MILITARY OPTOMETRY FROM WORLD WAR I TO THE PRESENT: AN OVERVIEW

W. Howard McAlister, OD, MA, MPH
Col., USAF (Ret)

Adjunct Professor, Rosenberg School of Optometry, University of the Incarnate Word

mcal@umsl.edu

Jeffrey L. Weaver, OD, MBA, MS
COL, USA (Ret)

Adjunct Professor, College of Optometry, University of Missouri-St. Louis

Jerry D. Davis, OD, MS
COL, USA (Ret)

Jeffrey A. Newsom, OD
Lt. Col., USAF

Aerospace and Operational Medicine Flight Commander

Peterson Air Force Base, CO

doi 10.14434/hindsight.v51i3.31044

ABSTRACT

Optometry has made significant contributions to the United States military for over a century. Assuring good vision and eye health of soldiers, sailors, airmen and marines is critical to maximizing the military functions necessary to achieve victory. There was little organization or recognition of the profession in World War I, but optometrists were essential in achieving the mission. Recognition of the profession of optometry was still limited in World War II but it was improving, especially with commissioning as officers occurring in the Navy. Through the Korean and Vietnam Wars, optometry grew in stature and strength with all services eventually commissioning all optometrists, and Army optometrists were assigned to combat divisions. Continuing through the more recent conflicts in the Middle East, the profession has continued to make an impact and has become an essential part of the armed forces of the United States. Doctors of optometry are now an integral part of the Department of Defense. The nation cannot field an effective fighting force today without the dedicated performance of these officers.

KEYWORDS

Military Optometry; Optometry History; Commissioning; Scope of Practice; Pharmaceutical Agents; Humanitarian Mission; US Army Aviation Research Laboratory

World War I

Optometric involvement in the military began in the infancy of the profession. Prior to World War I, the standing Army was small. Enlistment was limited to young healthy men with good uncorrected visual acuity. When the United States joined the hostilities, the Army grew dramatically with the drafting of 2.8 million men[1]. There were four million men under arms by the end of the war.[2] In order to meet the demand, men with significant ametropia were inducted into the military.

At the time, providers who could address the demand for eyecare in the military was limited to a small number of ophthalmologists and general medical practitioners. Thus, the number of competent refractionists was extremely limited and the demand was great. The quality of optometric education was variable with some practitioners being apprenticeship trained while others had university degrees. Licensure was yet to be legislated in many jurisdictions.[3-5]

There was no designated job classification for optometry in the Army. There were no provisions for commissioning optometrists. Only physicians, dentists, and veterinarians were commissioned. The Sanitary Corps was created to accommodate other medical professions, but optometry was not included. Yet the demand continued to increase. Many optometrists who enlisted or were drafted managed to end up in medical units where they were able to practice. Multiple optical fabrication facilities were set up at base hospitals. It was estimated that about nine percent of the force required spectacle correction. Eventually, the Army provided spectacles at no charge to enlisted personnel though officers still were required to pay for their own.[3]

At the conclusion of hostilities, the Army was dramatically decreased. The medical department, which included 353,572 people during the war was decreased to just 11,535 by 1939. The Army stagnated until WW II. The provision of free spectacles for enlisted men was discontinued.[3]

World War II

As WW II approached, the profession of optometry was maturing. The International Board of Boards (IBB) of Optometry, now the Association of Regulatory Boards of Optometry (ARBO), whose membership included representatives of all state boards of optometry, was founded in 1919.[6] In 1922, the American Academy of Optometry, whose function was to stimulate education and research came into being. There was also a focus on optometric education.[7] The American Optometric Association (AOA) funded a joint conference on education in 1922 which produced a standard syllabus for optometric education, similar to the Flexner Report for medicine.[4,8] Despite these advancements, there was still

no career ladder for optometrists in the Army where general medical practitioners with little to no training continued to perform refractions.[3]

Armed Forces Optometric Society members tour the USS Bremerton submarine while gathered at the AOA Congress in 1990 in Honolulu. Image courtesy Armed Forces Optometric Society.

From 1941 to 1945, the Army grew to over 8 million.[9] Once again there was tremendous demand for optometric services. Approximately twenty percent of soldiers required spectacle correction. Many other nonmedical and nondental professionals were commissioned in the Sanitary Corps and Pharmacy Corps but optometrists continued to serve as enlisted men. Though many optometrists were commissioned, they were generally no longer allowed to practice once they became officers. The provision for issuing free spectacles returned. To avoid evacuation of troops from combat areas, field optical units were established. Many optometrists served in these units.[3]

Needless to say, there was a significant morale problem among optometrists. They were used as refractionists, often correcting the mistakes of medical officers but receiving little professional recognition. In addition to refraction, they had other more menial duties, including such things as mopping the eye clinic floor.[10] Serving as privates, optometrists had no clout. The AOA pushed for the commissioning of optometrists. A bill creating an Optometry Corps passed the Congress in 1945 but was vetoed by President Truman.[3,11]

Things were quite different in the Navy. In the time between WW I and WW II the force was so small that the inductees were limited to young healthy men with good uncorrected visual acuity. By 1945, the number of sailors and marines serving reached nearly 4 million.[9] Prior to the initiation of hostilities, contract optometrists were used. In 1941, the first optometrist was commissioned as a Hospital-Volunteer Specialist officer, a Reserve component consisting of different allied health practitioners. However, some optometrists still worked as enlisted hospital corpsmen. Like the Army, the Navy established optical fabrication units at naval advanced bases in close proximately to the war zone. Spectacles provided for all sailors and marines at no cost did not come about until 1949.[12]

AOA efforts in support of military optometry paid off and things changed dramatically at the end of WW II with the passage of the Army-Navy Medical Service Corps Act of 1947. There were four sections in each corps, one of which was the Optometry Section. Though it did not provide the autonomy of a separate Optometry Corps, it was a major step forward.[3]

In 1947, the combat elements of the Army Air Force became the U.S. Air Force. However, medical support was still provided by the Army. The Air Force Medical Service was created in 1949, with the same corps structure as the Army, thus optometrists were in the Medical Service Corps (MSC). In 1965, the Air Force Women's Medical Specialists Corps became the Biomedical Sciences Corps (BSC) which became the home of optometry officers. The BSC was composed of the small medical specialties separate from medicine, nursing, and dentistry. It did not contain administrative officers like the MSC.[13] This conceivably would relieve optometry officers of some of the nonprofessional additional duties required of MSC officers.

Korean War

With the outbreak of war in Korea in 1950, there was once again a massive build up in military personnel and thus a great demand for optometrists. Though many were commissioned, there were still several optometrists serving in enlisted status. The Army workforce was still inadequate to meet the demand and thus physicians were again providing optometric services such as refractions. This brought further involvement of the AOA.[3] In addition, as MSC officers in the Army and Navy, optometrists were required to perform many additional nonprofessional duties like Administrative Officer of the Day and Linen Inventory Officer that were not required of medical or dental officers.

At the conclusion of the war in Korea there was again a major reduction in force; however, optometry positions in the Army actually increased. Enlisted optometrists continued to serve along with commissioned officers. Finally, in 1957, this practice ended, thanks in large part to the efforts of the American Optometric Association.[3]

Vietnam War

With the beginning of U.S. involvement in Vietnam in 1965 there became a sizeable increase in optometric manpower in the Army. It was estimated at that time that about a third of soldiers needed spectacles. Only a small percentage of soldiers deployed to Vietnam arrived with the required spectacles (two pairs in addition to inserts for the protective masks). A considerable number of Army optometrists were assigned to service in theater throughout the conflict. Many were assigned to combat divisions. Most spectacles were fabricated at the medical depot but a fourth of them were produced at the divisions.[3] There were few optometry officers in the Navy and Air Force that served in country, and the bulk of the involvement was in the Army.[14] Since an adequate number of male optometrists could not be recruited, they were included with physicians and dentists in the "doctors draft." During the conflict, Army optometrists entered service in the grade of O-3 (Captain) but Air Force and Navy optometrists entered as O-2 (1st Lieutenant in the Air Force, Lieutenant Junior Grade in the Navy). Following the Vietnam War, optometrists in all services were brought in as O-2. As physicians, dentists, and veterinarians continued to enter as O-3, this caused a considerable morale problem.[3] Entry grade was based on years of education required to achieve the degree. Even after optometric education matched that of the other professions, the practice continued.[4,15] This was not corrected until 1980.[16] In this time period the military leaned heavily on the Armed Forces Health Professions Scholarship to fill its ranks. This program included doctors of many disciplines and is still a major factor in filling the medical workforce needs of the military.

Scope of Practice

Originally, regulations specifically forbade the use of Diagnostic Pharmaceutical Agents (DPAs) and Therapeutic Pharmaceutical Agents (TPAs) by optometrists in all services. However, many gained experience in their use "under medical supervision."[17] This exposure spurred interest by many optometrists after leaving the service. Despite political ophthalmology warnings of ensuing blindness and even death if optometrists began using these agents, optometry officers learned that they are safe when used appropriately. This experience was a major contributing factor in the push for expanded scope in the civilian world. Rhode Island passed the first DPA law in 1971. West Virginia enacted the first TPA law in 1976.[18] Other states followed suit. These agents were now used in many states independently by doctors of optometry. However, by regulation, it still was not allowed in the military. Military optometrists complained that they were only allowed to use these agents under supervision in contrast to their civilian counterparts. The Army officially allowed the independent use of DPAs in 1981,[3] and approximately the same time frame in the Air Force and Navy. As more states passed TPA laws, the clamor for prescriptive authority increased. In 1983, the Army sanctioned optometrists to use TPAs,[19] followed by the Air Force in 1985,[20] and the Navy in 1988.[21]

Optometry in Army Divisions

During the Vietnam conflict, the Army Optometry leadership identified the need to authorize two optometry (OD) positions with each Army Division in order to provide eye care as close to the fighting units as possible. With Army Optometry leadership and American Optometric Association lobbying support, the authorization for ODs in all Army Divisions became law. For the division ODs to be effective, portable refractive and eye examination equipment were necessary. To meet this equipment need, a field optometry set was developed and approved. Having a wartime mission was key to insuring optometrists would not be cut or significantly reduced with the reduction in forces following Vietnam or any military buildup.[10]

The plan of having two ODs and two field optometry sets in each division was developed when divisions traditionally conduct combat operations with three brigades (war fighters) most often deploying with two in contact and one brigade held in reserve. This separation would allow the two ODs to operate two separate clinics, moving to stay near the rear echelons of the two brigades in contact with the enemy. Operations Desert Shield and Desert Storm were the first real test of this system. The field optometry sets had undergone several evaluations and modification, but wartime use helped to identify some key changes needed to allow ODs to easily relocate as they followed their units.[10]

Operations Desert Shield and Desert Storm

When Iraq invaded Kuwait in 1990, all active Army divisions had two ODs assigned to their unit. The ODs were either physically located at the post where the division was located or were in other locations and were designated to move to the division position when needed. This prior assignment and planning was essential for divisions to deploy as a single unit and be fully functional when they arrived in Saudi Arabia.[10]

By the time the air war began in January 1991 there were 13 active duty Army ODs in the theater of operation assigned to divisions or separate brigades.[10] These ODs remained with their units until those units departed the theater of operation. In addition to the field optometry sets, each division was authorized a field fabrication set (portable optical laboratory) and an Optical Laboratory Specialist to fabricate single vision spectacles and protective mask inserts for division personnel. These division units fabricated 6,000 pairs of spectacles and repaired over 1,000 pairs.[10]

In addition to providing eye care, six (one reserve and five active duty) ODs were assigned to the five Medical Supply Optical and Maintenance (MEDSOM) units deployed from the continental United States and Germany. These units had ODs assigned to manage the optical laboratory portion of the MEDSOM. The MEDSOMs did not have a patient care mission and thus did not have field optometry sets but at least one managed to obtain a complete set allowing that unit's OD was able to provide area optometric patient care in addition to managing the lab.[10]

With the potential chemical and biological agent threat from Iraq, all assigned Army personnel required effective personal protective equipment (PPE). The largest challenge in providing PPE was with pilots and weapons officers of AH-64 Apache helicopters, who were involved in the war's initial contact with the enemy. AH-64s were deployed to destroy the anti-aircraft weapons in Iraq that would be used against our bombers and fighter jets, but their low-level flight made them vulnerable to Iraq's chemical and biological agents any time they left friendly territory. The AH-64 pilot and weapons officer utilized a monocular head-up display that fit very close to the eye. This unique equipment functioned well until the aviators needed to wear a full-face chemical protection mask. The use of the protective mask was not compatible with spectacle corrections and most of the Apache pilots and weapons officers were senior warrant officers who required optical correction for ametropia. The workaround for this situation was to fit AH64 aviators with extended-wear soft contact lenses. This project was organized and managed from the Vision Branch of US Army Aviation Research Laboratory (USAARL) at Ft. Rucker, Alabama. This concept had not been considered prior to Operation Desert Shield, but with the specific threat in Iraq, the ODs at USAARL developed this program and obtained approval from Army Aviation to conduct this project as a "research study." Since many of the Apache aircraft were already deployed to Southwest Asia when this research protocol was approved, support included four Army ODs and four enlisted eye specialists who spent several days at USAARL before deploying to Saudi Arabia in late 1990. Prior to the start of hostilities, the four teams were all located in a large room at the King Fahd International Airport terminal building near Dhahran, Saudi Arabia, allowing easy access for aviators for initial fitting and follow-up contact lens care, as well as before the air war started. One week after hostilities commenced, the four teams relocated to four different locations in Saudi Arabia to continue providing follow-up contact lens care and gathering research data on the aviators scattered throughout Saudi Arabia. Following the cease fire, USAARL sent the lead OD for this project to Saudi Arabia for 31 days to examine aviators wearing the extended-wear contact lenses and gather data for this study.[22]

Due to the increased need for eyecare at the beginning of hostilities, the President signed an executive order allowing Army Reserve optometrists to be called to active duty for 90 days, later extended to 24 months. During the duration of the conflict 80 of 288 Reserve ODs were involuntarily mobilized. Most of the 80 ODs were utilized as backfill for deployed ODs stationed in the U.S. or Europe, but 4 were deployed to the Persian Gulf. They functioned as optometry clinic chiefs, optical laboratory officers, and detachment commanders.[23]

Early on, it was recognized that Reserve ODs quickly assimilated into the active force and functioned very effectively. These ODs were instrumental in resolving the increased demand for vision care as units prepared to deploy. Two Reserve ODs were assigned to deployed Army hospitals in Saudi Arabia and worked with ophthalmologists or independently during their deployments. Unfortunately, many of the Reserve ODs experienced significant financial loss as a result of their activation, resulting in some resigning their commissions as soon as they were eligible to prevent future financial loss from deployments.[23]

Two Navy ODs, one each to the USNS Comfort and USNS Mercy, were assigned during the time those two ships were in the theater of operation.[10]

Six active duty Air Force ODs deployed to the United Kingdom prior to the beginning of the air war, two to Lakenheath Air Force Base and four to a Royal Air Force Base as part of a deployed hospital with the mission to support any overflow of patients coming from the theater of operation. Although few patients were evacuated to the hospital, the ODs provided eye care to the hospital staff and other base personnel as well as providing school screenings.[24]

Operations Enduring Freedom and Iraqi Freedom

In the aftermath of the September 11, 2001, terrorist attacks, Operation Enduring Freedom (OEF) brought military forces to Afghanistan in late 2001 and then to Iraq in 2003 in support of Operation Iraqi Freedom (OIF). The Army supplied over a dozen optometrists in support of operations in Afghanistan under OEF and the subsequent Operation Freedom's Sentinel through early 2020. The Army sent more than 30 optometrists to Iraq for OIF and continue to support operations in Iraq and Syria from bases in Iraq, Kuwait, and Saudi Arabia under Operation Inherent Resolve (OIR) to the present day.[25]

While Army optometrists initially filled all of the deployment requirements, they became over-tasked after a few years and reached out to the Air Force for assistance. Air Force optometrists started providing support in the fall of 2005 by filling tasking at Bagram Air Base in Afghanistan. The Air Force sent 20 optometrists to Bagram, Afghanistan from 2005 to 2012. Starting in 2009, the first Air Force optometrist and technician deployed to Al Udeid Air Base in Qatar in support of OIF and continue supporting that mission as part of OIR. As of early 2020, Air Force Optometry had sent 22 optometry teams to Al Udeid.[25]

Humanitarian Missions

As far back as the Vietnam War, in addition to providing combat support, military medicine including optometry also supported Global Health Engagement activities around the world. Formerly referred to as Humanitarian and Civic Assistance or Medical Civic Action Programs, these missions are currently known as Medical Readiness Training Exercises (MEDRETEs) for operations in foreign countries and Innovative Readiness Trainings (IRTs) for those conducted in support of remote and under-served communities within the United States. These MEDRETEs and IRTs provide primary medical and dental care along with health education to impoverished locals while also advancing U.S. national interests.[26]

Military optometrists have also deployed on the Navy hospital ships USNS Comfort and USNS Mercy to coastal locations all over the world. These hospital ships were built from converted tankers in the mid-1980s and have provided care to more than 550,000 people in humanitarian and disaster-response missions around the world since 2001. The crew of the Comfort and Mercy varies but will often be comprised of service members from other U.S. military branches along with members of foreign militaries and nongovernmental organizations during humanitarian missions.[27]

Military optometrists and technicians, both active and reserve component, have supported humanitarian operations on every continent except Antarctica in support of Global Health Engagement operations. While these operations have been conducted in Africa, Asia, and Europe for several years, perhaps the most robust program is the U.S. Southern Command's operations in the Caribbean and Central and South America with more than 300 MEDRETEs conducted and well over 300,000 patients treated since 1993.[28] During the most recent six-month deployment of the Comfort in 2019, the ship's medical team cared for almost 69,000 patients including nearly 27,000 optometry exams and distributed almost 31,000 pairs of prescription spectacles to patients in twelve countries.[29]

Education and Research in the Military

To become an Officer in the United States military, a bachelor's degree is generally a requirement. Higher degrees tend to make officers more competitive for promotion. However, in the Army and the Navy, a clinical doctorate in disciplines including optometry and medicine is considered a level between a bachelor's and master's degree. So the majority of military career optometrists pursue higher degrees, particularly those aspiring to the level of Lieutenant Colonel/Commander or above.[30]

Many optometry officers get a masters on a part-time basis while working full time, often using a tuition assistance program that provides financial assistance for voluntary off-duty civilian education. The programs have had cap levels, either percentage or dollar, and officers may incur a service obligation after completion of the degree.[31-33]

During most periods over the past 50 years, there were opportunities for optometrists to pursue graduate degrees through long term civilian education programs. The programs allowed the individuals to attend school on campus with paid tuition, while continuing to be paid salary and benefits as a military officer. This was typically for a duration of two years for a masters, three years for a PhD. While taking full advantage of this to obtain a PhD seems like a great deal, there was risk, since those in student status would not get officer evaluations needed for promotion, and PhDs typically get research assignments as their "Utilization Tour" instead of command positions or clinic leadership roles, which are also very favorable when competing for promotion. Utilization tour assignments are commensurate with the advanced education received. Examples of the fields chosen included physiological optics/vision science, clinical optometric management, public health, healthcare administration, and business administration.[34]

In the Air Force, optometrists with advanced academic degrees engaged in research and development, teaching, and occupational vision programs. Those involved in research activities have been assigned to the USAF School of Aerospace Medicine, Brooks AFB, Texas; the Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio; the NASA Manned Spacecraft Center, Houston, Texas; and the Air Force Special Weapons Command at Kirtland AFB, New Mexico.[35]

Army utilization tour assignments include the United States Army Aviation Research Laboratory, Fort Rucker, Alabama; Center for Health Promotion and Preventive Medicine, Aberdeen Proving Grounds,

Maryland; and Walter Reed Army Institute of Research, Bethesda, Maryland.

The Navy has placed optometrists completing advanced degrees at such locations as the Naval Aerospace Medical Institute (NAMI), Pensacola, FL, for aviation research; the Naval Submarine Medical Research Laboratory (NSMRL) Groton, CT; and the Navy Refractive Surgery Center, San Diego, CA.[34]

Optometry has made significant contributions to the United States military for over a century now. Though there was little organization or recognition of the profession in World War I, optometrists were essential in achieving the mission. Optometry continued to be essential to the military, functioning effectively in World War II. Recognition of the profession of optometry was still limited but improving. Through the Korean and Vietnam Wars, optometry's position and the ability to make major contributions to the military increased. The profession has continued to make an impact and has become an essential part of the armed forces of the United States. Doctors of optometry are now an integral part of the Department of Defense. The nation cannot field an effective fighting force today without the dedicated performance of these officers.

ACKNOWLEDGEMENT

André B. Sobocinski, historian and communications directorate, Bureau of Medicine and Surgery, United States Navy, for assistance in the literature search.

References

1. https://www.history.com/topics/us-government/conscription
2. The United States Army and the First World War. https://spartacus-educational.com/FWWusa.htm
3. Ginn RVN. Army Optometrists: From World War I Through the Cold War. Office of Medical History Office of the Surgeon General, Department of the Army. March 31, 2003.
4. Hirsch MJ, Wick RE. The Optometric Profession. Philadelphia: Chilton, 1968.
5. Cooper SL. Laws regulating the practice of optometry. Unpublished.
6. https://www.arbo.org/aboutus.php. Accessed May 28, 2020.
7. https://www.aaopt.org/home/about/what-is-the-academy. Accessed May 28, 2020.
8. Report of first conference to establish optometric standards. American Optometric Association, 1922.
9. Research Starters: U.S. Military by the Numbers, nationalww2museum.org/students-teacheres/student-resources/research-starters-us-military-numbers.
10. McVeigh FL. The History of Army Optometry. Unpublished, 2001.
11. Bennett I. A witness to history. Review of Optometry, June 21, 2016. https://www.reviewofoptometry.com/article/a-witness-to-history. Accessed May 28, 2020.
12. Gray DP. Many Specialties, One Corps: A Pictorial History of the Medical Services Corps. 2nd ed, 2017.
13. https://www.airforcemedicine.af.mil/AFMSHeritage/ Accessed May 28, 2020.
14. Amos, John F. and Monaco, William A. Personal conversation.
15. McAlister WH. Military Optometry: Boycott or Barter. The O-Eye-O, 1975;40(2):13-15.
16. AFOS Newsletter, April 1980 and/or DOPMA 1980.
17. AFOS Newsletter, Jan 1979.
18. Cooper SL. 1971 – 2011: Forty year history of scope expansion into medical eye care. Optometry 2012; 83:64-73.
19. AFOS Newsletter, Apr. 1983.
20. AFOS Newsletter, Jan. 1985.
21. AFOS Newsletter, Oct. 1988.
22. Bachman WG. Personal conversation.
23. McAlister WH, Wingert TA, Handly RM. U.S. Army Reserve Optometry Mobilization in support of Operations Desert Shield and Desert Storm. Military Medicine 1994;159(6): 442-444.
24. Kent JF. Personal conversation.
25. Newson JA. 2020 - The year of Air Force optometry. https://www.airforcemedicine.af.mil/News/Display/Article/2066470/2020-the-year-of-air-force-optometry/. Published January 29, 2020. Last accessed February 20, 2020.
26. Military Health System Communications Office. Global Health Engagement Strengthens Partnerships. https://www.southcom.mil/MEDIA/NEWS-ARTICLES/Article/2050739/global-health-engagement-strengthens-partnerships/ Accessed May 28, 2020.
27. United States Navy Fact File. Hospital Ships T-AH. https://www.navy.mil/navydata/fact_display.asp?cid=4625&tid=200&ct=4 Accessed May 28, 2020.
28. Rodriguez J. Merging Civil Affairs and Medical Exercises for long-term success. https://www.southcom.mil/MEDIA/NEWS-ARTICLES/Article/944237/merging-civil-affairs-and-medical-exercises-for-long-term-success/ Accessed May 28, 2020.
29. Comfort Deployment 2019 Infographic
30. https://www.dvidshub.net/image/5911479/comfort-deployment-2019. Accessed May 28, 2020.
31. https://www.goarmy.com/careers-and-jobs/become-an-officer/army-officer-faqs.html.
32. https://myarmybenefits.us.army.mil/Benefit-Library/Federal-Benefits/Tuition-Assistance-(TA).
33. https://www.afpc.af.mil/Benefits-and-Entitlements/Military-Tuition-Assistance-Program/.
34. https://www.navycollege.navy.mil/tuition-assistance/what-is-tuition-assistance.htm.
35. Monaco, William A. Personal conversation.
36. Morris FM. The history of Air Force optometry. Medical Service Digest. September, 1969;10(9).