

# The Point

A magazine about the people of the  
U.S. Army Medical Research  
and Materiel Command  
Fall 2013



(Photo courtesy  
of U.S. Army)

## Post Traumatic Stress Disorder, Mild Traumatic Brain Injury Research Focus of Two New Multi-Institutional Consortia

The U.S. Army Medical Research and Materiel Command's Congressionally Directed Medical Research Programs, the U.S. Department of Veterans Affairs Office of Research and Development will support two new multi-institutional consortia focused on translational and clinical research on post-traumatic stress disorder and chronic effects of mild traumatic brain injury.

These collaborative five-year efforts are the Consortium to Alleviate PTSD and the Chronic Effects of Neurotrauma Consortium. Both consortia are part of the National Research

Action Plan for Improving Access to Mental Health Services for Veterans, Service Members, and Families.

The CAP and CENC will be composed of multiple organizations, including academia, VA, and military research and treatment facilities. Efforts will leverage existing resources and knowledge gained through Department of Defense and VA infrastructure and research investments, as well as public and private academia and industry to advance highly translational PTSD and TBI research.

The CDMRP will work collaboratively with the VA to provide administrative and technical research management with strategic guidance from each consortium's government steering committee.

"The CDMRP is well positioned to support CAP and CENC, having assisted with military consortia research in multi-institutional settings in psychological health and traumatic brain injury since 2008," said Col. Jeff Leggit, director of CDMRP. "The teams

**BRAIN continued on Page 5**



# Army Surgeon General Visits USARIEM

During a Sept. 23 visit to the U.S. Army Research Institute of Environmental Medicine, the Army surgeon general and commanding general of the U.S. Army Medical Command learned more about the important work being done here for service members.

Lt. Gen. Patricia D. Horoho toured USARIEM, which is situated at Natick Soldier Systems Center, and received briefings on such subjects as biophysics and biomedical modeling, thermal and mountain medicine, military performance, military nutrition, and the development of gender-neutral physical standards for Army Military Occupational Specialties.

“I think what impressed me the most was the level of dedicated scientists, researchers, those that can connect the expertise of what needs to be done in our military with the science behind it so that the right decisions are being made,” Horoho said.

Horoho came away impressed by “just how pervasive they are in so many different areas that are tied to our strategic objectives, whether it is health, whether it’s injury prevention, and the performance of our Soldiers, Sailors, Airmen and Marines, so we are constantly looking at



Army Surgeon General Lt. Gen. Patricia D. Horoho (left) speaks with Col. Deborah Whitmer, commander of the U.S. Army Research Institute of Environmental Medicine, Natick, Mass., during a visit to USARIEM Sept. 23. (Photo by David Kamm, NSRDEC photographer)

improving the performance of those that are willing to give so much to our nation.”

Horoho also spoke about her personal experience with the new female body armor, developed in a collaborative effort between Natick Soldier Research, Development and Engineering Center and Program Executive Office Soldier.

“When I first put it on, the initial impression was ... this is

what security feels like,” Horoho recalled. “And then I had the honor of being able to deploy with it in Afghanistan.

“It was easy to put on, to take off, and more important, it gives you the confidence that you need in an environment that is hostile.”

At a time when the body armor is being widely issued to female Soldiers, Horoho talked about how its effectiveness should be evaluated.

“What I think we need to do now, because there was so much research and time and expertise that was put into the [improved outer tactical vest], is we need to have it deployed, really utilized, get the feedback from our females, and then make those adjustments, as needed,” Horoho said. “But from an initial use of it? It’s pretty much on the mark. So I think it’s going to be some small changes, if changes occur with it.”

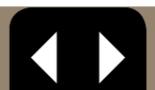
Finally, Horoho addressed Natick’s importance during a time of conflict for this nation.

“You know, when we look at the success that we’ve had on the battlefield for the last 12 years, I think it’s because we’ve had questions that were asked 15 to 20 years ago [and] research that was done here that drove the changes in personal protective equipment or practices,” Horoho said. “We need to continue to focus on that to ensure that we’re ready for the next 10 to 15 years in the future.

“But I could not be more proud of the team that’s here, the hard work and the expertise that we have. We’re making a difference.”

*Article by Bob Reinert, USAG-Natick Public Affairs*

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## National Research Action Plan Responds to Veteran Needs

Experts from Department of Defense and Veterans Affairs gathered to discuss the future of mental health and traumatic brain injury research during the Military Health System Research Symposium Aug. 14, in Fort Lauderdale, Fla.

Discussion leaders included Health Affairs Director of Medical Research Dr. Terry Rauch; Acting Chief Officer of the VA Office of Research and Development Dr. Timothy O'Leary; U.S. Army's Combat Casualty Care Research Program Director Col. Dallas Hack; Deputy Director of the Defense and Veterans Brain Injury Center Katherine Helmick; and Uniformed Services University School of Medicine's Center for the Study of Traumatic Stress Director Dr. Robert Ursano.

Dialogue turned toward the National Research Action Plan, which is the result of an executive order signed a year ago by President Obama to improve access to mental health services for veterans, service members, and military families. The plan directs DoD and the VA to work with the U.S. Department of Health and Human Services and the U.S. Department of Education to share resources and complete certain goals, such as complete within the next year the current DOD-CDC-Brain Trauma Foundation mild traumatic brain injury/concussion



U.S. Army's Combat Casualty Care Research Program Director Col. Dallas Hack (right) and Health Affairs Director of Medical Research Dr. Terry Rauch discuss mental health and traumatic brain injury research during the Military Health System Research Symposium Aug. 14, in Fort Lauderdale, Fla. (Photo by Melissa Myers, USAMRMC PAO)

classification project to clarify what is known and unknown, and address the critical gaps.

"The National Research Action Plan creates a common roadmap for medical leadership to follow as we move forward to work on incredibly complex issues," said Hack, who is stationed at the U.S. Army Medical Research and Materiel Command.

"The National Research Action Plan demonstrates a dedication across multiple agencies to close critical research and care gaps, both in the military and civilian sector," added Rauch.

Since September 11, 2001, more than 2.5 million service members have deployed to Iraq and Afghanistan in Operation Enduring Freedom, Operation

Iraqi Freedom, and Operation New Dawn. The Armed Forces Health Surveillance Center data indicates there have been more than 250,000 cases of TBI in the military from 2000--2012. However, more than 80 percent of these were the result of non-combat injuries.

"Clearly, we are not going to stop seeing traumatic brain injuries, even in times of no war," said Hack.

The NRAP also addresses the frequently co-occurring conditions, such as depression; substance abuse related to alcohol, tobacco, and other drugs, including the misuse and abuse of prescription drugs; and chronic pain, each of which can complicate the prevention and

treatment of PTSD, TBI, and suicidal behaviors.

"The interrelationships between TBI, PTSD, and suicidality are complex, to say the least," admitted Ursano. "In fact, I think it was this war that highlighted these areas in relation to each other, as an opportunity for further investigation for research and treatment."

Announced within the NRAP is also the creation of two joint research consortia, including the Consortium to Alleviate PTSD and the Chronic Effects of Neurotrauma Consortium. The

two consortia will be established within the next 6 months and are within the first phase of the NRAP. A key point will be to further the understanding of the relationship between mTBI and neurodegenerative disease.

"Mild traumatic brain injury is an area we need to continue to focus on, in terms of rapid evaluation, treatment and patient management," said Helmick, explaining that most service members with TBI have a mild injury or concussion. "With a mild TBI, most service members can have a full recovery."

In its first 12 months, NRAP will focus on developing a more precise system to diagnose TBI and standardizing data on TBI and PTSD. Longer term goals include confirming biomarkers for PTSD and TBI, identifying changes in brain circuitry after successful treatment, and exploring genetic risk factors.

"The plan lays out the next five years, but this is really a lifelong commitment," O'Leary said.

"That is the promise we make to our warfighters."

*Article by Ellen Crown, USAMRMC PAO*

### BRAIN continued from Page 1

are dedicated to the success of the consortia research projects to bring innovative, evidenced-based practice forward to improve the care of service members."

University of Texas Health Science Center at San Antonio Division of Behavioral Medicine in the Department of Psychiatry Chief Dr. Alan Peterson will serve as the principal investigator and director of the CAP award. The principal VA collaboration is led by consortium co-director Dr. Terence Keane of the VA Boston Healthcare System, the National Center for PTSD, and Boston University. Keane will provide VA leadership within the CAP Consortium and help design studies that address the needs of veterans. This effort will be focused on developing the most effective diagnostic, prognostic, novel treatment, and rehabilitative strategies to treat acute PTSD and prevent chronic PTSD. A significant focus of the CAP will be a research effort to identify and confirm clinically relevant biomarkers for PTSD and co-occurring disorders.

Virginia Commonwealth University Physical Medicine and Rehabilitation Department Chairman

Dr. David Cifu will serve as the principal investigator and director of the CENC award. Cifu is also the National Director for Physical Medicine and Rehabilitation for the VA. Consortium co-investigator Dr. Ramon Diaz-Arrastia of the Uniformed Services University of the Health Sciences and Walter Reed National Military Medical Center will provide access to critical military populations for studies of mTBI and the many diseases associated with combat duty. Veterans will be recruited to the studies through a number of VA medical centers nationwide. This collaborative effort focuses on examining the factors that influence the chronic effects of mTBI and common comorbidities in order to develop improved diagnostic and treatment options. One area of critical understanding is to establish the relationship between mTBI and neurodegenerative disease.

For more information, visit [http://www.whitehouse.gov/sites/default/files/uploads/nrap\\_fact\\_sheet\\_082013.pdf](http://www.whitehouse.gov/sites/default/files/uploads/nrap_fact_sheet_082013.pdf)

*Article by Congressionally Directed Medical Research Programs PAO*

Up-armored MRAP MaxxPro Plus ambulance with independent suspension and dual rear wheels. (Photo courtesy of U.S. Army)



## Saving Minutes and Lives with Litter Assist on Mine-Resistant Ambulance

The terrain in Afghanistan is tough.

Hairpin roads down treacherous hillsides, sandy valleys between tree-spotted ranges, snow-chilled mountains and plains, mud from snowmelt, narrow passes filled with boulders, and rivers, and more mud. Add in extremes of temperature, danger of flash flooding and earthquakes, and the expectation of unexploded land mines and improvised explosive devices. Add in sniper gunfire, heavy artillery, and wounded warriors.

How can the United States military safely evacuate its casualties without endangering the rescuers?

Given the mountainous terrain and inclement weather, which restrict the use of MEDEVAC helicopters, reaching casualties is one thing. Treating them while getting them off the battlefield, under fire, to combat support hospitals is another. Minutes saved using litter assist to load wounded warriors into a mine-resistant ambush-protected (MRAP) ambulance can make the difference between life and death.

Medical Support Systems Project Management Office at USAMRMC's Medical Materiel Development Activity works with military, government and industry partners to improve equipment and evacuation capabilities, giving minutes

back, saving lives.

MRAP vehicles are armored vehicles with a blast-resistant, V-bottomed hull designed to protect the crew from mine blasts, fragmentary and direct-fire weapons.

"The existing litter loading system on MaxxPro Plus solid-axle ambulances used in Operation Enduring Freedom does not fully meet objective requirements for safe and easily accessible litter loading," said Jaime Lee, Medical Support Systems Project Management Office product manager. "The current MaxxPro Plus ambulance requires four soldiers to lift and load, so that medics and casualties remain safe during medical evacuation."

Loading a casualty into and out of the back of a current MRAP MaxxPro ambulance is a time- and labor-intensive task. The back of the ambulance is elevated and requires a step ladder to enter the back hatch.

"A time trial, using a four-man team without gear in a secure environment to load a litter bearing a 200-pound soldier, took more than four minutes and involved some safety issues, such as the litter team losing balance while ascending the step ladder," said Lee.

"Once the litter is inside the ambulance, maneuvering the casualty and litter onto the litter support arms is very awkward, because space is limited. If soldiers did not need to climb the stairs while loading the litter and then readjust the litter onto the litter support arms, the physical demands would be lessened on the litter team," said Lee.

Based on a Request for Information from Theater, the USAMMDA's MSS PMO was asked to find a solution, according to Steve Hawbecker, MSS PMO project manager.

The MSS PMO mission is to develop, procure, and sustain the best medical evacuation, combat casualty care support, and operational and preventive medicine solutions for the combat soldier.

"The solution is the MRAP MaxxPro Plus long wheel base vehicle with the litter assist system retrofitted from the MaxxPro Dash DXM variant of MRAP vehicles," said Lee. "The loading and unloading takes less than a minute and is much safer and easier to use than the current system. Using the Dash ambulance litter loading system would eliminate the difficulty of climbing stairs to load the litter."

The Army Medical Department verified the load time in Fiscal Year 2012 at a review in Detroit, when the kit was first installed.

The Vice Chief of Staff of The Army selected the MRAP III study course of action on March

**MRAP continued on page 28**

## AFIRM II Agreement Awarded

The Armed Forces Institute of Regenerative Medicine (AFIRM): Warrior Restoration Consortium, under the Wake Forest University School of Medicine (Wake Forest Baptist Medical Center) entered into a cooperative agreement with the U.S. Army Medical Research and Materiel Command, the Office of Naval Research, the Air Force Medical Service, the Office of Research and Development - Department of Veterans Affairs, the National Institutes of Health, and the Office of the Assistant Secretary of Defense for Health Affairs.

The AFIRM II program will focus on extremity regeneration, craniomaxillofacial regeneration, skin regeneration, composite tissue allotransplantation and immunomodulation, and genitourinary/lower abdomen reconstruction.

Therapies developed by the AFIRM II program are intended to aid traumatically injured service members and civilians. The goals of the program are to fund basic through translational regenerative medicine research and to position promising technologies and therapeutic/restorative practices for entrance into human clinical trials.

The original AFIRM cooperative agreements, awarded in 2008, focused on limb repair, craniofacial repair, burn repair, scarless wound repair, and compartment syndrome. Research under the AFIRM was conducted through two independent research consortia working with the U.S. Army Institute of Surgical Research (USAISR) in Fort Sam Houston, Texas. One research consortium was led by Rutgers, the State University of New Jersey, and the Cleveland Clinic (Rutgers-Cleveland Clinic Consortium) while the other was led by Wake Forest University Baptist Medical Center and The McGowan Institute for Regenerative Medicine in Pittsburgh (Wake Forest - Pittsburgh Consortium).

Learn more about AFIRM II online at: <http://www.afirm.mil>

*Article by Carey Phillips, USAMMDA PAO*



## First Thought-Controlled Bionic Leg Funded Through Army Medicine Research

Researchers unveiled the world's first thought-controlled bionic leg Sept. 25, funded through the U.S. Army Medical Research and Materiel Command's Telemedicine and Advanced Technology Research Center and developed by researchers at the Rehabilitation Institute of Chicago Center for Bionic Medicine.

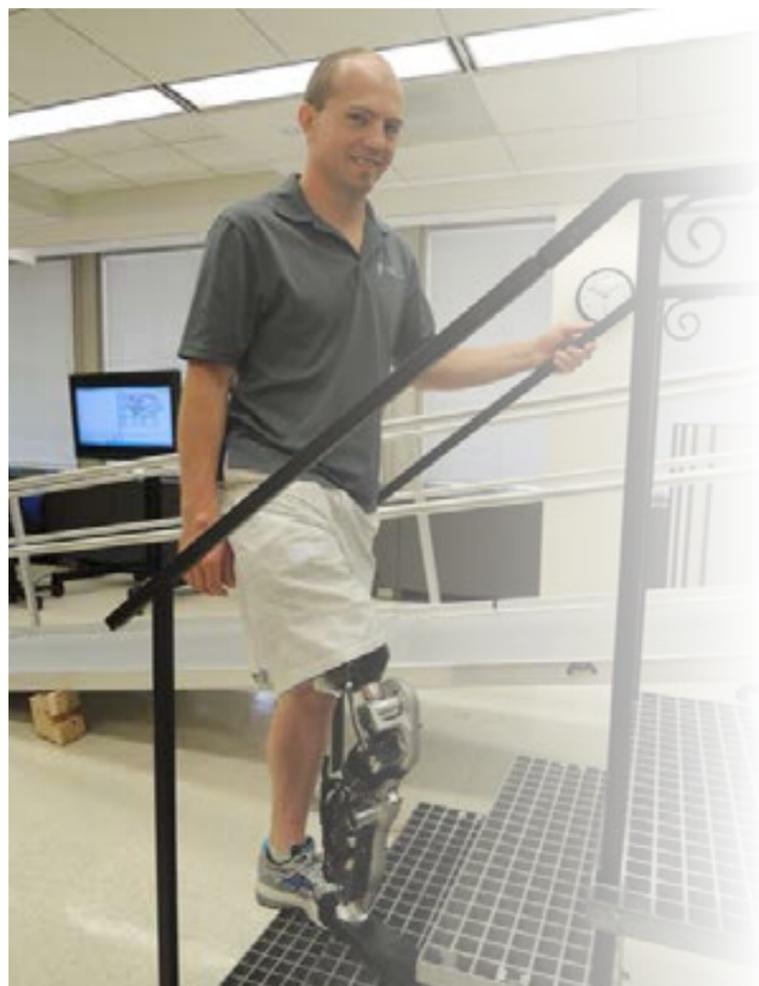
The New England Journal of Medicine highlighted the project that marked a milestone for prosthetics. Until now, this type of technology was only available for arms. While the bionic legs aren't for sale yet, researchers are hoping they may be available commercially in as little as five years.

"More than 1,600 service members returning from Iraq and Afghanistan have sustained amputations," said Col. John Scherer, director of USAMRMC's Clinical and Rehabilitative Medicine Program. "Our goal is to help these men and women participate fully in life."

Scherer added that may mean returning to active-duty or gainful employment in the civilian sector.

"This research is an important step to make the choice theirs, rather than the injury being a deciding factor," said Scherer. "While we want

**Researchers unveiled the world's first thought-controlled bionic leg Sept. 25, funded through the U.S. Army Medical Research and Materiel Command's Telemedicine and Advanced Technology Research Center and developed by researchers at the Rehabilitation Institute of Chicago Center for Bionic Medicine. Zac Vawter, a lower-limb amputee, served as the "test pilot." (Photo courtesy of RIC).**



to keep as many of these individuals on active duty as possible, we recognize that some of them must move on to civilian lives due to the severity of their injuries."

In fact, this technology can apply to civilian leg amputees as well. According to the National Limb Loss Information Center, there may be more than 1 million amputees in the U.S.

One such civilian amputee is 32-year-old Zac Vawter, who served as RIC's "test pilot" for the project's first bionic leg. Vawter is a software engineer who lives in Seattle with his wife and two children. In 2009 he lost his leg in a motorcycle accident.

Vawter first underwent a cutting-edge procedure called "Targeted Muscle Reinnervation" developed by RIC and Northwestern University. Surgeons redirected nerves from Vawter's damaged muscle in his amputated limb to healthy muscle above his knee.

Then Vawter started learning how to use the thought-controlled bionic leg. The leg is controlled using a computer chip that is similar to those in modern smartphones. As muscles contract, they generate signals that are detected by sensors and analyzed by the computer chip. A specially-designed computer program analyzes these signals and data from sensors in the leg. It instantaneously decodes the type of movement Vawter is trying to perform and then sends those commands to the leg. Using muscle signals in addition to robotic sensors makes the system safer and more intuitive, according to researchers.

Using the bionic leg, Vawter can walk up ramps and stairs, and transition between these activities without stopping. He was also able to use his thoughts to change the position of his lower leg while sitting down, something that cannot be done with current motorized leg prosthetics.

***"This research is an important step to make the choice theirs, rather than the injury being a deciding factor."***

Col. John Scherer,  
Director of USAMRMC's Clinical and Rehabilitative Medicine Program

"This new bionic leg features incredibly intelligent engineering," said Levi Hargrove, PhD, the lead scientist of this research at RIC's Center for Bionic Medicine. "It learns and performs activities unprecedented for any leg amputee, including seamless transitions between sitting, walking, ascending and descending stairs and ramps and repositioning the leg while seated."

Vawter's bionic leg is a prototype. When he is not working with the research team, Vawter uses a regular prosthetic.

"The bionic leg is a big improvement compared to my regular prosthetic leg," said Vawter, in a statement. "The bionic leg responds quickly and more appropriately, allowing me to interact with my environment in a way that is similar to how I moved before my amputation."

The bionic leg may also help prevent falls. Vawter's robotic leg had an error rate of about 12 percent. This was reduced to less than 2 percent with the bionic leg, according to researchers.

Vawter added, "This is a huge milestone for me and for all leg amputees."

Article by Ellen Crown, USAMRMC PAO



## 'Simple' Device Designed to Stop the Bleeding

In an age of ultra high-tech devices that are worthy of screen time in a big budget Hollywood action movie, one might be surprised to discover that a very “unglamorous” and simplistic medical device is being developed by the Combat Casualty Care Research Program of the U.S. Army Medical Research and Materiel Command, Fort Detrick, Md., that may soon save lives on the battlefield and beyond.

“Hemorrhage is the leading cause of death on the battlefield, and one of our most challenging forms of hemorrhage has been junctional [the junction of the legs or arms with the torso] hemorrhage, or hemorrhage from deep wounds on which it is impossible to put a tourniquet or apply manual compression externally,” said Dr. Anthony Pusateri, portfolio manager of the Department of Defense Hemorrhage and Resuscitation Research and Development Program, managed by the CCCRP.

Cue XSTAT, the new device so practical, one will wonder how the medical field has not thought of it until now. Simply put, the device looks like a large plastic syringe filled with many small, pellet-shaped sponges that enlarge to fill up a wound area quickly to prevent blood loss.

“This XSTAT device allows the haemostatic material to be put [injected] into the wound tract, and then it expands from the inside out, putting pressure on the bleeding to stop it,” said Pusateri. “It is a capability that has never existed before, and can be used in the field setting by medics, possibly even with buddy aid [first aid administered by battlefield ‘battle buddies’].”

As the portfolio manager, Pusateri must orchestrate matters among the various Services and the company in charge of production, RevMedx, that are collaborating for the successful development and release of this new medical device. However, as he states, Pusateri came into the project during its later development, at the time the Army took over management of the program.

“This project started with the United States Special Operations Command to conduct the initial work,” he said. “The research looked promising enough that the Army chose to fund it through its completion.”

While the current version of the device is useful for large wounds, Pusateri said that the next iteration will be one suited for narrower wound tracts. Due to the location of the target wounds, the original concept was for a common-size wound tract. As development progressed, the researchers found that in some cases, the wound tract is smaller, and it would not take much modification to create a smaller device to place into the wound. Pusateri said that the applicator will be narrower, although the sponge-like product inside will be the same size.

“We have not identified any significant problems, and we expect it will fill a capability gap that we’ve had for quite some time,” he said. “Upon FDA approval, the device will be commercially available off the shelf. I expect that RevMedx will do an initial production run.”

Regarding military use, Pusateri said that he expects that units will be able to purchase the device for themselves. The device will receive a National Stock Number, which will allow any group to purchase the device for use. He also believes that the XSTAT device will transcend military medical use and find its way into the field of civilian medicine for widespread public use in trauma scenarios.

While the XSTAT device is certainly small and light enough to be carried in military aid bags or combat lifesaver bags, Pusateri said this does not guarantee its use as standard military medical equipment.

So why wouldn’t the military want to have this in every warfighter’s bag?

“Well, for one, this doesn’t solve all of our bleeding problems,” said Pusateri, “but it does fill a capability gap for use on a wound area where you could not place a bandage or tourniquet.”

“It’s primarily intended for deep wounds with heavy bleeding inside, with no way of putting direct pressure on the wound, and no way to wrap a tourniquet around it. Basically, it’s designed for use in the axillary and inguinal regions, or the junction of the legs and arms with the torso, too high for a tourniquet and too deep for a dressing.”

Pusateri added, “Any new item must be considered along with all of the other items that medics, or others, must carry. Many factors come into play for the final fielding decision. In the Army, the Directorate of Combat and Doctrine Development at the U.S. Army Medical Department Center and School and the U.S. Army Medical Materiel Agency will play major roles in fielding decisions.”

Despite its specificity, or perhaps because of it, the XSTAT device seems to be a necessary part of the future of both military and civilian medicine, and it is a perfect illustration of creating a medical item to satisfy a critical need in the field.

“This is a good example of very innovative and thorough work done by USSOCOM to get this started, working with the initial lead company [that later transitioned to RevMedx],” said Pusateri, “but it is also an example of excellent cooperation and communication in a joint environment, between USSOCOM and the U.S. Army.”

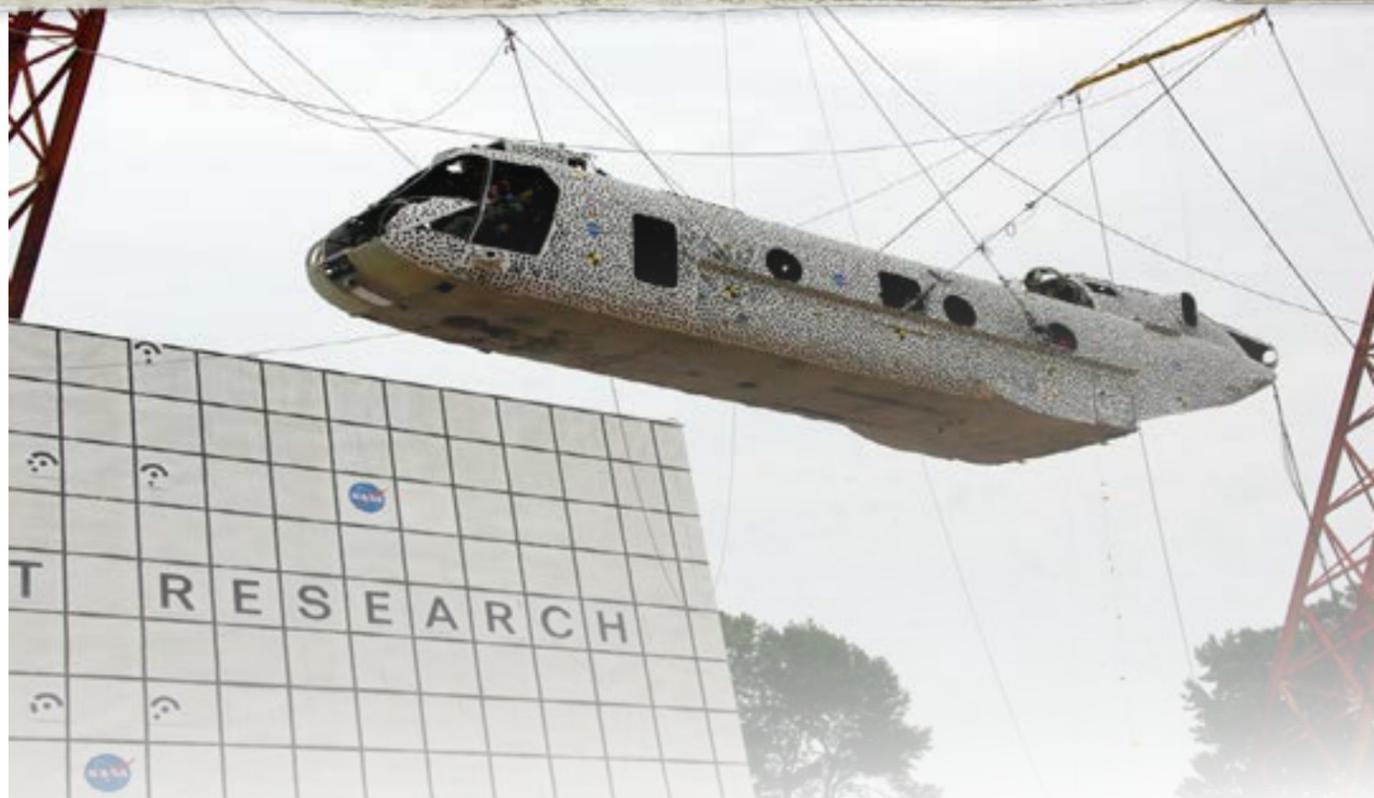
“This could certainly be a significant advance in our ability to control hemorrhage, both on and off the battlefield,” said Pusateri.

While the XSTAT device is currently on the forefront of the CCCRP’s work, Pusateri said that his group continues to work on developing blood-related items to help save lives. On the horizon, the CCCRP is researching dry plasma products to help restore/replenish blood loss quickly and help make the body more resistant to the detrimental effects of severe bleeding.

Article by Jeffrey Soares, USAMRMC PAO

**The XSTAT device, developed by USAMRMC’s Combat Casualty Care Research Program, is designed for use on a wound when a bandage or tourniquet isn’t the best option. (Photo courtesy of U.S. Army)**





Former Marine CH-46 helicopter airframe before the crash test at Langley's Landing and Impact Research Facility in Hampton, Va. Aug. 29. (Photo courtesy of NASA)

## USAARL, NASA 'Crash Test' Aircrew Safety

Engineers and scientists crashed a former Marine CH-46 helicopter airframe at Langley's Landing and Impact Research Facility in Hampton, Va., Aug. 29.

As part of the Rotary Wing Project in NASA's Aeronautics Research Mission Directorate, the U.S. Army Aeromedical Research Laboratory at Fort Rucker, Ala. is collaborating with NASA, the U.S. Navy, the Federal Aviation Administration, and Cobham, an occupant restraint system manufacturer, on the Transport Rotorcraft Airframe Crash Test Bed full-scale crash test.

The purpose of the crash was to collect baseline data in preparation for future crash research with composite structures, and to answer questions aimed at occupant protection and injury mitigation during a helicopter crash. This was the first of two

planned tests in the Rotary Wing Project.

Loaded with 15 crash-test dummies, the helicopter was lifted 30 feet into the air and released – crashing onto the ground at about 30 miles per hour. The impact represents a severe but survivable condition under both civilian and military requirements.

The interior and exterior of the helicopter was instrumented with a total of 40 high-speed cameras, recording at rates of more than 500 images per second. These images will allow researchers to investigate dynamic performance issues related to litter patients in the cabin of a rotary-wing airframe.

USAARL's support, funded by the U.S. Army Medical Materiel Development Activity, provided

NASA with a legacy patient litter support system, similar to that currently used in the Army's CH-47 helicopter, three modern patient litters, two crash-test dummies, two high-speed video cameras, and data acquisition systems.

"USAARL's overall goal is to protect Soldiers from injuries," said Joe McEntire, a USAARL research mechanical engineer leading the Army's collaboration effort. "Testing in a dynamic environment provides USAARL

with baseline data of the performance of the legacy patient litter support systems."

McEntire said that the data will be used to influence the design of future aeromedical transport equipment, such as patient litters.

Although preliminary observations indicate useful data were collected during the crash, the information will take months to analyze.

"Next year, during the second CH-46 crash test, we will install a modern litter support system for a comparative analysis with the legacy system," said McEntire. "Our overall intent is to protect the litter occupants, the attending flight medics, and aircrew during aircraft crash events."

*Article by Catherine Davis,  
USAARL PAO*



The result of USAARL's legacy patient litter support system, three modern patient litters, and three crash-test dummies after the crash test Aug. 29. (Photo courtesy of NASA)



## USAMMCE Conducts Emergency Responder Exercise

The U.S. Army Medical Materiel Center, Europe, conducted an Emergency Responder Exercise Sept. 6 at Husterhoeh Kaserne in Pirmasens, Germany.

About 125 responders from the German Red Cross, the Fire Departments of Pirmasens and Rodalben, the German Police, and USAMMCE personnel participated. Observers from all emergency services and the mayors of Pirmasens and Rodalben attended. To ensure safety, local experts set up the explosions.

The scenario tested a threat being received and a mock car bomb detonating in a parking lot with smaller devices going off in a building nearby, causing nine casualties. As part of the exercise, first responders evacuated the building next to the explosion site.

USAMMCE Soldiers staffed the gates and inspected vehicles and personnel once they received the mock threat. First responders rendered first aid to the mock injured until the Red Cross arrived. The fire department arrived and extinguished the fires while the German police blocked off the scene.

The goal of the exercise was to test response times

and provide the local emergency teams with an opportunity to test their capabilities under extreme conditions.

According to USAMMCE's Security Chief John Biles, the interaction between the local services and USAMMCE personnel went very well.

*Article by Doris Crittenden,  
USAMMCE PAO*



A vehicle burns after explosion as part of an Emergency Responder Exercise conducted by the U.S. Army Medical Materiel Center, Europe at Husterhoeh Kaserne in Pirmasens, Germany Sept. 6. (Courtesy photo)

## Hearing Center of Excellence Director Visits USAARL

Col. Mark Packer, director of the DoD Hearing Center of Excellence, and Tanisha Hammill, senior research administrator, visited the U.S. Army Aeromedical Research Laboratory at Fort Rucker, Ala. Sep. 11. Packer and Hammill met with the command team and principal investigators involved in auditory and vestibular research to discuss USAARL's collaboration with HCoE. These discussions focused on building upon a high caliber network of physicians, scientists, and researchers devoted to solving and/or preventing hearing loss and auditory related injuries within the DoD. Packer also presented to laboratory personnel a seminar on HCoE's history, mission, and primary goals. (Photo by Steve Martin, USAARL)



## Collaboration Key to Burn Care Innovation

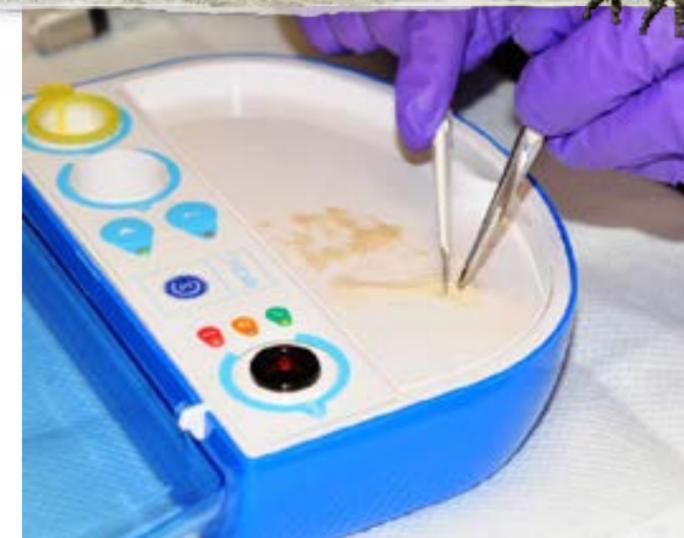
***"We're on the verge of having a new day-to-day world in burn surgery."***

Those were the words used by expert Dr. James H. Holmes IV, Wake Forest University Baptist Medical Center's Burn Center's director, at the 2013 Military Health System Research Symposium Aug. 15 in Fort Lauderdale, Fla., as he discussed the state of health care for our country's burn patients.

Holmes was describing two emerging procedures, both related to skin care, which he believes will revolutionize burn care.

Holmes shared his thoughts during a roundtable discussion with medical experts from the U.S. Army Medical Research and Materiel Command, including U.S. Army Institute of Surgical Research Director of Research David G. Baer, Ph.D; Director of the Clinical and Rehabilitative Medicine Program Army Col. (Dr.) John Scherer; and Deputy Director of the Combat Casualty Care Research Program Air Force Col. (Dr.) Todd Rasmussen.

Traditional treatment for skin care on burn patients has been to use autographs, which means taking healthy skin from another part of the body to use at the damaged location. Issues arise when a patient has a large burned area. Also, if more skin needs to be harvested, the donor site must completely heal before it can be re-harvested. This can leave a patient vulnerable to infection and other complications. Another option is to temporarily use grafts from cadavers or artificial skin, which could lead to other complications such as the body rejecting it.



Harvested skin requires cell segregation before being suspended in a solution that is sprayed on a wound where it multiplies and creates new skin tissue. (Photo courtesy of U.S. Army)

"We've invested heavily in ways to engineer and grow skin that can be collected from a small patch between the size of a quarter and a silver dollar, processed and grown in a lab and then returned to the patient," explained Baer. "So a very small donor site can be used to treat a large area."

Baer said they are also exploring "spray on" skin.

Holmes credits the advancements in burn care and regenerative medicine to the direct support and collaboration of the military and funding by the Department of Defense.

"We've done a lot to improve burn surgical care," said Scherer. "We are in this business to change the practice of medicine and make the lives of not only those in the military, but those outside the military better."

"We could not have gotten this far without it," said Holmes.

Baer agreed, "Collaboration is the secret to innovating in this area."

*Article by Steven Galvan,  
USAISR PAO*



Adrienne Noe, Ph.D., director of the National Museum of Health and Medicine, stands with Dr. Norman M. Rich (center) and Alan Hawk, NMHM Historical Collections Manager, next to some of the Vietnam War-era objects Rich donated to the National Museum of Health and Medicine. (Photo courtesy of National Museum of Health and Medicine)

## Renowned Vascular Surgeon Donates Vietnam War Medical Collection to NMHM

Ranging from a display board featuring bullets and fragments from explosive devices once embedded in the limbs of service members, to a Vietnamese pharmaceutical kit, Dr. Norman M. Rich, a retired Army colonel and renowned vascular surgeon, is in the process of donating the last of his impressive collection of Vietnam War-era medical items to the National Museum of Health and Medicine (NMHM).

Rich, the recipient of many awards and the namesake of a surgical department at the Uniformed Services University of the Health Sciences (USUHS), set up a small medical

museum within the 2nd Surgical Hospital (Mobile Army) in An Khe, Vietnam, while serving as chief of its department of surgery during the Vietnam War. The idea to create the museum occurred to Rich while reading “Wound Ballistics,” a World War II and Korean War review of ballistics and wounding power, on a ship heading for Vietnam in the fall of 1965. After he finished reading the book, Rich decided he would collect similar information for surgeons treating wounded service members in Vietnam.

Upon arriving at the hospital in Vietnam, Rich began asking for donations of bullets and other objects retrieved during surgery. When word spread of the

project, Rich soon had enough items to begin compiling his medical museum. All branches of the American military services contributed, he said, and each item was saved, identified and catalogued. Reports were also made with a detailed description of the wound and the origin of the wounding object.

“As my college professors at Stanford University said, you should collect everything you can, and analyze and document it and then see what you can do with that information to treat patients in a better way,” said Rich, a graduate of Stanford University.

Rich’s collection also includes several punji sticks— a type of wooden stake made of sharpened bamboo and primarily used in booby traps. He noted that he saw more than 200 punji stick wounds while serving at the 2nd Surgical Hospital.

After completing his tour of duty, Rich arranged for many of the items he collected in Vietnam to be shipped to the National Museum of Health and Medicine, which at that time was called the Armed Forces Medical Museum and was an element of the Armed Forces Institute of Pathology (AFIP) in Washington, D.C., so that the objects could be viewed by the public. A soldier’s boot that was

punctured by a punji stick is on display today in an exhibit commemorating the 150th anniversary of the founding of the Army Medical Museum (today’s NMHM).

Rich went on to become the first fellow in vascular surgery at Walter Reed Army Medical Center (now Walter Reed National Military Medical Center), and shortly after assumed the position as chief of vascular surgery and director of the fellowship from 1967 to 1978. He also created the vascular surgery registry, an outcome study of vascular surgery performed in theater during the Vietnam War. Upon retirement from the Army, Rich became a professor of surgery at USUHS and later was awarded the Leonard Heaton and David Packard Professorship, which is named for two USUHS founders. In 2002, the USUHS department of surgery was named in his honor; Rich served as that department’s chairman from 1977 to 2002.

Recently, Rich, who continues to teach at USUHS, visited NMHM to donate more artifacts, such as a mortar base, two flechettes, an M-79 grenade and a thermometer bearing the words “Made in USSR.” He said he chose to give his items to NMHM because he believed they would find a good home at the Museum.

“Since my service in the Republic of South Vietnam (1965-1966), I have been dedicated to putting all of our items from the 2nd Surgical Hospital (MA) Museum into the National Museum of Health and Medicine as originally communicated to and with then Brig. Gen. Joel Blumberg as Director of the AFIP,” Rich said.

Alan Hawk, collections manager for NMHM’s Historical Collections, said Rich’s collection and his establishment of a medical museum in Vietnam is similar to the Army Medical Museum’s own founding.

“Dr. Rich’s collection is in the tradition of the Army Medical Museum during the Civil War, preserving the wounding agents of war to inform contemporary and future military surgeons,” Hawk said. “It is a very important collection, and we are glad to have it and be able to preserve it.”

NMHM is located at 2500 Linden Lane, Silver Spring, MD 20910. For more information, call 301-319-3303. Information about NMHM, including directions and parking, can be found at <http://www.medicalmuseum.mil>.

*Article by Melissa Brachfeld,  
National Museum of  
Health and Medicine PAO*

## Mobile Tool in Development to Help Combat Medics Identify Shock

ZOLL Medical Corporation has entered into an agreement with Reflectance Medical, Inc., in an initiative to develop and market a ruggedized version of the Mobile CareGuide 3100 — a sensor that will allow medical personnel to obtain tissue measurements of oxygen and pH without a blood sample and identify patients about to go into shock. The tool was designed with the goal in mind of saving lives and reducing complications that can and do result from inadequate resuscitation.

Since 2009, the RMI team has been working toward the development of this next generation military sensor, with the original CareGuide 1100 receiving clearance from the U.S. Food and Drug Administration in July 2012 and the second-generation CareGuide 2100 following closely behind with clearance in December 2012. The latest version of the device, the Mobile CareGuide 3100 with SmO<sub>2</sub> and pH, received its own FDA clearance July 19.

“The FDA clearance of the Mobile CareGuide 3100 with non-invasive pH measurement is a major milestone for the

company,” said Babs Soller, Chief Executive Officer at RMI. “For the first time, we can provide continuous, non-invasive, real-time assessment of patient acid-base status.” This will bring ICU level monitoring capability to patients not only in the emergency room but outside of the hospital, Soller explained.

The U.S. Army Medical Research and Materiel Command and Combat Casualty Care Research Program funded the development of CareGuides 1100, 2100 and 3100.

RMI, located in Westborough, Mass., is made up of seven in-house employees, all working towards the common goal of bringing its CareGuide technology to market for both military and civilian critical care. Through strategic partnerships, RMI works with multiple outside partners who assist in CareGuide development, design and production. One such partner is Dr. Victor Convertino, a senior scientist at the U.S. Army Institute of Surgical Research and manager of the Tactical Combat Casualty Care Research task area, funded by the CCCRP.

“For the past 8 years, our Human Physiology Laboratory investigators and I have conducted experiments in collaboration with Dr. Babs Soller using our human simulation of hemorrhage in an effort to study the response of tissue oxygen and pH during progressive hemorrhage,” said Convertino.

The CCCRP, a critical research effort of the USAMRMC, works day-in and day-out toward the goal of saving the lives and reducing morbidity of troops injured in the line of duty through the development of lifesaving strategies, new surgical techniques, biological and mechanical products, and the timely use of advanced physiology monitoring.

According to the CCCRP website, approximately 20 percent of all combat deaths are considered “preventable” if timely, appropriate care had been available. Specifically, roughly 20 percent of all combat deaths considered to be “potentially survivable” occur prior to arriving at a combat support hospital, revealing this out-of-hospital, transport from point-of-injury timeframe to be



A ruggedized version of the Mobile CareGuide 3100, which is a sensor that allows medical personnel to obtain tissue measurements of oxygen and pH without a blood sample and identify patients about to go into shock, is being designed with the goal in mind of saving lives and reducing complications that result from inadequate resuscitation. (Photo courtesy of Reflectance Medical Inc)

the most significant opportunity for saving the lives of combat casualties. Combat medics must therefore have not only the concern of diagnosing and treating combat injuries as quickly as possible following injury, but they must also do so under not-so-conventional circumstances during transport.

Together with ZOLL, Soller and her team at RMI are moving forward toward making the jobs of combat medics a little easier.

“Our development efforts kicked off earlier this year, by jointly developing the specifications for the Mobile CareGuide

4100, a modification of the 3100 designed to meet military specifications and be certified for use on military aircraft,” said Soller.

The Mobile CareGuide 4100 — a modification of the 3100 specifically for integration with ZOLL’s monitor and defibrillator technologies — will have more ruggedized packaging for the optical sensor and a new disposable to attach the sensor to the patient. Additional software modifications will make it quicker and easier to get measurements started on injured patients.

“This effort is being funded by ZOLL, but as always, we incorporate the needs of the military into our specification through on-going discussions with USAMRMC and the CCCRP,” added Soller. “Long term, we plan to work with our commercial partners to make Mobile CareGuide technology the standard of care for continuous assessment of trauma patient metabolic status both inside and outside the hospital.”

Article by Melissa Myers,  
USAMRMC PAO

# Finding Their Way

Marksmanship, physical fitness and Army warrior tasks are primary aspects of Army training. While not a first thought, land navigation is just as important.

With this in mind, the Soldiers and officers of the U.S. Army Research Institute of Environmental Medicine, or USARIEM, went to the woods of Fort Devens to brush up on their skills July 26.

Prior to heading to the field, Soldiers clocked in some classroom hours to prepare for the adventure. Soldiers looked at the tools they would be using to familiarize themselves with the fundamentals of land navigation.

After arriving in the field, a quick briefing was given to personnel, stressing the importance of the correct way to hold the compass, how to establish a pace count, and plotting points on their maps using an azimuth, or degrees.

“So, basically, what we’re doing is we’re handing out maps of the general area, giving them three to four eight-digit grid coordinates; they plot those coordinates on the map, and they go and they find them,” said Staff Sgt. Carl Larcom, Military Performance Division non-commissioned officer in charge at USARIEM.

Larcom spearheaded this particular training, along with Capt. Laurel Smith, a research occupational therapist with USARIEM.

“It’s just good refresher training, and it gives the unit a chance to mingle with people that they might not have an opportunity to work with outside their division,” said Smith. “It promotes esprit de corps and morale, and gets us out of the office.”

Once a week, the Soldiers of USARIEM partake in some type of training. This usually consists of classroom-style instruction covering everything from Equal Opportunity to Sexual Harassment/

Assault Response and Prevention (SHARP) to life-preservation training. USARIEM leaders also try to incorporate field exercises at least once a month.

“[This training] is nice because it breaks up the day and gives some of the Soldiers an opportunity to get out and apply some of their military skills and knowledge,” said Smith.

This type of out-of-the-office training also prepares Soldiers for potential future assignments.

“It’s all very precise in order to get you there,” said Larcom. “That eight-digit grid should get you within 10 meters of your point ... (With) a 10-digit grid, you should be within one meter.”

Larcom also pointed out that it is often difficult for some Soldiers to realize the attention to detail it takes during an exercise such as this one.

“They have to be really accurate,” Larcom said, or the Soldiers run the risk of not finding their points.

As the first iteration came to an end, Soldiers had plenty to say about the course.

“Everything went really well, especially considering the weather. Everybody’s in pretty high spirits,” said Sgt. Shaun Morand, a behavioral health NCO at USARIEM.

Soggy conditions called for a slightly trickier land navigation day as Soldiers had to be certain they weren’t stepping into unstable terrain.

Morand, considered an expert in land navigation, made sure not to dominate his group.

“I kind of let them take the reins, made a couple of corrections when I realized we needed to, and used it as a learning point,” said Morand. “If you have people looking over things twice, you’re more than likely to get it right.”



(Photo courtesy of U.S. Army)

# Through the Woods

Morand also said the land navigation course had “real-world application” that could be used whether someone is downrange or hiking on his or her own.

Cpl. Luis Leandry, a bioscience research assistant at USARIEM, trekked through the moist woods to complete the course.

“Two of the points were in the middle of the swamp ... , which threw us off,” Leandry said with a chuckle.

“The first one was really hard to find, then the second was OK, and the third one was in a swamp again, so that was a little bit rough.”

Course facilitators purposely designated points in areas such as these so Soldiers could then practice

their skills involving getting a back-azimuth. Instead of getting a direct “hit,” Soldiers could backtrack to figure out where their next point would be.

Smith thought the exercise overall went really well.

“No one got hurt and everyone had fun,” said Smith. “I think [everyone] learned something, and it seems like most had a good time despite the weather, which is always a positive.”

USARIEM has more training on the horizon, including a leader’s reaction course, grenade launcher and rifle ranges.

Article by Tazanyia Mouton,  
USAG-Natick PAO

## Tool May Reduce Altitude Sickness In Deployed Soldiers

It is no secret that Soldiers must prevail in all kinds of terrain and climates to complete missions. Afghanistan, for example, boasts mountains with elevations higher than 24,000 feet.

Many Soldiers who have deployed to high altitudes without the proper time to adjust have learned the hard way that they are probably going to get sick.

“Rapid ascents without sufficient time to adapt to altitude can lead to acute mountain sickness, or AMS,” said Dr. Stephen Muza, acting division chief for the Thermal and Mountain Medicine Division, or TMMD, which is part of the U.S. Army Research Institute of Environmental Medicine, or USARIEM. “This condition, marked by nausea, fatigue, headache and gastrointestinal distress, can really throw a wedge into a mission when not planned for.”

Abrupt exposure to high altitude negatively affects mental and physical performance and overall health because it lowers the oxygen supply to the body’s tissues for a significant amount of time. This condition, known as hypoxia, is what leads to altitude sickness.

“You also see a performance decrement at altitude,” said Muza. “A Soldier may not be able to carry as heavy a load as they are used to or even march at speed.”

This summer, like many summers before, researchers from USARIEM’s Thermal and Mountain Medicine Division traveled to Pikes Peak in Colorado, to study the physiological effects of AMS.

“Soldiers have to perform in the mountains,” Muza said. “We know lack of oxygen impairs health and performance. Currently, we are developing a tool that will give commanders a validated predictive model that accurately tells them at what point a Soldier may feel the effects of AMS and the likely

severity of the symptoms.”

Annually, researchers from TMMD make the trek to perform research at Pikes Peak because it allows them to validate the studies they conduct in the altitude chamber in Natick, Mass., while replicating a forward operating base environment similar to ones in Afghanistan. Also, Pikes Peak has what Muza calls the “ideal research elevation” of 14,000 feet, allowing for significant impairment without making people dangerously sick.

This year’s study concluded a two-year study. Researchers from USARIEM collected data on 70 men and women who were exposed to four different altitudes, at different activity levels, to validate their previously published predictive model of AMS, which suggested that altitude, time at altitude, gender and physical activity level are significant predictors of AMS.

Researchers were also there to collect data to develop an altitude acclimatization model as part of the Altitude Readiness Management System, or ARMS, being developed. This system will contain three models: the validated AMS model, the altitude acclimatization model and a physical performance model.

“USARIEM has the world’s largest mountain medicine database,” said Dr. Beth Beidleman, a research physiologist for TMMD, and the primary investigator for this study. “By using the wealth of historical data combined with the studies we have done at Pikes Peak, we have been able to pool information and create this important system.”

Prior to this, there was no test that could predict an individual’s likelihood of getting altitude sickness. So the researchers at TMMD came up with the idea to create a model that would significantly help planners and commanders when they are planning missions.

The ARMS combines population-based data with an individual’s altitude exposure, providing useful information for sustaining health and improving performance. It does this by predicting the prevalence



**Dr. Beth Beidleman of the U.S. Army Research Institute of Environmental Medicine, holds an Android-based smartphone to demonstrate the capability of the altitude-acclimatization model. (Photo by David Kamm, NSRDEC)**

and severity of altitude stress by incorporating altitude acclimatization, acute mountain sickness and physical work performance decrements. Simply put, it predicts the level of AMS a person is likely to experience during a mission and provides actual ways to reduce the severity and potentially avoid the affects of AMS altogether.

The first AMS model will allow commanders to identify the likely probability and severity of Soldiers experiencing AMS based on the mission requirements. If the risk and severity are too high, the altitude-acclimatization model will then enable commanders to mitigate the risk of AMS by developing an altitude-acclimatization prescription to avoid the harmful effects.

“This model allows commanders to mitigate the impact of altitude exposure,” Beidleman said. “It not only predicts whether a Soldier would get ill at certain altitudes, it gives a prescription for exposure. This tool can prescribe, for example, that if (Soldiers spend) two days at 8,000 feet before they go to their final altitude of 14,000 feet, the likelihood and severity of AMS would be drastically reduced.”

When this patent-pending technology debuts, the

goal is to have produced a stand-alone software product coupled with the capability to produce a device version integrated into a wristwatch, GPS or smartphone.

“We are currently collaborating with Massachusetts Institute of Technology’s Lincoln Laboratory to get this technology into a smartphone-based application,” Beidleman said. “It is important for us to provide a really basic planning tool that anyone could easily use while planning missions.”

Putting a good planning tool in the hands of commanders and unit leaders, enabling them to better complete their missions, is the primary planning consideration to Beidleman while perfecting this tool.

“If a commander has a small unit of 12 Soldiers with specialized skills, and potentially two can get sick, that really impacts their mission,” Beidleman said. “With this tool, he or she can think ahead to bring an extra person or allow for more time for Soldiers to acclimatize to the altitude. Essentially, it tells them the risk and also provides them with ways to mitigate that risk.”

*Article by Kelly Sullivan, USARIEM PAO*



## USAMMDA Medical Prototype Development Lab Demonstrates ‘Power of Three’

When the U.S. Army Medical Materiel Development Activity is asked to find a solution to a problem that affects the nation’s warfighters, it calls upon the talent and resources of its team at the Medical Development Prototype Laboratory located on the grounds of Fort Detrick, Md. As a subcommand of the U.S. Army Medical Research and Materiel Command, USAMMDA shares in the USAMRMC’s mission to create, develop, deliver and sustain medical capabilities for the warfighter — to protect and preserve the lives of our men and women in uniform.

From concept to creation, using some of the most sophisticated and technologically advanced equipment available today — from a laser engraver to 3-D printer, from a 50,000 psi water jet cutting system to woodworking and sheet metal machines — this group of experienced engineers and engineering technicians at the MPDL not only know how to get the job done, they actually get the job done — on time, every time.

And surprisingly, this team consists of only three dedicated men.

“USAMMDA’s MPDL has a uniquely direct and important impact on the medical materiel field,” said Mark Brown, a mechanical engineer who serves as shop supervisor. “Typically, our services are called upon when something is needed very quickly, such as an out-of-theater request. That is when our capability, experience, flexibility and support throughout the MRMC are critical.”

Brown said he and his team “have the best jobs on post,” and he may be right. Together with Jay Bartlett and Mark Easterday, the lab’s two engineering technicians, this highly knowledgeable group brings nearly 115 years of combined research and development experience to the MPDL.

Any way you slice it, this number is pretty impressive for a team of only three.

And speaking of slicing, this is exactly what goes on many days in the shop. But when one thinks of slicing, he usually thinks in terms of inches, and feet. In their world, slicing may mean separating a piece of material into sections within a 0.003-inch tolerance, which is about the thickness of a strand of human hair.

### Yes, a strand of hair.

It’s all about ultra-precise measurements, because if a cut is off even the width of that which cannot be seen with the naked eye, two pieces made to fit together will not — and this doesn’t help anyone solve any problems.

“Basically, our team works together to design, develop drawing packages, and quickly prototype far-forward medical equipment in support of the USAMRMC’s mission,” said Brown. “We’re able to prototype and do small production runs of medical devices in different scales and out of various materials. We also use our capabilities to harden commercial off-the-shelf items for use in the field.”

Core capabilities of the MPDL include 3-D computer-aided design and manufacturing, prototype development and fabrication, precision sheet metal forming, welding, chemical coating, cleaning and finishing, and technical data package development. And the lab uses all of these resources to achieve its full potential when called upon — all with the safety, health, and welfare of the warfighter in mind.

While Brown and his team typically are tasked by the Army for their projects, recently they have been developing a very critical bracket for the U.S. Air Force.

“Currently, we are working on an Air Force project that involves mounting a device to a Stokes litter basket that will prevent it from rotating uncontrollably during

helicopter hoisting and rescue,” said Brown. “Under certain conditions, because of rotor backwash and the surrounding landscape, the litter basket can begin to spin wildly, endangering the lives of both the casualty and the assisting medic. This device we’ve created uses the rotor back wash and a gyroscope to maintain a steady-state condition.”

This bracket is just one of many items Brown and his men have created over the past few years. Other projects they have completed include full-scale mock-ups of various military medical vehicles, field operating tables and sinks, an X-ray machine, shelters, entomology devices (for sand fly and mosquito-repellent testing), and a non-contact respiratory monitor. Many of these items have been patented or have U.S. patents pending.

While these products may appear “complicated” to some, the intent and result is actually the opposite. With the warfighter in mind, the key principals that drive product design for the MPDL team are that the product be functional, simple to operate, compact, lightweight, easy to assemble (no tools required), and interchangeable — all packaged in a low-volume cube for shipping and distribution.

This all sounds easy enough, doesn’t it? Well, it is — most of the time — for Brown, Bartlett and Easterday. But even when it isn’t, they still come through with the product — on time, every time.

To sum it up in a nutshell, it’s all about impact — the impact this team has on saving lives and securing the welfare of those men and women defending our country, because these warfighters are the focus and the recipients of the MPDL’s work each and every day.

“We’re very fortunate to have the support of upper management throughout USAMMDA’s divisions, because this enables us to prioritize our internal workload and get funding in place to acquire the materials, tooling and commercial parts required to complete the task at hand,” said Brown. “We have worked very hard to streamline the development process by aggressively integrating technology,



(Left to right) Jay Bartlett, engineering technician; Mark Brown, mechanical engineer and shop supervisor; and Mark Easterday, engineering technician. (Photo by Jeffrey Soares, USAMRMC PAO)

cross-training personnel, and leveraging knowledge and capabilities throughout the entire USAMRMC.”

And perhaps best of all, this team of three dedicated engineering professionals are able to work together, everyday, using their minds, hands, and specialized equipment to create a finished, working, and effective product that comes from one simple phrase — “Our Soldiers need this.”

“Without a doubt, the best thing about my job is that it gives me the opportunity to work with my team to design and fabricate materiel solutions in support of those who have dedicated their lives to defending our freedoms,” said Brown. “This is my greatest professional reward and motivation.”

Article by Jeffrey Soares,  
USAMRMC PAO



## Medical Stability Operations Course Hosted by 6th Medical Logistics Management Center

The 6th MLMC hosted the Medical Stability Operations Course Sept. 10-12.

The course was coordinated with Defense Medical Readiness Training Institute of Fort Sam Houston. In total, 36 military personnel and civilians from the 6th MLMC, the U.S. Army Medical Materiel Agency, the U.S. Army Medical Research for Infectious Diseases, the Walter Reed Army Institute of Research, the Air Force Medical Operations Agency, and the Joint Vaccine Program completed the course.

"We've been maintaining five ready-to-deploy teams at all times to provide strategic medical logistics expertise to major Combatant Commands," said Col. Anthony R. Nesbitt, Commander of 6th MLMC. "Understanding strategic concepts of military (and military to civilian health engagements, stability operations, and U.S. government humanitarian and disaster response efforts is very important to accomplish that mission."

The MSOC was developed in response to increasing demands from deployed and returning military health support personnel for more deliberate preparation for Military Health Support for Stability Operations.

The engagements in Iraq and Afghanistan, as well as responses to humanitarian needs around the globe have moved military action toward a new paradigm. This paradigm supports national security through the development of stable environments that enable durable peace and political, economic, and human security.

In November 2005, the Department of Defense acknowledged the role of the U.S. military in preventive diplomacy with the passage of DODD 3000.05 which elevated "stability operations" to a priority level comparable to combat and defined it as an overarching term encompassing various military missions, tasks, and activities conducted outside the U.S. in coordination with other instruments of national power to maintain or re-establish a

safe and secure environment for essential governmental services, emergency infrastructure reconstruction, and humanitarian relief.

"The MSOC curriculum was designed to build a healthcare force that possesses the knowledge, skills, and abilities to support MSSO," said Dr. Diana Luan, Education Director of MSOC. "This includes humanitarian assistance in the global arena and ensures geographical Combatant Commanders have the capabilities for integrated stability operations."

This course is open to all military and civilian personnel. For more information: <http://www.dmrta.army.mil>

*Article by  
Capt. Kang Seungho,  
6th MLMC*



(Photo courtesy of U.S. Army)

## Army Funds Research on Family Stress during Deployments

The Department of Defense's Defense Health Program is funding research to examine the impact of military deployments on spouses and children.

Dr. Deborah Beidel, Professor of Psychology and Medical Education at the University of Central Florida, presented the study entitled, "When Parents Go to War: Psychological Adjustments Among the Families of Deployed OEF/OIF Service Members," at the 2013 Military Health System Research Symposium Aug. 14 in Fort Lauderdale, Fla.

"We know [when parents deploy] that we see increases in fear and decreases in academic performance [among military children]," Beidel explained, during her presentation. "But what is statistically significant and what is clinically significant? When is intervention necessary? No one says."

Beidel said they are looking at objective measures of stress, such as participants' sleep schedules and saliva samples to measure cortisol. The study will also include diagnostic interviews and self-assessment tools, such as participant self-reporting and spouse reports.

The study, which started in January 2013, is now recruiting participants and plans to have 450 active duty and reserve families at three sites including Orlando, Fla., Houston, Texas, and Honolulu.

The project will be completed in collaboration with the Military Operational Medicine Research Program, which manages an extensive portfolio of research aimed at developing effective countermeasures against stressors to maximize health, performance and well-being throughout the deployment cycle. Beidel said that depending on what the study results show, follow on work could focus on tools to build service member and family resilience.



Dr. Deborah Beidel, Professor of Psychology and Medical Education at the University of Central Florida, presented the study entitled, "When Parents Go to War: Psychological Adjustments Among the Families of Deployed OEF/OIF Service Members," at the 2013 Military Health System Research Symposium Aug. 14 in Fort Lauderdale, Fla. (Photo by Ellen Crown, USAMRMC PAO)

"With unique factors including multiple and prolonged deployments, families need tools to cope with stress," said Beidel. "By helping the family cope better, we ensure the service member can focus on the mission."

MHSRS is the DoD's premier scientific meeting addressing the unique medical needs of the warfighter. This conference combines the former Advanced Technology Applications for Combat Casualty Care Conference, the Air Force Medical Service Medical Research Symposium and the Navy Medicine Research Conference.

*Article by Ellen Crown,  
USAMRMC PAO*



**MRAP continued from page 7**

14. Currently, 301 MaxxPro Plus vehicles with independent suspension systems will be converted to ambulances. AMEDD worked with the Joint MRAP Vehicle Program and found that the MRAP Dash litter loading system was an acceptable course of action for the Plus ambulance.

“AMEDD has a contract in place through Tank Automotive Research, Development, and Engineering Center to install a retrofitted Dash system into a government-owned Plus ambulance for user evaluation, coordinated with the Joint MRAP Vehicle Program,” said Lee. “Work is expected to be finished 4th quarter of FY13.”

Why not use the very maneuverable MaxxPro Dash ambulance itself?

The Army Test and Evaluation Command completed the limited user test of the Dash DXM ambulance with the independent suspension system in November 2011 at Yuma Proving Ground, Ariz., in accordance with the Director of Operational Test & Evaluation-approved test plan. The ambulance kit was inserted into the Dash MRAP vehicles in FY12.

DOT&E provided an operational assessment of the Dash DXM ambulance in August 2012: The patient compartment is small, and litter births are not long enough to accommodate patients taller than 5 feet 11 inches. The small interior does not store enough medical equipment and hampers the ability of the medic to treat patients. Aligning the litter into the rail system is often difficult while loading patients into the Dash ambulance. On the other hand, the Dash ambulance vehicle is reliable and survivable.

The Dash litter loading system will be retrofitted into a government-owned MaxxPro Plus vehicle with independent suspension for test and evaluation. The MaxxPro Acquisition Program Management team plans to take the demonstrator

vehicle design and complete an engineering change proposal in January 2014 for potential production of retrofit kits.

AMEDD and Navistar Defense, builder of the MaxxPro line of vehicles, through TARDEC/Primus, are working together to create a demonstrator Plus ambulance retrofitted with a Dash litter loading system to conduct a limited user test.

To better handle the tough terrain, USAMMDA worked with Navistar Defense to retrofit vehicles with an independent suspension system that dampens the rough ride and is critical to prevent further damage to wounded warriors, especially to those with traumatic brain injuries.

According to John Akalaonu, deputy program manager for the Navistar Defense MaxxPro family of vehicles, the solid axles were replaced by putting the MRAP MaxxPro Base vehicle body onto a new rolling chassis with independent suspension and bigger engine to create the long wheel base MaxxPro Plus that will be used for the 301 new ambulances. The Dash, which was designed to be lighter, smaller, and with a shorter turning radius, has a shorter wheelbase.

“The chassis swap gained 18 inches in length,” said Scott Zion, MaxxPro chief engineer.

The interior can accommodate litters up to 91.5 inches, more than 7.5 feet long, surpassing the need for litters that can comfortably carry soldiers taller than 6 feet 3 inches (the Army standard). The Plus ambulance is compatible with all litters, including the new 7309 NATO Litter and the TALON II. Patients will be side-by-side, providing a better working space for the medic.

“The litter loading sequence takes about 15 seconds,” said Akalaonu. “Unloading is about the same, with a maximum of 20 seconds. Two people are required to load and secure a patient in the long wheel base ambulance.”

The litter trolley is wider in the prototype to handle

**USAMRICD Soldiers Visit with Sergeant Major of the Army**

Spec. Kevin Laitipaya, a medical laboratory specialist in the Pharmacology Branch of the U.S. Army Medical Research Institute of Chemical Defense, was one of fifteen Soldiers on Aberdeen Proving Ground to receive special recognition from Sgt. Maj. of the Army Raymond F. Chandler III, during Chandler’s August visit to the installation.

The USAMRICD selected Laitipaya for this honor as a result of his accomplishments and exemplary service. Laitipaya recently graduated from the Warrior Leader Course on the Commandant’s List. Earlier in the year, as a member of the institute’s Molecular Pathology Team, Laitipaya received a Baltimore Federal

Executive Board gold award in the category Technical, Scientific & Program Support-Team. Laitipaya has also dedicated time to serve as vice president of the USAMRICD’s Morale, Welfare and Recreation Committee and as a USAMRICD representative for the Better Opportunities for Single Soldiers program.

Laitipaya received a challenge coin from Chandler during a Town Hall Meeting at the APG Post Theater, where Chandler spoke to Soldiers, civilians, and their families on several current topics, such as the Army as a profession, suicide prevention, sexual assault, and defense budget concerns.

Earlier in the day, USAMRICD’s Sgt. 1st Class Johnatan Caseja



Spec. Kevin Laitipaya

had joined other APG senior noncommissioned officers for lunch with Chandler at APG’s Top of the Bay.

*Article by Cindy Kronman, USAMRICD PAO*

more kinds of litters, and the alignment is adjustable. Magnets along the trolley rails help keep the litter aligned and in place. The landing brackets have been increased, and the litter arms are stationary.

The rear dual-wheeled design helps carry increased payload such as the ambulance kit. The Plus was further modified to accommodate additional armoring for more protection against explosively formed penetrators.

“Medical Research and Materiel Command has always worked closely with the program managers at Tank-Automotive and Armaments Command to design, develop, build, test and field ambulances

for the DoD,” said Lee. “The MaxxPro Plus ambulance with this new litter loading system is truly a state of the art vehicle for medical evacuation.”

“We have now achieved our objective requirement,” said Hawbecker. “The MaxxPro Plus ambulance retrofit is a move forward to safeguarding medics and their wounded warriors at point of injury.”

*Article by Merrie Aiken, USAMMDA Medical Support Systems Project Management Office*



## Natick Holds Inaugural NCO Induction Ceremony

Followers became leaders as six noncommissioned officers were recognized Sept. 30 at U.S. Army Garrison Natick's inaugural NCO Induction Ceremony.

Command Sgt. Maj. Kevin B. Stuart of the U.S. Army Medical Research and Materiel Command served as guest speaker at the ceremony, held at the Lord Community Center. Inductees included Sgt. David A. Gonzalez, Sgt. Matthew C. Lavallee, Sgt. Crystal L. Meints, Staff Sgt. Shaun M. Morand, Sgt. Dennis E. Scofield, and Sgt. Marissa G. Spitz.

"We had the opportunity to be included in this time-honored custom, which many Soldiers may never get to witness and be a part of," Spitz said. "I was happy to see so many folks from around (Natick Soldier Systems Center) at the event, to witness this important day for us Soldiers. We appreciate all of the hard work they do in their research for the Soldiers, and we try to give as much back as we can by being superior leaders and warfighters."

Natick Command Sgt. Maj. Robert Beausoleil reminded those in attendance of the event's importance.

"This induction ceremony that you just witnessed is a time-honored custom of select Soldiers being inducted



Staff Sgt. Shaun M. Morand passes through an arch and under crossed swords Sept. 30 during the inaugural Noncommissioned Officer Induction Ceremony at U.S. Army Garrison Natick. (Photo by John Harlow USAG Natick PAO)

into the ... corps of the noncommissioned officers," Beausoleil said.

In his remarks, Stuart welcomed the Natick Soldiers to the NCO Corps.

"You are now part of the NCO heritage," Stuart told the inductees. "You now have the opportunity to contribute to the legacy of outstanding service and leadership. You now have the opportunity to be part of a team that has been around for about 238 years. You now have the opportunity to be a part of a corps that has been in every battle, every skirmish, every war from the Revolutionary War to present."

Stuart pointed out that today's NCOs must train, teach, coach and mentor Soldiers to success while working under a great deal of scrutiny.

"You see, in a sense, we live in a glass house," Stuart said. "People are always watching us. They need that leadership. They want that leadership."

Stuart told the NCOs that leading Soldiers won't always be easy.

"You've got to make tough decisions sometimes. You're going to face tough situations and circumstances."

Leadership isn't just about rank, positions and functions, Stuart

said. He added that it's about relationship, friendship, fellowship, partnership, sportsmanship, sponsorship and mentorship.

"We have to be the best at what we do. We lead by example. Always strive for excellence."

During the ceremony, the NCOs passed under an arch and crossed swords, symbolizing their transition from followers to leaders.

"Once you cross that line, there's no crossing back," Stuart said. "More than ever, our noncommissioned officers are needed in our Army."

Spitz said she was impressed with what Stuart had to say to her and her fellow inductees.

"CSM Stuart ... gave a very inspiring speech on the Army values and leadership," said Spitz, "tools I will definitely use on a daily basis."

*Article by Bob Reinert, USAG-Natick PAO*

## AWARDS & PROMOTIONS

Col. Bruce A. Schoneboom, commander, U.S. Army Medical Research Institute of Chemical Defense, Aberdeen Proving Ground, Md., is the first recipient of the Uniformed Services University of the Health Sciences Alumni Association's Graduate School of Medicine Award. Schoneboom was nominated by fellow alumnus and alumni association graduate school representative John Pesce, Ph.D., a lieutenant in the U.S. Public Health Service Commissioned Corps, who currently serves at the National Institute of Allergy and Infectious Diseases.



Col. Dana K. Renta was presented with the Knight of the Honorable Order of Saint Michael during the Fort Rucker Army Aviation Association of America Chapter Membership meeting held at Fort Rucker, Ala., June 27. During 23 years of service in the medical field, Renta's responsibilities included running a battalion aid station; providing and directing care for active-duty servicemembers at Martin Army Community Hospital at Fort Benning, Ga.; and providing acute and chronic medical care to and promoting community wellness for soldiers and family members at Lyster Army Health Clinic at Fort Rucker, Ala.

Capt. Edward J. Sullivan, NMLC's Executive Officer, took the oath of office during a ceremony where he was promoted to his present rank Sept. 1. Long-time friend, Daniel M. Shelley, Lt. Cmdr., USN (Ret.) handled the pinning duties, while Capt. Sullivan's wife, Jennifer, took the photographs.



U.S. Army Medical Materiel Center, Europe staff earned international sports badges Sept. 13-15, in Aachen, Germany. Sgt. Anthony Coleman, Sgt. Jojo Ada and Spc. Dominique Williams participated in the competition where they each received the German and the Austrian Sports Badges, as well as the Netherland and Belgian Military Sports Badges.

## Experts Emphasize Investment in Acute Trauma Care

From battlefield blasts to plane crashes, major advancements in acute trauma care are being seen in both the military and civilian health sectors, agreed experts during roundtable discussion at the 2013 Military Health System Research Symposium Aug. 13 in Fort Lauderdale, Fla.

Funding in research and rapid implementation of best practices are paying off, and people with serious injuries are surviving and rehabilitating, said director of the U.S. Army's Combat Casualty Care Research Program Col. Dallas Hack. Joining him was Air Force Col. Todd Rasmussen, CCCRP deputy director.

"It's not an overstatement to say that trauma care has been transformed because of this investment," said Rasmussen. "This transformation has resulted in the lowest fatality rate for service members we have ever seen, and this investment has translated to civilians, including those injured on the streets of this country."

Roundtable participants included Navy Capt. Eric Elster, Uniformed Services University School of Medicine, Department of Surgery professor; Air Force Col. Jeffrey Bailey, Joint Trauma System director; and Dr. Margaret Knudson, Chief of Surgery at the San Francisco General Hospital and Trauma Center.

Bailey, who joined the event via phone from Afghanistan, talked about some of the



Advancement in acute trauma care and priorities for the future was the topic at a 2013 Military Health System Research Symposium roundtable discussion Aug. 13, with panelists including director of the U.S. Army's Combat Casualty Care Research Program Col. Dallas Hack (right); Air Force Col. Todd Rasmussen, deputy director of the Combat Casualty Care Research Program (middle); and Navy Capt. Eric Elster, Uniformed Services University School of Medicine, Department of Surgery professor (left). Joining them via phone was Air Force Col. Jeffrey Bailey, Joint Trauma System director; and Dr. Margaret Knudson, Chief of Surgery at the San Francisco General Hospital and Trauma Center. (Photo by Melissa Myers, USAMRMC PAO)

technologies, tools, and education implemented over the past decade of war, including battlefield tourniquets, hemostat bandages to reduce blood loss, and education on first-aid care. Bailey said now it's time to "focus on the gaps."

"The greatest burden of death is not in the hospital; it is on the battlefield. So we have the greatest opportunity to make a difference in pre-hospital care," Bailey said, to the group.

It was a point with which non-military doctors agreed. Knudson joined the group to share her recent experiences caring for victims during

the San Francisco plane crash in July. Fifty-three of the plane crash patients were treated at San Francisco General.

Knudson explained that she had previously trained with military health care combat casualty teams and how she used that training during the mass casualty triage.

"We need to keep these collaborations going because it brings a value to both the military and the civilian sectors," said Knudson.

Elster added, "It's how we train the next generation."

Article by Ellen Crown,  
USAMRMC PAO