Chapter 62

ROLE OF THE PHYSICIAN ASSISTANT IN OCCUPATIONAL MEDICINE

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Introduction

The National Institute of Environmental Health Sciences defines occupational health as the identification and control of risks arising from (*a*) physical, (*b*) chemical, (*c*) biological, and (*d*) psychosocial workplace hazards in order to establish and maintain a safe and healthy working environment.[1] Additionally, the Occupational Safety and Health Administration (OSHA) directs that occupational health professionals apply the disciplines of occupational medicine, industrial hygiene, epidemiology, toxicology, preventive medicine, and statistics in collaborative multidisciplinary occupational health and safety teams that design, implement, and evaluate occupational health and safety programs.[2] OSHA's goals are to (*a*) enhance health, (*b*) improve safety, and thus (*c*) increase productivity.[2]

The US Army Occupational Health Program has adopted and adapted OSHA's standards, providing the support and resources necessary to achieve compliance in Army workplaces. The role of the occupational health physician assistant (OHPA) is critical in the occupational safety and health of soldiers, Department of Defense (DOD) civilians, and other beneficiaries who work with the Army, and thereby potentially encounter acute or chronic exposures to workplace hazards.

History of Occupational Medicine

Hazardous exposures that increase the risk of morbidity and mortality are not new in the workplace. Numerous diseases and injuries due to work-related exposures have been documented from Roman times through the present. One of the most cited is the account of Pliny the Elder, a Roman scholar who devised a face mask from an animal bladder to protect laborers working with zinc dust and sulfur fumes in the 1st century ad.[3] In other historical cases, Hippocrates documented miners with lead toxicity in the 4th century bce; Galen recognized lead poisoning and hazardous copper exposures among miners in the 2nd century ad; and Agricola, a German scholar, transcribed the first cases of pneumoconiosis-silicosis, a restrictive lung disease, in his 1556 book *De Re Metallica*. Percival Pott associated London chimney sweepers' exposure to soot with scrotal cancer in 1775; Alice Hamilton correlated worker illnesses and injuries to exposures to lead, carbon monoxide, and dangerous and repetitive industrial practices in the early 20th century[4]; and Rachael Carson's 1962 book, *Silent Spring*,[5] found the pesticide dichlorodiphenyltrichloroethane (DDT) detrimental to both birds and people (from consuming exposed produce and being sprayed during agricultural work). Joyce Egginton's *The Poisoning of Michigan* describes the 1970s dairy cattle contamination with the highly toxic chemical polybrominated biphenyl (PBB), which contributed to over 9 million residents ingesting contaminated milk and meat for almost a year.[6]

The true father of occupational medicine was the Italian Bernardo Ramazzini, who wrote a book in 1700 on occupational diseases, including military service exposures. He was credited with asking every patient, "What occupation do you follow?"[4] This practice is upheld today by all Army OHPAs, who are trained to ask every patient or soldier, "What is your military occupational specialty (MOS) or job in the Army?"

Workforce health and safety standards continue to evolve. In 1994, the World Health Organization developed a "Global Strategy on Occupational Health for All," and regular international conferences develop consensus action plans to address the large gaps between optimal occupational health services and the actual services available to most of the world's workforce.[7]

Background

The US Army's soldiers and civilian workforce have been exposed to a variety of occupational hazards since the Army's inception in 1775. Until the US Civil War (1861–1865), these exposures were an accepted risk of war and soldiering.[8] During the Civil War, several weapons systems, including the "Union repeating gun" (also known as the Ager gun) were returned to manufacturers after testing because of design flaws that injured soldiers (lead exposure was not known at that time to cause adverse health effects).[8] The invention of the tank in World War I added new hazards, prompting French military medical officers to study, report on, and mitigate carbon monoxide poisoning of tank crews from weapons propellant combustion inside sealed crew compartments.[8] New occupational hazards presented by new weapons and technologies prompted the Army Medical Department to establish the Armored Force Medical Research Laboratory at Fort Knox, Kentucky, in 1942.[8] This center studied the stressors placed on soldiers by the soldier–weapon system interface and recommended design modifications to improve effectiveness and safety of those systems.[8]

To protect workers in the gas defense production and ammunition plants of World War I and World War II, collaborative efforts arose that resulted in (*a*) the Army's taking responsibility for employee health; (*b*) expansion of industrial medical programs (including considerations for pregnancy, infectious disease, and overseas stationing); and (*c*) the establishment of the Army Industrial Health Laboratory in 1943. Originally located at Johns Hopkins University, the laboratory was relocated to Aberdeen Proving Ground, Maryland, and became the US Army Environmental Hygiene Agency after World War II.[4]

There was a lull in new Army occupational health programming between World War II and 1970, when the Occupational Safety and Health Act put the onus of responsibility for occupational injuries and illnesses on US employers and the military, forcing them to provide a safe and healthy workplace. The military then took on the responsibility to develop and publish (*a*) military standards, (*b*) an information management surveillance system, and (*c*) occupational health programs for both garrison and overseas.[4,9]

In the early 1980s, to improve occupational health services for soldiers and meet OSHA requirements, the Army Medical Department sponsored physician assistant (PA) training for master's degrees

in occupational and environmental health at the University of Oklahoma.[10] An Army OHPA who graduated from the program in 1984 began a pilot program at Fort Campbell, Kentucky, developing a survey that identified job-specific exposures resulting in ocular injuries and pulmonary diseases.[4] This resulted in the issuing of personal protective equipment to the identified workers, which mitigated occupational injuries and diseases.[11] Since 1984 the majority of the OHPA slots have been converted into civilian positions, but a few active duty OHPA slots remain (see Key Facts, later in this chapter).

Duties and Responsibilities

The OHPA assists the occupational medicine physician (area of concentration [AOC] 60D) or the preventive medicine physician (AOC 60C) in occupational and preventive medicine duties. OHPAs can perform the majority of the following types of examinations in accordance with DOD Manual 6055.05-M, *Occupational Medical Examinations and Surveillance Manual*[12]:

- qualification (per 5 CFR 339) and medical surveillance (per 29 CFR 1910), both preemployment and periodic
- return to work
- predeployment and postdeployment
- fitness to continue in current position (fit for duty)
- disability
- retirement
- surety medicine
- personnel reliability program
- security clearance
- termination
- respirator fit testing

In addition to the normal scope of practice, knowledge, skills, and behaviors required of PAs, the OHPA skill set duties include (*a*) assessing occupational health needs for active duty personnel and DOD civilians, (*b*) identifying hazardous occupational exposure and stress factors, (*c*) developing mechanisms to monitor soldier and civilian employee health trends, (*d*) conducting worksite evaluations and medical surveillance, (*e*) performing epidemiological studies, (*f*)

monitoring hearing conservation programs, (*g*) ensuring respiratory protection, (*h*) ensuring radiation protection, (*i*) enacting vision conservation programs, (*j*) conducting sexually transmitted disease surveillance, and (*k*) participating in collaborative industrial hygiene priority and support.[13]

Per Army Regulation 40-68, *Clinical Quality Management,* the duties and responsibilities of the OHPA specialty include (*a*) conducting job-related, fitness-for-duty, and health maintenance examinations for military and civilian personnel; (*b*) conducting occupational and non-occupational disease and injury prevention and treatment of military and civilian personnel; (*c*) conducting illness and injury MONITORING AND INVESTIGATIONS; (*d*) performing chronic disease surveillance, including tuberculosis and sexually transmitted diseases; and (*e*) providing occupational and environmental health education to soldiers and DOD civilian employees.[13] The OHPA's duties and responsibilities in conducting medical surveillance and exposure mitigation are fundamental to lowering future morbidity or mortality rates.

Requirements

Requirements for serving in OHPA positions are as follows:

- graduate of an accredited Master of Public Health (MPH) degree program in occupational health[10] (refer to current long-term health education and training [LTHET] information on the Army Human Resources Command website for updated requirements)[14];
- rank of captain or major; and
- graduate of Captains Career Course preferred.

Knowledge, Skills, and Attributes

OHPAs should maintain all military requirements and have the following knowledge, skills, and attributes:

- promotion potential for future service in broadening and operational assignments;
- professional knowledge and emotional maturity;
- critical thinking;

- interpersonal skills, including supervising, coaching, mentoring, and teaching;
- ability to function on a collaborative team and to work autonomously;
- leadership ability in promoting the OHPA specialty;
- motivation to work in research or public health settings;
- effective communication skills, both horizontally and vertically; and
- the occupational health skill set (acquired through LTHET).

Training

OHPA training encompasses LTHET and the following:

- Qualified PAs must attend an approved (by the Department of the Army and the Office of the Surgeon General) MPH program with an occupational health or environmental health concentration.
- The OHPA curriculum encompasses (*a*) didactics, (*b*) lectures, (*c*) conferences, (*d*) demonstrations, (*e*) seminars, (*f*) practical exercises, (*g*) academic subjects, (*h*) clinical applications, and (*i*) research.
- The goals and objectives of the training involve mastering concepts from the fields of (*a*) preventive medicine, (*b*) industrial hygiene, (*c*) toxicology, (*d*) epidemiology, (*e*) statistics, and (*f*) occupational medicine.
- Also recommended is the Army Training Requirements and Resource System (ATRRS) two-phase (online distributed learning and resident) Fundamentals of Occupational Medicine course (6H-F20).[15]
- After their MPH program, practicing OHPAs are encouraged to continue their specialty education to attain a Doctor of Medical Science (DMSc) degree with a concentration in the advanced professional practice of occupational preventative medicine, as completed by a military OHPA for the first time in 2020.[16]

Key Facts

Post-LTHET master's training involves a 2-year utilization tour in which the student practices as an OHPA, and incurs a concurrent additional duty service obligation of 4 years. There are currently six locations for OHPA utilization tours:

1. Ft Bragg, NC

2. Ft Hood, TX
3. Joint Base Lewis-McChord, WA
4. Pine Bluff Arsenal, AR
5. Ft Drum, NY
6. Watervliet Arsenal, NY

The active duty OHPA positions listed above, and over 90 civilian OHPA positions, are located in Army occupational health services across the United States and overseas. Active duty OHPAs should maintain both primary care and occupational health credentials. Primary care PA credentials are required for deployment (although there are no current OHPA deployment positions). Of the 1,415 US certified PAs in occupational medicine, only 7.2% (n=102) are federal government health care providers, both military and civilian, who work in federal government facilities, hospitals, and clinic settings, according to a 2018 specialty report by the National Commission on Certification of Physician Assistants.[17] Interestingly, the data suggest that the OHPA specialty is growing in the civilian sector and decreasing in the military setting.

Authorized List Positions

A few authorized list positions—jobs that are not part of the PA (65D or 65X immaterial) authorizations—have been filled by OHPAs in coordination with certain AOC consultants (such as occupational medicine physicians) and the Army Medical Specialist Corps management at Human Resources Command, including the following:

- Army Medical Center of Excellence (MEDCoE), deputy chief of the Preventive Medicine Branch, Department of Preventive Health Services, Joint Base San Antonio–Fort Sam Houston, TX
- Army Public Health Center, US Army Injury Program, Aberdeen, MD
- Army Public Health Center, OHPA, Aberdeen, MD
- National Training Center Command Surgeon, Ft Irwin, CA

Significant Contributions

OHPAs have continued to make enduring military medical contributions resulting from individual and collaborative research and public health practice, in areas ranging from basic combat training and combat morbidity to veteran mortality.[18–21] OHPAs have been nationally recognized for their significant medical contributions to military public health in practice and research. For example, a new LTHET graduate OHPA, after successfully completing the educational and examination requirements, and thereby demonstrating a mastery of the knowledge and skills relevant to contemporary public health, attained charter class recognition as the first military PA to be certified in public health (CPH) with the National Board of Public Health Examiners on October 24, 2008.[22] The OHPA was also inducted into the Delta Omega Honorary Society in Public Health,a national recognition for his contributions to military medicine.[23]

OHPAs have also contributed to a unique DOD predeployment and postdeployment study, which was collaboratively conducted by Sharp and colleagues at the US Army Research Institute of Environmental Medicine, Natick, Massachusetts; 1st Cavalry Division, Fort Hood, Texas; 10th Mountain Division, Fort Drum, New York; and the Army Center for Health Promotion and Preventive Medicine (now the Army Public Health Center).[18] The study's medical monitor and associate investigator was an OHPA.[18] Another study, on physical readiness training, also collaboratively conducted by an OHPA with staff from the US Army Research Institute of Environmental Medicine and the US Army Fitness School, resulted in the development of a new fitness training program by the Army Training and Doctrine Command, which has helped identify and significantly reduce injuries among Army personnel.[19,24] A third collaborative study, in which an OHPA was the primary investigator, resulted in an update to Army Pamphlet 385-63, *Range Safety*, and established the current US Army and Marine Corps range safety policy as well as a DOD lead (Pb) exposure medical surveillance program for outdoor ranges, indoor firing ranges, and shoot-houses.[21,25]

Challenges and the Way Ahead

Training and experience in epidemiology, injury prevention, preventive medicine, environmental health, soldier health care, and primary care provide the ideal skill set for OHPA utilization in division and corps headquarters surgeons' sections as division force health optimization officers. However, authorizations for officers in Table of Organization and Equipment (TOE) units are fixed, and an OHPA position does not exist in current TOE formations, specifically at the division and corps levels. With the current restructuring of medical forces in the Army as a result of the National Defense Authorization Act of 2017,[26] and the shortage of PAs to fill authorizations, it is unlikely that those positions will be realized. In the meantime, OHPA training supports collaboration with other specialists in the Army Medical Specialist Corps to bolster human performance optimization, focusing on (*a*) health readiness (with 65D PAs); (*b*) performance nutrition (with 65C dieticians); (*c*) exercise optimization, injury prevention, and rehabilitation (with 65B physical therapists); and (*d*) sleep, behavioral health optimization, and brain injury prevention and restoration (with 65A occupational therapists in their combat and operational stress control role). In the future, OHPA training may focus on preparing officers for research and epidemiology doctoral programs, or human performance optimization disciplines.

This multidisciplinary approach dovetails with the Army's new Holistic Health and Fitness (H2F) campaign, which replaces the previous Army Ready and Resilient Campaign. The H2F "doctrine directs leaders and Soldiers to use unit-level experts, facilities, and equipment to develop the physical and nonphysical components of Soldier readiness. . . . The H2F System is an immersive, comprehensive approach to readiness centered on brigade-owned H2F facilities and personnel."[27] OHPAs become familiar with community health promotion during their occupational health training programs, and are able to coordinate health promotion initiatives and programs in their formations.

Conclusion

Occupational health practitioners strive to optimize the health of workers, who make up half of the world's population. Improving the health of workers at their worksites, and preventing injuries and

illnesses associated with employment, increases productivity and decreases costs for employers. The US Army has embraced occupational health principles in protecting the uniformed and civilian workforce, the Army's most important asset. The application of the principles of occupational health improves worker performance and satisfaction, allows the Army to meet statutory requirements, and optimizes the productivity of soldiers and employees in support of the Army's mission—defending the nation. The Army is the DOD's largest employer, and Army occupational health serves a vital role within Army medicine, bridging the gap between employee workplace health and safety needs and employer resources, thereby preventing injuries and optimizing health in the Army's diverse work locations. Army PAs with an interest in research, epidemiology, public health, health readiness, soldier and worker performance optimization, and overall wellness and preventive medicine should consider specializing as an OHPA.

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