

FORCE HEALTH PROTECTION

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To sustain a fit and healthy force is the first of three focal points of [force health protection](#). Total Exposure Health (TEH) aims to accomplish this by creating a solution to capture workplace, environment, and lifestyle exposures and connect to the individual using advances in science, technology, and informatics to prevent disease and improve the health and well-being of Air Force personnel.

A fit and healthy force increases the Air Force's capability to withstand the physical and mental rigors associated with combat and other military operations. The ability to remain fit and healthy despite exposure to numerous health threats is a force multiplier at home station and in deployed settings.



Healthy Fit Force Concept

Concept for Fit and Healthy Force

Fit and healthy Airmen can deploy on short notice and operate effectively in austere environments. Using TEH for early identification and intervention of health conditions that could otherwise prohibit Airmen from being fully ready to deploy, increases the [commander, Air Force forces](#)' (COMAFFOR's) ability to [mass](#) forces. Fitness includes at least fitness for military service, for Air Force specialty code, for deployment, and special operational duties and implies abiding fitness for in garrison duties, periodic fitness for deployed duty, and on-demand fitness for emergency or disaster-response duties anyway.

Prevent Illness and Injury

To prevent illness and injury is the second of three focal points of force health protection. Illness and injury prevention is the framework by which Air Force leaders and individuals optimize health readiness and protect Airmen. The force health protection goal is to prevent illness and injury from the physical and mental stress caused by environmental, occupational, operational, and warfare; to include [chemical, biological, radiological, and nuclear](#) (CBRN) threats. Air Force medical personnel recognize and prepare for emerging man-made and natural threats. They make reasonable efforts to identify and protect our forces from emerging infectious diseases, as well as potential genomic/proteomic, directed energy, non-traditional agents, and other new technologies. Casualty prevention is a continuous process conducted throughout pre-deployment, deployment, and post-deployment phases. Illness and injury prevention requires the full commitment of commanders, leaders, and individuals.

Medical forces arrive early as an integral part of the [beddown](#) team to assess threats; mitigate hazards to acceptable levels for operations; and to protect Airmen. Medical forces conduct routine standardized exposure monitoring and tracking of disease and injury rates to assist commanders in taking data-driven corrective actions at all levels. Automation and data collection are conducted at the lowest echelon, and actionable data are transferred to each echelon of command. This enables a full health risk assessment for the operational missions and the development of risk-mitigating recommendations for commanders.

During deployment and follow-on operations, adversaries and the total environment generate threats to forces. Enemies produce combat-related casualties, commonly called battle injuries; while the environmental, safety, and occupational health threats, or total-environment threat, produce disease and non-battle injury (DNBI) casualties.⁷ DNBI's historically have accounted for three-quarters or more of battlefield casualties, although this proportion has decreased dramatically since the advent of modern medical practices. Casualty prevention historically has focused on reducing or eliminating the risk of food-, water-, waste-, and insect-borne illnesses, as well as heat and cold injuries during deployments. However, in today's environment, increased risk from covert

⁷ Department of Defense Instruction 6490.03, [Deployment Health](#).

chemical and biological contamination by terrorists has expanded casualty prevention to include the monitoring of food, air and water for chemical and biological agents. Recent operations demonstrated the need to emphasize environmental and occupational exposures and combat stress in addition to DNBI.

Medical capabilities include refined military medical surveillance and objective exposure measurements to identify threats, assess risk, and develop countermeasures to meet actual and potential threats. Considerations to prevent casualties include:

- ✦ **Total Exposure Health:** Includes workplace, environmental, and lifestyle exposures to the individual. TEH integrates exposure science and information technology to analyze and translate all data into clinically and personally actionable results.
- ✦ **Non-Adversary Threats:** These are naturally occurring in the environment or a result of past or present military operations and may include endemic diseases, motor vehicle accidents, sports or recreational injuries, body stresses due to wearing of personal protective equipment and other equipment, heat and cold exposure, biological exposures, and chemical and radiation exposures from industrial sources.
- ✦ **Adversary Threats:** The result of deliberate attack, which can include CBRN agents. As a mitigating tool, health surveillance may likely be the first indicator of a biological, chemical, or other attack.
- ✦ **Identifying Preventable Threats and Implementing Countermeasures:** Casualty prevention requires medical forces to identify preventable threats and for commanders, leaders, and individuals to implement countermeasures. Medical forces provide location and task-specific threat knowledge and casualty prevention lessons learned. Commanders mitigate casualties before operations begin by directing required immunizations or chemoprophylaxis, engineering solutions, managerial controls, or personal protective equipment that mitigates identified threats. Additionally, aerospace medicine functions directly support operations to ensure health and safety of the total force by conducting health risk assessments and pre- / post-mishap investigation of human factors that are causal or contributory in over 70 percent of mishaps. Medical experts coordinate with safety personnel to investigate and analyze unit safety culture and mishap human factors, with the goal of providing actionable safety information to operational commanders, acquisitions efforts and individual Airmen. During operations, medical forces use automated information support systems and equipment designed for detection, monitoring, and evaluation of occupational, environmental, and CBRN threats to assess risk and recommend mitigating actions to commanders.
- ✦ **Disease Prevention:** Medical forces use current medical information data to identify infectious disease threats to Airmen at home station and deployed locations.⁸ The Air Force tracks the vaccination status of all Airmen to ensure protection against

⁸ Air Force Instruction (AFI) 48-105, [*Surveillance, Prevention, and Control of Disease and Conditions of Public Health or Military Significance*](#).

vaccine-preventable diseases such as typhoid, meningitis, and influenza. At each airfield, medical forces assess disease threats and implement appropriate countermeasures, particularly in the areas of food and water vulnerability, waste disposal, and control of disease-carrying vectors.

- ★ **Dental Disease Prevention:** The Air Force Dental Service collects extensive risk assessment and dental readiness information to provide commanders an accurate picture of the dental fitness of their personnel.⁹ Severe dental pain rarely can be managed by self-care and most often requires professional intervention with specialized equipment.
- ★ **Mental Health Casualty Prevention:** The mental health of Airmen is critical to mission success. In the Air Force, the concepts of prevention and resilience are the two keys to mental health casualty prevention. In the deployed environment, medical forces identify mental health problems and provide appropriate care. Mental health personnel prepare the fighting force for mission readiness throughout the deployment cycle. Air Force members should be vigilant for signs of mental distress and act decisively to obtain assistance for themselves and others.
- ★ **Medical Intelligence:** Medical forces require seamless medical surveillance and intelligence integration with Air Force, Department of Defense, interagency and international agencies to maintain vigilance against emerging diseases and enemy threats.
- ★ **Global Vigilance:** Global vigilance is the ability to gain and maintain awareness anywhere in the world; provide warning; and determine intent, opportunity, capability, or vulnerability. Medical surveillance and information provide crucial support to medical operations and provide essential information to the [joint force commander](#). Included within this capability are medical information systems and processes to detect and warn of possible disease outbreaks.

Provide Casualty Care and Management

To restore health is the third of three focal points of force health protection. Medical forces use combined processes to rapidly restore each Airman to a combat ready status or arrange for the appropriate rehabilitative services. Restoring health requires a continuum of medical capabilities that includes first responders, forward resuscitative care (FRC), en route care, theater hospitalization, and definitive care.

- ★ **[First Responder](#):** The first responder is the initial stabilizing medical care rendered to casualties at the point of injury or illness. Collectively, this includes self-aid / buddy care and immediate care and stabilization of individuals by medical personnel to return to duty or coordinate aeromedical evacuation.

⁹ AFMAN 47-101, [Managing Air Force Dental Services](#).

- ✦ **Emergency Responder:** Emergency responders are called upon if a specific incident dictates a particular need or hazard requires an immediate assessment. Air Force medical emergency responders, as defined by the Air Force Incident Management System, are members of the disaster response force elements that deploy after the first responders to expand command and control and provide additional support. Emergency responders include follow-on medical treatment and preventive medicine teams, with training in field sanitation; behavioral; environmental; occupational; operational; industrial; or CBRN warfare health assessment and management.
- ✦ **Forward Resuscitative Care:** The FRC is forward advanced emergency medical treatment performed as close to point of injury as possible. FRC makes extensive use of technology and advanced emergency medical treatment and surgical practice to increase initial surgical efficiency. Requirements for medical logistic support (blood and medical materiel) including varying re-supply, storage, and distribution capabilities, are intrinsically linked. The goal is stabilization. Properly designed, equipped, and employed, FRC capabilities can provide a decreased forward medical footprint while enhancing the capability to sustain life and limb and should be available as close to the point of injury as operational conditions permit.
- ✦ **En Route Care:** En route care is the continuation of care during movement (evacuation) within the health service support continuum of care without clinically compromising the patient's condition. En route care involves transitory medical care, en route critical care, patient holding, and staging capabilities during transport from the site of injury or onset of disease, through successive capabilities of medical care, to a medical treatment facility that can meet the needs of the patient. En route care consists of three phases:

 - ✦✦ **Casualty Evacuation** (CASEVAC) involves the unregulated movement of casualties aboard ships, land vehicles, or aircraft.
 - ✦✦ **Medical Evacuation** (MEDEVAC) refers to dedicated medical evacuation platforms staffed and equipped to provide en route medical care using pre-designated tactical or logistic aircraft, boats, ships, and other watercraft temporarily equipped and staffed with medical attendants for en route care.
 - ✦✦ **Aeromedical Evacuation** (AE) specifically refers to “the movement of patients under medical supervision to and between medical treatment facilities by air transportation” (JP 4-02, [*Joint Health Services*](#)). AE provides time-sensitive in-flight care of patients or casualties to and between levels of care using predominantly mobility air forces aircraft or contracted aircraft (civilian air ambulance) with medical aircrew trained specifically for this mission.
- ✦ **Theater Hospitalization:** Theater hospitals are designed to provide in-theater support. This includes all care and capabilities required to support the theater such as emergency, surgical, public health, dental, preventive, stress control, and

ancillary services. Air Force theater hospitalization capabilities deploy as modules or multiple individual capabilities.

- ✦ **Definitive Care:** Definitive care is rendered to personnel to conclusively manage the condition, injury, or illness. This normally leads to rehabilitation, return to duty, or discharge from the Service. Definitive care capability includes the full range of acute, convalescent, restorative, and rehabilitative care provided at definitive and rehabilitative care sites outside the operational area.

Air Force medical forces are designed, organized, and employed to stabilize sick and injured persons and expedite transport to definitive care while maintaining or increasing the standard of care en route. The nature of airpower provides Air Force medical forces with worldwide responsive operational reach between airfields in a theater of operations as well as the strategic reach to any global definitive care capability.

Roles of Medical Care

US doctrine uses roles of care to describe battlefield medical and health capabilities. Some of the North Atlantic Treaty Organization (NATO) definitions for roles of care are different from US doctrinal definitions. NATO roles consist of first / emergency responder (Role 1), forward resuscitative care (Role 2), theater hospitalization (Role 3), and definitive care (Role 4). See Joint Publication 4-02, [Joint Health Services](#), Chapter II, [Health Service Support](#), for specific details on each of these roles of medical care.

Optimize Human Performance

Personnel are the most important and valuable resource for the Air Force. Accordingly, [Air Force Medical Service](#) (AFMS) focuses on human performance in addition to health care as a primary means of supporting the COMAFFOR. Given the prerequisite need for health, addressing human performance requires achievement of the AFMS effects of “a healthy and fit force” and “prevent illness and injury”—two key focal points of force health protection.

The AFMS becomes a force multiplier by focusing on human performance in addition to TEH as the primary means of supporting Air Force and joint forces. Air Force medical personnel work to sustain the performance of Airmen, whether in the face of enemy conflict, environmental threats and stressors, or advancing age. Any activity that supports or encourages improvement in physical, mental, or emotional health and fitness contributes to sustaining human performance. Additionally, Air Force medical personnel develop risk mitigation approaches. They employ approved countermeasures to help Airmen maintain performance (or minimize performance degradations) during warfare or upon exposure to environmental threats such as climatic extremes, gravitational forces, fatigue, weapons effects, prolonged mental or physical stress, witnessing or participating in violent acts.

Management of Fatigue

Medical forces readily provide fatigue management training resources to aircrew and extend fatigue management capabilities to battlefield Airmen, security forces, critical care air transport teams, and other personnel that operate around the clock. Fatigue management, in all of its forms, is used by commanders as a means of sustaining and optimizing warfighter effectiveness.

Cognitive Performance

Optimizing and sustaining cognitive performance provides an advantage in the analysis, synthesis, and collation of information and timely action or reaction. Maintaining the highest degree of cognitive capacity improves information management quality and may attenuate fear, stress, or confusion.

Improved Physical Performance to Operate in All Environments

Air Force medicine optimizes and sustains the Air Force's ability to operate across the full [range of military operations](#). The goal is to reduce the physical demands on the warfighter and sustain the ability to complete the mission. Airman performance may need to be sustained regardless of adverse conditions due to unfavorable weather, temperature, or lightning; high altitude; rough terrain; gravitational effects; directed energy; or CBRN effects. The Air Force maintains an extensive array of methods and equipment to optimize and sustain warfighter performance under these conditions. These methods may range from sunscreen to spacesuits, medications to body armor, glasses to night vision goggles, and vaccines to rapid diagnostics. Cutting-edge efforts to enhance physical performance include manipulation of metabolic processes and addition of equipment or mechanical augmentation.

Weapons Effects on Human Performance and Health

Air Force medicine has a role in assessing weapons effects on human performance and health in an effort to advise commanders, support development of effective countermeasures against threats, and develop injury treatment. Assessing the effects of weapons against individuals or groups can supply information for the risk management process or developing defensive measures. Many performance and health impacts from traditional warfare methods such as kinetic and CBRN weapons are well known, and performance and health impacts of less traditional warfare methods such as directed energy systems, laser, less than lethal agents, psychological warfare, and thermobaric (heat pressure) weapons are being further assessed and investigated.
