

DISPATCH FROM LANDSTUHL

BY A. BRENT EASTMAN, MD, FACS

Like some of my trauma surgical colleagues, I had the opportunity in July 2007 to participate in the American College of Surgeons/American Association for the Surgery of Trauma (AAST), Senior Visiting Surgeon Combat Casualty Program at the Landstuhl Regional Medical Center (LRMC) in Landstuhl, Germany.

This program was initially conceived and inaugurated by the AAST to allow senior civilian trauma surgeons to work with our military surgical colleagues in caring for the combat casualties from the war in Iraq. The concept was that we could help and teach by bringing our years of trauma experience and, in turn, we could learn from them the trauma lessons from this war.

As has been the case for most of the ACS/AAST visiting surgeons who have had the opportunity to visit Landstuhl, it was undoubtedly one of the most rewarding experiences of my surgical career for a variety of reasons. Principally, it was gratifying to have been immediately integrated into the superb LRMC trauma team and to participate in the operative and surgical critical care of the many wounded warriors being evacuated virtually every day from the war in Iraq and from Afghanistan and Africa.

Because of my long-standing interest in trauma systems, I was especially pleased to observe, first-hand, the Joint Services Trauma System (described later in this article).

In addition, I was honored, as a Regent of the College, to deliver a Certificate of Appreciation to the surgical teams at the LRMC.

Following is an edited version of the “Dispatch from Landstuhl” I sent to the leadership of the ACS: Edward M. Copeland III, MD, FACS, Immediate Past-President; Gerald B. Healy, MD, FACS, President; Josef E. Fischer, MD, FACS, Chair of the Board of Regents; and Thomas R. Russell, MD, FACS, Executive Director.

Saturday July 28

DEAR DRs. COPELAND, HEALY, FISCHER, AND RUSSELL,

I have completed my tour at the Landstuhl Regional Medical Center (LRMC), as a participant in the ACS/AAST Senior Visiting Surgeon Combat Casualty Program. It has been one of the most rewarding experiences of my surgical career.

It is important to note that LRMC was, just last month, verified by our ACS verification program as a level II trauma center. It is the only military hospital outside the continental U.S. to achieve ACS Trauma Center Verification status. This is an incredible achievement, because they prepared, had a successful site visit, and met all of our rigorous criteria for level II trauma center verification—all accomplished while caring for the large number of critically injured “wounded warriors” they receive on a daily basis.

There have been a number of trauma surgeons who have preceded me in this program and others who will follow. I fortuitously overlapped with my friend and colleague Norman McSwain, MD, FACS, from Charity Hospital, Tulane. I believe all of my predecessors have been Fellows of the ACS.

I, with your endorsement, was privileged to go as a Regent representing the ACS and to deliver an ACS Certificate of Appreciation. Dr. Russell and the staff in Chicago prepared an official ACS document, which read as follows:

Certificate of Appreciation

The American College of Surgeons honors and applauds the dedicated surgical teams of Landstuhl Regional Medical Center for their care of our servicemen and women wounded in Iraq.

I presented this certificate to Col. Brian C. Lein, MD, FACS, Commanding Officer of the LRMC, and Col. Stephen Flaherty, MD, FACS, chief of surgery/trauma and critical care, in a ceremony attended by most of the surgical staff at the hospital. It was graciously received, and Colonel Lein, a general surgeon, expressed his

extreme gratitude and pride at receiving this acknowledgment from the ACS. He and Colonel Flaherty told me how much this meant to the morale of their entire surgical team.

One of the highlights of my experience was working with and witnessing the superb leadership of Colonel Flaherty, a talented, committed, and compassionate trauma surgeon. These surgical teams at LRMC are an integral part of the remarkable Joint Theater Trauma System (JTTS), serving our injured warriors from Iraq, Afghanistan, and beyond. Colonel Flaherty is one of the architects of the JTTS.

The JTTS spans all of the military “echelons of care” (that is, continuum of care) as follows:

- *Echelon 1:* Medic care in the battle zone for life-saving care including the control of hemorrhage (often with tourniquets).
- *Echelon 2:* Division-level health service support, which includes evacuating patients from the unit-level aid stations and providing initial resuscitative treatment in division-level medical facilities. These are our forward surgical teams operating in mobile field hospitals. They may remove tourniquets, treat shock with intravenous fluids, perform emergent lifesaving amputations for improved explosive device blast mangled extremities (frequent procedure), place temporary silastic vascular shunts for arterial injuries, stabilize fractures, give pain medications, and so on.
- *Echelon 3:* Includes combat support hospitals such as the one in Balad, Iraq, from which most of the LRMC patients are transferred. Here they do “damage control” surgery, including vascular repairs with interposition vein grafts, external fixators, fasciotomies, laparotomies, splenectomies, and so on. They usually leave the abdomen open, apply a wound vac, and transfer by critical care air transport team (CCATT) (described later in this article).

• *Echelon 4:* Definitive care hospitals such as the LRMC, where patients are reoperated if necessary, wounds washed out, debrided, burn wounds dressed, escharotomies done or extended as needed, wounds including fasciotomies closed when appropriate, critical care provided (such as dialysis and other procedures). Patients are seen by all specialties as indicated. Transfers by CCATT to the U.S. are arranged. The average length of stay at LRMC is only about three to four days.

• *Echelon 5:* Tertiary care hospitals such as Walter Reed, the U.S. Naval Center in Bethesda, and Brooke Army Medical Center (all burns) in San Antonio, TX, and San Diego (CA) Naval Hospital. CONUS (Continental U.S.) is where the ultimate treatment capability for patients from the theater resides, including full rehabilitative care and tertiary-level care.

(At the invitation of Admiral Christine Hunter, Commander, San Diego Naval Hospital, I was actually able to visit one of the marines I cared for at the LRMC in July. At the Naval Hospital, he is undergoing rehabilitation following an above-the-knee amputation. The people, the facility, and the care he and many other wounded warriors are receiving are truly magnificent.)

Integral to the JTTS is the U.S. Air Force's CCATT. CCATT transfers are accomplished in a C17 transport plane that has been converted to a "flying intensive care unit (ICU)." They can carry up to 40 wounded soldiers. The most critical, such as the patient I have described, are accompanied by a doctor, nurse, and respiratory therapist, and they are equipped to do virtually all modes of critical care. Other less critical patients are cared for by nursing teams. They fly at 35,000 feet. It is about an eight-hour flight to the U.S. There is some element of high altitude physiology since the plane interior is at about 1 atmosphere.

At LRMC, we received flights from "down range" (Iraq and Afghanistan) every day, and had outgoing flights to the U.S. ("up range") three days a week (Tuesday, Friday, and Sunday).

It is an amazing process to watch these CCATTs move in to the LRMC ICU, "package" the patients, move them by converted bus to the Ramstein Air Base (a 15-minute drive), and load them on the C17.

I was allowed to accompany one of my patients on this trip to Ramstein Air Base. They also al-

lowed me to go aboard the C17 and see the interior, which is configured as an ICU. I was able to wish my patient safe travel home. Like most of the Marines I cared for, he said he would rather be going back to the war with his platoon.

Some of the most remarkable things about the JTTS they have created are as follows:

- The commitment, courage, passion, and expertise of the surgical teams, particularly those surgeons operating in or near the combat zone ("one terrain feature from the battle line"), with constant threat of mortar and sniper fire. Colonel Flaherty told me that one of his trauma surgeons who had been deployed down range was killed by mortar fire. On rounds one day, Colonel Flaherty commented on the need to carefully reexplore a patient because this would be the first operation he has had where the surgeons weren't under mortar fire. There is one medical facility that has been nicknamed "Mortaritaville."

- The incredibly rapid movement of critically injured soldiers from the battle line of the combat zone to definitive/tertiary care, usually over only several days, which is made possible by the CCATT operation.

- System performance improvement over the continuum of care. Once a week, they have a video trauma conference with participation from surgeons down range (Iraq), LRMC, and Walter Reed, Bethesda, and Brooke Army Medical Center. They discuss all patients from the past week and we hear what happened in the combat zone, what we did at LRMC, and what they have done and are doing at the echelon 5 hospitals in the U.S.

I have some initial thoughts about where we, the ACS, can help in this effort to care for combat casualties:

- *Verification of military trauma hospitals.* We can begin by helping to celebrate the major accomplishment of level II verification at LRMC. I have discussed this issue with Dr. Russell, who will help facilitate someone from ACS attending their celebration ceremony. There are only a few verified military trauma centers in the U.S. (such as Brooke Army Medical Center).

We should also help facilitate the verification of the military's echelon 3 combat support hospitals such as the one in Balad. This would help ensure the delivery of optimal care at that level. This next step is critical.

• *Dr. Healy's idea of involving our surgical specialties.* The orthopaedic surgeons play an absolutely critical role, especially down range. I did meet one orthopaedic surgeon from Denver, CO, who is part of the visiting surgeon program.

I discussed the neurosurgeon situation with the only neurosurgeon at LRMC, and clearly they are stressed to the limit. There are, I understand, currently only two neurosurgeons in Iraq, and they do all of the urgent cases before transfer to LRMC.

We could lead discussions with these critical specialties, as Dr. Healy has suggested.

• *Research.* There are opportunities to help facilitate clinical research. They are putting together a trauma registry database. It will be extremely valuable, especially in the treatment of hemorrhagic shock and blast injuries of the extremities, head, and neck. I would like to consider adding a military surgical scientist (such as John Holcomb, MD, FACS, Director of Research Unit at Brooke Army Medical Center) to the Regent's Scholarship Committee, of which I am Chair. We could explore how we might direct some of our research grant money to military surgeons doing clinical research in one of these areas.

• *Trauma system development.* There is opportunity to involve the surgeons who have developed the JTTS I have described. They could teach us a great deal about what they have done with triage and transport. Also, I think we could put together a trauma system consultation team that could help them. The military surgeons would define the questions and describe the expertise they would want on the ACS team. That's the way we are doing it in the U.S. The ACS Trauma System Consultation Program has the processes and access to surgical expertise to make this happen.

• *Education.* Better integrate them into our various education programs, including the Clinical Congress, specialty meetings, and so on. I did hear from the surgeon at Walter Reed, during our video trauma conference this week (while discussing one of our patients with a penetrating wound to the neck) that they will present a paper at the Surgical Forum at this year's Clinical Congress. They are presenting 200 penetrating wounds of the neck. This is a prime example of the wealth of information they have to share with us. This is information that will save lives in the U.S.

In summary, there is much that the ACS can do to support our surgeons (many of whom are Fellows) and surgical teams who are caring for the injured men and women of this war. I did have the opportunity to meet with Brig. Gen. David Rubenstein, Deputy Commanding General, 3rd Medical Command, and he is interested in pursuing how we can work together.

It is clear to me that the support of the ACS is profoundly important to our surgical teams. This appreciation was demonstrated by the surgeons at LRMC, and Brigadier General Rubenstein, in response to receiving our ACS Certificate of Appreciation.

When we talk about what we can do for our Fellows, this is a prime example, and I think our efforts would also be appreciated by our Fellows at home.

General Rubenstein shared a wonderful quote from the Mayo brothers during WW II: "The only victor in war is medicine."

Ultimately, injured patients cared for in our trauma centers in the U.S. and Canada will benefit from the new knowledge being learned from this war, just as military medicine has advanced trauma care throughout history. □

Dr. Eastman is chief medical officer and the N. Paul Whittier Chair of Trauma, ScrippsHealth, San Diego, CA, and a Regent of the College.

