow-on period).
- Screening identified cancers only comprised 18% (of intervention group).
- No difference in mortality between the control and intervention group.



## Screening by CT Scan

- BLUF**
  - CT scanning has greater sensitivity (and specificity) for identification of lung cancer relative to CXR.
  - Up to 80% of patients diagnosed with lung cancer by CT have stage I disease.
  - Clin Imaging 2004;28:317-21
- Numerous trials exist, many randomized, most too small to demonstrate mortality benefit.
  - Garg et al. 2002: 193 patients
  - NELSON 2009: 15,622 patients
  - ITALIANO: 2009: 3,268 patients
  - DANTE: 2009: 2,472 patients
  - DLCSF: 2012: 4,104 patients.
- Largest & highest quality study did demonstrate a mortality benefit.
- National Lung Screening Trial (NLST)

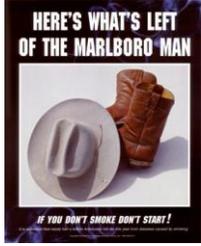




**Summary**

1. Lung Cancer Kills, and screening saves lives.
  - ✓ Breast Cancer: 1339
  - ✓ Colon Cancer: 812
  - ✓ Lung Cancer: **320**
2. Screen using USPSTF Guidelines with Low Dose CT Scan
  - Asymptomatic patients aged 55-80, and
  - Have ≥ 30 pack-year history of tobacco, and
  - Have smoked within the last 15 years
3. Get patients to STOP smoking!
4. Consider DECAMP
  - DECAMP-1: Nodule+ Smoker
  - DECAMP-2: Emphysema/COPD + Smoker

**Questions?**



HERE'S WHAT'S LEFT OF THE MARLBORO MAN

IF YOU DON'T SMOKE DON'T START!

DERMATOLOGIC PEARLS  
FOR PRIMARY CARE

LCDR CARRICK BURNS  
MAY 13, 2016

OBJECTIVES

- Learn practical and preventative medicine pertinent to dermatology
- Address fears and misconceptions when using topical steroids and systemic antifungals
- Learn to optimize dermatology referrals

DISCLOSURES

- I have no disclosures

OVERVIEW

- Sunscreen and sun protection
- Diagnosis and treatment of onychomycosis
- How to prescribe topical steroids
- Appropriate referral criteria

DISCLAIMER

- The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.

WHO NEEDS SUNSCREEN?

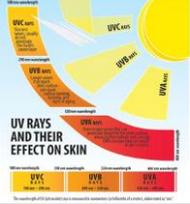
- Everyone! People of all skin types get skin cancer
- 3.5 million skin cancers will be diagnosed in 2 million Americans this year
  - Basal cell carcinoma outnumbers all other cancers in humans combined
- Most of these can be prevented with regular sun protection and sunscreen use



## WHAT SUNSCREEN SHOULD I USE?

## WHEN SHOULD I USE SUNSCREEN?

- ### WHAT SUNSCREEN SHOULD I USE?
- The American Academy of Dermatology recommends:
    - **Broad-spectrum protection (UVA and UVB)**
    - **Sun Protection Factor (SPF) 30 or greater**
      - Myths regarding SPF
    - **Water resistant**
      - 40 or 80 minutes

- ### WHEN SHOULD I USE SUNSCREEN?
- **Every day.** The sun emits harmful ultraviolet (UV) rays year round.
  - Even on cloudy days, up to 80% of the sun's harmful UV rays can reach your skin.
- 

- ### CHOOSING THE RIGHT SUNSCREEN ISN'T ENOUGH
- **Re-apply every 2 hours**
    - Every 1 hour if swimming or sweating a lot
  - **Wear protective clothing**
    - Long-sleeved shirt, pants
    - Wide-brimmed hat
    - Sunglasses (polarized and/or UV protected)
  - **Seek shade**
    - UVB is strongest between 10am and 2pm
  - **Use caution near water, snow, and sand**
    - Reflection can amplify UV exposure

## HOW MUCH SUNSCREEN SHOULD I USE?

### HOW MUCH SUNSCREEN SHOULD I USE?

- Approximately "one ounce, a shot glass" for the entire body
- titrate to body size and exposed skin
- Apply to dry skin 30 minutes BEFORE going outdoors
- Wait 8 minutes before putting on clothes
- Don't forget the lips



### ARE SUNSCREENS SAFE?

### WHAT'S THE DIFFERENCE BETWEEN UVA AND UVB RAYS?



### ARE SUNSCREENS SAFE?

- **Yes, sunscreen is safe to use.** No published studies show that sunscreen is toxic to humans or hazardous to human health. Scientific studies actually support using sunscreen.
- Research shows that wearing sunscreen can:
  - Prevent sunburn
  - Reduce your risk of skin cancer
  - Prevent premature aging
- Australian study showed decreased incidence of melanoma even 10 years after limited, controlled sunscreen in elderly patients

Green et al., J Clin Oncol. 2011

### UVA..UVB...WHAT'S THE DIFFERENCE?

- Sunlight contains ultraviolet A (UVA) rays and ultraviolet B (UVB) rays. Both can lead to skin cancer.
- In addition to causing skin cancer:
  - UVA rays prematurely age your skin, causing wrinkles and age spots. It can pass through window glass.
  - UVB rays cause sunburns and are blocked by window glass.
- The World Health Organization's International Agency of Research on Cancer has declared ultraviolet (UV) radiation from the sun and artificial sources, such as tanning beds and sun lamps, as a known carcinogen

### WHAT ABOUT SPRAY SUNSCREENS?

## SPRAY SUNSCREENS

- Generally not recommended
  - Inadequate amount applied
  - Risk of inhalation
- **Never spray sunscreen around or near the face or mouth.**
- Spraying adequate amounts into your hands and then applying can help avoid the fumes and ensure adequate coverage.
- When applying spray sunscreens on children, be aware of the direction of the wind to avoid inhalation.



## CAN I USE THE SUNSCREEN I BOUGHT LAST SUMMER?

## ARE SUNSCREENS SAFE FOR MY CHILD?

## THE OLD SUNSCREEN BOTTLE

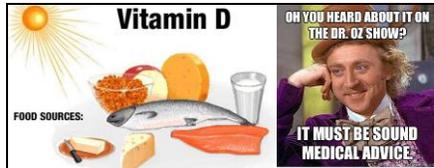
- Dermatologists recommend using sunscreen every day when you are outside, not just during the summer.
- **If you are using sunscreen every day and in the correct amount, a bottle should not last long.**
- The **FDA requires that all sunscreens retain their original strength for at least 3 years.**
  - Some sunscreens include an expiration date
  - If there is no expiration date, write the day you bought it on the bottle
  - You also can look for visible signs that the sunscreen may no longer be good. Any obvious changes in the color or consistency of the product mean it's time to purchase a new bottle.

## PEDIATRIC USE OF SUNSCREEN

- Sunscreen **can** be applied to **toddlers and infants 6 months or older** and should only be applied to exposed skin not covered by long sleeves, pants, wide-brimmed hats, and sunglasses.
- The best sun protection for **babies** is to keep them in the **shade** as much as possible in addition to wearing **long sleeves, pants, a wide-brimmed hat, and sunglasses.**
  - Make sure the baby does not get overheated and that they drink plenty of fluids.
  - If your baby is fussy, crying excessively, or has redness on any exposed skin they should be moved indoors.

- Dr. Oz says that sunscreen starves my body of Vitamin D...will using sunscreen limit the amount of vitamin D I get?

## Vitamin D

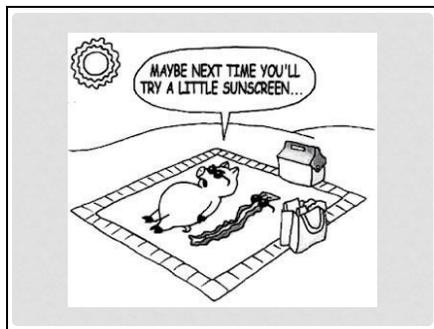


**FOOD SOURCES:**

- Using sunscreen may decrease your skin's production of vitamin D
- Only 5 minutes of unprotected mid-day sun is needed to convert 7-Dehydrocholesterol to Pre-Vitamin D3
- Many people can get the vitamin D they need from **foods and/or vitamin supplements**
- 1,000 - 2,000 IU per day of vitamin D3 (preferred over D2)

## ONYCHOMYCOSIS OBJECTIVES

- Decrease your fear of terbinafine
- Consider treating without lab confirmation
- Consider pulsed dose terbinafine
- Don't bother with topical antifungals for nail fungus



## DISCLAIMER

- Onychomycosis is a money pot for pharmaceuticals
  - Most published studies involving antifungal treatment (esp. onychomycosis) are funded by pharmaceuticals
- Published efficacy tends to drop over time with more independent research
  - Terbinafine 72% → 50%
  - Eflinaconazole 56% → 16%
- Don't trust older cost-analysis studies
  - The price of systemic antifungals has decreased significantly
    - Terbinafine generic since 2007
  - The price of diagnostic tests has increased
- Bottom line: don't trust everything you read, especially if more than a few years old



## ONYCHOMYCOSIS

EVIDENCE BASED AND COST CONSCIOUS MEDICINE

## ONYCHOMYCOSIS

- Accounts for 50-60% of all nail abnormalities
- 3% incidence in US population
- Risk factors:
  - Age
  - Swimming
  - Tinea pedis
  - Diabetes
  - Immunodeficiency
  - Pre-existing nail dystrophy (psoriasis most commonly)



### WHEN TO TREAT ONYCHOMYCOSIS

- Predominantly a cosmetic concern
- I generally don't bring it up
- Indications to treat:
  - Symptomatic (pain)
  - Immunocompromised patients
    - Higher risk of secondary bacterial infection
  - Patients at risk for lower extremity infection
    - Diabetic patients
    - Prior h/o cellulitis
    - Venous insufficiency

### FUNGUS MIMICKERS

- Atopic Dermatitis
  - H/o chronic eczema
  - Skin lesions elsewhere
- Allergic Contact Dermatitis
  - Erythema of digits



### NAIL DYSTROPHY: FUNGAL OR NOT?

- Many things other than fungus can cause thickened, yellow nails
  - 5-35% of nail dystrophy is not fungal in origin
- Associations with onychomycosis
  - History: Sweaty, diabetics who only wear 1 pair of sneakers
  - Tinea pedis (Moccasin, scaling between 4<sup>th</sup>-5<sup>th</sup> toes)



### WHAT'S THE BEST WAY TO DIAGNOSE ONYCHOMYCOSIS?

### FUNGUS MIMICKERS

- Nail psoriasis
  - Large pits
  - Oil spots
  - Nail separation
  - Other skin lesions
- Lichen planus
  - Often all 20 nails
  - Oral, skin lesions
  - Scarring of nail fold

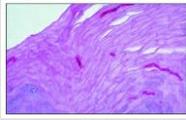


### BEST WAY TO DIAGNOSE?

- Clinically!

## ONYCHOMYCOSIS CONFIRMATION

- KOH of subungual debris
  - **\$6 + time**
- Nail clipping to pathology
  - **\$148**
  - Easiest
- Nail clipping for fungal culture
  - **\$152**
  - Longest for result



Mikhailov et al., JAMA Dermatol. 2016

www.medscape.com

## CONFIRMATION OF DIAGNOSIS

- Decision (statistical) analysis using existing prevalence, cost, diagnostic certainty, and incidence of harm
- Study looked costs of:
  - Diagnosis and treatment
  - Avoidance of harm with terbinafine treatment

Original Investigation

### Cost-effectiveness of Confirmatory Testing Before Treatment of Onychomycosis

Avner Mikhailov, MD, Jeffrey Cohen, MD, Cara Joyce, PhD, Arash Mostafaei, MD, MPH  
JAMA Dermatol. 2016

## DO I REALLY NEED TO CONFIRM THE INFECTION?

## COST OF TREATMENT

Table 1. Costs of Onychomycosis Treatment and Testing

Characteristic	Total Cost, \$
Efinacozole, 10%, cost for full treatment of 1 nail	2307*
Terbinafine, 250-mg, full treatment course	10*
Aspartate aminotransferase	21†
Alanine aminotransferase	22†
KOH stain preparation in office	6 <sup>‡</sup>
PAS test	148*

Original Investigation

### Cost-effectiveness of Confirmatory Testing Before Treatment of Onychomycosis

Avner Mikhailov, MD, Jeffrey Cohen, MD, Cara Joyce, PhD, Arash Mostafaei, MD, MPH  
JAMA Dermatol. 2016

## CONFIRMATION OF DIAGNOSIS

- **Controversial**
- Choosing Wisely campaign recommends confirmation of fungal infection prior to systemic treatment
- However this is based on 1999 safety and price data



## COST OF TESTING

- You must spend **\$364 + time** in KOH testing to prevent treating 1 patient who doesn't have onychomycosis
- **\$751** for PAS nail clippings

Table 2. Additional per Patient Testing Cost to Avoid 1 Inappropriate Treatment Compared With Immediate Treatment

Prevalence, %	Terbinafine	Efinacozole, 10%
KOH screening		
30	192	-2092
60	264	-3095
75	364	-3899
90	764	-2116
Direct PAS testing		
30	238	-2123
60	452	-2178
75	751	-2194
90	1049	-2559

Mikhailov et al., JAMA Dermatol. 2016

**“DOC, I HEARD TERBINAFINE  
WILL DESTROY MY LIVER”**

FEAR IS REAL AMONGST PATIENTS AND PROVIDERS

**PULSED DOSE TERBINAFINE**

- Based upon:
  - Terbinafine has high bioavailability and longevity in the nails
  - Fear of liver failure
- Some authors and dermatologists recommend
  - Terbinafine 500mg daily x 1 week every month x 3 months
- Pooled meta-analysis of 8 prospective pulsed vs. continuous treatment arms
  - Continuous treatment has 13% higher mycological cure rate
  - **No difference in clinical cure rate**

Gupta et al., J Eur Acad Dermatol Venereol. 2013

**ANTIFUNGAL HEPATIC INJURY**

- Clinically apparent hepatic injury incidence of 1 in 50,000-120,000 terbinafine treatments
- Almost all resolved after stopping terbinafine
- 27 reports of Acute liver failure
  - 51% mortality
- 2 cases of liver transplantation
  - First occurred after 5 days of terbinafine
    - Published in NEJM in 1999—ground zero of terbinafine fear!
  - Second occurred after 3 months of terbinafine
  - Neither pulsed therapy nor LET's after 1 month of treatment would have changed the outcome

Kaschi et al., World J Hepatol. 2014

**IS THE FUNGUS CURED?**

- Mycologic cure
  - negative KOH and fungal culture
- Complete cure
  - No clinical involvement + mycologic cure

THAT DEPENDS ON WHAT...  
THE DEFINITION OF IS IS

**COST TO PREVENT HEPATIC INJURY**

- In order to prevent injury in a falsely-positive patient
  - \$18.2 to 43.7 million in KOH preps
  - \$37.6 to 90.2 million in PAS nail clippings

Mikhailov et al., JAMA Dermatol. 2016

TACKLE IT  
**JUBLIA**  
(efinaconazole)  
Topical Solution 10%

**DOC, WHAT ABOUT THAT  
TOPICAL DRUG?**

## TOPICAL ONYCHOMYCOSIS TREATMENT

- There is essentially no role for topical treatment despite what the pharmaceuticals say
- Efficacy for complete cure
  - Cicloporix 5.5-8.5%
  - Tavaborole 6.5-9.2%
    - When only 20-60% of nail infected
  - Efinaconazole 15-18% (vehicle 3-6%)
    - When only 20-50% of nail infected
  - Vicks VapoRub 22%
    - Single small study

Gupta et al., JAAD 2000   Elewski et al., JAAD 2013   Elewski et al., JAAD 2015

## TOPICAL STEROIDS

## RELATIVE COSTS OF TREATMENT

- Jublia
  - \$645 for 4ml bottle with 80 drops
    - 1 drop per day per nail
    - 48 week course
    - 4 bottles needed to treat 1 nail
  - **\$2,580 per course to treat 1 nail**
  - Number needed to treat = 6.25
    - **\$16,125 to completely cure 1 partially infected nail**
- Tavaborole
  - Same price as Jublia but with lower efficacy!
  - \$2,580 per course per nail
- Terbinafine
  - \$10 per course to treat all nails

## TOPICAL STEROIDS

- Don't be steroid shy, but don't go crazy
- Ointments are better
  - Less well tolerated
- Creams are more sensitizing and burn when applied to fissured skin

## REVIEW OF ONYCHOMYCOSIS

- It's not always nail fungus
- Consider treating without confirmed diagnosis
- Don't be afraid of terbinafine
- Consider pulsed dose terbinafine
  - 500mg po daily x 1 week each month x 3 months
- Don't bother with topical antifungals for onychomycosis

## STEROID STRATEGY

- Severe eczematous dermatitis
  - Start with short course of strong steroids
    - Lidex 0.05% ointment
    - Triamcinolone 0.1% ointment
  - Use BID Monday to Friday, not weekends
  - Do not use on face, axilla, groin
  - Limit the quantity to 15-30 gram tubes without refills

### STEROID STRATEGY

- Facial dermatitis or intertriginous skin
- Use Class 4 or 7 ointments/creams for a good period of time
  - Desonide 0.05% cream
  - Hydrocortisone 1.0 or 2.5% cream/ointment
- You should still watch for signs of steroid complications

### PERIORAL DERMATITIS FROM TOPICAL STEROIDS



### CUTANEOUS SIDE EFFECTS

- Atrophy, striae, wrinkling
- Erythema, burning, stinging
- Pigment alteration
- Telangiectases
- Acne, folliculitis
- Perioral dermatitis

### REFERRAL OPTIMIZATION

### STEROID OVERUSE



## LOGISTICS OF DERM REFERRALS

- Every referral is evaluated by a staff dermatologist
- Services vary depending on command
- Wait time is typically 2-3 weeks for initial referrals at Balboa
- Dermatology is a consultation service
  - We help with diagnosis and formulating a treatment plan
  - Complicated patients are managed by derm but most are followed by PCM
  - Once conditions are appropriately managed, care is transferred back to PCM
- Unfortunately referring provider doesn't automatically get feedback on referral



## REASONS FOR CONSULT REJECTION

- Referral for recurrent condition that can't be cured
  - Most skin disease can't be cured
  - Seborrheic dermatitis, linea versicolor, rosacea, eczema, etc.
  - If the first treatment worked—keep it going!
- Pseudofolliculitis Barbae
  - **The only reason to refer is if the patient has failed phases I-III and wants laser hair reduction**
    - Do not refer someone without a permanent no-shave chit! (phase III)
    - Patients can not be forced to have Laser hair reduction
  - PCM signs and routes permanent no-shave chit to CO
    - Permanent no-shave chits last on entire career and do not have to be repeated at the next command

## WHAT IS HELPFUL IN A CONSULT?

- Simple and straightforward
  - Red umbilicated papule on the arm
  - Not: 3mm wide, 2mm tall papule that is firm and well-circumscribed with a central depression...
- Write what you are thinking
  - "Concerned for melanoma" usually gets the patient walked in quickly
- Ask a clinical question if applicable
  - "Is this rash related to their diabetes?"
- Include a good phone number!

## REASONS FOR CONSULT REJECTION

- Tattoo removal
  - Few derm clinics have tattoo lasers—devices are much better out in town
  - If patient instructed by CO to remove tattoo, they will likely have to pay for it out-of-pocket in the community
- Hair removal
  - Only refer for medical reasons (PFB or hirsutism secondary to PCOS, CAH, or other endocrine issue)
- Male pattern baldness
  - Not a medical problem
  - Propecia and minoxidil are not on the formulary

## REASONS FOR CONSULT REJECTION

- Removal of skin tags or seborrheic keratoses
  - Not medically necessary
  - If they want it done, there is a ~\$200 cosmetic fee
  - Patients often abuse access to care for these lesions
- Referred without any treatment attempts
  - Most commonly atopic dermatitis, acne, or fungal infections
  - Do not initiate treatment at the same time as referral
  - **Have confidence in your abilities**—most dermatologic conditions are effectively treated by primary care!
    - If any questions on how to treat, talk with colleagues, medical officer, or call derm call phone

## REASONS FOR CONSULT REJECTION

- Acne
  - All acne treatment takes 2-6 months to take effect
  - **Do not start treatment the same day you refer!**
  - Have reasonable expectations: 75% improvement is a treatment success. Clearance rarely possible
  - **Refer early for cystic and scarring acne**
    - Start women on birth control



## OBJECTIVES

- Learn practical and preventative medicine pertinent to dermatology
- Address fears and misconceptions when using topical steroids and systemic antifungals
- Learn to optimize dermatology referrals

## OVERVIEW

- Sunscreen and sun protection
- Diagnosis and treatment of onychomycosis
- How to prescribe topical steroids
- Appropriate referral criteria

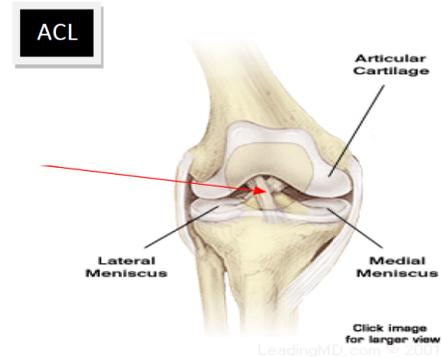
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## ACUTE ANTERIOR CRUCIATE LIGAMENT (ACL) TEAR

The anterior cruciate ligament is one of two ligaments inside the knee joint. The ACL prevents the tibia from sliding too far forward underneath the femur. It also helps prevent hyperextending and over-rotation of the femur on the tibia. An ACL injury usually occurs when the knee is sharply twisted or extended beyond its normal range of motion. The three grades of ACL injury range from mild to severe (Grade I-III).



### ◆ Signs and Symptoms of this Condition

- Y Pop or tear heard at the time of the injury (usually while cutting, jumping, or twisting)
- Y Large knee swelling (water on the knee) within hours after the injury
- Y Instability or giving way of the knee when pivoting or changing directions

### ◆ Causes

Sports and activities involving a lot of planting of the foot and cutting/quickly changing directions of running are commonly associated with ACL injuries. Soccer, basketball, skiing, and football are examples of sports in which a high number of ACL injuries occur. These sports require movements that cause the femur to pivot on the tibia. The ACL is also very susceptible to injury in contact sports.

### ◆ What Can I do to Prevent an ACL Tear?

- Y Maintain good hamstring and quadriceps strength
- Y Perform sport-specific neuromuscular training (balancing on one leg with eyes closed or while tossing ball at wall, single leg hopping in different directions [like hop-scotch])

### ◆ Prognosis

#### *Is surgery always needed for an ACL tear?*

Surgery is not required for all ACL injuries. Partial tears, in which a physical examination shows a relatively stable knee, may be treated with bracing and rehabilitation. Even some patients with complete ACL tears do not need reconstruction. These "copers" are typically older patients with lower physical activity, who do not participate in pivoting and cutting activities.

#### *Why should the ACL be reconstructed?*

One reason to reconstruct the ACL is to provide knee stability that allows for return to activities and sports. Another reason is to provide knee stability in order to prevent more injury, such as a meniscal tear, which may eventually lead to degenerative joint disease.

## ◆ Treatment

### Y Initial Treatment

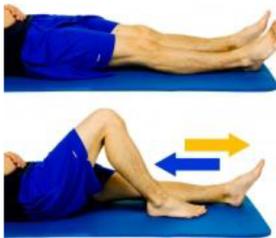
- **RICE** – Rest (crutches and staying off the extremity), Ice, Compression (with elastic bandage, and Elevation

Y Anti-inflammatory medication (aspirin, ibuprofen, etc) may be helpful in reducing both pain and inflammation

Y Rehabilitation involves eliminating the swelling, regaining full knee range of motion, regaining muscle strength (especially the hamstrings), regaining neuromuscular control of the knee through proprioceptive training exercises (exercises involving balancing on the injured extremity while providing different challenges to balance)



**Quad Set:** with a towel under your ankle, tighten up your quad and push your knee straight towards the floor. This will help regain full extension, strengthen the quad, and also help with swelling. Do 10 reps for a 5 second hold x 2 sets; three times a day.



**Heels Slides:** This exercise will help regain knee flexion and will also help reduce swelling within the knee. Start with the leg straight and slowly bend the knee until you feel a stretch or slight increase in pain. Hold the end range stretch for 10 seconds. Perform 10 reps x 2 sets; 3 times a day. You may also use a belt to assist with motion but do not be aggressive with the stretch.



**Straight Leg Raise-ABDUCTION:** This exercise will help maintain the strength of the outer hip. Outer hip strength is important for knee stabilization. Make sure your leg is in line with the rest of your body. Lift your leg up, hold for 3 seconds and slowly release to starting position. Repeat 10 times x 2 sets; 3 times a day.

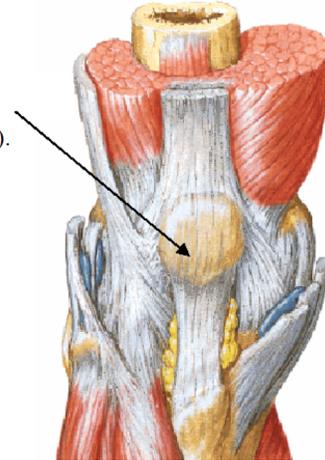


**Straight Leg Raise-Supine:** This exercise will help maintain the strength of your leg while your injury is healing. Lift your leg up to the height of your bent knee (non-involved), hold for 3 seconds and slowly release to starting position. Repeat 10 times x 2 sets; 3 times a day.

## PATELLOFEMORAL PAIN SYNDROME (KNEECAP PAIN – “RUNNER’S KNEE”)

### ◆ What is it?

- ◆ Patellofemoral pain syndrome (PFPS) is pain that occurs behind the patella (knee cap) and/or the soft tissue surrounding it. It occurs with overuse, excessive pressure on the patella (kneecap), or when the patella does not correctly track in the groove on the femur (thigh bone).



### ◆ Signs and Symptoms of this Condition

- Pain under, around, or on sides of patella
- Pain and stiffness under the patella after prolonged sitting. Pain with running, climbing stairs, deep knee bending, or squats
- Grating, grinding, cracking, popping, feeling under the patella with knee motion.

### ◆ Causes

- **Overuse** – too much, too often... running, high impact activities, excessive stairs.
- **Prolonged Pressure** – prolonged sitting with bent knees
- **Muscle Imbalance** – decreased flexibility and muscles weakness
- **Improper Footwear** – right shoe type for your arch and replacing shoes every 6 months

### ◆ What can I do to prevent this condition?

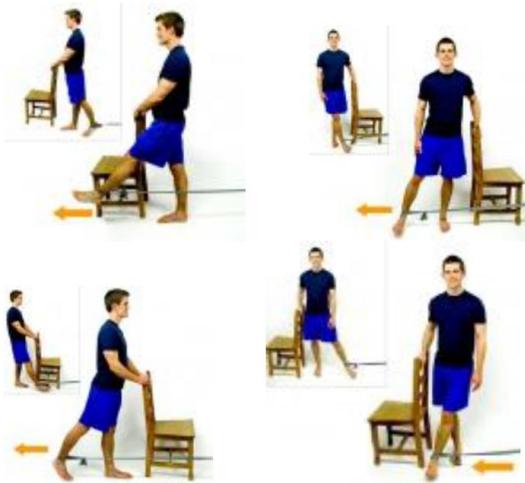
- Allow time for adequate rest and recovery between exercise sessions
- Ensure your exercise program includes strength, flexibility and cardio.
- Avoid the following activities: prolong sitting, deep squats, high impact
- Shoe Wear: replace your shoes often and get fitted for the right shoe

### ◆ Prognosis

Acute patellofemoral pain will normally resolve in 6-8 weeks given sufficient rest from aggravating activities and if a patient is compliant w/ home exercises. NSAIDs may assist during the initial stages of this condition. More chronic conditions may take 8-16 weeks to rehab due to muscles imbalances and the need for improved flexibility and strength in the lower extremities and core (abs, back and hip musculature).

### ◆ Treatment

- Replace your running shoe if older than 6 months
- Avoid deep squats and activities that reproduce symptoms.
- Start performing the exercises below and ensure good compliance to receive maximal benefits
- You may use an ice pack x 15-20 minutes to assist with pain and inflammation
- Your health care provider may prescribe Non-Steroidal Anti-Inflammatory Drugs (NSAIDS)



### STEAMBOATS

Loop two ends of theraband together and knot them. Place knot under door and slide loop end through to other side. Shut the door securing the theraband. Stand on the involved leg. Place theraband loop around non-involved leg.

With motion coming from hip (KNEE REMAINS STRAIGHT) quickly pulse the leg back and forth. Complete each direction for 30 seconds. You should feel that the stance leg gets fatigued more so than the moving leg. Try to progress in increments of 10 seconds up to 1 minute in each direction.

Complete all 4 directions 1x/day.



### WALL SQUATS/MINI SQUATS

Stand with your back against the wall or door (smooth surface) Walk feet in front of you approximately 12 inches and shoulder width apart.

Slide down the wall until you reach the onset of your pain or your knees are at 90 deg (buttock should not go lower than knees). Hold for 5-10 seconds then push back up the wall. Make sure knees do not go beyond your toes. Knees should also track through your second toe. Do not let the knees collapse inward.

Complete 3 sets of 10 repetitions 1x/day



### CLAMSHELLS WITH BAND

While lying on your side with your knees bent, place a band 2 inches above your knees. Slowly externally rotate your hip or open up your knees like a clam (picture showing end position of exercise). Slowly lower your upper leg to return to the closed position. Perform 15 reps x 3 sets; three times a week.

\*\*This exercise helps with stabilizing the hip in a single leg position.



### HAMSTRING STRETCH – QUAD STRETCH

For hamstring stretch, make sure you uninvolved leg is completely flat on the ground. Use a belt or towel to lift your other leg into the air until you feel a stretch. Hold each stretch for 30 sec and repeat 3 times; twice a day.

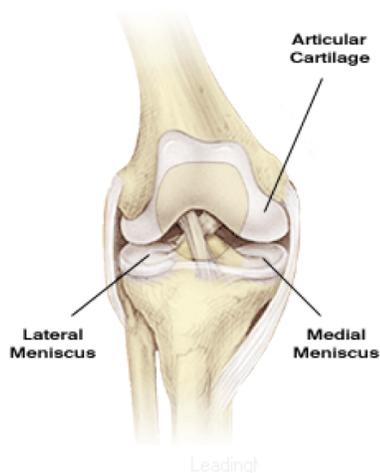
Quadricep Stretch: Pull your leg back to your buttocks. Make sure you leg is in line with your body. For an extra stretch, squeeze your buttock and push your hip forward. Hold 30 seconds x 3 reps; twice a day.

## ACUTE MENISCUS TEAR

### ◆ What is it?

The meniscus is a C-shaped cartilage structure in the knee that sits on top of the leg bone (tibia). Each knee has two menisci, an inner (medial) and outer (lateral) meniscus. The meniscus serves to help distribute the forces between the two bones over a greater area (rather than point to point), helps supply nutrition to the cartilage that lines the bones (articular cartilage), and helps stabilize the knee.

Meniscus tears are very common, occurring in up to one third of all sports injuries. The inner (medial) meniscus is injured most often.



### ◆ Signs and Symptoms of this Condition

- Y Feeling or sound of pop at the time of injury, medial joint line tenderness
- Y Pain with standing, squatting > 90 degrees and twisting of involved leg
- Y Swelling of the affected knee, usually starting 1 to 2 days after the injury
- Y Locking or catching of the knee joint, causing an inability to straighten the knee

### ◆ Causes

- Y Direct blow to the knee, twisting, pivoting, or cutting, kneeling or squatting
- Y Without injury, degenerative tears can occur due to aging.

### ◆ What Can I do to Prevent a Meniscus Tear?

- Y Perform sport-specific neuromuscular training (balancing on one leg with eyes closed or while tossing ball at wall, single leg hopping in different directions [like hop-scotch]).
- Y Attempt to minimize risk of "Causes" listed above.

### ◆ Prognosis

Some meniscal injuries (small peripheral tears) can heal over an 8 week period of rest and reduced weightbearing on the injured limb. Tears that extend into the inner portion of the meniscus do not heal and may require surgery. Healing and recovery time depend upon the type of surgery. Partial meniscectomy (cutting out just the torn piece) allows much quicker recovery. Meniscal repair surgery requires extended protection, precautions and rehab.

## ◆ Treatment

### Y Initial Treatment

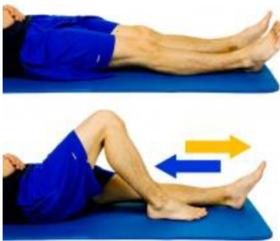
- **RICE** – Rest (crutches and staying off the extremity), Ice, Compression (with elastic bandage) and Elevation

Y Anti-inflammatory medication (aspirin, ibuprofen, etc) may be helpful in reducing both pain and inflammation.

Y Rehabilitation involves eliminating the swelling, regaining full knee range of motion, regaining muscle strength, regaining neuromuscular control of the knee.



**Quad Set:** with a towel under your ankle, tighten up your quad and push your knee straight towards the floor. This will help regain full extension, strengthen the quad, and also help with swelling. Do 10 reps for a 5 second hold x 2 sets; three times a day.



**Heels Slides:** (DO NOT GO PAST 90 DEGREES) This exercise will help regain knee flexion and will also help reduce swelling within the knee. Start with the leg straight and slowly bend the knee until you feel a stretch or slight increase in pain. Hold the end range stretch for 10 seconds. Perform 10 reps x 2 sets; 3 times a day. You may also use a belt to assist with motion but do not be aggressive with the stretch.



**Straight Leg Raise-ABDUCTION:** This exercise will help maintain the strength of the outer hip. Outer hip strength is important for knee stabilization. Make sure your leg is in line with the rest of your body. Lift your leg up, hold for 3 seconds and slowly release to starting position. Repeat 10 times x 2 sets; 3 times a day.

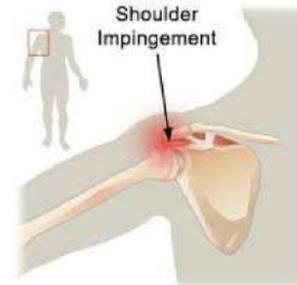


**Straight Leg Raise-Supine:** This exercise will help maintain the strength of your leg while your injury is healing. Lift your leg up to the height of your bent knee (non-involved), hold for 3 seconds and slowly release to starting position. Repeat 10 times x 2 sets; 3 times a day.

## SHOULDER IMPINGEMENT SYNDROME

- **What is it?**

Impingement syndrome is characterized by pain in the shoulder due to inflammation of the tendons of the rotator cuff or the bursa (subacromial bursa) that sits between the rotator cuff and the roof of the shoulder (acromion). The rotator cuff consists of four muscles that surround the ball of the shoulder (humeral head). The subacromial bursa sits over the top of the cuff, and functions to reduce friction between the tendons and the bone of the acromion. Normally the humeral head gets closer to the acromion when the shoulder is moved upwards overhead. The subacromial space (space between the humerus and acromion containing the rotator cuff tendons and bursa) decreases significantly when the arm is elevated to between 90- 120 degrees (to shoulder level and above). When the rotator cuff becomes inflamed because of injury or overuse, or when the bursa becomes inflamed, then both the swollen tendon and swollen bursa may become pinched between the humeral head and the acromion, resulting in pain.



- **Signs and Symptoms of this Condition**

- > Pain in the shoulder that often refers out into the deltoid muscle/upper arm.
- > Pain that is worse with reaching overhead or lifting.
- > Pain in the shoulder when sleeping on the side of the painful shoulder.
- > Tenderness over the shoulder just off the edge of the acromion bone.
- > Loss of strength.
- > Limited motion of the shoulder, especially reaching or across your body.
- > Crepitus (crackling, popping, grinding sound and feeling) when moving the arm.

- **Causes**

- > Repetitive overhead motions (overhead weight lifting activities such as military press, lat pull-downs, lateral raises, etc. also activities such as over head painting, lifting, and other types of overhead work).
- > Strain from sudden increase in amount or intensity of activity.
- > Direct blow or injury to the shoulder from falling on an outstretched arm.
- > Aging, degeneration of the tendon with normal use.
- > Acromial or AC joint bone spurs.

- **What Can I do to Prevent Shoulder Impingement?**

- > Appropriately warm up and stretch before practice or competition.
- > Allow time for adequate rest and recovery between practices and competition.
- > Avoid overhead weightlifting (military press, lat pulldowns, overhead tricep strengthening, etc.)
- > Avoid repetitive overhead work/lifting.
- > Maintain appropriate conditioning:
  - Cardiovascular fitness
  - Shoulder flexibility
  - Muscle strength and endurance
- > Use proper technique when lifting weights.

## □ Prognosis

> This depends upon how long it has been going on

- Acute cases identified and treated appropriately (described below) can resolve in 6-8 weeks.
- Chronic cases that have been allowed to continue for months or years in an attempt to “work through” the pain can take many months (6-8 months or more) to resolve and may require more invasive measures to resolve the symptoms such as steroid injection or surgery.

## □ Treatment

- > Rest – avoid overhead motions or any motion that is painful; avoid weightlifting, pushups or pull-ups.
- > Ice over the shoulder 15-20 minutes 1-2 times per day.
- > Anti-inflammatory medication (aspirin, ibuprofen, etc) may be helpful in reducing both pain and inflammation.
- > Rotator cuff exercises and scapular (shoulder blade) muscle exercises and stretches. **See Below**



### INTERNAL ROTATION STRETCH

With good posture (shoulders back); place a towel behind your back. Your involved arm should be the lower arm holding onto the towel. Gently pull the towel up until you feel a slight stretch in the shoulder of the bottom arm. Hold for 15 seconds. Repeat 3-5 times. Do 2-3 times a day until your flexibility improves and it is more symmetric to your other shoulder.



### ELASTIC BAND EXTERNAL ROTATION

While holding an elastic band at your side with your elbow bent, start with your hand near your stomach and then pull the band away. Keep your elbow at your side the entire time. Complete 15 reps x 3 sets; three times a week.



### SCAPULAR STABILIZATION

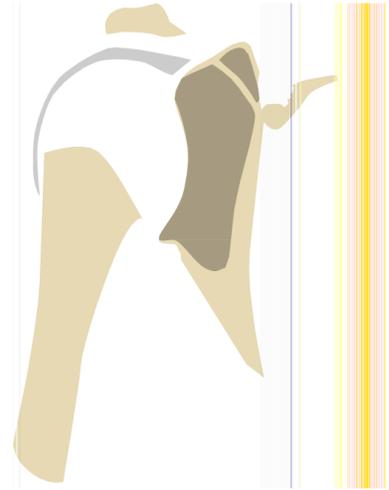
With good posture, grab a band that is tied or looped around a pole in front of you. With your arms straight, slowly pull your arms back until they are slightly behind the plane of your body. At the end range of motion, you will also pinch your shoulder blades together. Perform this motion for the I's, T and Y's. If it hurts to perform the Y's (overhead), just do the I and T's until your pain decreases. Perform 15 reps x 3 sets; three times a week.

## ACUTE ROTATOR CUFF TEAR

### ◆ What is it?

The rotator cuff tendons are key to the healthy functioning of the shoulder. They are subject to a lot of wear and tear, or degeneration, as we use our arms. A torn rotator cuff creates a very weak shoulder. Most of the time patients with torn rotator cuffs are in late middle age, although rotator cuff tears can happen at any age.

Tearing of the rotator cuff tendons results in weakness in turning the arm outward (external rotation) and upward to the side (abduction). Often times, individuals with torn rotator cuff tendons have to “hike” or shrug the entire shoulder upwards to raise their arm overhead. This may or may not be painful depending upon how acute or chronic the condition is.



### ◆ Signs and Symptoms of this Condition

- Y Pain in the shoulder that often refers out into the deltoid muscle/upper arm.
- Y Pain that is worse with reaching overhead or lifting; sometimes pain at night
- Y Significant loss of strength, especially in turning the arm outward (external rotation) and raising the arm up to the side (abduction).

### ◆ Causes

- Y Strain from sudden force of trying to catch a heavy falling object or lifting an extremely heavy object with the arm extended.
- Y Direct injury to the shoulder from falling on an outstretched arm.
- Y Aging, degeneration of the tendon with normal use.

### ◆ What Can I do to Prevent a Rotator Cuff Tear?

- Y Appropriately warm up and stretch before practice or competition.
- Y Allow time for adequate rest and recovery between practices and competition.
- Y Avoid repetitive overhead work/lifting.
- Y Perform routine rotator cuff strengthening exercises as a preventive measure.

### ◆ Prognosis

- Y Prognosis depends upon the size of the tear and the treatment approach. Some may require surgery, while others may not need repaired at all.

## ◆ Treatment

- Y Rest – avoid overhead motions or any motion that is painful; avoid weightlifting, push-ups or pull-ups.
- Y Ice over the shoulder 15-20 minutes 1-2 times per day.
- Y Anti-inflammatory medication (aspirin, ibuprofen, etc) may be helpful in reducing both pain and inflammation.
- Y If surgery is required, you will undergo a supervised rehabilitation program you're your physical therapist.
- Y If surgery is not recommended by an orthopedic surgeon, you should undergo rehabilitation to maximize your shoulder function.



Pendulums: Can be used to control pain and as a warm-up prior to exercises. Perform small circles in a clockwise, then counter clockwise position for 30 seconds. Do not use weight or perform large circles. Do as many times as needed for pain.



Wand Therex for Flexion: Use your non-involved shoulder to move your injured shoulder through full range of motion or until you start to have an increase in pain or feel an increase in stretch. Hold 10 seconds and repeat 10 times. Do 2-3 times a day.



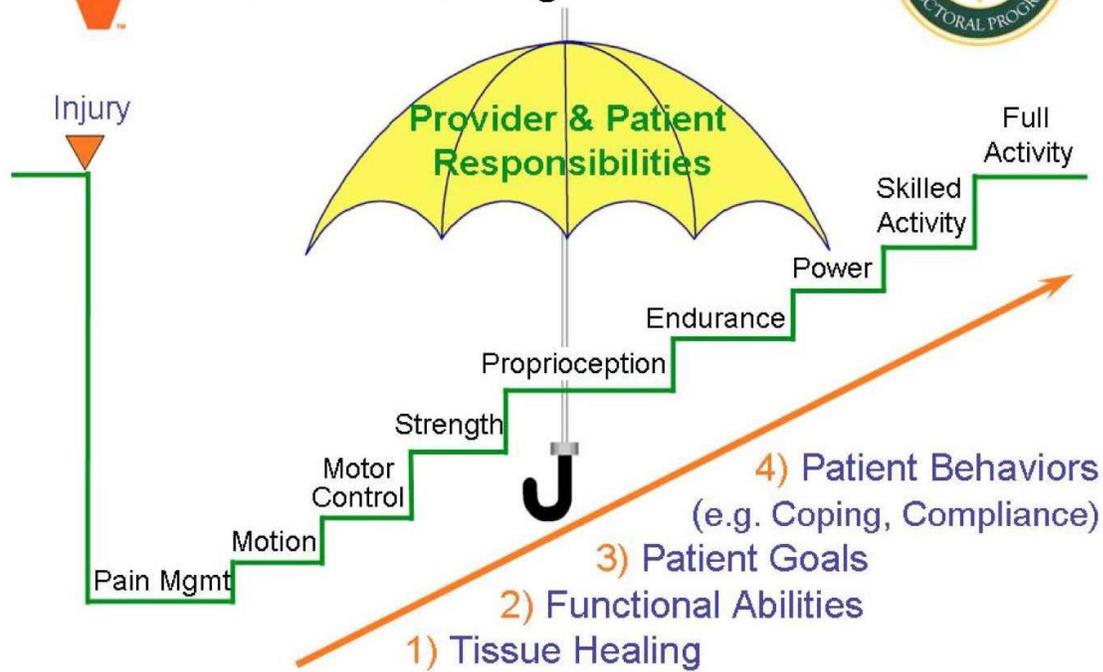
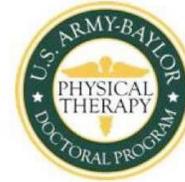
Wand Therex for ABDuction: Use your non-involved shoulder to move your injured shoulder through full range of motion or until you start to have an increase in pain or feel an increase in stretch. Hold 10 seconds and repeat 10 times. Do 2-3 times a day.



Shoulder Isometrics: Gently press your hand into a wall using your other hand. Place a towel roll between hand and wall, do not drop while performing exercise. Maintain a bent elbow the entire time. Perform in each direction shown. Do 10 reps x 2 sets 2-3 times a day, as tolerated.



# UVA-Baylor University Intervention Progression Model



## THEREX GUIDELINES

	INFLAMMATORY	FIBROBLASTIC	REMODELING
TISSUE RESPONSE	Inflammation (↑ pain, redness, swelling, temp) ↑ Inflammatory cells	↑ Granulation tissue ↑ Collagen synthesis ↓ Inflammatory cells	Collagen fibers thicken ↑ Tissue response
PAIN ONSET	BEFORE resistance	WITH resistance	AFTER resistance
POST-OP PHASES	MAX Protection	MOD Protection	MIN Protection
REHAB PHASES	Protection	Controlled Motion	Return to Function
REHAB GOALS	Control inflammation Promote early healing Prevent immob effects	Promote mobile scar ↑ Painfree motion Begin early strengthening	Increase scar alignment ↑ Strength and endurance Progress to full function
REHAB GUIDELINES	Pain Management Mobility - ROM progression Isometrics/mm setting	Pain Management Mobility - ROM progression - GENTLE stretching Strengthening - Dynamic PREs Early Proprioception	Mobility - Stretch progression Strengthening - Dynamic PREs - Isokinetics Proprioception Endurance, Power, and Skilled Activities

## MEDICAL HISTORY FORM – KNEE

### DEMOGRAPHIC INFORMATION

NAME: \_\_\_\_\_ FMP/Sponsor SSN: \_\_\_\_ / \_\_\_\_ - \_\_\_\_ - \_\_\_\_  
 DATE OF BIRTH: \_\_\_\_\_ AGE \_\_\_\_\_ DOD ID Number: \_\_\_\_\_  
 HOME PHONE NUMBER: (\_\_\_\_) \_\_\_\_ - \_\_\_\_ WORK PHONE NUMBER: (\_\_\_\_) \_\_\_\_ - \_\_\_\_  
 EMAIL ADDRESS: \_\_\_\_\_ MAY WE CONTACT YOU BY EMAIL: YES NO  
 DUTY STATION/EMPLOYER: \_\_\_\_\_  
 RANK/OCCUPATION: \_\_\_\_\_

### PATIENT HISTORY

WHICH KNEE BOTHERS YOU? RIGHT LEFT BOTH  
 How would you rate your knee today as a percentage of normal (0% to 100% scale with 100% being normal)? \_\_\_\_\_  
 What is your chief complaint? \_\_\_\_\_ DATE OF ONSET: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 NO INJURY: (please circle type of onset) GRADUAL SUDDEN  
 Please indicate why you think it started: \_\_\_\_\_

INJURY: (please circle) ACCIDENT SPORT (type) \_\_\_\_\_ WORK SCHOOL OTHER \_\_\_\_\_  
 Please specify where and how it happened: \_\_\_\_\_

Have you had a problem like this before? Yes No \_\_\_\_\_  
 Are your symptoms: Getting Better Unchanged Getting Worse \_\_\_\_\_

WHAT SYMPTOMS DO YOU HAVE				WHAT ACTIVITIES CAUSE YOU DIFFICULTY			
RIGHT		LEFT		RIGHT		LEFT	
Pain		Pain		Walking		Walking	
Swelling		Swelling		Stair Climbing		Stair Climbing	
Giving Way		Giving Way		Running		Running	
Locking		Locking		Squatting		Squatting	
Popping		Popping		Pivoting/Twisting		Pivoting/Twisting	
Grinding		Grinding		Sitting		Sitting	
Snapping		Snapping		Work		Work	
Stiffness		Stiffness		Sports		Sports	

IF YOU HAVE INSTABILITY, WHAT ACTIVITIES CAUSE IT? \_\_\_\_\_

IF YOU HAVE PAIN, WHERE IS IT LOCATED? \_\_\_\_\_

How would you rate your pain on a scale of 0 to 100, with 0 being no pain and 100 being the worst possible pain? \_\_\_\_\_

WHAT IS THE QUALITY OF THE PAIN? Sharp Dull Stabbing Throbbing Aching Burning

#### ACTIVITY-RELATED SYMPTOMS:

Is your knee comfortable at rest? YES NO  
 Do you need a device to walk (brace, crutch, cane)? YES NO IF YES, WHAT TYPE \_\_\_\_\_  
 Can you perform your normal activities of daily living? YES NO  
 Can you participate in your desired sporting activities? YES NO

OFFICE LOCATION: 34800 Bob Wilson Drive, Building 1, 1st Floor. San Diego, CA 92134  
 MAILING ADDRESS: 34800 Bob Wilson Drive, Ste 112, San Diego, CA 92134  
 T: 619-532-6868

WHAT MAKES YOUR SYMPTOMS WORSE? \_\_\_\_\_

WHAT MAKES YOUR SYMPTOMS BETTER? \_\_\_\_\_

HAVE YOU HAD A PREVIOUS INJECTION? YES NO IF YES WHEN? \_\_\_\_\_

HAVE YOU HAD ANY PHYSICAL THERAPY OR BRACING? YES NO IF YES WHAT TYPE \_\_\_\_\_

WHAT TESTS/SCANS HAVE YOU HAD FOR THIS PROBLEM? X-Rays MRI CT Scan Nerve Test

HAVE YOU ALREADY HAD SURGERY FOR A PROBLEM IN THE SAME AREA IN THE PAST? YES NO

If yes, please list below:

Procedure #1 \_\_\_\_\_ Date \_\_\_\_\_ Surgeon \_\_\_\_\_

Procedure #2 \_\_\_\_\_ Date \_\_\_\_\_ Surgeon \_\_\_\_\_

**PAST MEDICAL HISTORY:** Do you have or have you ever had:

Heart Attack (year \_\_\_\_\_) High Blood Pressure Blood Clots (year \_\_\_\_\_)

Stroke Heart Failure Ankle Swelling

Kidney Failure Cancer (type \_\_\_\_\_) Diabetes

Stomachache while taking anti-inflammatory medications (which type \_\_\_\_\_)

MRSA Infections

Any other medical conditions (please list): \_\_\_\_\_

**PAST SURGICAL HISTORY:** What operations have you had and when? Please list:

\_\_\_\_\_

\_\_\_\_\_

**PLEASE LIST ALL CURRENT MEDICATIONS:**

NAME	DOSAGE	FREQUENCY

**ALLERGIES TO ANY MEDICATIONS**

PENICILLIN YES NO Reaction: \_\_\_\_\_

SULFA DRUGS YES NO Reaction: \_\_\_\_\_

NOVOCAINE YES NO Reaction: \_\_\_\_\_

OPIATES (VICODIN/PERCOCET) YES NO Reaction: \_\_\_\_\_

CORTISONE YES NO Reaction: \_\_\_\_\_

FOODS YES NO Reaction: \_\_\_\_\_

OTHER YES NO Reaction: \_\_\_\_\_

**LATEX ALLERGY SCREENING:** Have you ever had a reaction including swelling, itching or difficulty breathing when exposed to latex, rubber materials like gloves, condoms, balloons or foods such as bananas, avocados, papayas, or kiwi fruit? YES NO Reaction: \_\_\_\_\_

Have you or a family member every had a reaction to anesthesia? YES NO

If yes, EXPLAIN: \_\_\_\_\_

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**FAMILY HISTORY:** Have any direct relatives had any of the following? If so, which relative?

Diabetes \_\_\_\_\_ High Blood Pressure \_\_\_\_\_ Heart Disease \_\_\_\_\_  
Rheumatoid Arthritis \_\_\_\_\_ Cancer \_\_\_\_\_ Nerve Disorder \_\_\_\_\_  
Bleeding disorders \_\_\_\_\_ Clotting disorders \_\_\_\_\_

**SOCIAL HISTORY:**

Do you use tobacco? YES NO If yes, packs per day \_\_\_\_\_ / cans per day \_\_\_\_\_ / other \_\_\_\_\_  
Do you use alcohol? YES NO If yes, how often? \_\_\_\_\_ drinks per DAY/WEEK  
Chemical Dependency? YES NO If yes, please specify \_\_\_\_\_

**MILITARY AND DUTY STATUS (ACTIVE DUTY ONLY):**

WHAT IS YOUR PROJECTED ROTATION DATE OR END OF OBLIGATED SERVICE: PRD/EOS \_\_\_\_\_  
YEARS OF ACTIVE SERVICE: \_\_\_\_\_  
ARE YOU ON FLIGHT OR DIVE STATUS? YES NO IF YES WHICH? \_\_\_\_\_  
ARE YOU CURRENTLY ON LIGHT DUTY? YES NO IF YES: FOR HOW LONG? \_\_\_\_\_  
ARE YOU CURRENTLY ON LIMDU? YES NO IF YES: WHAT PERIOD OF LIMDU? 1 2 OTHER \_\_\_\_\_  
HAVE YOU PREVIOUSLY BEEN ON LIMDU? YES NO IF YES: HOW MANY PERIODS? 1 2 OTHER \_\_\_\_\_  
ARE YOU CURRENTLY ON A MEDICAL BOARD (PEB)? YES NO

**REVIEW OF SYSTEMS:** Have you had any of these symptoms? If NO, mark NONE

GI	Heartburn, Ulcers	Nausea, Vomiting	Hepatitis or Liver disease	NONE	
ENDO	Thyroid Disease	Heat or Cold Intolerance		NONE	
CON	Weight Loss	Loss of Appetite		NONE	
EYE	Blurry Vision	Double Vision	Loss of Vision	NONE	
ENT	Hearing Loss	Hoarseness	Difficulty Swallowing	NONE	
CV	Hypertension	Palpitations	Pacemaker	Heart Disease/Failure	NONE
RESP	Chronic Cough	Shortness of Breath	Asthma	COPD Sleep Apnea	NONE
GU	Painful Urination	Blood in Urine	Kidney Problems		NONE
SKIN	Frequent Rashes	Skin Ulcers	Lumps	Psoriasis	NONE
NEURO	Frequent Headaches	Dizziness	Seizures		NONE
HEME	Easy Bleeding	Easy Bruising	Anemia	Blood Clots	NONE

Women: Are you pregnant? YES NO Delivery Date: \_\_\_\_\_

**ARE THERE ANY SPECIFIC QUESTIONS YOU WOULD LIKE TO DISCUSS TODAY?**

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KNEE EXAM															
Height		Weight													
RIGHT									LEFT						
Alignment	Neutral	Valgus	Varus						Neutral	Valgus	Varus				
Effusion	0	Trace	1+	2+	3+				0	Trace	1+	2+	3+		
Quad Atrophy	None	Mild	Mod	Sev.					None	Mild	Mod	Sev.			
Extension		Degrees								Degrees					
Flexion		Degrees								Degrees					
J Sign															
PF Crepitus	0	Mild	Mod	Sev.					0	Mild	Mod	Sev.			
Patellar Tenderness															
Patellar Tilt															
Patellar Mobility	1	2	3	4					1	2	3	4			
Patellar Apprehension?															
Joint Line Tenderness?															
McMurray/Thessaly															
Lachman	Neg	1A	1B	2A	2B	3A	3B		Neg	1A	1B	2A	2B	3A	3B
Pivot Shift	Neg	Glide	1+	2+					Neg	Glide	1+	2+			
Varus 0	Neg	1A	1B	2A	2B	3A	3B		Neg	1A	1B	2A	2B	3A	3B
Varus 30	Neg	1A	1B	2A	2B	3A	3B		Neg	1A	1B	2A	2B	3A	3B
Valgus 0	Neg	1A	1B	2A	2B	3A	3B		Neg	1A	1B	2A	2B	3A	3B
Valgus 30	Neg	1A	1B	2A	2B	3A	3B		Neg	1A	1B	2A	2B	3A	3B
Posterior Drawer	Neg (1 cm ant)	I	II	III					Neg (1 cm ant)	I	II	III			
Dial 0	Neg								Neg						
Dial 30	Pos								Pos						

XRAYS:

MRI:

IMPRESSION:

PLAN:

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Updated 25AUG15

## MEDICAL HISTORY FORM – SHOULDER

**DEMOGRAPHIC INFORMATION**

NAME: \_\_\_\_\_ FMP/Sponsor SSN: \_\_\_\_ / \_\_\_\_ - \_\_\_\_ - \_\_\_\_  
 DATE OF BIRTH: \_\_\_\_\_ AGE \_\_\_\_\_ DOD ID Number: \_\_\_\_\_  
 HOME PHONE NUMBER: (\_\_\_\_) \_\_\_\_ - \_\_\_\_ WORK PHONE NUMBER: (\_\_\_\_) \_\_\_\_ - \_\_\_\_  
 EMAIL ADDRESS: \_\_\_\_\_ MAY WE CONTACT YOU BY EMAIL: YES NO  
 DUTY STATION/EMPLOYER: \_\_\_\_\_  
 RANK/OCCUPATION: \_\_\_\_\_

**PATIENT HISTORY**

WHICH SHOULDER BOTHERS YOU? RIGHT LEFT BOTH      DOMINANT HAND: RIGHT LEFT  
 How would you rate your shoulder today as a percentage of normal (0% to 100% scale with 100% being normal)? \_\_\_\_\_  
 What is your chief complaint? \_\_\_\_\_ DATE OF ONSET: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 NO INJURY: (please circle type of onset) GRADUAL SUDDEN  
 Please indicate why you think it started: \_\_\_\_\_

INJURY: (please circle) ACCIDENT SPORT (type) \_\_\_\_\_ WORK SCHOOL OTHER \_\_\_\_\_  
 Please specify where and how it happened: \_\_\_\_\_

Have you had a problem like this before? Yes No \_\_\_\_\_  
 Are your symptoms: Getting Better Unchanged Getting Worse \_\_\_\_\_

WHAT SYMPTOMS DO YOU HAVE				CAN YOU? (Check if yes)			
RIGHT		LEFT		RIGHT		LEFT	
Night Pain		Night Pain		Throw		Throw	
Swelling		Swelling		Use your arm overhead		Use your arm overhead	
Dislocation		Dislocation		Work		Work	
Feels Unstable		Feels Unstable		Play sports		Play sports	
Limited Motion/ Stiffness		Limited Motion/ Stiffness		Other:		Other:	
Weakness		Weakness					
Numbness		Numbness					
Neck Pain		Neck Pain					

IF YOU HAVE INSTABILITY, WHAT ACTIVITIES CAUSE IT? \_\_\_\_\_  
 IF YOU HAVE PAIN, WHERE IS IT LOCATED? \_\_\_\_\_  
 How would you rate your pain on a scale of 0 to 100, with 0 being no pain and 100 being the worst possible pain? \_\_\_\_\_  
 WHAT IS THE QUALITY OF THE PAIN? Sharp Dull Stabbing Throbbing Aching Burning

**ACTIVITY-RELATED SYMPTOMS:**

Is your shoulder comfortable at rest?      YES NO  
 Can you perform your normal activities of daily living?      YES NO  
 Can you participate in your desired sporting activities?      YES NO

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WHAT MAKES YOUR SYMPTOMS WORSE? \_\_\_\_\_

WHAT MAKES YOUR SYMPTOMS BETTER? \_\_\_\_\_

HAVE YOU HAD A PREVIOUS INJECTION? YES NO IF YES WHEN? \_\_\_\_\_

HAVE YOU HAD ANY PHYSICAL THERAPY? YES NO IF YES WHAT TYPE \_\_\_\_\_

WHAT TESTS/SCANS HAVE YOU HAD FOR THIS PROBLEM? X-Rays MRI CT Scan Nerve Test

HAVE YOU ALREADY HAD SURGERY FOR A PROBLEM IN THE SAME AREA IN THE PAST? YES NO

If yes, please list below:

Procedure #1 \_\_\_\_\_ Date \_\_\_\_\_ Surgeon \_\_\_\_\_

Procedure #2 \_\_\_\_\_ Date \_\_\_\_\_ Surgeon \_\_\_\_\_

**PAST MEDICAL HISTORY:** Do you have or have you ever had:

Heart Attack (year \_\_\_\_\_) High Blood Pressure Blood Clots (year \_\_\_\_\_)

Stroke Heart Failure Ankle Swelling

Kidney Failure Cancer (type \_\_\_\_\_) Diabetes

Stomachache while taking anti-inflammatory medications (which type \_\_\_\_\_)

MRSA Infections

Any other medical conditions (please list): \_\_\_\_\_

**PAST SURGICAL HISTORY:** What operations have you had and when? Please list:

\_\_\_\_\_

\_\_\_\_\_

**PLEASE LIST ALL CURRENT MEDICATIONS:**

NAME	DOSAGE	FREQUENCY

**ALLERGIES TO ANY MEDICATIONS**

PENICILLIN YES NO Reaction: \_\_\_\_\_

SULFA DRUGS YES NO Reaction: \_\_\_\_\_

NOVOCAINE YES NO Reaction: \_\_\_\_\_

OPIATES (VICODIN/PERCOCET) YES NO Reaction: \_\_\_\_\_

CORTISONE YES NO Reaction: \_\_\_\_\_

FOODS YES NO Reaction: \_\_\_\_\_

OTHER YES NO Reaction: \_\_\_\_\_

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SHOULDER EXAM													
Height		Weight											
RIGHT						LEFT							
C-Spine	WNL	DEC ROM	Pain	Spurling	WNL	DEC ROM	Pain	Spurling					
SC Joint	WNL	TENDER			WNL	TENDER							
Scapulo thoracic	WNL	CREPITUS	WINGING		WNL	CREPITUS	WINGING						
Flexion		Deg				Deg							
Abduction		Deg				Deg							
ER At Neutral		Deg				Deg							
IR At Neutral		Deg				Deg							
ABER		Deg				Deg							
ABIR		Deg				Deg							
ANT INSTABILITY Apprehension Relocation	Positive Positive	Negative Negative			Positive Positive	Negative Negative							
POST INSTABILITY Kim Jerk	Positive Positive	Negative Negative			Positive Positive	Negative Negative							
LOAD AND SHIFT Anterior Posterior Inferior/Sulcus	Positive Positive Positive	Negative Negative Negative			Positive Positive Positive	Negative Negative Negative							
IMPINGEMENT Neer Hawkins	Positive Positive	Negative Negative			Positive Positive	Negative Negative							
ROTATOR CUFF Supraspinatus External Rotation Subscapularis		/5 /5 /5				/5 /5 /5							
AC JOINT TTP Cross Arm Adduct.	Positive Positive	Negative Negative			Positive Positive	Negative Negative							
SLAP O'Brien Speeds Yergason's	Positive Positive Positive	Negative Negative Negative			Positive Positive Positive	Negative Negative Negative							
LHB Tenderness	Positive	Negative			Positive	Negative							

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