Chapter 50

THE HOME BASE: LANDSTUHL, GERMANY, AND HOSPITALS IN THE CONTINENTAL UNITED STATES

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INTRODUCTION

Before leaving the combat theater, injured soldiers are surgically stabilized, although considerable surgery usually remains to be done. In the typical combat-wounded veteran, most restorative surgical procedures are performed at Role 4 facilities. The network of US military hospitals in the continental United States, as well as in Landstuhl, Germany, provides a robust healthcare system capable of definitive care for all of the combat casualties who survive to evacuation from the combat theater. This system is also supported by a small number of civilian or Veterans Affairs (VA) medical centers that provide unique or specialty care for some soldiers (based on need).

LANDSTUHL REGIONAL MEDICAL CENTER

History

Located in southwestern Germany in the state of Rheinland-Pfalz, Landstuhl Regional Medical Center (LRMC) is the largest American military medical center outside the United States. The US Army has maintained a hospital presence in the town of Landstuhl since November 28, 1951, when the 320th General Hospital took over operational control from an existing German military hospital. Soon thereafter, construction began on a new hospital, and the 320th General Hospital moved patients into the new facility on March 9, 1953. This hospital has been continuously operational since that day, although the name has changed three times. It was renamed the 2nd General Hospital in 1954 and Landstuhl Army Medical Center in 1994. In November 2003, it was redesignated Landstuhl Regional Medical Center.

Throughout its history, LRMC has been a key medical resource for the European theater and the Middle East. Among the service men and women treated at Landstuhl were the Marines injured during the 1980 hostage rescue attempt in Iran and in the 1983 Beirut barracks bombing, as well as 500 casualties of the 1988 disaster at the Ramstein Air Show.[1]

In the post-9/11 era, the bed capacity at LRMC was expanded by almost 50%. The greatest expansion was a tripling of the intensive care unit beds from 6 to 18, and an increase in the number of inpatient psychiatry beds, from 12 to 22. A smaller increase was seen in the number of medical-surgical beds (now 74). There are eight main operating rooms, two obstetric operating rooms, and two urologic operative procedure rooms. From January 1, 2004, through January 5, 2011, LRMC treated 64,892 patients, returning 20.9% back to duty within Central Command (CENTCOM).

Current Capabilities

LRMC's top priority, as published by the commander at the time of this writing, is casualty reception for wounded warriors from across the CENTCOM (which includes Iraq and Afghanistan), African Command (AFRICOM), and European Command (EUCOM) areas of responsibility. Since the Cold War ended, medical capabilities have been consolidated at LRMC because 23 other hospitals in Europe have closed, making LRMC the sole US tertiary referral facility for military forces, their families, and other beneficiaries in EUCOM, CENTCOM, and AFRICOM. EUCOM alone comprises 245,000 beneficiaries (Table 50-1). In addition to being a tertiary referral center, LRMC is a primary care facility serving 100,000 beneficiaries, with the remaining 145,000 EUCOM beneficiaries receiving primary care at outlying clinics. The specialties represented at LRMC are myriad. In addition to the surgical specialties listed in Exhibit 50-1, many medical specialties and ancillary services are offered, including addiction treatment, nutrition care, physiatry, physical and occupational therapy, and social work.

The specific capabilities of each of these services tend to be weighted toward military combat care

TABLE 50-1

A TYPICAL DAY AT LANDSTUHL REGIONAL MEDICAL CENTER (BASED ON AVERAGES FROM DECEMBER 2009 TO NOVEMBER 2010)

Admissions	25
Outpatient visits	2,908
Operating room cases	31
Intensive care unit census	9
Laboratory services	2,396
Radiology services	789
Births	3
Pharmacy products	1,297
Meals served	1,769

EXHIBIT 50-1

LANDSTUHL REGIONAL MEDICAL CENTER SURGICAL SPECIALTIES

- anesthesiology/pain clinic
- otolaryngology
- general surgery
- plastic surgery
- hand surgery
- podiatry
- neurosurgery
- spine surgery
- obstetrics/gynecology
- trauma
- ophthalmology
- urology
- oral surgery
- thoracic surgery
- orthopedics

needs to a greater degree than most civilian or stateside facilities of similar size. For example, the LRMC neurosurgical service is geared to provide state-of-the-art care for complex spine injuries and traumatic brain injuries, but is more limited in its ability to care for intracranial vascular cases and tumors due to imaging limitations and an absence of interventional neuroradiologists. Urgent cases that require such services are immediately transferred to local German hospitals with these capabilities.

The consultants at LRMC and stateside medical centers frequently interact with medical staff in the combat zone, either as part of a formal consultation program or an informal peer-to-peer communication. For instance, primary care physicians examining an uncommon skin lesion can take a digital photo and email it, along with a case description, to derm.consult@us.army.mil. A telemedicine administrator at Fort Sam Houston in San Antonio, Texas, screens the request and sends it to a dermatologist on call at LRMC or one of the stateside medical centers, who will then send recommendations back to the originating doctor within a few hours. This process allows many service men and women to avoid unnecessary travel within or from the combat theater,[2] and it is available for many other specialties. Modern communications also support peer-to-peer communication between surgeons in the field and LRMC receiving surgeons. This exchange has facilitated LRMC surgical teams in anticipating the logistical and medical needs for a patient before his or her arrival.

Specialty Services

Because penetrating and blast injuries to the eye are common in combat trauma, ophthalmologists have active roles in maintaining or restoring eyesight to injured service members. The ophthalmology service providers perform initial, mid-term, and long-term management of all anterior segment trauma, and mid-term and long-term management of vitreoretinal and orbital trauma; that is, they can perform initial globe repair, but subsequent vitreoretinal surgery is sent to a local hospital if urgent and deferred until arrival in the United States if not urgent. Routine nontrauma cases include all commonly performed refractive surgeries, cataract surgeries, strabismus, and oculoplastic procedures. The LRMC ophthalmology service typically receives one to eight telephone calls or emails daily from optometrists, primary care physicians, and physician assistants in the combat zone via an Army Medical Department telemedicine site. In addition, providers participate in a monthly teleconference with forward-deployed and stateside sites to discuss cases.

LRMC has dedicated an extracorporeal membrane oxygenation (ECMO) team to support cases of devastating lung injuries. The team consists of physicians, intensive care nurses, and respiratory technicians who have undergone specific ECMO training. Although the majority of ECMO cases have been initiated at LRMC, there have been several ECMO cannulations in the combat theater, with ECMO care continuing during evacuation to LRMC. The first ECMO cannulation in the combat theater was performed in Kandahar in October 2010. Regardless of where ECMO is initiated, the ECMO team cares for the injured service member until he or she arrives at University Hospital Regensburg, a German facility with significant ECMO expertise. Because of its role in the care of combat casualties, LRMC is also actively involved in the organ donation program with its European counterparts.[3]

The vast majority of US patients received from the combat theater spend only a short time at LRMC before continuing their journey to the United States. There are typically three scheduled air evacuation/critical care air transport team flights to the United States from Germany per week, and there is capability to "spin up" additional flights, if necessary. Thus, the average US combat surgical patient receives one to two surgeries at LRMC. The destination of patients departing from LRMC is determined by several factors, such as type of injury (eg, all major burns go to the burn center in San Antonio; see Institute of Surgical Research, below), location of the service member's unit, the location of the service member's family, and potentially by the available bed space at stateside hospitals.

MILITARY HOSPITALS IN THE UNITED STATES

Military Medical Centers

Military medical treatment facilities (Exhibit 50-2) are any medical care sites, including clinics, hospitals, and medical centers. Military medical centers (MEDCENs) are Army medical facilities that offer tertiary care (sophisticated diagnosis/treatment of any ailment) as well as primary and secondary care. Each MEDCEN has a hospital and other services (preventive medicine, blood bank, etc). MEDCEN hospitals are the largest MTFs, have the most sophisticated equipment and most specialized staffs, and offer the widest arrays of specialty care in the military health system. All MEDCENs offer graduate medical education (internships, residencies) for physicians. Army hospitals that offer complex, resource-intensive secondary care (eg, inpatient care, surgery under general anesthesia) but do not provide all the services required for a MEDCEN are called Army community hospitals (ACHs). ACHs also deliver primary care at outpatient clinics inside and outside the hospital (eg, at troop clinics and outlying clinics at small posts). A facility that offers all ACH services except inpatient care is called an Army health center. A clinic is defined as an outpatient facility offering primary care or simple specialty care (ie, routine exams, tests, and treatments supervised by a larger entity such as a Medical Department activity (see Military Medical Activities, below). A clinic may be a stand-alone site (eg, an Army health clinic) or part of a major health facility (family practice clinic, pediatric clinic, and so forth, within a hospital).

Combat casualty care is delivered in a variety of US military hospitals; the major centers are the Walter Reed National Military Medical Center (the old Walter Reed Army Medical Center combined with the National Naval Medical Center); San Antonio Military Medical Center (Brooke Army Medical Center and Wilford Hall Medical Center); and San Diego Naval Medical Center. These MEDCENS provide initial treatment for the majority of combat casualties. Injuries requiring less complex care may be treated in other MEDCENS closer to the service member's duty station or home.

The individual services have unique programs aimed at providing the highest quality of care to the injured warrior. The Army Wounded Warrior Program (AW2) is the official US Army program that assists and advocates for severely wounded, ill, and injured soldiers, veterans, and their families, wherever they are located and regardless of military status. Warriors in transition who qualify for AW2 are assigned to the program as soon as possible after arriving at the Warrior Transition Unit. AW2 supports these soldiers and

EXHIBIT 50-2

US MILITARY MEDICAL TREATMENT FACILITIES

Army Medical Treatment Facilities

- Madigan Army Medical Center, Joint Base Lewis-McChord, WA
- William Beaumont Army Medical Center, Fort Bliss, TX
- Brooke Army Medical Center, Fort Sam Houston, TX
- Carl R. Darnall Army Medical Center, Fort Hood, TX
- Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA
- Walter Reed National Military Medical Center, MD
- Womack Army Medical Center, Fort Bragg, NC

Navy Medical Treatment Facilities

- Naval Hospital, Beaufort, SC
- Naval Hospital, Bremerton, WA
- Naval Hospital, Camp Lejeune, NC
- Naval Hospital, Camp Pendleton, CA
- Naval Hospital, Jacksonville, FL
- Naval Hospital, Lemoore, CA
- Naval Hospital, Oak Harbor, WA
- Naval Hospital, Pensacola, FL
- Naval Hospital, Twenty-nine Palms, CA
- National Naval Medical Center, MD
- Naval Medical Center, Portsmouth, VA
- Naval Medical Center, San Diego, CA

Air Force Medical Treatment Facilities

- 3rd Medical Group, Elmendorf Air Force Base, AK
- 6th Medical Group, MacDill Air Force Base, FL
- 14th Medical Group, Columbus Air Force Base, MS
- 20th Medical Group, Shaw Air Force Base, SC
- 56th Medical Group, Luke Air Force Base, AZ
- 47th Medical Group, Laughlin Air Force Base, TX
- 75th Medical Group, Hill Air Force Base, UT
- 96th Medical Group, Eglin Air Force Base, FL
- Keesler Medical Center, Keesler Air Force Base, MS
- Wilford Hall Medical Center, Lackland Air Force Base, TX
- Wright-Patterson Medical Center, Wright-Patterson Air Force Base, OH

their families throughout their recovery and transition, even into veteran status. This program, through the local support of AW2 advocates, strives to foster the independence of warriors in transition.

The Marine Wounded Warrior Regiments (WWRs) are strategically placed assets that have thus far contacted or provided support in some degree to nearly 25,000 marines, whether they are assigned to the regiment or returned to their parent units. "Once a Marine, always a Marine" is an enduring commitment the WWR upholds. Whether marines are wounded in combat, fall ill, or are injured in the line of duty, the WWR serves the total force: active duty, reserve, retired, and veteran marines. The regiment maintains administrative and operational control of two wounded warrior battalions located at Camp Pendleton, California, and Camp Lejeune, North Carolina. These battalions have detachments located at medical treatment facilities and at VA polytrauma rehabilitation centers. The span of the regiment extends across 23 locations from Landstuhl, Germany, to Okinawa, Japan, and throughout the continental United States. The regiment's nerve center is the Wounded Warrior Operations Center (located at Pendleton and Marine Corps Base Quantico, VA), which serves as the central point of contact for all nonmedical care management issues.

Institute of Surgical Research

The US Army Institute of Surgical Research, part of the US Army Medical Research and Materiel Command, is collocated with Brooke Army Medical Center and dedicated to both laboratory and clinical trauma research. Its mission is to provide requirements-driven combat casualty care and medical solutions and products for injured soldiers, from self-aid through definitive care across the full spectrum of military operations. The Institute also provides state-of-the-art trauma, burn, and critical care to Department of Defense beneficiaries around the world and civilians in the south Texas trauma region as well as burn special medical augmentation response teams.

Military Medical Activities

The US military has made tremendous progress in the rehabilitative care of injured combatants. The medical personnel of the combined services are doing outstanding work to develop and implement the Military Health System (MHS) rehabilitative programs necessary to return severely injured service members to duty or to a productive civilian life. Severely injured service members often require prolonged treatment, time to heal, and rehabilitative care before a decision can be rendered about their ability to remain on active duty. The MHS is meeting this challenge by improving the coordination of healthcare for service members and veterans with the Veterans Health Administration. MHS is dedicated to ensuring that service members are provided outstanding clinical care and streamlined administrative processes to return them to duty status or to transition them from MHS care to the VA healthcare system in an effective and timely manner. Five MHS Specialty Centers of Excellence, listed in Exhibit 50-3, provide specialized care with unique capabilities in their assigned sphere.[4]

Veterans Affairs Medical Centers

VA medical centers represent the most comprehensive hospitals within the Veterans Health Administration network. There are 152 medical centers, located across the 50 states, the District of Columbia, and Puerto Rico, as well as a multitude of smaller facilities such as community-based outpatient clinics and living centers. As detailed on the VA website (http://www.va.gov/health/MedicalCenters.asp), VA medical centers provide all of the traditional hospital-based services including surgery, critical care, physical therapy, and mental health. Many centers provide additional specialty services such as neurology, prosthetics, and vision care. In some VA medical centers, plastic surgery and organ transplantation are offered.

Together, these hospitals and clinics are designed to provide continuity of treatment for service members after their departure from active duty service. The VA has established care management teams consisting of

EXHIBIT 50-3

US MILITARY HEALTH SYSTEM SPECIALTY CENTERS OF EXCELLENCE

- Walter Reed National Military Medical Center Amputee Care Center and Gait Laboratory
- National Naval Medical Center's Traumatic Stress and Brain Injury Program
- Center for the Intrepid and Brooke Army Medical Center Burn Center at Joint Base San Antonio, Texas
- Naval Medical Center San Diego Comprehensive Combat Casualty Care Center
- Department of Defense/Veterans Affairs Defense and Veterans Brain Injury Center (multiple sites)

case managers and patient advocates to help newer veterans initiate and coordinate their care upon exiting active duty and when relocating from one geographic region to another. In recent years, the VA has taken numerous steps to increase dissemination of information to beneficiaries, with many VA medical centers using social media such as Facebook and Twitter to help the beneficiaries stay informed.

SUMMARY

The military and VA hospitals comprise a geographically vast and technically capable network reaching from Germany to the United States. Every conceivable medical specialty and all ancillary services are contained within the system. The temporal span of interaction with the patient lasts decades—from days after injury through the rest of the service member's military career and beyond.

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