

## Perspective

# Physical Medicine and Rehabilitation within the Department of Defense

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## Perspective

Physical Medicine and Rehabilitation within the Department of Defense (DoD) continues to serve a unique role for the military. Over the past 15 years, medical advances on the battlefield have contributed to historically high survival rates among war casualties. The complexity of wounds sustained by service members, particularly those suffering blast injuries, has required the coordinated interdisciplinary care across a wide spectrum of medical specialties, with rehabilitation taking a prominent role. The integration of these services in a holistic and comprehensive manner, commencing during the acute phase of treatment, has helped to ensure each service member receives an individualized treatment program that promotes functional recovery, successful community reintegration, and quality of life.

## Historical Perspective

The field of Rehabilitation Medicine is historically imbedded in the care of injured service members. The United States War Risk Insurance Act of 1917 mandated rehabilitation and re-education for all disabled Civil War soldiers [1], with over fifty sites offering “physical reconstruction services” aimed at restoring physical and functional aspects of injured service members by the end of WWI [2]. After WWII, President Roosevelt established a formal program within the Army Air Corps for active rehabilitative services to restore ambulation and strength, as well as to promote mental, emotional, vocational and social recovery [3]. These efforts along with practicing rehabilitation providers laid the foundation for the American Medical Association to formally recognize the specialty of Physical Medicine and Rehabilitation (PM&R) in the 1940s [4]. Rehabilitation services during the polio epidemic increased national awareness of rehabilitation, spurring research in therapeutic exercise, biomechanics, and functional restoration. This further compelled specialists in physiatrist, physical and occupational therapy, speech

language pathology, nursing and orthotics/prosthetics to work in interdisciplinary teams. During the Vietnam conflict, physical therapists intervened in combat areas, resulting in an 80% return to duty rate [5]. Casualties from Vietnam, who needed to be evacuated from theater, received care from rehabilitative teams within both the Departments of Defense (DoD) and Veterans Affairs (VA). These teams included physicians, therapists, psychologists, social workers and vocational specialists, who helped restore physical and emotional functioning and promoted community re-integration. During this period significant advances were also achieved in prosthetics, wheelchairs and adaptive sports, fueled largely by disabled veterans who were unsatisfied with the status quo.

## Current day

Since September 11, 2001, combat operations in Afghanistan and Iraq have again resulted in rehabilitation specialists assisting wounded service members recover and restore functional independence. Survival rates during Operations Enduring and Iraqi Freedom (OEF/OIF) have reached historical highs, due to advances in body armor, expertly trained and equipped medics and corpsmen on the front lines, forward surgical resuscitation, and improved medical evacuation capabilities [6]. Devastating injuries from explosive devices that in prior conflicts would have been fatal, are now survivable, but frequently result in multiple complex co-morbid conditions, including extremity trauma and amputation, paralysis, sensory (vision/hearing) impairment, Traumatic Brain Injury (TBI), psychological health conditions (including PTSD), and life-threatening infections from contaminated wounds [7].

In order to meet the complex rehabilitative needs of injured service members returning from OEF/OIF, three Centers of Excellence were developed within the DoD: Walter Reed National Military Medical Center (WRNMMC) in Bethesda, Maryland; the Center for the Intrepid (CFI) in San Antonio, Texas; and the Comprehensive Complex Casualty Care Center (C5) program in San Diego, California [8]. These Centers offer holistic inter-disciplinary care, where rehabilitative teams are engaged during the acute medical and surgical care of the patient. Evidence supports that early rehabilitative intervention promotes faster functional restoration, decreases length of stay, mitigates the risk of secondary complications, and improves overall patient satisfaction and outcomes [9]. Unlike prior military conflicts, when rehabilitation was not initiated until after medical and surgical stabilization, today’s paradigm is to engage in rehabilitative efforts early and often, even as wounded warriors receive aggressive medical intensive care, or go back and forth to the operating room for wound debridement and/or surgical reconstruction.

Military PM&R specialists are uniquely skilled to support the military healthcare system’s mission because of their specialized training to lead interdisciplinary teams and integrate medical, surgical, and behavioral health care, along with assistive technology

and physical and therapeutic modalities to optimize individualized care for wounded warriors, particularly those with complex blast injuries. War casualties represent a very heterogeneous patient population. These inter-disciplinary rehabilitative teams generally consist of PM&R specialists, physical and occupational therapists, speech-language pathologists, nurses, social workers, nutritionists, peer-support visitors, psychologists and behavioral health experts, assistive technology experts, orthotists, prosthetists, pharmacists, recreational and vocational therapists, driving rehabilitation specialists, and the families of those injured. Their focus is goal-directed interventions to optimize recovery, restore function and dignity, and promote successful community reintegration and return to active military duty if desired. Special skills in pain management, cognitive and behavioral interventions, monitoring and mitigating secondary injury (e.g. deconditioning, contractures, skin breakdown, venous thrombus, electrolyte or nutritional imbalance, etc.), diagnosing peripheral and central nervous injury, managing bowel and bladder dysfunction, and prescribing appropriate prosthetics, orthotics and wheelchairs, contribute to the physiatrist's ability to have a profound effect on the quality of care and eventual outcome of a wounded warrior.

While DoD physiatrists provide specialized care to wounded warriors, they also serve multiple other roles within the military. Many PM&R physicians hold prominent leadership roles within the military, commanding clinics and hospitals globally. This year marks a historic event, as the U.S. Army promoted its first PM&R physician to the rank of brigadier general [10]. PM&R providers also actively engage in research and educational activities to support the professional training and career development of medics and corpsman, medical students, residents of all specialties, and fellows. A Department of Rehabilitation now exists within the F. Edward Hebert School of Medicine – “America’s Medical School” at the Uniformed Services University of the Health Sciences in Bethesda, Maryland [11,12]. Finally, like all military physicians, PM&R physicians support military readiness by deploying to hostile environments to serve in Role II (e.g. field tents, aide stations, etc.) and Role III (Combat Support Hospitals) facilities, where they engage in providing resuscitative care, along with primary care support to deployed military personnel. Deployed physiatrists are also frequently engaged in helping to coordinate medical evacuation planning, as well as advising military commanders about the morale and welfare of the soldiers, sailors, airmen and marines within their units. During peacetime, PM&R specialists support the military healthcare system and ongoing combat readiness by caring for all military beneficiaries, ranging from pediatrics (dependent children) to geriatrics (retirees) at military medical facilities across the globe to help keep and protect the U.S. fighting force.

## Conclusion

The military has had a long tradition of promoting the need for and advancing the field of rehabilitation. The origins of Physical Medicine & Rehabilitation, as well the fields of Physical and Occupational therapy, largely stem from the care of war casualties, as providers sought to advance their skills in caring for war survivors and subsequently organized and developed their respective professional societies. While their collective work has brought about many advances in rehabilitative medicine, continued work is needed, as countless veterans from the U.S. and around the globe continue to endure significant impairments and disability from war and other disease related conditions.

Continued collaboration between rehabilitation specialists, both within and outside the DoD, will not only improve the care of injured service members, but veterans and civilians across this country and abroad. Trans-disciplinary partnerships continue to emerge between rehabilitation professionals and other disciplines, such as neuroscientists, engineers, roboticists, and regenerative medicine scientists. These partnerships have the potential to revolutionize the care of for all those with disability here and across the globe.

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