



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

BUMEDINST 5450.170A
BUMED-N1
30 Jun 2025

BUMED INSTRUCTION 5450.170A

From: Chief, Bureau of Medicine and Surgery

Subj: MISSION, FUNCTIONS, AND TASKS OF NAVAL MEDICAL RESEARCH UNIT
DAYTON

Ref: (a) BUMEDINST 5450.174B

Encl: (1) Functions and Tasks of Naval Medical Research Unit Dayton

1. Purpose. To define the mission, functions, and tasks of Naval Medical Research Unit (NAVMEDRSCHU) Dayton as prescribed by reference (a) and enclosure (1).
2. Cancellation. NAVMEDRSCHENINST 5450.4 and BUMEDINST 5450.170.
3. Mission. To optimize the readiness, performance, and survivability of operational forces through environmental health effects, toxicology and aerospace medical research, and development.
4. Command Hierarchy. NAVMEDRSCHU DAYTON is a shore activity in an active status under a commanding officer.

a. Command

Commanding Officer
Naval Medical Research Unit Dayton
2624 Q Street Building. 851 Area B
Wright-Patterson Air Force Base, Ohio 45433-7955

(SNDL: FH8) (UIC: 41817)
(PLA: NAVMEDRSCHU DAYTON WRIGHT PATTERSON AFB OH)
(Activity Code: 4188-700)

b. Echelon

- (1) Echelon 1: Chief of Naval Operations
- (2) Echelon 2: Chief, Bureau of Medicine and Surgery

- (3) Echelon 3: Commander, Naval Medical Forces Pacific
- (4) Echelon 4: Commander, Naval Medical Research Command
- (5) Echelon 5: Commander, Naval Medical Research Unit Dayton
- c. Immediate Superior in Command of: None.
- d. Area Coordination. NAVMEDRSCHU DAYTON is subject to regional coordination of Commander, Navy Region Mid Atlantic.
- e. Office of the Chief of Naval Operations (OPNAV) Resource Sponsor
 - (1) Director, Military Personnel, Plans, and Policy (OPNAV-N13), and Expeditionary Health Branch (OPNAV-N4L4)
 - (2) Activity-level aggregation of estimated manpower cost.
 - (a) Military Personnel Navy: \$2.82 million
 - (b) Civilian Personnel: \$9 million
- 5. Supporting relationships: None.
- 6. Obligations to external entities: 88th Logistical Readiness at Wright Patterson Air Force Base Intra Government Support Agreement.
- 7. Action. NAVMEDRSCHU DAYTON will execute the assigned mission, functions, and tasks, and will update this directive every 8 years.
- 8. Records Management
 - a. Records created as a result of this instruction, regardless of format or media, must be maintained and dispositioned per the records disposition schedules located on the DON Assistant for Administration, Directives and Records Management Division portal page at <https://portal.secnav.navy.mil/orgs/DUSNM/DONAA/DRM/Records-and-Information-Management/Approved%20Record%20Schedules/Forms/AllItems.aspx>.
 - b. For questions concerning the management of records related to this instruction or the records disposition schedules, please contact the local records manager or the OPNAV Records Management Program (DNS-16).

9. Review and Effective Date. Per OPNAVINST 5215.17A, Manpower Plans and Business Policy (BUMED-N12) will review this instruction annually around the anniversary of its issuance date to ensure applicability, currency, and consistency with Federal, Department of Defense, Secretary of the Navy, and Navy policy and statutory authority using OPNAV 5215/40 Review of Instruction. This instruction will be in effect for 10 years, unless revised or cancelled in the interim and will be reissued by the 10-year anniversary date if it is still required, unless it meets one of the exceptions in OPNAVINST 5215.17A, paragraph 9. Otherwise, if the instruction is no longer required, it will be processed for cancellation as soon as the need for cancellation is known following the guidance in OPNAV Manual 5215.1 of May 2016.



D. K. VIA

Releasability and distribution:

This instruction is cleared for public release and is available electronically only via the Navy Medicine Web site, <https://www.med.navy.mil/Directives/>

FUNCTIONS AND TASKS OF
NAVAL MEDICAL RESEARCH UNIT DAYTON

1. Functions: Provide basic and applied research competence in global Aeromedical Research and Environmental Health Effects Research directly supporting naval and joint military requirements and operational needs.

a. Naval Aeromedical Research. Conduct medical, physiological, sensory, and cognitive research to address threats to warfighter health, safety, readiness, and performance encountered in aerospace and other extreme environments.

(1) Execute basic and applied medical, physiological, and human factors research to address aerospace-specific threats to the health, safety, and operational readiness of aircrew.

(2) Perform human acceleration research to better understand and mitigate the effects of accelerative exposures on aircrew spatial orientation, motion sickness, and vestibular and multisensory physiology.

(3) Perform high-altitude exposure research to better understand and mitigate the effects of altitude exposures to aircrew.

(4) Perform biomechanics research to better understand and mitigate the effects of flight deck ergonomics, acceleration, and whole-body vibration on aircrew neck and back pain and injury.

(5) Evaluate environmental and operational mission characteristics of maritime en route care patient transport inform research initiatives to better understand and mitigate operational and environmental impacts on patients, providers, and medical equipment.

(6) Perform clinical aeromedical research to identify and improve standards for aircrew qualification based on validated clinical and operational criteria.

(7) Perform cognitive neuroscience and neuroimaging research to better understand and mitigate the effects the aerospace environment on aircrew brain health.

(8) Perform research on aircrew physiology to understand and improve solutions for aircrew sleep, nutrition, hydration, and related physiologic requirements.

(9) Perform research to better understand and support female-specific aircrew challenges.

(10) Perform technology invention and development to translate applied aeromedical research into material solutions, in coordination with Naval Air Systems Command.

b. Environmental Health Effect Research. Uses unique and state-of-the-science technologies to assess the potential health risks associated with exposure to chemicals, environmental hazards or stressors, and military settings, to include occupational exposures and operational environments.

(1) Execute basic and applied toxicology and environmental health effects research to determine the potential health effects of military-relevant exposures and assess the risk of those to warfighters, Department of Defense (DoD) personnel, and impacted populations.

(2) Execute in vivo inhalation toxicology, environmental and physical exposure studies to determine potential health effects of hazards or stressors on all organ systems, with an emphasis on respiratory physiology.

(3) Perform in vivo non-inhalation (e.g., oral, dermal) toxicology, environmental and physical exposures to determine potential health effects of hazards or stressors on all organ systems.

(4) Execute in vitro, or cell or tissue-based studies, and new approach methodologies to identify toxicological effects of exposure to chemicals and environmental or physical hazards or stressors associated with military operations.

(5) Evaluate developmental and reproductive effects of exposure to military-relevant chemical, environmental or physical exposures.

(6) Determine the effects on a cellular and organ level, to include mechanism(s) of action, following exposure to chemicals and environmental or physical hazards or stressors associated with military operations.

(7) Identify and understand biomarkers of exposure or effects associated with exposure to chemical, environmental or physical hazards or stressors associated with military operations.

(8) Assess mutagenic and genotoxic effects of exposure to chemicals and environmental hazards or stressors associated with military operations.

(9) Evaluate neurological effects of exposure to chemicals, environmental or physical hazards or stressors associated with military operations, including behavioral, cognitive, performance, depression or anxiety-related issues, and neuro-electrophysiological assessments associated with exposure.

(10) Identify effects of military-relevant chemical, environmental and physical hazards on the nervous and sensory systems, to include hearing and vision.

(11) Understand the effects on military-relevant exposures on a molecular and mechanistic level, to include neuronal function and synaptic plasticity, protein or receptor expression, cellular signaling, neurotransmitter production, release, and uptake, and cytokine production.

(12) Assess changes to the microbiome (as a ‘microbial organ’) due to exposure to the chemical, environmental or physical hazards or stressors that may occur in military operations.

2. Tasks

a. Provide subject matter expert(s) services to the Fleet, Navy Medicine and DoD regarding Aerospace-medicine related questions and concerns.

b. Provide subject matter expert(s) services to the Fleet, Navy Medicine and DoD regarding toxicology and environmental exposure related questions and concerns.

c. Provide consultative services to the Fleet, Navy Medicine and DoD regarding Aerospace-medicine related questions and concerns.

d. Provide consultative services to the Fleet, Navy Medicine and DoD regarding toxicology and environmental exposure related questions and concerns.