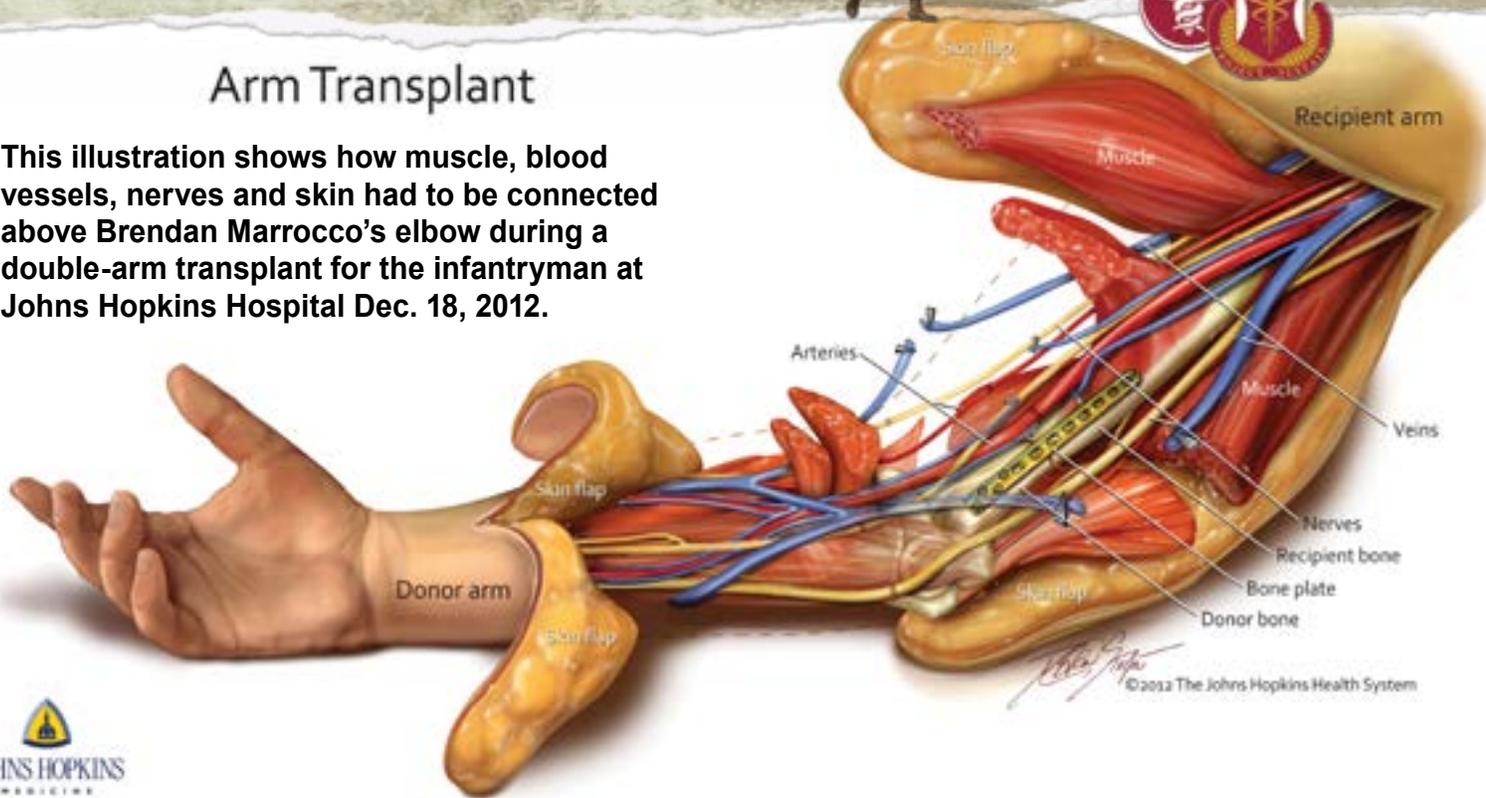


The Point

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U.S. Army Medical Research
and Materiel Command
Spring 2013

Arm Transplant

This illustration shows how muscle, blood vessels, nerves and skin had to be connected above Brendan Marrocco's elbow during a double-arm transplant for the infantryman at Johns Hopkins Hospital Dec. 18, 2012.



Soldier's Double Arm Transplant Restores Function, Quality of Life

With advancements in protective equipment, battlefield evacuation and medical care, service members are surviving injuries that would previously have resulted in death, and they are learning how to live without one or more limbs. Recent advances in regenerative medicine provide hope to these service members who look toward a future where they may once again have arms and hands that they can use.

Since 2008, the Armed Forces Institute of Regenerative Medicine has been bringing together the world's leading scientists and physicians from academia and industry to

develop innovative medical solutions to fully restore Warriors with traumatic injuries. During this time, the Department of Defense and the U.S. Army Medical Research and Materiel Command have provided and managed more than \$6.5 million in hand transplant research, to include the double-arm transplant performed at Johns Hopkins Hospital in Baltimore, Md. Dec. 18.

"A team of physicians and nurses helped to restore the physical and psychological well-being of someone most deserving," said Dr. W.P. Andrew Lee, director of the

Johns Hopkins School of Medicine's Department of Plastic and Reconstructive Surgery, and head of the team that performed the transplant. "Brendan Marrocco had lost both arms and both legs serving our country nearly four years ago."

Marrocco, a sergeant in the U.S. Army, sustained his injuries in April 2009 when an explosive-fired projectile entered his vehicle. Marrocco was the first service member during the war to survive a quadruple limb amputation.

**DOUBLE ARM continued on
Page 5**



ISR Burn Flight Team Completes Record-Breaking Mission

For more than 60 years, the U.S. Army Institute of Surgical Research Burn Center at Joint Base San Antonio, Fort Sam Houston, Texas, has provided specialized medical response through its Burn Flight Team, to deploy and transport burn and critically injured patients throughout the world to the ISR Burn Center for definitive care. On Feb. 22, the team set a new record for the longest continuous flight by flying for 19 hours on a non-stop flight from Singapore to San Antonio and traveling more than 9,850 miles, surpassing its previous longest flight by more than 3,000 miles.

Since its inception in 1952, the BFT has been able to deploy its five-person teams year-round within hours of notification of a mission. The specialized team is normally composed of a burn surgeon specialized in critical care, a critical care registered nurse, a licensed vocational nurse, respiratory therapist, and an operations non-commissioned officer. The team usually departs from the San Antonio International Airport on a commercial flight with all the specialized critical care equipment necessary to transport one or more patients on an Air Force C-17 configured for patient care en route to San Antonio.

For the last decade, the BFT has conducted almost 100 missions between Landstuhl



Members of the ISR Burn Flight Team in action. (Army photo)

Regional Medical Center in Germany and transported more than 350 patients injured in Afghanistan and Iraq. The recent mission to Singapore provided unique challenges for the team as they transferred the patient from the hospital to the aircraft and on to San Antonio. According to Lt. Col. (Dr.) Booker T. King, team leader and Burn Center deputy director, the mission went precisely according to plan with a combined effort from all the branches of the U.S. military, the International SOS organization, and the TRICARE Pacific Area office.

“The success of the mission relied on all these agencies working together in order to coordinate multiple aspects of the transfer beyond that which we normally experience when flying in and out of Germany,” said King.

In order to make this mission a success, Army team members synchronized their efforts with the Marines on the ground; with the Air Force for the transport aircraft, the Navy for ground transportation and storage of the equipment in Singapore; and the ISOS and TRICARE for the care management and transfer of the patient from the hospital to the aircraft.

“The success of the recent Burn Flight Team mission to Singapore exemplifies the dedication of military professionals demonstrating limitless commitment to care for their brothers and sisters in arms,” said ISR Burn Center Director, Col. (Dr.) Evan Renz. “It also reflects the collaborative efforts of a tri-service team whose skills have been honed over a decade of combat support.”

As with all transport missions, highly trained personnel and specialized equipment are used to stabilize the patient for the long flight home. Both Air Force Critical Care Air Transport Teams and BFT can be utilized to transport burn casualties.

“Many burn patients are transported by CCATT,” said King. “We are usually involved with patients who sustain burns over 40 percent of their body or those with inhalation injuries.” King also explained that the BFT is ideally suited to care for casualties with complex traumatic injuries—such as those with a combination of burns, amputations, chest, abdominal and head injuries.

The six team members on the Singapore mission were King; Cpt. Michael A. Campbell, a critical care nurse; two licensed vocational nurses—Sgts. Macneil Ramos and Nikenson Pennette; and two respiratory therapists—Staff Sgts. Seth B. Holland and Daniel J. Nelson.

“Everyone on this team has to be proficient with their job,” King said. “Also, it’s not uncommon for a team member, for example a respiratory technician to assist the nurse and help with wound care while we are mid-air. We all work as a team for the benefit of the patient.”

Article by Steven Galvan, USAISR PAO

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Army Medicine Realigns Medical Readiness

In an effort to better support the Army Force Generation cycle and assist the active and Reserve components in improving medical readiness throughout the Army Force Generation cycle, the Commanding General of Army Medical Command, Lt. Gen. Patricia D. Horoho, on July 8, 2012, directed the realignment of the regional medical readiness divisions within each of the Army's five regional medical commands.

The medical readiness division realignment will be a two-phased operation, with a completion date of Oct. 1, 2015.

The mission of the Medical Readiness Branches will be to coordinate, synchronize and standardize health service support for the Army Force Generation, or ARFORGEN, process and provide staff assistance for deployable and/or mobilized active and Reserve components, or AC/RC, units/personnel within their region. They will also monitor the health readiness status of deploying and mobilizing AC/RC units/personnel within the regional medical command, or RMC, area of responsibility.

In addition, readiness branches will coordinate all medical readiness functions, to include medical readiness metrics, Soldier Readiness Processing, standardization for medical mobilization and demobilization, deployment health assessments, Medical Protection System, and e Profile.

"Medical readiness means that service members are free from health-related conditions, including dental conditions, which could limit their ability to carry out their duties and result in non-deployment," said Col. Roman Bilynsky, Army Medical Command's G-37 chief of the Medical Readiness Division. "Medically ready Soldiers require less medical and dental support in theater, which translates into fewer medical evacuations from theater, which conserves available strength by minimizing unnecessary intra-theater travel and maximizing medical support for combat operations."

The two-phased realignment began in June 2012, and involved the realignment and renaming of the divisions as Regional Medical Command G-37, Medical Readiness

Branch. The second phase will consist of the execution of the Regional Medical Command G-37, Medical Readiness Branch co-location and hiring plans.

When the dust settles, Western Regional Medical Command and Southern Regional Medical Command G-3, Medical Readiness Branches will collocate with their respective RMC headquarters while Northern Regional Medical Command G-37, Medical Readiness Branch will remain with the Northern Regional Medical Command headquarters at Fort Belvoir, Va.

"Ensuring the medical readiness of our forces has always been challenge, especially among the Reserve/Guard components," assured Bilynsky, "However, with the realignment of our medical readiness advisors with Regional Medical Command staff, we will be better able to coordinate and influence mobilization and pre-deployment medical readiness to ensure all of our forces, regardless of component, are optimally prepared to perform their warfighting mission."

*Article by Kirk Frady,
Army Medicine*

"One of my goals is to hand-cycle a marathon."

**Pfc. Brendan Marrocco,
double-arm transplant recipient.**



A team of surgeons at Johns Hopkins performs the hospital's first double-arm transplant on former infantryman Pfc. Brendan Marrocco. The surgery took 13 hours, and was sponsored by the Armed Services Institute of Regenerative Medicine. (Army photo)

DOUBLE ARM, continued from Page 1

"[Marrocco's] hope to lead a normal life has been boosted by the first double-arm transplant at Johns Hopkins," said Lee.

The DoD invests in medical research and development efforts that have the most promising ability to benefit our troops injured in combat.

"Hand transplants, such as the bi-lateral procedure performed on Sgt. Marrocco, have the potential to restore not just function but also quality of life for our injured service members," said Dr. Smita Bhonsale, deputy director for Science and Technology for the AFIRM.

"It's such a big thing for my life and it is just fantastic," said Marrocco at the Johns Hopkins Press Conference Jan. 29. "It has given me a lot of hope for the future."

Marrocco, now 26 years old, continues to maintain a positive attitude and is looking forward to reaching for the goals he has set for himself and taking his ambitions as far as he can.

"One of my goals is to hand-cycle a marathon," said Marrocco.

While the road to more functional use of his arms will be slow, Marrocco is confident that he will get there.

"The nerves regenerate at the maximum speed of one inch per month," said Lee. "Considering where we did the transplant, and where the nerves are connected, there are many, many inches and indeed many, many months -- a couple years for that matter -- before function will return."

Marrocco and Lee closed out the press conference with a message to fellow amputees to not give up hope. Advances in medicine are made every day.

The AFIRM continues to support advances in regenerative medicine, generating hope for injured service members.

*Article by Carey Phillips,
USAMMDA PAO*

Mouth Device to be Tested as TBI Therapy

The tongue is an amazing organ.

Thousands of nerve fibers in it help us eat, drink and swallow. Without them, we would not taste. The tongue helps us speak. Quietly, its surface defends our bodies from germs.

Yet for everything the tongue can do, perhaps one of its most exciting roles is to serve as a direct “gateway” to the brain through thousands of nerve endings.

Now researchers at the U.S. Army Medical Research and Materiel Command in collaboration with the University of Wisconsin-Madison and NeuroHabilitation Corporation are leveraging the power of those tiny nerves. They are aiming to restore lost physical and mental function for service members and civilians who suffered traumatic brain injury or stroke, or who have Parkinson’s or multiple sclerosis.

The treatment involves sending specially-patterned nerve impulses to a patient’s brain through an electrode-covered oral device called a PoNS™, a battery-operated appliance placed on the tongue. The 20-30 minute stimulation therapy, called cranial nerve non-invasive neuromodulation (CN-NINM) is accompanied with a custom set of physical,

occupational, and cognitive exercises, based on the patient’s deficits. The idea is to improve the brain’s organizational ability and allow the patient to regain neural control.

NeuroHabilitation Corporation is funding the commercial development of the device, and has more than just financial investments in PoNS™. The company was created with support by Montel Williams, a celebrity and military veteran who was diagnosed with multiple sclerosis in 1999. Williams was originally introduced to the research through an American Way magazine an attendant gave to him while he was on an American Airlines flight. The magazine included an article about work being done at the University of Wisconsin-Madison. Shortly after reading the article, Williams joined a study at the University of Wisconsin-Madison’s Tactile Communication &



Neurorehabilitation Lab, which is in the Department of Biomedical Engineering.

“The third day there I said we need this in the mouths of our soldiers,” recalled Williams, stating that he has always kept his ties with the military after serving in the Marine Corps and graduating from the Naval Academy.

The PoNS™ prototype and associated therapeutic use were developed by University of Wisconsin-Madison scientists Yuri Danilov, Ph.D., Mitchell Tyler, M.S., P.E., and

Kurt Kaczmarek, Ph.D. Their research is driven by the principle that brain function is not hardwired or fixed, but can be reorganized in response to new experiences, sensory input and functional demands. This area of research is called neuroplasticity and is a promising and rapidly growing area of brain research.

Preliminary data from University of Wisconsin showed CN-NINM to have great potential for a wide variety of neurological issues. Remarkably, the therapy doesn’t only slow functional loss, but also has the potential to restore lost function. That’s why researchers are saying that it “breaks the rules.”

“When we talk about a brain changing itself, this is what we mean,” said Danilov.

Because of its possible application for service members, especially those returning from combat with blast-related traumatic brain injuries, USAMRMC signed a Cooperative Research and Development Agreement with NeuroHabilitation Corporation (founded by Williams and his colleagues, including the University of Wisconsin scientists) on Feb. 8 that allows the Army to further evaluate the device.

PoNS continued on Page 21

Brain Injury ‘Doesn’t Mean You’re Broken’

Army Spc. Kevin Wear was riding in an armored vehicle in Afghanistan last summer when a roadside bomb exploded, tearing the vehicle into three pieces and killing three of the five passengers inside.

But Wear remembers nothing of that incident or anything that happened a few weeks prior. The blast injured his leg and caused a traumatic brain injury that left him in a coma for about a week and a half.

“I woke up in San Antonio,” he said, referring to Brooke Army Medical Center, or BAMC, “and was in an amnesia state for a month or so.”

Nearly a year later, Wear is still coming to terms with the aftermath of his traumatic brain injury, commonly known as a TBI. He struggles with short- and long-term memory, but has learned “tricks,” such as association and rhyming, that help him get by.

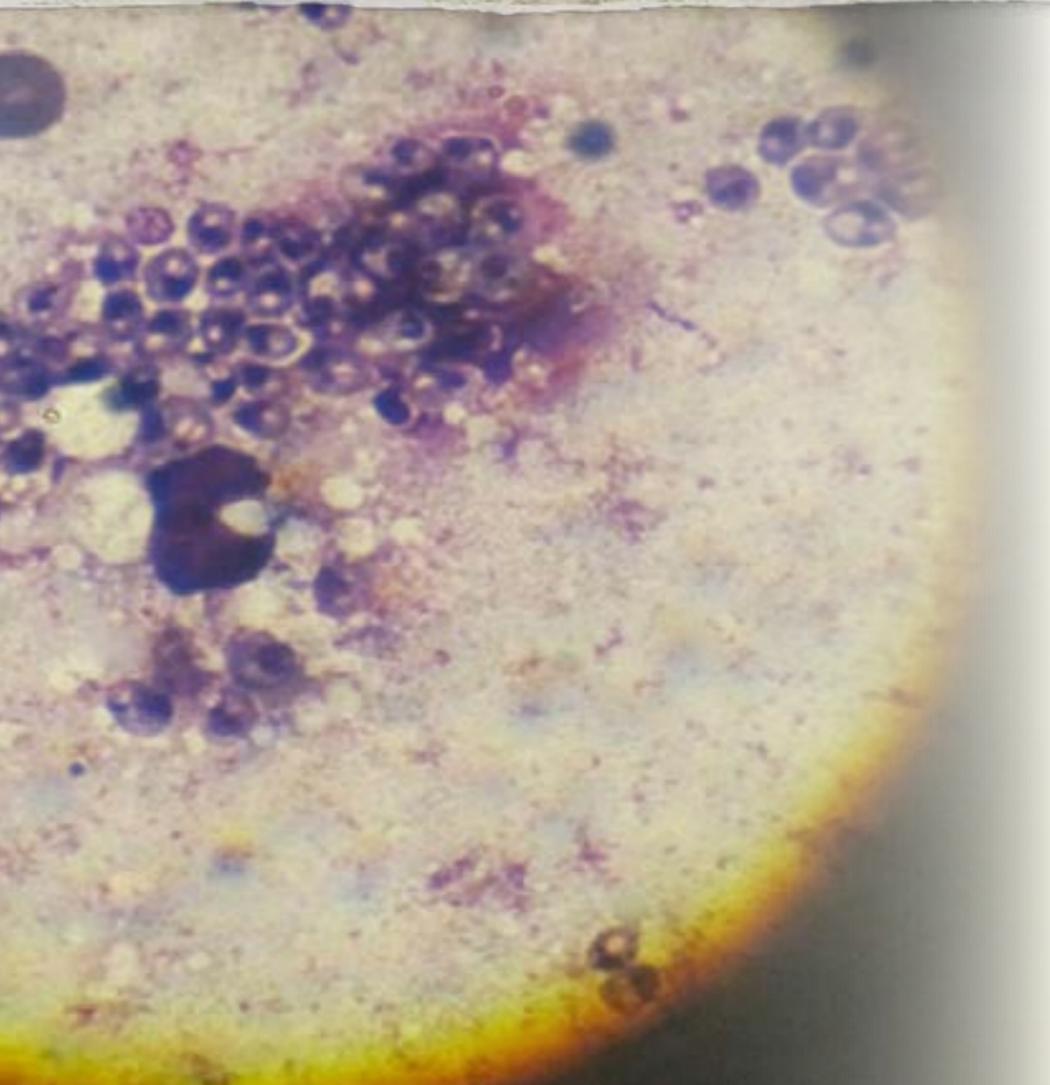
“Sometimes I have trouble, but I play it off,” he said in an interview at the BAMC Warrior Transition Battalion headquarters. “All five of my kids believe I’m Superman -- the toughest, strongest guy in the world. I just want to keep that as long as I can. I don’t want to feel different -- or less.”

TBI continued on page 30



Sgt. Ed Matayka spends a quiet moment with his wife, Karen, at the Warrior and Family Support Center near San Antonio Military Medical Center, Texas. The Vermont National Guard medic lost both legs and suffered a brain injury after a roadside bomb blew up his vehicle in Afghanistan in July 2010. (Photo by Lori Newman)





**Leishmaniasis
as seen under a
microscope at Walter
Reed Army Institute
of Research in Silver
Spring, Md. (Army
photo by Sgt. 1st
Class Roddy Rieger)**

Cutaneous Leishmaniasis ‘Combo Cream’ Completes Third Phase III Clinical Study

Cutaneous leishmaniasis. It is not generally life threatening, but it is painful, disruptive and potentially life altering with no FDA-approved treatment. While it may not be all that noticeable in the United States, it affects U.S. service members and travelers to subtropical regions of the world where it is widespread.

The U.S. Army Medical Research and Materiel Command celebrated the successful completion of its third Phase III clinical study and the announcement of the study result for Topical Paromomycin for the treatment of cutaneous leishmaniasis in the New England Journal of Medicine on the day of publication Feb. 7 at Fort Detrick.

Key speakers included Brig. Gen. (P) Joseph Carvalho, Jr., commanding general for the USAMRMC and Fort Detrick and Deputy for Medical Systems to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology; and Dr. Kenneth Bertram, principle assistant for Acquisition.

“Today, we recognize the completion of a pivotal four-year study in Tunisia focusing on finding an effective treatment for cutaneous leishmaniasis,” said Carvalho. “Truly this research is expected to not only affect military health but also global health.”

Study results for the combination cream with the antibiotics promomycin + gentamicin showed a cure rate of 81 percent in patients who participated in the trial. Patients saw shrinking of the lesions, regrowth of normal skin and the absence of relapse. A cream containing paromomycin alone had a similar cure rate of 82 percent. Only 58 percent of patients receiving placebo saw the lesions cured. Less than five percent of all study groups reporting adverse events which were primarily minor reactions at the applications site.

“This is more than just remarkable research,” said Bertram. “This new investigational antibiotic cream has the potential to become a first-line treatment for cutaneous leishmaniasis that service members could apply themselves in the field.”

Cutaneous leishmaniasis is a parasitic disease transmitted through the bite of an infected sandfly. The disease causes disfiguring lesions.

“Cutaneous leishmaniasis has affected more than 3,000 U.S.

service members since 2003, and affects millions of people in 98 countries throughout the world,” said Bertram. “In Tunisia, where the Phase III clinical trial was conducted, up to 10,000 new cases are reported each year and more than half of those cases are in children.”

Current treatments are expensive, contain toxic heavy metals that must be administered either intravenously or injected directly into the lesion for a 20-day course of treatment at a medical center. For U.S. service members deployed in these areas, this often results in evacuation from their posts -- at an approximate cost of \$35,000 for hospitalization, treatment and lost duty time per service member.

In the developing world, patients often resort to home remedies such as burning the lesions with anything from battery acid to a red-hot machete.

“A simple cream represents a tremendous breakthrough in the way we treat this neglected disease,” said Maj. Mara Kreishman-Deitrick, product manager at the U.S. Army Medical Materiel Development Activity, which leads the advanced development of medical products for the USAMRMC.

“Let me explain why without this partnership we would not be here today,” said Bertram.

“We all shared a common goal -- to find a better treatment for cutaneous leishmaniasis -- but the dynamics of this unique partnership is what determined our success.”

The financial support and scientific expertise for Topical Paromomycin’s development was provided by scientific researchers, product managers and regulatory scientists at USAMRMC and its labs the USAMMDA and the Walter Reed Army Institute of Research.

In Tunisia, the Institut Pasteur de Tunis and the Institut Pasteur in Paris conducted clinical trials, where there was a sizeable population of cutaneous leishmaniasis patients and experienced researchers to oversee the trial.

“Each ensured the clinical trials were developed and conducted using the highest ethical and human protection standards, in compliance with international, U.S., U.S. military and Tunisian law,” said Bertram.

The next step is for USAMRMC and its partners will work towards FDA approval, and then evaluating potential partners for manufacturing and distribution of the treatment.

*Article by Carey Phillips,
USAMMDA PAO*

Studying the Hidden Enemy of the Afghanistan Mountains

When they deploy rapidly to the mountainous regions of Afghanistan, U.S. soldiers confront more than the enemy.

At heights exceeding 8,200 feet, they must worry about the effects of altitude on their mental performance and about their susceptibilities to Acute Mountain Sickness, or AMS. As acting chief of the Thermal and Mountain Medicine Division at the U.S. Army Research Institute of Environmental Medicine, Natick Soldier Systems Center, Stephen R. Muza, Ph.D., devotes a great deal of time to studying those problems.



Stephen R. Muza, Ph.D., of the U.S. Army Research Institute of Environmental Medicine's Thermal and Mountain Medicine Division, is studying the effects of altitude on Soldiers' mental performance and their susceptibility to Acute Mountain Sickness. (Photo by David Kamm, NSRDEC photographer)

"We need to know the actual, physiological basis for the development of these altitude illnesses," said Muza, "and specifically in this case, Acute Mountain Sickness, in order to target new pharmaceutical products."

Working toward that goal, Muza and his colleagues at USARIEM are collaborating with the Neural Systems Group, Massachusetts General Hospital, Harvard Medical School on "Neuroimaging of Acute Mountain Sickness," a research study sponsored by the Department of Defense Telemedicine and Advanced Technology Research Center. The study is using near-infrared neuroimaging, or NIN, to non-invasively measure changes in the brains of test subjects at sea level and 14,500 feet while doing cognitive tests and either light or heavy exercise.

Neuroscientist Gary Strangman,

Ph.D., of MGH has been bringing his NIN equipment to Natick, where it is used on subjects in USARIEM's hypobaric chamber, which can simulate altitudes up to 30,000 feet. The NIN is a portable alternative to magnetic resonance imaging, or MRI.

"He can specifically look at what's going on in this brain tissue between the transmitter and the receiver," said Muza of Strangman. "We're not looking at the whole brain, but we're looking at the cortex, where most of the neurons are found. That's where really where all of the action is."

The collaborative study is focusing on 36 healthy civilian subjects from the Boston metro area, who have baseline

measurements done at MGH and then spend two eight-hour sessions each in USARIEM's chamber. Light is beamed through their brain tissues and then analyzed for changes in blood volume, oxygenation, and fluid distribution.

"He was looking for an opportunity to use his equipment," said Muza of Strangman. "I was looking for an opportunity to use cutting-edge (equipment), basically what nobody else has in this world -- new portable imaging devices -- to study the changes in the brain at altitude in our hypobaric chamber, because you cannot bring an MRI (in there)."

As Muza pointed out, soldiers' thought processes slow

Field Band Gathers Fans

USAMRMC Commander Brig. Gen. (P) Joseph Carvalho, Jr. and others gathered at the Weinberg Center for the Arts for a matinee performance from the United States Army Field Band Jan. 27. The Weinberg Center for the Arts is located in Frederick Md. Former Secretary of State and Chairman of the Joint Chiefs of Staff, Gen. (Ret.) Colin Powell will be speaking on May 9 as part of the Frederick Speaker Series. Learn more: <http://www.weinbergcenter.org/>



(Photos courtesy of Army Field Band. Graphic altered.)

at altitude. So Strangman designed cognitive tests on a computer screen to measure subjects.

"We want to cause the brain to have to work, and to make the brain work, we do cognitive tasks," said Muza, "things that are very comparable to what a soldier does."

Muza and Strangman also want to know what the brain is doing when a subject is experiencing headaches, lightheadedness, nausea and other symptoms associated with AMS.

"When you get above 14,000 feet, there's better than an 80 percent chance that you'll develop some degree of severity of Acute Mountain Sickness," Muza said. "We're

interested in knowing what's going on in the brain in the hours that lead up to the development of Acute Mountain Sickness."

The study has been ongoing for a year and should be completed in May. The early data are encouraging.

"In the individuals reporting Acute Mountain Sickness versus those who do not report having symptoms of Acute Mountain Sickness, we see that there is a reduction in blood flow to the brain and, therefore, oxygen delivery to the brain in the individuals who are sick versus the individuals who are not sick at altitude," Muza said. "We do see, with 60 minutes of exercise, more Acute Mountain Sickness than we see with

the 10 minutes of exercise. We expected that, and that's happening."

The only available pharmaceutical treatment, said Muza, improves breathing, not brain function. This study could help change that one day.

"Finding an alternative drug therapy is a long-term goal of our research program," said Muza, who added that the collaborative study has offered "the opportunity to bring what I think nobody else has in the world into our hypobaric chamber and use it to study these effects."

Article by Bob Reinert, USAG-Natick PAO



Natick Researchers Team Up With Norwegian Army to Measure Nutritional Needs During Arctic Ski March

A group of scientists from the U.S. Army Research Institute of Environmental Medicine recently returned from a field study in which they teamed up with the Norwegian Defense Research Establishment and the Norwegian Army from the Garnisonen i Sør-Varanger in Kirkenes, Norway, to assess the physiological demands of a multi-day winter training exercise.

Norwegian soldiers and U.S. Army Research Institute of Environmental Medicine's researchers braved whiteout conditions and intense March winter weather -- sometimes with temperatures that were as low as minus 22 degrees -- during the Garnisonen i Sør-Varanger's three-day ski march exercise along the Norwegian-Russian border in an effort that took more than a year of collaboration and planning.

"For this study we're very interested in recovery nutrition," said Dr. Andy Young, division chief for USARIEM's Military Nutrition Division. "[Norwegian Defense Research Establishment] had used the ski march successfully in other studies. They suggested that we collaborate with them on this study to document and quantify the level of physiological strain during this exercise to see if it would be appropriate for future tests of prototype

'recovery rations.'"

Every winter, the Norwegian Army sends companies of conscripted soldiers through cold-weather military training at GSV. This training includes a multi-day winter survival course that culminates with a three-day ski march along the border between Norway and Russia.

"This was an opportunity to assess physiological stress using an actual real-world training environment," said Dr. Stefan Pasiakos, a nutritional physiologist with MND. "Our objective was to characterize how physically challenging the actual training course was and how their bodies responded to the combination of extreme weather and sustained physical activity. This real-world scenario is difficult to duplicate in the laboratory."

As part of USARIEM's mission to enhance warfighter health and performance, researchers from MND are always looking for ways to assess nutrition requirements during real-world operational conditions.

"We thought this winter training event would be an ideal situation to characterize nutritional requirements of operational stress imposed by a combination of exercise while carrying heavy loads, environmental

extremes and potentially inadequate food intake," Pasiakos said. "The resultant stress and potential energy imbalance are important determinants of optimal nutrient composition of combat rations for these types of missions and conditions."

When a Soldier is highly stressed and performs high levels of physical activity, he or she may not consume enough calories, because there may not be enough food or simply because they are active all day and do not stop to eat.

"This can lead to a caloric deficit, which can compromise skeletal muscle and bone health, leading to decrements in physical performance and increased injury risk," Pasiakos said. "By better understanding these sometimes unavoidable physiological consequences of military operations, we aim to identify effective nutritional countermeasures suitable for incorporation in new combat rations."

In March 2013, months of planning and coordination between USARIEM, the Norwegian Defense Research Establishment, known as FFI, and GSV paid off. Four researchers from USARIEM's MND and one from the Thermal and Mountain Medicine Division left on a two-week trip to GSV on Norway's extremely cold border with Russia.

The first few days in Norway were spent recruiting soldier-volunteers to participate in the study and to get baseline testing done. While this was happening, Norwegian soldiers were training and preparing for the ski march that was now only days away by learning how to function in teams, executing military tasks and winter-survival drills in the field.

"GSV's command was extremely supportive, allowing us ample access to their soldiers and facilities," Pasiakos said. "Thirty soldiers volunteered and we completed all preliminary testing -- biological sampling, muscle power testing, cognitive testing, diet assessment and anthropometrics -- within the first two days of our trip. Our USARIEM and FFI team was exceptional; they were truly a great group to work with."

Volunteers were outfitted with physiological strain

monitors and swallowed ingestible temperature pills to monitor activity and core temperature continuously during the ski march. Volunteers also consumed stable isotopes to measure energy expenditure and protein metabolism. Then Pasiakos, along with Svein Martini, a principal scientist from FFI, headed out into the cold to track their volunteers during the approximately 60-mile trek.

"These soldiers had a lot of ground to cover in a short time," Pasiakos said. "During the march, soldiers carried about 75-100 pounds on their backs. Most soldiers skied for about 12 hours during the first day. They would ski for 50 minutes and then have a 10-minute break. They would use the break to change into dry clothes and to eat something fast."

On the second day, the weather conditions worsened, with treacherous winds and blizzard-like conditions, making visibility extremely difficult. That night, the march had to be halted earlier than expected at a patrol station along the border.

The soldiers and scientists skied on, continuing military training and research data collection until the end of the march on the third day. At the end of the trip, the soldiers had to go to the range and qualify with their weapons, while the USARIEM and FFI team assembled a field laboratory at Grense Jakobselv, another border patrol station, to make the last measurements on the volunteers and gather the last of the test samples.

The researchers then packed up and headed back to the states. Now home, Pasiakos is excited for the results of the study, hopes that preliminary data are available by early summer, and is open to the potential for future trips.

"We conducted a strong observational study; we just have to wait and see what the data tell us," Pasiakos said. "Getting a chance to work with a large group of soldiers and collect information that is valuable for the U.S. and Norwegian Army couldn't have been done in the lab. This was our chance to go out there and ask 'what's really happening?' This was a perfect opportunity to do that."

Article by Kelly Sullivan,
USARIEM PAO



TSAS-Lite belt

TSAS-Lite Improves Pilot Perception of Drift, Situation Awareness

During rescue hoist operations, helicopter pilots sometimes face the difficult task of maintaining a stabilized hover position in degraded visual conditions. When over water, the task is further complicated by the motion of the waves and the drifting of the victim(s). Maintaining a hover over the victim requires the pilot to constantly adjust the helicopter's position. These adjustments are made based on the verbal instructions given to the pilot by a crewmember.

To aid in making such adjustments, researchers and engineers from the U.S. Army Aeromedical Research Laboratory, Defence Research and Development Canada, and Henry M. Jackson Foundation evaluated the effectiveness of a tactile display system in maintaining and/or improving pilot performance during a hover maneuver over a moving target.

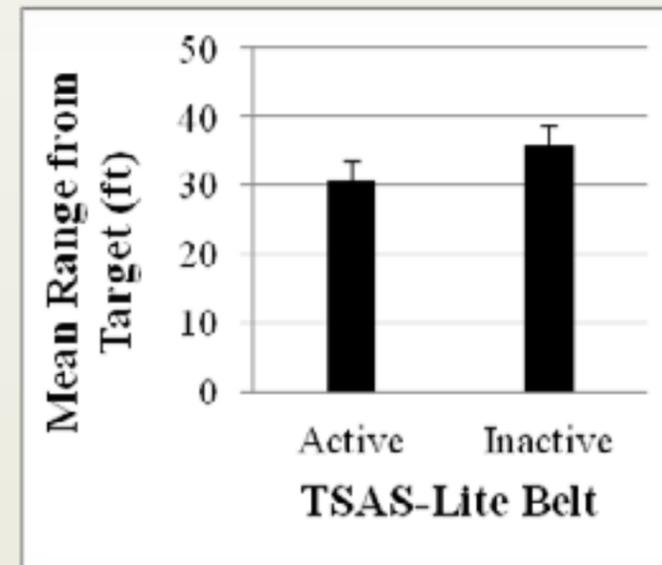
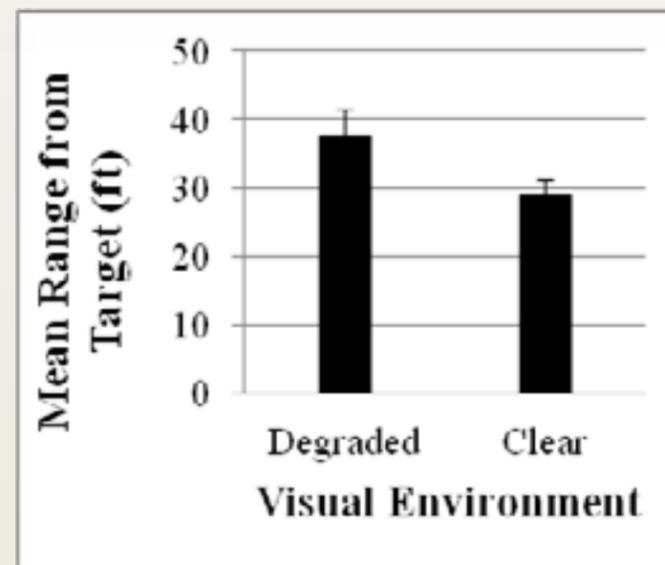
To effectively assess the tactile system in maintaining a stabilized hover, the study used the tactile situation awareness system-Lite belt, and USAARL's one-of-a-kind NUH-60 Black Hawk flight simulator.

The idea of TSAS was to develop a device that provides pilots with information via the sense of touch. Within the last 10 years, engineers from Engineering Acoustics, Inc. manufactured the electromechanical tactors, which produce vibrating pulses that are similar to the vibration of a standard electric toothbrush.

The full TSAS array consists of a custom fit, upper-body torso suit, shoulder straps, and a seat. All three components contain tactors, which transmit information from the flight simulator or aircraft to TSAS and provides, to the pilot, tactile cues such as the

aircraft's altitude, position, and velocity. For example, when the helicopter or simulator drifts to the left, the corresponding left position tactor vibrates to alert the pilot of the drift so that he/she can compensate by moving the helicopter to the right. TSAS is designed so that as it alerts the pilot, he/she is able to maintain orientation while looking away from the aircraft's instrument panel.

Over the years, however, the bulky, upper-body torso suit proved unrealistic for operational use. Therefore a smaller and lighter ensemble, the TSAS-Lite belt, became part of the system, which also includes tactors in the shoulder harness and seat cushion. The TSAS-Lite belt, consisting of eight electromechanical tactors, is placed around the waist. The simulator transmits information to the belt, shoulder straps, and seat tactors. The



The main effects of visual environment and the TSAS-Lite belt on mean range from target (ft). Error bars represent standard error of the mean.

tactors then provide cues to the pilot regarding the aircraft's orientation.

During the two-day study, 16 Black Hawk pilots completed 4 simulated flights per day to a ship where the helicopter landing deck was used as the moving target. In each flight, the participants hovered the helicopter over the moving target for approximately 10 minutes. Day one conditioned the aviators to be rested while performing the maneuver, with and without TSAS-Lite, in both a clear (seven miles of visibility) and degraded (overcast, with less than a quarter mile visibility) visual environment. During day two, following one night of continuous wakefulness, the fatigued aviators performed the same maneuver in both visual environments with the presence and absence of TSAS-Lite.

The results showed that the

limited-display and use of the TSAS-Lite belt helped increase hover accuracy during low speed hovers in clear and degraded visual conditions, which may increase safety. For example, the participants' performance greatly improved when hovering over the target while using TSAS-Lite. In rested and fatigued pilots, all measures of performance related to aircraft orientation were improved with use of the belt compared to performance without the belt. Figure 2a and 2b illustrate the main effects of the study conditions.

Participants rated their situation awareness as greater when the tactile system was active rather than inactive. Participants also rated their perception of target drift relative to their position as better when using TSAS. In addition, pilots perceived workload to be diminished when the tactile system was

active, thus indicating that the additional information was not a burden or distraction to the pilot.

The findings support the tactile system as an effective device for facilitating performance of this task under varied conditions (rested versus fatigued and clear versus degraded visual environment). Additionally, the data indicate that participants developed a strategy for using the cues, which influenced their performance. Overall, the results show that the belt significantly improved pilot perception of drift and situation awareness, and reduced mental stress.

This information is a summary of USAARL Technical Report No. 2013-09.

Article by Catherine Davis and Dr. Amanda Kelley, USAARL



USAMRMC Office of Research and Technology Applications Receives Designation in Study

Have you ever seen a new product or gadget and thought to yourself, “Why didn’t I think of that?” At the United States Army Medical Research and Materiel Command, innovation occurs constantly in the research labs and on the field as Soldiers, scientists, and medics tackle the issues that affect Soldiers.

These new ideas and discoveries that come out of the command are patented and then transitioned to the private sector through the USAMRMC’s Office of Research and Technology Applications, which negotiates license agreements with companies, who then commercialize the USAMRMC’S technologies. Recently, USAMRMC’s ORTA was named number four in Department of Defense license-related sales; this designation affirms that the research conducted at the USAMRMC has resulted in many successful technologies.

In addition to developing new and exciting technologies for use on the battlefield and in the treatment of wounded and recovering Soldiers, the ORTA coordinates intellectual property licensing on behalf of the command and its laboratories.

The office, located at Fort Detrick, Md., coordinates Cooperative Research and Development Agreements, Material Transfer Agreements, Interagency Agreements, Nondisclosure Agreements, and other technology transfer transactions. This work expands the Army’s capabilities and furthers the mission of the USAMRMC.

“Licensed products being sold on the commercial market are the end result of the MEDCOM Technology Transfer program,” said Dr. Paul Mele, director of the USAMRMC ORTA. “Research from Army laboratories results in products that are commercialized and available for purchase by the military and civilian sector.”

Occasionally, the ORTA coordinates with an

intermediary organization to facilitate partnerships that can lead to new and cutting-edge technology for military medicine. One such organization is TechLink, funded by the DoD . Through coordination with TechLink, the command is able to discover new technologies by partnering USAMRMC labs with private sector companies for technology licensing, transfer, and research and development.

The DoD has more than 120 labs and research centers nationwide. TechLink has facilitated partnerships with 101 of these labs and centers, linking them with private industry for technology licensing, transfer, and joint research and development.

“TechLink markets USAMRMC’s technologies and capabilities to industry to find qualified technology transfer partners, pursues leads, helps companies evaluate USAMRMC’s technologies for potential licensing, and helps companies submit high-quality license applications and commercialization plans,” said Will Swearingen, executive director of TechLink. “We also help broker CRADA agreements for joint technology development, facilitate communications with companies while license agreements and CRADAs are being established, and work to get ‘win-win’ technology transfer agreements between USAMRMC and companies.”

For more than a decade, TechLink has been conducting a DoD economic impact analysis that has helped to designate USAMRMC’s Technology Transfer Office as number four in DoD license-related sales, with more than \$240 million in license-related sales. The study, which was completed earlier this year, cites that the nationwide economic impacts from all USAMRMC license agreements from 2000 through 2011 totaling more than 12 hundred million dollars.

The study was undertaken in partial response to a White House request that required all federal executive departments and agencies to improve the results of their technology transfer and commercialization activities in order to stimulate economic growth, create new companies, industries and jobs, and maintain US-global competitiveness. The study was intended to establish a baseline of how well DoD labs were doing in generating positive outcomes and impacts.

“The study’s two-fold purpose was to determine the extent to which DoD license agreements have contributed to new economic activity and job creation in the United States,” said Swearingen, “and resulted in the transition of new technology to U.S. military use.”

Currently, the USAMRMC has 23 products on the market, commercialized via licensing agreements. The partnership between the USAMRMC’s ORTA and intermediaries like TechLink ensure that the best and newest technologies are readily available. One such technology is the Special Medical Emergency Evacuation Device. Developed in 2000 by an Army staff sergeant at the United States Army Institute of Surgical Research during a mass casualty exercise, the SMEED is a stretcher with a steel platform that allows medical equipment to be strapped to the stretcher rather than to the patient. This is particularly useful with burn patients and amputees. The USAMRMC ORTA licensed the SMEED in 2002 to Impact Instrumentation, a small company in New Jersey. Purchased by the Army, Air Force, and Marine Corps, the SMEED has been utilized in missions throughout Operation Iraqi Freedom and Afghanistan.

For program a specific breakdown of the economic impact analysis contact the USAMRMC ORTA at USAMRMCORTA@amedd.army.mil or 301-619-6975.

*Article by Chelsea Bauckman,
USAMRMC PAO*

Cell Phone Swap Signifies Command Change



The “ceremonial passing of the cell phone” between outgoing U.S. Army Medical Materiel Center-Southwest Asia commander Lt. Col. Jason Sepanic (left) and incoming commander Lt. Col. Victor Suarez at Camp As Sayliyah, Qatar, Feb. 5. (Army photo)

The U.S. Army Medical Materiel Center-Southwest Asia held a Change of Command ceremony at Camp As Sayliyah, Qatar, Feb. 5. Lt. Col. Jason Sepanic relinquished command to Lt. Col. Victor Suarez at the CAS small gym. Those in attendance included senior leaders from 6th Medical Logistics Management Center, Area Support Group-Qatar, U.S. Forces-Afghanistan, Task Force Medical-Afghanistan, U.S. Air Forces Central, Special Operations Command Central, 950th Military Police Battalion, 402nd Army Field Support Brigade, and 3rd Medical Command Deployment Support Forward.

This ceremony marks the 12th detachment rotation for 6MLMC since 2003 when then Lt. Col. Bill Fry led the first rotation with Soldiers from the 6th and members of both the 388th Medical Logistics Battalion (FWD)(-), and the 424th Medical Logistics Detachment (Rear)(-). The 392d Medical Logistics Company from Wichita, Kan., was deployed in support of USAMMC-SWA until mid-March, when the 308th Medical Logistics Company from St. George, Utah, assumed the mission. Sepanic redeployed with four other 6MLMC Soldiers back to Fort Detrick, Md.

NICBR Event Encourages Students to Explore Research Careers

More than 80 high school and college students attended the second annual NICBR Exploring Careers in a Scientific Environment Symposium held recently at Fort Detrick. The event, sponsored by the National Interagency Confederation for Biological Research, gave students a full day of information about internship programs and science careers, combined with opportunities to meet and talk with scientists and other experts from the USAMRMC and its partner agencies.

Dr. Kathy Schneider of the National Biodefense Analysis and Countermeasures Center kicked off the morning, followed by Michael Jewett of the National Institute of Allergy and Infectious Diseases-Integrated Research Facility. Both gave brief overviews of their agency missions and outlined specific opportunities available to students who wish to further their interest in science careers. Other presenters included Dr. Andrea Keane-Myers of the Naval Medical Research Center and Dr. Doug Luster from the United States Department of Agriculture-Agricultural Research Service.

Hood College junior Amelia Lovelace, attending the symposium for the first time, already works as a lab assistant at USDA-ARS while pursuing a double major in biology and mathematics. Her duties include performing a laboratory test called polymerase chain reaction on genetic material extracted from chrysanthemums infected with white rust, a plant disease.

"This experience is great in that I get to work with scientists and I am learning new skills every day," she said. "My career path involves working in the field of bioinformatics. The student symposium helped me set new short term goals in order to achieve my long term goals—I learned a lot about the different internship possibilities and future career paths in my field of study."

Speaker Dr. James Cherry of the Frederick National Laboratory, part of the National Cancer Institute, called himself, "a product of the NCI-Frederick." He completed both his master's degree and Ph.D. while enrolled in the NCI training program in biomedical sciences, and enjoys working with and mentoring the young scientists who hope to someday follow in his footsteps. Cherry said his favorite time of year is summer when, "the campus really comes alive" with students.

"The cafeteria is full, the students are running around and everyone is talking science—it's a lot of fun," he commented.

For Thomas Johnson High School student Andrea Robinson, the symposium gave her a broader perspective of the skill sets needed for jobs in mathematics and bioinformatics. Robinson takes an elective course in Biomedical Sciences at the Frederick County Public Schools Career and Technology Center. She hopes to major in medical laboratory science and eventually apply for an internship at Fort Detrick.

"I enjoyed the career panel discussion the most," she commented, "and I particularly

liked Dr. Jim Cherry...he reminded me that what I want in the future is all up to me."

Robinson also enjoyed hearing from speaker and panelist Maj. Eric Fleming, PhD, a research and clinical microbiologist at the U.S. Army Medical Research Institute of Infectious Diseases, who outlined the types of programs available at the Institute for high school and college students. Fleming and several of his fellow presenters also stayed for lunch and informal discussions with the students in the NCI café.

To round out the day's events, attendees were invited to take an afternoon tour at either the FNL or USAMRIID. Lovelace, who opted for the FNL tour, said she was impressed.

"I could not believe how large the building was," she commented. "The labs were organized in a logical manner, in that the counters could be moved and rearranged to satisfy needs. Multiple instruments and devices were explained to us."

Alice Jones of USAMRIID, who chairs the NICBR Education and Outreach Working Group that sponsored the symposium, said it was obvious that the students were engaged and interested.

"The Q&A session was inspiring, and I heard many positive comments and thanks from the student attendees," she said.

Echoing those positive comments were first-time attendees Greg Irwin and Thomas McIlroy of Towson University. Both are molecular biology majors and said they were inspired by the speakers to apply for internships



NECSSES attendees hear from various speakers and panelists during morning session. (Photo by William Discher, USAMRIID VIO)

at Fort Detrick.

"It would be a dream come true to work for any of the organizations that I heard from today," said McIlroy.

Added Irwin, "Hearing about some of the projects that are ongoing or that have been completed by the scientists was really motivating. Those projects and what they mean to society are what compels me to continue on my path and look towards the day that I can be a part of that experience."

For both Irwin and McIlroy, the highlight of the day was taking the USAMRIID tour and seeing firsthand how the maximum containment laboratories operate.

"I learned a lot about the containment of diseases at different levels," Irwin said. "Everything has a protocol and that protocol is strictly adhered

to. I was not surprised that these measures are in place but the level of sophistication was impressive. I learned that this facility has the newest and best equipment available so that they can do their work as efficiently and safely as possible."

Dr. Michael Turell, a medical entomologist at USAMRIID who gave one of the "tour stop" presentations, also earned rave reviews from the students. Turell, a self-professed insect enthusiast since childhood, has traveled the world in the course of his research on infectious diseases carried by mosquitoes and ticks. His advice to the group went something like this: Find something you love to do; get really good at it; get someone to pay you to do it; and you'll never have to work a day in your life.

"He was so enthusiastic," said McIlroy. "To have a career that fulfills you that much is truly a wonder to me."

In summarizing her day's experience, Lovelace said she was surprised by the variety of scientific careers available at Fort Detrick.

"I liked how they were all working together," she said. "I also thought it was nice to hear from the supervisors because they are the ones who are going to be hiring us, not the scientists. Thus, I really paid attention to what they had to say, as well as the advice they gave, because they are the types of people I'll have to convince to hire me in the future."

Article by Caree Vander Linden, USAMRIID PAO and USAMRIID representative to the NICBR Public Affairs and Community Relations Subcommittee



Burn Center Holds 10-Year Remembrance Ceremony

On March 6, 2003, Lance Cpl. Ian Lennon, a motor transportation Marine with the 5th Marine Regiment in Kuwait, was burned in an explosion while fueling a tanker. The next day, Lennon with 33 percent of his body burned, was transported and admitted to the U.S. Army Institute of Surgical Research Burn Center at Fort Sam Houston, Texas. Since that day and for the next 10 years, the Burn Center has cared for 1,147 other wounded warriors who sustained severe burns and/or associated injuries, most directly in support of Operations Iraqi and Enduring Freedom.

Ten years to the day, March 7, the Burn Center staff members and more than 100 burn survivors gathered at the San Antonio Military Medical Center auditorium for a special ceremony of remembrance and recognition to honor of all who served, in remembrance of those who died, and in recognition of those who survived OIF/OEF injuries.

“Seventy of these brave Americans subsequently died of their wounds,” said Burn Center Director, Col. (Dr.) Evan Renz. “In some cases, they died during subsequent tours of duty in Iraq and Afghanistan.”

To honor the 70 fallen warriors, Burn Center senior enlisted noncommissioned officers from the different departments

read off their names as their photographs were projected onto a screen on stage.

“We just paid respect to some of the country’s greatest men and women,” said Renz, explaining the special bond formed among the staff, patients and families. “We know them and more importantly we all love them. We will always love them, and that’s what makes this place [Burn Center] so special because this place doesn’t run on funding, it doesn’t run on schedules—it runs on love. It runs on love for our Soldiers and our fellow Americans in uniform, which is then passed on for the greater good of our community.”

“It was an incredibly emotional event. I cried through the whole slide show,” said Burn Center physician-assistant Kelley Thompson, who helped organize the event. Thompson assisted during several of the missions to Landstuhl Regional Medical Center in Germany, to transport patients injured in Afghanistan and Iraq back to San Antonio. “I had a lot to do with most of these patients from the time we picked them up in Germany to caring for them here. So to be with many of them at their bedside with their families and then to see them up there, it was tough.”

During his remarks, Renz also acknowledged the accomplishments of the burn

“...This place doesn’t run on funding, it doesn’t run on schedules — it runs on love... for our Soldiers and our fellow Americans in uniform...”

*Burn Center Director,
Col. (Dr.) Evan Renz*

survivors during the last 10 years. “It’s impossible to list them all. You have basically broken all the rules,” he said to the burn survivors. “I thought I had heard all the possible adaptive behaviors to deal with severe life-long injuries, but everyday I’m hearing of a new one. I absolutely believe that it is the key to your resiliency.”

While not having appeared on a national dance show like J.R. Martinez or being a stand-up comedian like Bobby Henline, Lennon shares similar circumstances with Martinez and Henline. All three spent about a year or more recovering in the Burn Center from burns sustained in support of OIF/OEF; they all lead productive lives despite their scars and disfigurements. Lennon now works for a nonprofit organization dedicated to honoring and empowering

Soldiers Earn German Armed Forces Proficiency, Sports Badges

Sgt. 1st Class Robert White of the U.S. Army Medical Materiel Center, Europe, was awarded the German Armed Forces Proficiency Badge in Gold at Heaton Auditorium in Landstuhl, Germany, March 4. Maj. Brandi Schuyler, also a Gold winner from USAMMCE, was unable to attend the ceremony due to a previously planned temporary duty trip.

The competition took place in November 2012 and was carried out over a three-week period. It consisted of first aid training, German weapons qualification, and a road march. The German Sports Badge is comprised of five events, including strength, endurance, speed, coordination, and swimming ability. In order to earn the German Armed Forces

Proficiency Badge, Soldiers must first earn the German Sports Badge.

All Soldiers are eligible to compete for the badge, if they are not flagged, barred from reenlistment, or if an event would violate a physical profile.

*Article by Doris Crittenden,
USAMMCE PAO*

wounded warriors—many of them burn patients. “It’s overwhelming to be here, knowing there are lots of guys who are still around,” said Lennon.

To conclude the ceremony, Renz thanked everyone for their attendance, the families for their support, and the wounded warriors for their service.

“You are absolutely the key to our survival as providers,” said Renz. “You have touched our lives more than you’ll ever know, and we can never thank you enough, we can never repay you, and we owe you everything.”

*Article by Steven Galvan
USAISR PAO*

PoNS continued from Page 7

“This exciting agreement leverages a unique private-public partnership,” said Col. Dallas Hack, director of the USAMRMC Combat Casualty Care Research Program. “By collaborating with University of Wisconsin-Madison and NeuroHabilitation Corporation, we maximize our resources to explore a potential real-world treatment for injured service members and civilians with a variety of health conditions.”

Testing will include a collaborative study with researchers and clinicians at the Blanchfield Army Community Hospital in Fort Campbell, Ky., due to start this month as the result of a year-long coordination effort led by Capt. Ian Dews, deputy director of CCCR. The hospital is home to the Warrior Resiliency and Recovery Center, which is dedicated to the treatment of soldiers with physical and neuropsychological problems due to service-related trauma.

Additional patient testing will be conducted at other Veteran facilities and civilian medical institutions. Concurrently, USAMRMC, in collaboration with its subcommands the U.S. Army Medical Materiel Agency and the U.S. Army Medical Materiel Development Activity, will conduct environmental testing, such as temperature and humidity limitations for the device, to better understand potential constraints. At the conclusion, USAMRMC hopes to seek U.S. Food and Drug Administration clearance for PoNS™.

*Article by Ellen Crown,
USAMRMC PAO*



Division of Investigational New Drugs for Force Health Protection

The U.S. Army Medical Materiel Development Activity works to develop and deliver quality medical solutions to protect, treat, and sustain the health of our service members. The medical needs of our service members are vast and ever-changing. In order to provide the most comprehensive and highest quality medical solutions, it takes a team of specialists in all areas. USAMMDA uses five Project Management Offices and four Divisions to execute its mission. One division in particular has the job to anticipate our service members' needs during the most critical situations. This task is one that is performed all over the globe to assist all of our U.S. Forces with meeting their needs. The Division of Investigational New Drugs for Force Health Protection uses unique capabilities to provide urgent medical response to attacks on our service members.

The Division of IND-FHP provides an urgent diagnostic, therapeutic or preventative treatment capability using investigational countermeasures to protect U.S. Forces against deliberate or natural threats when no U.S. Food and Drug Administration-approved drugs exist or fail.

Lt. Col. Travis Watson, IND-FHP director, described the work that IND-FHP does which contributes to the USAMMDA mission. Under DODI 6200.02, which provides the authority to use IND products to support force health protection,

IND-FHP works to make products demonstrated to be safe in advanced development available for use under appropriate controlled protocols before they have received FDA clearance or approval.

"Although our division does not perform any advanced development, we support the USAMMDA mission by providing a treatment capability that would otherwise leave U.S. Forces vulnerable to deliberate or endemic disease threats," said Watson.

IND-FHP focuses on preparedness for harmful situations that may arise against our U.S. Forces. It is imperative to have groups like this, so that when/if we do face crisis, there will be solutions already in place. It takes years to get a product licensed by the FDA, but IND-FHP works to have products available for our troops when and where they are most needed, when no other options are available.

Watson described the main priority of IND-FHP as having the correct diagnostic, treatment or preventative IND medical countermeasure at the right place at the right time.

"This means we must ensure that we have the most relevant portfolio of IND medical countermeasures in the hands of treating physicians to meet the actual or anticipated needs

of the Force," said Watson. "This requires being strategic and connected to our collaborating partners and the medical planners throughout the DoD; it requires having a regulated and responsive plan to field these capabilities under an IND or emergency use authorization; it requires focused timely training for implementation; and it requires strategic positioning of the medical countermeasures to ensure timely treatment."

Recently, IND-FHP partnered with Walter Reed National Military Medical Center and Meiji Pharma, LTD, to provide the drug Arbekacin as a new option to treat soldiers with multi-drug resistant infections. This FDA-regulated study will provide an alternative antibiotic to cure infections.

IND-FHP also acquired Heptavalent Botulinum Antitoxin, which is a safer and more effective product than past products, for post-exposure treatment of botulinum toxin exposure. They also have provided IV Ribavirin in several instances to treat soldiers with Viral Hemorrhagic Fevers, a life-threatening disease for which there are no FDA-approved vaccines or drugs. Additionally, IND-FHP is working on a treatment for smallpox or other serious orthopox virus infections, to treat our U.S. Forces.

IND-FHP also provides a

USAMRAA Finalizes Organizational Redesign

The U.S. Army Medical Research Acquisition Activity, a subcommand of the U.S. Army Medical Research and Materiel Command, Fort Detrick, Md., initiated the final phase of its Organizational Redesign throughout the Activity March 11. This reorganization is intended to afford USAMRAA staff the ability to specialize in three main commodity areas: Service Contracts, Materiel and Equipment Contracts, and Assistance Agreements.

"Reorganizing by commodities will allow our staff to specialize in the work that they perform, and that should equate to efficiencies and improved quality and improved timeliness of the product we deliver," said Brian Martin, USAMRAA Acting Director. "Most of USAMRAA staff have already started to move into their new commodity-focused teams, and we hope the moves will be finalized within April."

Although USAMRAA has planned extensively for the new reorganization, its staff remains sensitive to potential transition issues, and Martin asks that all remain patient during the transition as his staff works through any and all issues that may arise.

Martin said that per this reorganization, some USAMRAA staff members may no longer serve

as the point-of-contact for USAMRMC offices assigned to them prior to the transition. In light of this change, Martin has distributed a new contact list that should be very helpful in the upcoming weeks.

As a result of the new organization, you may no longer be working with the same individual that you have worked with in the past," said Martin. "If you need to contact anyone regarding any of your awards, and you are unsure who to contact, please use the list that was provided to assist you. This customer chart contains the names and telephone numbers of the supervisors who are now responsible for Assistance Agreement and Service or Materiel Contracting Branches."

Martin understands that there may be minor bumps along the way during the transition, and he has already thanked staff members in advance for their cooperation and patience.

"If you have any concerns, please feel free to contact me or a member of the USAMRAA team at any time," said Martin.

Article by USAMRMC PAO

specialized team to assist in homeland or outside continental United States chemical, biological, radiological, nuclear responses. The Specialized MEDCOM Response Capabilities Investigational New Drug Team is managed by IND-FHP to provide support to lead medical units in employing investigational countermeasures against a CBRN or terrorist incident.

According to Watson, some of the key tasks the SMRC-IND team prepares to perform are: Rapidly establish a protocol site; Train supporting medical staff on the use of the medical

product; Ensure FDA and DoD regulatory requirements are met; Provide the investigational countermeasure to the treating organization(s)

Partners of IND-FHP include, but are not limited to, the Biomedical Advanced Research and Development Authority, the Centers for Disease Control and Prevention, the Joint Program Executive Office for Chemical Biological Defense and the U.S. Army Medical Research Institute of Infectious Diseases.

USAMMDA is truly armed with a tremendous asset in the IND-FHP Division. In order to

maintain the highest level of quality, in the widest area of expertise, it requires specialized divisions such as IND-FHP. From Investigational New Drugs, to the SMRC-IND team, IND-FHP delivers solutions to the service member, when and where they are most critical. The specialized knowledge of the individuals in this group contributes not only to USAMMDA but also to the entire U.S. Forces, and its work will benefit our troops for years to come.

*Article by Erin Bolling,
USAMMDA marketing assistant*



BHT hosts 'Innovation Day' for San Antonio

The U.S. Army Institute of Surgical Research at Joint Base San Antonio, Fort Sam Houston, Texas, along with the Navy Medical Research Unit-San Antonio and the Air Force Dental Evaluation and Consultation Service, combined known as the Battlefield Health and Trauma Research Institute, hosted an Innovation Day March 7. More than 60 leaders from San Antonio, to include academia, biotechnology entrepreneurs, and city leaders, attended. The event was designed to promote awareness of the tri-service combat casualty care research programs in order to facilitate aligned and synergistic endeavors between these three commands and civilian entities.

"Our goal for this event was to make local community leaders aware of the invaluable work that the three military research laboratories conduct to serve combat-wounded," said USAISR Commander, Col. (Dr.) Michael A. Weber. "It was also a great opportunity for us to promote new collaborations between the military and other entities within the community."

"This was our first effort to engage stakeholders in the San Antonio community to better

coordinate our efforts in ways that are mutually beneficial," said USAISR Combat Casualty Care Research director Dr. David G. Baer. "We received great feedback both from the military participants and the visitors."

The attendees were able to see firsthand some of the research conducted at the BHT and interact with researchers.

"I walked away with a deeper appreciation for the hidden gem at Fort Sam Houston and gained inroads to collaborate with our military peers," said associate professor Dr. Brent M. Nowak, director of Robotics and Intelligent Machines Laboratory, Mechanical Engineering Department at the University of Texas at San Antonio. "If I were looking for a single word [to describe the event], it would be eye-opening."

"Many in our own community did not realize the extent, quality and importance of the work going on here in San Antonio," said Baer. "The event was a great success."

David Spencer, the chief financial officer for Pryor Medical, Inc., agreed with Baer. "This day was a great start for the local community to better

understand and support the BHT mission in support of the wounded warrior," said Spencer. "The M.D.s, Ph.D.s and other researchers are a nationally unique capability and represent a huge business opportunity for San Antonio."

The USAISR is a subordinate research command of the U.S. Army Medical Research and Materiel Command at Fort Detrick, Md. USAMRMC is a major command in the Army that leads efforts in support of the full life cycle of medical supplies and equipment, to include research, development, acquisition and sustainment. The research part of the mission is executed through its laboratory commands and extramurally.

Article by Steven Galvan,
USAISR PAO



USAMRICD Team Enters Order of Military Medical Merit

Over the last several months, five employees of the U.S. Army Medical Research Institute of Chemical Defense have been honored with induction into the Order of Military Medical Merit. Col. Leo L. Bennett and Lt. Col. Kevin K. Pitzer were inducted near the end of 2012, and Ms. Melanie Murrow, Ms. Billie Jo Benjamin, and Master Sgt. Carlos Wright received their member certificates and ribboned medallions in March 2013.

Founded as a private organization in 1982 by the

commanding general of the U.S. Army Health Services Command, the order "recognize[s] excellence and promote[s] fellowship and esprit de corps among Army Medical Department Personnel." Nominees must have served the AMEDD for a minimum of 10 years and demonstrated "the highest standards of integrity and moral character...an outstanding degree of professional competence...selflessness, and...a sustained contribution to the betterment of Army Medicine."



From left to right, Col. Bruce Schoneboom, commander, USAMRICD; Melanie Murrow; Kenneth Snyder; Billie Jo Benjamin; Lt. Col. Greg Saturday; Master Sgt. Carlos Wright; Col. James Madsen; and Lt. Col. Kevin Pitzer (Photo by Darrell Jenson, USAMRICD)



Heading for Home to Help Veterans

How often does one get the chance to run on the field at Fenway Park, cross home plate, and help Iraq and Afghanistan veterans and their families -- all on the same day?

The answer is once a year, during the Run-Walk to Home Base presented by New Balance. The fourth annual event will take place Saturday, May 4 to raise funds for the Red Sox Foundation and Massachusetts General Hospital Home Base Program, which since 2009 has helped veterans and families coping with post-traumatic stress and traumatic brain injuries.

Each of those organizations contributed \$3 million in seed money over three years to launch the unique partnership, which had been born during visits that Red Sox players, management and owners had made after their World Series wins in 2004 and 2007 to young veterans at Walter Reed Army Medical Center. Home Base is the first partnership of its kind between an academic medical center and Major League Baseball to offer clinical care, community education and research.

The 2013 event, limited to

4,000 entrants, will feature a nine-kilometer run and a three-mile walk that start and finish at Fenway. While most participants must raise a minimum of \$1,000 apiece, up to 500 active-duty military members can enter for just a \$50 registration fee. Participants and sponsors have raised more than \$7.3 million since 2010 for the Home Base Program.

Among the thousands who lace up running and walking shoes each year are service members and veterans seeking to help their brothers and sisters in arms. Some have their own special reasons for toeing the starting line, including Army Sgt. 1st Class Jeffrey Coots II, running for the first time.

Currently stationed at Fort Riley, Kan., Coots will be heading for home in more ways than one May 4: He's a Pawtucket, R.I., native, and he will join family members who have done the Run since 2009 in memory of his brother-in-law, Capt. Anthony Palermo Jr., who was killed in Iraq by an improvised explosive device April 6, 2007.

It's important to do this run for me for remembrance," said Coots, "not only for the ones we lost, but for the ones

who still fight today, whether it be on a battlefield or at home with the memories and/or injuries."

Dan Kemp is no longer in uniform, but he works on behalf of those who still are. The chief of the Information Management Branch at the U.S. Army Research Institute of Environmental Medicine at Natick Soldier Systems Center in Massachusetts has taken part in the Run since its inception.

"It sounded like a good thing to do, like my little way to give back," said Kemp, a former Soldier and an Operation Iraqi Freedom veteran. "I've decided to make that my thing."

Though he grew up in Carlisle, Pa., and does the event each year wearing a Phillies cap, Kemp enjoys running through Boston and into Fenway.

"It's a great atmosphere," Kemp said. "Fenway's an iconic park. It's a great event, it's a fun crowd, and it's for a good cause."

Spc. Kim Belskis of the Massachusetts Army National Guard will run in the Home Base event for the fourth consecutive year.

"The race has been close



Service members are among participants each year in the Run-Walk to Home Base presented by New Balance, which raises funds to support those affected by post-traumatic stress and traumatic brain injuries. The next Run-Walk is May 4. For more information, visit www.runtohomebase.org. (Army photo)

to my heart for the last few years," Belskis said. "I thought this is a way for me to give back to those that are serving overseas."

Belskis recalled running into the historic ballpark for the first time in 2010.

"I've never been able to actually touch the field at Fenway Park before," said Belskis, "so it was a fantastic experience."

Belskis said she has no plans to stop supporting the Home Base Program. She added that she has seen what the program has done for veterans and families.

"They do a lot for everybody," Belskis said. "This is something that I could actually see myself doing for a very long time. When you join the military, you essentially join a family."

For more information on the 2013 Run-Walk to Home Base presented by New Balance, go to www.runtohomebase.org. To learn more about Home Base services for veterans and their families, visit www.homebaseprogram.org or call (617) 724-5202.

Article by Bob Reinert, USAG-Natick PAO



Update: Autism Spectrum Disorder

Autism Spectrum Disorder encompasses a range of complex developmental disorders characterized by mild to severe challenges to social, emotional, cognitive, and communication abilities. Recent data released by the Centers for Disease Control and Prevention in Atlanta, Ga., showed an alarming increase in the number of children diagnosed with ASD. In the United States, 1 in 88 children are diagnosed yearly while as many as 1 in 54 boys are on the spectrum. Boys are four times more likely than girls to have a diagnosis of ASD. The associated national cost of ASD is estimated to be \$35-\$90 billion annually. It is important to realize children do not grow out of autism, but through specialized behavioral interventions and medications, they can progress and compensate for their specific challenges. Adolescents and adults with ASD face impediments in society today because of the lack of measures to assist them in daily living activities and the lack of pathways to help them become independent, productive members of society.

To better the lives of those individuals living with ASD, the U.S. Congress answered the needs of the ASD community through an appropriation in fiscal year 2007 that was the genesis of the Autism Research Program. The ARP is managed

on Congress' behalf by the U.S. Army Medical Research and Materiel Command through the office of the Congressionally Directed Medical Research Programs. The mission of the ARP is to find and fund the best research in ASD to promote innovation that advances the understanding of ASD and leads to improved outcomes. From its inception in FY07 through FY12, a total of \$41.4 million has been designated for the ARP through the congressional appropriations, and this has led to 85 scientific awards, selected through a rigorous two-tiered peer reviewed and programmatically reviewed process.

Responsiveness to the needs of the ASD community has been at the forefront of the ARP mission through different awards to researchers. In one such award, to enhance the ability of adolescents with high functioning autism to gain independence, Drs. Daniel Cox and Ronald Reeves of the University of Virginia have designed and built a virtual reality system to evaluate and augment the driving skills of individuals with ASD. Based on preliminary results from a previous ARP seed grant, Cox and Reeve are further developing this system. The results of this study may lead to long-term advancements for people living with autism and may help them to gain

confidence and independence in society.

In addition, the ARP is funding a clinical study to look at technology-enhanced early intensive behavior intervention services for children with ASD in military families. Led by principal investigator Dr. Wayne Fisher at the University of Nebraska Medical Center, the study facilitates behavioral intervention care for military families where geography or deployments cause difficulties in attaining care, or consistent care, for their children with ASD. By providing long-distance training of paraprofessionals and family members in intervention services for children, Fisher's research team hopes to provide a lasting benefit for military families.

Through innovation and ingenuity, and through dedication and commitment, the ARP is focused on the mission to serve the scientific community to research ASD for the benefit of people and families living with ASD, every day.

For more information on the Autism Research Program, please visit the CDMRP website at <http://cdmrp.army.mil/arp/default.shtml>.

*Article by Donna Kimbark Ph.D.,
USAMRMC CDMRP*

Update: Multi-drug Resistance

What happens when antibiotics cannot cure an infection?

This is the issue being studied by the U.S. Army Medical Materiel Development Activity at the Walter Reed National Military Medical Center, where injured service members go for battlefield injury treatment.

As the face of war is ever-changing, so are the needs of the service members. During the most recent conflicts in Afghanistan and Iraq, we have seen multi-drug resistance to bacterial organisms that previously did not exist. Due to this resistance, it has become more difficult to cure various infections. The USAMMDA has been working to develop Arbekacin as an antibiotic treatment for infections caused by MDR bacteria, to give our service members relief from prolonged injury.

The Force Health Protection-Investigational New Drug Division of USAMMDA has been working on this Arbekacin project since May 2010. Christa Madock, Chief of the Surveillance Branch, FHP-IND, has been working on this project since the beginning, well before its official addition to the FHP-IND portfolio. "FHP-IND is uniquely qualified to make IND products available to service members. Since research in 2008 demonstrated Arbekacin's in vivo (in the lab) efficacy, USAMMDA FHP-IND was selected as the vehicle for

making this drug more rapidly available to wounded warriors," stated Madock.

Arbekacin was first introduced in Japan by Meiji Seika Pharma Co., LTC, in 1990 under the trade name Habekacin, for the treatment of pneumonia and septicemia caused by MRSA. Meiji Seika Pharma Co., LTC is working in collaboration with USAMMDA, to provide the Arbekacin being used in this study.

Col. Michael Zapor, M.D., Ph.D., Infectious Disease Service at WRNMMC, will be the Principal Investigator for the study. As such, Zapor will be the treating physician to the wounded warriors seeking MDR infection treatment at WRNMMC.

Zapor explained, "The emergence of antibiotic resistance is an evolutionary phenomenon and attests to the tremendous adaptability of bacteria. For example, in the 1950s, penicillin was a potent antibiotic against *Staphylococcus aureus*. Now, it is very uncommon to isolate a penicillin susceptible *Staphylococcus*. The use of antibiotics doesn't eradicate bacteria, it simply inhibits or kills bacteria that are not innately resistant or haven't acquired resistance to the antibiotic."

In a summary statement to the U.S. Congress, the Infectious Diseases Society of America recognized antimicrobial

resistance as, "one of the greatest threats to human health worldwide."

The individual with MDR is not resistant to antibiotics themselves, as we would believe, but it is the infecting organism in the individual that is resistant to antibiotic. This resistance is caused by several factors, including unavailability, intolerance, contraindications, or treatment non-response.

"Since the beginning of the Global War on Terror, treatment of a patient with an infection caused by a MDR bacterium has been one of the commonest causes for an infectious diseases consultation in our hospital. In many instances, the infecting organism was only susceptible to one, perhaps two, of the many antibiotics tested; and in a few instances, we have seen pan-resistant isolates, meaning resistance to all antibiotics tested. Management of these infections poses a daunting challenge for the infectious diseases physician, and I envision this being a potential role for Arbekacin," stated Zapor.

This study will seek enrollment of 50 patients, up to five years in duration, to be treated at WRNMMC. Each patient will be determined to have a bacterial infection, of MDR bacteria. Under this treatment protocol, inclusion criteria

MDR continued on page 30



MDR continued from page 29

include infections of the respiratory tract, bloodstream, skin, soft tissue, bone and/or genitourinary tract. Patients will be given daily dose intravenous Arbekacin for 3-14 days (most infections). Efficacy will be measured by clinical or microbiologic cure of the infection.

Additional collaborators in this study include Walter Reed Army Institute of Research, Johns Hopkins Medical Institution, and Uniformed Services University of the Health Sciences. When certain drugs used to cure infection, prove to be ineffective, there must be another solution. This is why so many organizations are partnered to make Arbekacin available to treat these infections that might have otherwise gone untreated.

Zapor explained, "Arbekacin is not a silver bullet and I fully expect that it will prove beneficial in only very specific situations. I also expect to see the emergence of resistance with its use. History has shown this to be the case with all antibiotics.

Arbekacin will provide a therapeutic option for some patients with infections caused by MDR bacteria for which other antibiotics have failed or cannot be used. Moreover, approval and implementation of the Arbekacin human use protocol is a striking example of a clinical question or problem leading to basic research and culminating in a product with a clinical application. Additionally, this treatment protocol illustrates the potential benefit to be gained when clinicians, scientists and regulatory personnel collaborate on achieving a common goal."

Zapor is an advocate for the future of medicine and medical research. The ability to use Arbekacin in the future will benefit generations of wounded warriors for the future.

This study will begin in April 2013.

*Article by Erin Bolling,
USAMMDA marketing assistant*

TBI continued from Page 7

Wear is one of the more than 266,000 military members who have sustained a TBI from 2000 to 2012, according to Brainlinemilitary.org. Additionally, each year, a reported 1.7 million civilian brain injuries occur in the United States.

TBI is defined as a disruption of function in the brain from an external force, such as a car accident or, as in Wear's case, an explosion. Brain injuries range in severity from a mild TBI, also known as a concussion, to a severe injury that involves an extended period of unconsciousness or amnesia.

Symptoms of a TBI are typically divided into three basic categories, explained Dr. Jan Kennedy, a neuropsychologist and senior scientific director for the Defense and Veterans Brain Injury Center, Department of Neurology, San Antonio Military Medical Center. These include cognitive, such as issues with memory and attention; emotional, such as depression, anxiety and irritability; and physiological, including headaches, dizziness and problems sleeping.

Sp. Rizaldy DeJesus refers to TBI as an "invisible wound" that's difficult for others to understand.

The Army medic was injured in Afghanistan in July 2011 while on a convoy delivering supplies to a forward operating base. The convoy was moving along a narrow hillside road when an explosion knocked the vehicle DeJesus was riding in down a two-story cliff.

DeJesus woke up in Germany with a fractured ankle and back, dislocated hip, and a TBI. Through individual and group therapy he's come a long way since, he said, but still has trouble with his memory and is easily irritated.

"It's a long process of healing," he said. "I see myself improving slowly and am thankful the Army has a really good program for TBI."

*Article by Elaine Sanchez,
Brooke Army Medical Center PAO*

USAMMCE Recommended for Star Status

U.S. Army Medical Materiel Center Europe underwent a Department of Defense Voluntary Protection Program (VPP) Stage III audit Feb. 25-26 and was recommended for "Star Status."

DoD Voluntary Protection Program Center of Excellence, Concurrent Technologies Corporation inspection team concluded that USAMMCE had established an exceptional Safety and Health Management Program with safety and health incident rates well below the industry average for warehousing operations. They further stated that USAMMCE demonstrated excellence in response to hazards identified during the audit team's visit.

*Article by
Doris Crittenden,
USAMMCE PAO*

USAMRMC

Meritorious Service Medal
Col. Sang Pak

Superior Civilian Service
Chris Chambers
Mike Leggieri

Certificate of Achievement
John Carr
Greg Kniesler
Bret Mower
Thomas Titus
Randy Weishaar
Glenn Wilson
Sunny Danyean

Order of Military Medical Merit
Lt. Col. Mee Paek

35 years
Karen Mohney

15 years
Bret Mower

10 years
Kelly Garrett

5 years
Sandra Rogers

Promotion
Maj. Chanese Michelle Clayborn

WRAR

Promotions
Sgt. Theresa Elizabeth Bettger
Col. Stephen Joseph Dalal
Sfc. Jeffrey Scott Dressing
2nd. Lt. Samuel C Erickson
Maj Benjamin C Kirkup
Sgt. Andrew Lawrence Johnston
Sgt. Rehema Wanjiku Kabiru
Sgt. Shawn Byron Mcloughlin
Staff. Sgt. Seth Williams
Maj. Bethany Sarah Zarndt

USARIEM

Promotions
Maj. Steven Jac Jackson

USAARL

Certificates of Appreciation
Andrew Alvarado
Vicky Anderson
Sp. Monica Ang
Dr. Khalid Barazanji
Kelley Beavers
Staff Sgt. Craig Berlin
Fred Brozoski
Stacey Brunson
Sgt. Kathleen Caplinger
Kimberly Carter
Sp. Yesenia Contreras
Matt Cox
Jill Emerson
Brad Erickson
Victor Estes
Charles Forehand
Sp. Tabitha Garcia
Elmaree Gordon
Bruce Hall
Casey Harris
Andy Higdon
Jeffrey Holemo
Sylvia Hughes
Rose Jackson
Dr. Amanda Kelley
Dr. Ben Lawson
Staff Sgt. David Lopez
Robin Madderra
Mary Mayo
Sgt. William McGilberry
Deborah McKinnon
Stephanie Moon
Janet Pray
John Ramiccio
Dan Ranchino
Dr. Efrem Reeves
Sp. Sarah Red
Ronnie Reynolds
Alan Roddy
Dr. Angus Rupert
Sp. Stanslaus Simiyu
J.R. Stefanson
Elizabeth Stokes
Katie Stokes
Dr. Leonard Temme
Sgt. Oris Webster

Certificate of Achievement
Sp. Monica Ang

Achievement Medals for Civilian Service
Alex Austermann
Catherine Davis
Dr. Lori St. Onge
Elizabeth Stokes

USAARL Commander's Coin
Sgt. Kathleen Caplinger
Maj. Jonathan Deeter

Military Outstanding Volunteer Service Medal
Sgt. Oris Webster

German Armed Forces Proficiency Badge
Staff Sgt. Craig Berlin
Maj. Tim Cho
Sp. Daniel Lopez
Sgt. William McGilberry
Capt. Stephanie Traynham

Soldier of the Quarter
Sp. Monica Ang

Army Commendation Medal
Sgt. Kathleen Caplinger
Sp. Tabitha Garcia

30 years
Robert Haygens
Rose Jackson

10 years
Shawn Booms
Cindy Lee
John Ramiccio

USAMMA

Promotions
Lt. Col. James Wilson Beach
Lt. Col. Joseph Matthews Mrozinski

USAMRIID

Promotions
Lt. Col. Jon Michael Davis
Sgt. Craig Thomas Roberts
Staff. Sgt. Dawn Marie Torrisi
Sgt. 1st Class Charles Eric Warren

USAMRICD

Promotions
Sgt. Luis Daniel Cains
Sgt. 1st Class Johnatan Noe

USAISR

Promotions
Sgt. Shane Jacob Quin Berry
Sgt. Brandon Douglas Bock

USARIEM Launches Redesigned Website

The U. S. Army Research Institute of Environmental Medicine, Natick, Mass., unveiled its redesigned institute website on March 18 in an effort to combine multimedia information and products into one easily accessible location.

The home page not only welcomes visitors to the site, but also allows quick linking to everything from official social networking sites, such as Facebook and Twitter, to ways that one may work with the institute, to current and archived news stories. It also allows users the ability to search for all USARIEM publications dating back to 1993, and links to websites of its sister organizations at Natick and its higher headquarters at the U.S. Army Medical Research and Materiel Command.

The various tabs within the site allow users ease of access when seeking information about USARIEM. The “About” tab not only explains USARIEM’s history, location and research divisions, it also boasts a new “Facilities” tab that allows visitors to take a virtual tour of the institute. The new “Partnering” tab allows users quick access to resource material such as submitting a new product, idea or research proposal, while the “Research” tab provides insight into USARIEM’s core capabilities.

The “Media” tab serves as a digital newsletter, hosting current and past stories about the institute, and it also places marketing brochures instantly at users’ fingertips. Finally, the “Publications” tab links visitors to USARIEM researchers’ peer reviewed journal articles, textbooks and technical bulletins.

Sharing information and getting the message out are priorities of USARIEM, and using these venues will allow us to let users know what’s happening quickly and effectively.



With this website release, it is also very important to remain vigilant regarding operational security and internet scams, cyber security and identify theft. There are frequent reports citing instances in which criminals use technology to invade both our homes and local, state and federal agencies. Keep in mind OPSEC means protecting information that can be used to piece together a puzzle about anything, including your home and work environments. Protecting our information is critical to ensuring that we keep our nation and homes safe.

To check out USAIREM’s redesigned web page, please visit: <http://www.usariem.army.mil/>

Article by USARIEM PAO