Reconstructing Lives — A Tale of Two Soldiers

Susan Okie, M.D.

Jason Pepper can’t see the deer and wild turkeys that feed in the pasture in front of his new home, an hour’s drive from Nashville. But when he sits and smokes on his front porch, he likes knowing they’re out there — and even more, he savors the silence. Pepper, who was blinded by a bomb in Iraq in 2004, completed a rehabilitation program for blind veterans last year at the Edward Hines, Jr., Veterans Affairs Hospital in Illinois, learning to find his way using a cane and a personal global positioning system (GPS) device. With this device he was able to travel alone by public transportation into downtown Chicago. By moving to the country, Pepper has given up that independence: his wife or her brother must drive him to his college classes and other appointments. But to Pepper, a former Army combat engineer still struggling with disabling headaches, episodic anxiety, and other sequelae of the blast that blinded him, damaged his brain, wounded both arms, and destroyed his sense of smell, it seemed more important to escape from the sounds he associates with danger and combat.

“I want the quietness, the serenity of knowing that I’m in the country,” said Pepper, a powerfully built man in his late 20s. “You don’t have the hustle and bustle of all the traffic. You don’t have the honking of horns, the sirens. You hear gunshots, but it’s target practice or hunting.” He grinned. “The crickets get kind of annoying.”

Pepper and another soldier, David Emme, were profiled in the Journal last year while they were undergoing treatment and rehabilitation at Walter Reed Army Medical Center in Washington, D.C. As sergeants in the U.S. Army serving in Iraq, both had been wounded by improvised explosive devices and had traumatic brain injury (TBI), which has been called the signature wound of this war. Both also had symptoms of post-traumatic stress disorder (PTSD). Among more than 22,600 U.S. soldiers wounded in the conflicts in Iraq, Afghanistan, and other locations as of November 4, 2006, blasts have been by far the most common cause of injury, and 59% of blast-exposed patients at Walter Reed have been found to have a TBI. As thousands of brain-injured veterans come home to recover and rebuild their lives, medical experts have expressed concern about the challenges of providing them with continuing medical care and vocational and emotional support, especially be-
cause cognitive and psychological aftereffects of TBI can predispose them to falling through the cracks of the health care system. Officials in the Departments of Defense and Veterans Affairs (VA) have planned for what they term a “seamless transition” from military medicine to the VA or civilian health care. To see how two transitions are going, I recently revisited Sergeants Pepper and Emme.

Technology has become Pepper’s lifeline. Mechanically talented and computer-savvy, he loved video games before he lost his vision; now, computers help him to find his way, read, do homework assignments, and prepare for a career in computer networking and information security. For today’s wounded soldiers, “prosthetics” is a term encompassing far more than artificial limbs.

“A prosthetic is any augmentative equipment that helps you survive or do things you need to do on a day-to-day basis,” Pepper explained. His prosthetics include a personal GPS device that can direct him to his destination by voice or in braille, software that lets him operate his computer by voice, and software enabling the computer to read aloud to him. Pepper spent most of his time at Hines learning to use such tools. He soon lost patience with braille and with learning to cook, focusing instead on mobility training and computer classes.

Learning to function as a blind man was one of many challenges in a life-wrenching transition. Separated from his wife, Heather, and young daughter, Naomi, Pepper spent 12 lonely weeks at Hines last summer, then returned to Walter Reed for more reconstructive hand surgery. Last fall, he returned to Germany, where he and Heather had met. He had spent 10 years in the Army and had intended to stay for his entire career; being discharged was enormously painful. “If I could,” he said, “I’d still go back.” Forced to choose where they would relocate, the couple picked the Nashville area on the basis of Internet research. Naomi stayed with her grandparents in Germany until the Peppers were able to move into a house. “We’ve been going through kind of a financial strain, but we’re still able to put food on the table, still able to pay the bills,” Pepper said. “Now everybody has a bed.”

When I visited in early October, Heather Pepper was in her final month of pregnancy with their second child. Jason Pepper attends college 2 days a week. They live on his VA and Social Security disability payments, which total $6,200 per month — a comparatively large figure reflecting the
severity of his disability. Like other wounded soldiers, Pepper underwent disability evaluations by both the Army and the VA. According to the military’s formula for determining disability, “I was 200% disabled,” he said: 100% because of blindness and another 100% because of the injuries to his left hand and right arm, shrapnel embedded in his body, and his PTSD. The VA has its own scheme, which considers all of a veteran’s medical problems in computing the degree of disability — and the amount of compensation. Pepper’s code is R1. “Basically, R1 is the highest you can go without being classified as a vegetable,” he joked.

Nonetheless, Pepper intends to return to work — but not until he gets a bachelor’s degree and finds a job that pays well enough to make up for the loss of his Social Security disability payments and the other expenses he would incur by working. Heather is not currently employed and plans to stay at home with Naomi and the new baby.

Pepper talks frequently with his “prosthetics lady,” a VA employee in Nashville who helps him get the electronic devices he needs. Yet he is reluctant to discuss his medical problems and had not seen a doctor since leaving Walter Reed in September 2005. Before being discharged, he enrolled with Tricare, an agency that administers a national health care plan for military personnel, veterans, and their families. Tricare referred him to a civilian primary care physician in Nashville, but Pepper said he was unable to contact him. Although he accompanied Heather to her prenatal visits at Blanchfield Army Community Hospital at Fort Campbell, Kentucky — a 2-hour drive — Pepper had yet to make an appointment for himself. In early November, the family was finally assigned a primary care physician at Fort Campbell.

Pepper has severe migraines almost daily, for which he has taken escalating doses of a barbiturate-containing pain medication left over from Walter Reed. “I’ll just be sitting here and all of a sudden the headache will start,” he said. “Then it will sit just right behind [my left eye], and I’ll rub my head for hours.” He also takes medications intermittently to reduce anxiety and to help him sleep, but he has halved his dose of an antidepressant: “I just don’t like the way it makes me feel.” He smokes heavily and said he hates the fact that, being blind, he can’t get vigorous exercise safely: he can’t run on a road or a treadmill because of the risk of falling. He weighed 187 pounds at discharge from Walter Reed; now, he weighs 240 or 250: “I’m fat, lethargic, and have no energy.”

For David Emme, the worst part of each day is bedtime. He postpones it as long as possible, because he dreads the feeling that comes as he is dozing off. “It has happened ever since I got wounded,” he said. “It feels like there’s an explosion inside my brain — like a shock-wave effect. It lasts a few minutes. Sometimes my whole face, neck, and head will hurt. It’s almost like getting blown up again. . . . When it really hurts, I’ve felt like . . . my spirit was leaving my body. I would wake up real quick and try to stay awake as long as I could.”

In November 2004, while riding in a convoy in Talafar, Iraq, Emme was exposed to the full force explosion of an improvised device and incurred a severe brain injury. Twice, he went into cardiac arrest and was resuscitated while being transported to a hospital in Mosul. He remained in a coma for 10 days and awoke at Walter Reed with profound aphasia. He remembers none of these events and has made a remarkable recovery. Yet there are consequences: a large section of prosthetic bone in his skull, partial deafness in his left ear, shrapnel in his brain — and the almost-nightly feeling that he is about to die. “Some suggest that it might be post-traumatic stress disorder, but I want to get that checked out,” said Emme, 34. “Not that I’ve ever been scared to die, but . . . I want to know if this is something that might cause it. I’m too young — I’ve got a long life to live still.”
Literally and figuratively, Emme has spent the past 2 years restoring lost connections: learning to speak again, trying to overcome headaches and mood swings, getting back in touch with Army buddies and members of his family, piecing together the story of his combat injury, letting friends know that he’s alive. When I met him last year, the left side of his head had a large depression where part of his skull had been removed (see model at right). Now, with his skull reconstructed and his reddish-brown hair worn longer, there is no visible trace of his injuries except for minor scarring of his left cheek. Formerly anxious in social situations, he seemed relaxed and talkative when I visited him at the trailer home north of Allentown, Pennsylvania, where he lives with his ailing father.

Emme’s parents divorced when he was 10. After years without contact with his father, Emme located him last year through an Internet search and learned that he needed care after having a heart attack and stroke. By moving to rural Pennsylvania after his Army discharge, Emme gained a home and could meet his father’s needs while continuing his own recovery. His siblings “all have their own lives,” he said.

On the day I visited, the small, cluttered house was dimly lit and redolent of stale tobacco smoke. Emme’s father, who requires supplemental oxygen and has limited mobility, sat at a computer in the living room while Emme and I talked nearby in the kitchen. Emme does the cleaning and shopping, drives his father to medical appointments, and calms him when he has an anxiety attack—a practiced skill for someone familiar with PTSD. “I learn how he works, and he learns how I work,” Emme said.

Like Pepper, Emme spent a decade in the military—first the Marines, then the Army—and had hoped to return to active duty despite his brain injury. He said that when he learned that he would be discharged, “I was so depressed I wouldn’t even get out of bed.” Eventually, he realized, “I’m just going to have to go on with my life. . . . This is what it is, and I’ve got to deal with it.” His disability was rated
at 30% by the Army but at 100% by the VA (such discrepancies are usual, say experts). He receives a monthly VA payment of $2,390.

Early next year, Emme hopes to enroll in a business program part-time at a nearby college, but for now, he is taking things slowly. He would like to work someday for a company or perhaps for the federal government, helping other disabled soldiers.

“...I know I can’t go to school and work at the same time,” he said. “I want to get my degree.”

Like Pepper, Emme had not sought medical care since leaving the Army. While at Walter Reed, he tried multiple medicines for headaches, received speech therapy, intermittently saw a psychiatrist, and was enrolled in a study of the antidepressant sertraline. He also met regularly with a nurse in the Defense and Veterans Brain Injury Center. “When something really frustrated me or I was really mad, I would go to her,” he said. “She would sit there with a listening ear.” Since his skull was reconstructed, his headaches have abated, but he has episodes of muscle twitching (an effect of his brain injury) and has sleep apnea. The frightening sensations he experiences while falling asleep may represent hypnagogic hallucinations, a symptom of PTSD. He says he is constantly losing things, and although his speech is fluent, he feels that he sometimes “gets lost” during conversations. He is taking no regular medications.

Since he does not live near a VA hospital, he enrolled in Tricare and intends to find a civilian neurologist in the Allentown area, but after almost 2 years of intensive treatment, he has become a therapeutic nihilist. “Basically, it got to a point where I could figure my own stuff out,” he said.

Emme’s strongest emotional ties are with fellow soldiers from his Army Stryker brigade, many of whom believed that he had not survived the explosion. Describing his wounding and the reaction of friends in his unit, he said, “When you’re ripped from your family and you no longer see them... it was hard for them, but it was harder for me. They lost one. I lost 82.” Last fall, he traveled to Fort Lewis, Washington, for a reunion ball attended by members of his brigade. “It was one of the greatest times of my life,” he said, “because everybody thought I had died.”

Pepper and Emme acknowledged that, as compared with many Americans, they have a wealth of medical choices: they can seek treatment at military medical centers, at VA facilities, or from civilian physicians and hospitals using their Tricare coverage. Like thousands of other soldiers, they received state-of-the-art treatment at military hospitals. However, delivering similar care to severely injured veterans dispersed throughout the country is a greater challenge. Many live in rural areas far from military or VA facilities. Of the options available, the VA system offers the most comprehensive services for soldiers with TBI and “polytrauma” — including teams of specialists, mental health counseling for PTSD and social workers to support families, and an individualized treatment plan. Yet, like about 80% of soldiers recently discharged after returning from Iraq, Pepper and Emme have not enrolled as patients in the VA system.

Moreover, although a recent government report on the long-term treatment of veterans with TBI emphasizes the importance of a case manager — someone who keeps in regular contact with the patient, helps to arrange appointments, and ensures continuity of care — neither Pepper nor Emme has one. Each of the...
four military services has established a program to serve members who have been severely wounded, and soldiers or family members can also call a toll-free number at the Military Severely Injured Center to get help in obtaining health care. Seriously wounded Army soldiers are supposed to be assigned a case manager by the U.S. Army Wounded Warrior Program, the VA, or Tricare. Given their injuries, both men “would certainly qualify” for this service, said a Tricare spokesman, but “there is a certain degree of responsibility for the service member or veteran to be in touch.”

According to public affairs officer Timothy Poch, the Wounded Warrior Program has case workers stationed around the country to facilitate the transition between military hospitals and care by the VA or civilians and to link patients with needed services for 5 or more years after discharge. “We’re the ones that can open doors for that,” he said. “We’ll act as their advocate.”

Under a new system established by the Veterans Health Administration early last year, severely injured soldiers with TBI are being referred earlier in their treatment to one of four VA medical centers (in Richmond, Virginia; Tampa, Florida; Palo Alto, California; and Minneapolis) designated as Polytrauma Rehabilitation Centers, according to Harriet Zeiner, the lead neuropsychologist at the Palo Alto center. “You get a case manager, but more than that, you get a complete evaluation and treatment plan” that can be followed at the VA facility closest to the soldier’s home, with periodic expert reassessment for at least 5 years, she said. “It’s to prevent . . . people being sent home and told, ‘Go to your local VA.’” Zeiner added that during treatment at military hospitals, soldiers often minimize or deny having TBI symptoms because they hope to return to active duty. Yet even a mild TBI can cause long-lasting cognitive and behavioral problems. She urges physicians to ask recent returnees whether they were exposed to a blast, saw stars, or partially lost consciousness and to be alert for symptoms such as headaches, difficulty concentrating, and trouble with memory. Each of the four Polytrauma Rehabilitation Centers has been identifying 6 to 10 cases of TBI per month that were missed in military hospitals, Zeiner said.

Large numbers of wounded soldiers are returning home at a time when the philosophy, ethics, and economics of the military disability system are being reassessed by a presidential commission and four committees of the Institute of Medicine. Department of Defense officials, grappling with exploding expenses for disability entitlement programs, are concerned about the cost of potentially lifelong treatment for brain-injured veterans. Although Army doctors now screen for TBI when treating casualties in Iraq, in Afghanistan, and at military hospitals, the Pentagon has not yet implemented a policy to begin routinely screening all soldiers. A Department of Defense official said that new clinical guidelines, soon to be issued, are likely to include recommendations that all returning soldiers be questioned about exposure to blasts, head trauma, and possible TBI symptoms as part of their initial postdeployment medical assessment.

“We should screen for brain injury and mental health issues — there’s such a high percentage of both” in returning veterans, said Representative Bob Filner...
(D-CA), who is likely to become chairman of the House Committee on Veterans’ Affairs. “They talk about the seamless transition, but there is no such thing. The proactive approach is just not part of their culture.”

“I give the military and the VA credit” for creating programs to treat brain-injured veterans, “but there are not enough of them, and I think that’s the bottom line,” said Gene Bolles, an assistant professor of neurosurgery at the University of Colorado at Denver, who treated soldiers wounded in Afghanistan and Iraq at the military’s Landstuhl Regional Medical Center in Germany from 2001 to 2003. “The best thing the military could do is to recognize that this is a serious problem, help them get jobs, and give them the disability [payments] that they deserve.”

An Interview with Jason Pepper and Harriet Zeiner can be heard at www.nejm.org.

Dr. Okie is a contributing editor of the Journal.


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The Limitations of Risk Factors as Prognostic Tools

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Suppose that the goal is to identify persons at high risk for acquiring a disease (the outcome) within 5 years. We will assume, as shown in the figure, that the risk factor is normally distributed in the group of persons who will not experience the outcome. We will further assume that the risk factor is also normally distributed with the same variance, but with a mean 0.5 SD that is larger among persons who will have the outcome than among the group of persons who will not. (The results that follow do not depend on the values of the mean end variance in the group of persons without the outcome.) Finally, let us suppose that the cumulative incidence of the outcome within 5 years is 5%.

Given these assumptions, we can use standard methods to calculate the conditional probability that a person with a given value of the risk factor will have the outcome. For example, an event will occur with probability 0.081 in persons whose value for the risk factor falls at the 90th percentile of the distribution in the event-free group, and with probability 0.024 in persons with a value at the 10th percentile. Thus, the odds ratio for the outcome in those at the 90th percentile, relative to those at the 10th percentile, of the distribution in the event-free group, and with probability 0.024 in persons with a value at the 10th percentile. The odds ratio for the outcome in those at the 90th percentile, relative to those at the 10th percentile, of the distribution in the event-free group is (0.081 + 0.919) ÷ (0.024 ÷ 0.976) = 3.58. In most epidemiologic studies, a risk factor with an odds ratio of this magnitude would be of considerable interest.

Despite the strong association between the risk factor and the