

# The Point

A newsletter for and about the people of the  
**U.S. Army Medical Research  
 and Materiel Command**  
**Winter 2009**



## U.S. Army Sponsors First HIV Vaccine Trial to Show Some Effectiveness in Preventing HIV

The HIV pandemic is an unprecedented global crisis, but Army researchers prove there is hope in preventing the infection with this scientific advancement.

In 2003, the U.S. Army Surgeon General sponsored the world's largest HIV vaccine trial in Thailand that tested a "prime-boost" vaccine strategy composed of two investigational vaccines, ALVAC and AIDSVAX B/E. Results of the trial show that the vaccine regimen is safe and 31.2% effective at preventing HIV infection. Coordination for the trial was led by the U.S. Military HIV Research Program, which is centered at the Division of Retrovirology, Walter Reed Army Institute of Research, a subordinate command of the U.S. Army Medical Research and Materiel Command. The trial was conducted by the Thai Ministry of Public Health in collaboration with a team of leading Thai and U.S. researchers.



"This significant achievement was the result of longstanding relationships involving many partners from Thailand, NIAID, NIH, and the DoD, among other private and commercial companies and volunteers," said Lt. Gen. Eric Schoomaker, surgeon

general, U.S. Army. "This is exciting news. Twenty-five years ago, when I was at Walter Reed [Army Medical Center], we didn't even know that HIV would become an epidemic.

— See **"HIV"** page 21

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## USAMMDA Hosts Annual Force Health Protection Meeting



Marianne Erlichman, product manager, FHP Branch, USAMMDA, reviews protocols for "Intravenous Ribavirin for the Therapy of Hemorrhagic Fever with Renal Syndrome" and "Protocol Treatment of Viral Hemorrhagic Fever (Crimean-Congo Hemorrhagic Fever or Lassa Fever) with Intravenous Ribavirin" in Department of Defense-associated medical treatment facilities.

The U.S. Army Medical Materiel Development Activity's Force Health Protection Investigational New Drug branch hosted its fifth annual meeting at the Landstuhl Regional Medical Center, Landstuhl, Germany, Sept. 21-22. The annual FHP meeting brought together Department of Defense personnel from USAMMDA; the U.S. Army Medical Research Institute of Infectious Diseases; the U.S. Army Medical Materiel Center, Europe; and LRMC to facilitate the use of FHP contingency and endemic protocol. Attendees participated in two days of FHP protocol reviews, procedures, current events, and training at the Landstuhl Learning Center.

"As director of FHP-IND and attending my first FHP-IND site visit, I am extremely impressed with the knowledge and professionalism provided by our staff," said Col. Isiah Harper, Medical Affairs chief and FHP director. Harper said there has been tremendous improvement with IND support since he was the in-patient pharmacy chief at the then 121st Evacuation Hospital in Seoul, Korea, from 1985 to 1988. He was responsible for the administration, storage, and accountability of the IND product Ribavirin. "We addressed many issues via telephone conferences but never had a team that visited us annually to check our records and to see if we were meeting FDA's requirements.

It makes a difference having the experts in person to answer questions on an annual basis. This is what our customers want," said Harper.

Product managers presented FHP protocol reviews on various subjects, including botulinum antitoxin for early treatment of botulism patients; IND IV Ribavirin protocols for the treatment of hemorrhagic fever with renal syndrome, Crimean-Congo hemorrhagic fever, and Lassa fever; and post-exposure prophylaxis treatment for post-exposure to anthrax spores and the treatment of smallpox infection and vaccinia virus complications.

Dr. Janice Rusnak, FHP-IND subject matter expert, provided clinical information on the symptoms and diseases treated by FHP protocols, including a review of the recent case of a Soldier who contracted Crimean-Congo hemorrhagic fever while deployed in Afghanistan in support of Operation Enduring Freedom. The Soldier was air evacuated to the LRMC where he was diagnosed and treated by the LRMC and FHP team.

The issue of "cold chain management and logistics" was also addressed at the meeting. It is the ability to allocate FHP products to their final destination without loss of potency. "Cold chain management is critical in assuring that FHP products provided to the Warfighters have maintained their integrity and quality," said Intisar Abbasi, FHP product manager. "The temperature is tracked from the point of shipment to the final destination,

and product is released for use only if temperature during shipment stayed within an approved range."

Regulatory compliance for contingency protocols and group and team building exercises were conducted by Shirley Roach, USAMMDA regulatory trainer, to facilitate interaction between FHP staff and USAMMCE and LRMC staff in Germany.

"We did several group exercises, led by Shirley, including evaluation of 'patients,' played by FHP staff, to enroll into an anthrax protocol," said Marianne Erlichman, FHP product manager. "The purpose was to determine if we met inclusion/exclusion criteria for the protocol."

"The training was well received and attended by doctors, pharmacists, nurses, and infection control staff from LRMC," said Lt. Col. Max Teehee, FHP deputy director. "It always turns out to be a two-way learning session with an exchange of ideas and recommendations to make the processes work better for everyone."

Capt. Lyle Kolnik, LRMC pharmacy officer, said the event was informative and gave excellent insight into current events. "[It will be] nice to apply research into pharmacy practices."

In addition to the meeting, a regulatory visit of USAMMCE and the LRMC Pharmacy Department was conducted to inspect pharmacy records and IND products. The FHP-IND team will be traveling to Korea in November to conduct similar training with Korean staff.

*Carey Phillips*  
USAMMDA Public Affairs

## The Armed Forces Research Institute of Medical Sciences Celebrates 50 Years of World-Class Research

The Armed Forces Research Institute of Medical Sciences traces its origin to a group of scientists that responded to a cholera epidemic in Thailand in 1958. The Southeast Asia Treaty Organization recognized the significance of the cholera problem and established the SEATO Cholera Research Laboratory in 1959.

"AFRIMS has celebrated the anniversary in September for the last few years with a quasi-religious ceremony where Buddhist monks do a 'string' ceremony and basically bless the facility," said Col. James Boles, AFRIMS commander.

AFRIMS may not be well known in the Army and Army medical community but is well recognized by the infectious disease research community. What some people may not know is that AFRIMS has had a crucial role in the development of Japanese encephalitis and hepatitis E and A vaccines and a number of devices, as well as the fact that input from the Nepal laboratory has gone into the composition of the seasonal flu vaccine.

The laboratory's mission was expanded in 1961 to include research on other tropical diseases and was renamed the SEATO Medical Research Laboratory. The laboratory became the AFRIMS upon dissolution of

SEATO in 1977 and today operates as a joint Thai-American military medical research partnership. It is composed of both Royal Thai Army and U.S. Army medical components. The U.S. component functions as a special foreign activity of the Walter Reed Army Institute of Research in Washington, D.C. and of the U.S. Army Medical Research and Materiel Command, Fort Detrick, Md.

Boles said some are unaware of AFRIMS' role in the recently announced HIV vaccine trial success. "It may be a limited success but a success no matter and a place to start for further vaccine development and reason for hope in prevention of the disease," said Boles.

Boles, the commander for 22 months, said, "Throughout Southeast Asia researchers and health professionals love us as we help improve the health of the nation. A sense of Army pride bubbles up when our own see that it was their Army that produced some of the medical products they use and rely on, which were to one degree or another conceived, developed, tested, and produced with the service member in mind and not simply something bought off the shelf."

*Tiffany Holloway*  
USAMRMC Public Affairs



## USAARL Researcher Appointed to Director of Education, NHCA

Lt. Col. Kristen Casto, Au.D., Ph.D., of the U.S. Army Aeromedical Research Laboratory was appointed as director of education for the National Hearing Conservation Association. Serving as the director of education, Casto is responsible for attending conferences, seminars, and educational programs hosted by the NHCA. She is also responsible for all educational materials generated by NHCA, including practical guides, position statements, model programs, and any materials developed specifically for the NHCA web site. Further, Casto will serve as the liaison between NHCA and related university academic programs.

The NHCA includes members who share a common vision—preventing noise-induced hearing loss. NHCA's

mission is to prevent hearing loss due to noise and other environmental factors in all sectors of society. The association's members reflect the cross-functional nature of hearing conservation with expertise in areas such as audiology, engineering, industrial hygiene, safety, professionalism, medicine, and nursing. NHCA is a dedicated group of professionals who are willing to share their expertise and are devoted to the prevention of hearing loss.

Casto is a research audiologist and chief of the Acoustics Research Branch at USAARL. Her research focuses on acoustics, and human factors and ergonomics. Specifically, Casto's research includes the evaluation of hearing protection and communica-



tion devices, and the investigation of the auditory and vestibular effects of blast injuries.

Source information provided by USAARL

## Clinical Investigation Program Meeting

There was a historical two-day meeting September 28–29 dedicated to improving human subject protections through cooperation and education within the Army Medical Centers. The U.S. Army Medical Research and Materiel Command Office of Research Protections and ORP Clinical Investigation Regulatory Office discussed two goals with leaders from the Departments of Clinical Investigation and the Institutional Review Boards from Army medical facilities. One goal was to discuss the way forward for cooperative research within the Clinical Investigation Program. The second goal was to share best practices on how to achieve excel-



lence in human subject protections while streamlining the processes.

The topic of establishing an Army Medical Command IRB for multi-center, greater-than-minimal-risk protocols drew high interest though developing the details of such an advance will take more time. An Internet-based research advertising

program developed at the Walter Reed Army Medical Center may become a model for all research recruiting and advertising within the Army Medical Department.

Lt. Col. Mary Klote  
Clinical Investigation Regulatory  
Office Director

## USAMRMC Announces the Activation of the U.S. Army Medical Materiel Center-Korea

U.S. Army medical logisticians from around the world gathered at Camp Carroll for the activation ceremony of the U.S. Army Medical Materiel Center-Korea Oct. 25. Maj. Gen. James K. Gilman, commander, U.S. Army Medical Research and Materiel Command and Fort Detrick presided over the ceremony.

USAMMC-K's role is to provide medical logistics support in a variety of ways. USAMMC-K staff can assist with repairing glasses, fixing x-ray machines, and providing medical supplies, such as band-aids, aspirin, and flu vaccines, to hospitals and clinics in the Korean Peninsula and Pacific Region. The activation of



Photo courtesy of the Training Audio Visual Support Center

USAMMC-K shows the U.S. Army's continued commitment to the ever-changing and critical mission of providing medical logistics support to Soldiers, their families, and health care providers. The new strategic alignment will provide America's

premier medical team with innovative solutions to their needs.

Lt. Col. Shon-Neil W. Severns and  
Sara Schubert  
USAMMC-K

## USAMRMC Forms New Decision Gate Support Office

A new office called the Decision Gate Support Office under Plans, Programs, Analysis, and Evaluation has been formed to support the U.S. Army Medical Research and Materiel Command's Integrated Product Teams. The mission of the DGSO is to teach, consult, advise, and support the IPTs. The DGSO has four primary responsibilities: (1) assess and improve project management throughout USAMRMC IPTs via education, training, and support; (2) standardize project management IPT practices throughout USAMRMC; (3) support Research Area Directors and Project Managers with administrative and acquisition activities related to Decision Gate; and (4) facilitate the use of acquisition tools such as risk man-

agement, planning, and earned value so that projects identify and achieve strategic objectives.

The office will initially focus on the following eight areas: Product Management, Lifecycle Management, Financial Planning, Quality, Training, Communications, Standardization, and Risk Management. The DGSO also includes four new PPAAE staff members. Louise Harris has more than 25 years of experience in biologics and devices, risk management, quality, and working with and on IPTs. Nancy Karaskiewicz has 25 years of experience in biologics and devices, teaches advanced degree students at Johns Hopkins University, and has been the director of quality

and chief executive officer in the pharmaceutical industry. Joel Malagari has more than 25 years of experience in financial planning and budgeting, EVMS, and working with IPTs in a U.S. Food and Drug Administration and government-regulated environment. Tina Matthews has more than 12 years of experience providing administrative support in both university and Army settings and has worked with the Telemedicine and Advanced Technology Research Center and MOM in the recent past.

For more information about the DGSO, contact Harry Coffey, contract representative, at (301) 619-9974.



## Single Host Gene May Hold Key to Treating Both Ebola and Anthrax Infections



Research published by the U.S. Army Medical Research Institute of Infectious Diseases scientists indicates that a minor reduction in levels of one particular gene, known as CD45, can provide protection against two divergent microbes: the virus that causes Ebola hemorrhagic fever and the bacterium that causes anthrax. Taken together, the results suggest a common host restriction factor and a promising approach to drug development for treating two completely different infections.

Writing in the Aug. 20 online issue of *Cell Host and Microbe*, the USAMRIID team reported that mice expressing reduced levels of CD45 (between 11 and 77 percent) were protected against Ebola virus. In addition to an overall survival rate of 90 to 100 percent, these mice had reduced levels of virus load in the major organs and

had completely cleared the virus 10 days after challenge. In contrast, mice that had naturally occurring levels of CD45—or none at all—failed to clear the virus and succumbed to infection within seven to eight days following challenge.

The protein encoded by CD45 is a member of the protein tyrosine phosphatase family. PTPs are known to be signaling molecules that regulate a variety of cellular processes, including cell growth, cell division, and the development of malignancies that can lead to tumor formation.

Scientists created various “knock-down” mice, which expressed reduced levels of CD45, to determine how those changes may alter the body’s immune response to microbial pathogens such as Ebola virus. According to the authors, the knockdown mice retained greater control of gene ex-

pression and immune cell proliferation following Ebola virus infection. These factors contributed to enhanced viral clearance, increased protection against the virus, and a reduction in cell death. The team’s results suggest that host susceptibility to Ebola virus is dependent on the delicate balance of the body’s natural immune system, which can be determined by the levels of a single regulator gene.

Ebola virus, which causes hemorrhagic fever with human case fatality rates up to 80 percent, is a global health concern and a potential biological threat. Currently, there are no available vaccines or therapies. USAMRIID scientists study the Ebola virus to support the development of medical products to prevent and treat infection. The recently published work builds upon a related study that appeared in the *Journal of Biological Chemistry* in May of this year. That research showed that CD45 also plays a role in protection from *Bacillus anthracis*, the causative agent of anthrax. Specifically, the USAMRIID team demonstrated that in mice expressing 62 percent of the CD45 gene, about 70 percent were protected following exposure to anthrax. *B. anthracis* causes three types of disease—cutaneous, gastrointestinal, and inhalational—depending upon the route of exposure.

A licensed vaccine is available and is protective if administered before exposure. Inhalational anthrax is difficult to diagnose early, and despite antibiotic therapy, has a high fatality rate. In addition, because anthrax

spores can remain in the body for extended periods, antibiotic treatment is typically recommended for 60 days or more following exposure.

“This report demonstrates the critical connection between basic research and the potential development of medical products,” said COL John P. Skvorak, USAMRIID commander. “Understanding pathogenesis of disease and host response is critical to the Department of Defense’s investment in broad spectrum countermeasures.”

The next step for investigators is to look at the mechanism of action to better understand how reduced expression of this gene regulates the pathogenesis of both diseases. That information could one day lead to the identification and discovery of additional promising compounds for treating Ebola and anthrax infections. Both studies were supported by grants from the Defense Threat Reduction Agency, the National Institutes of Health, the National Cancer Institute, and the National Institute of Allergy and Infectious Diseases.

Caree Vander Linden  
USAMRIID Public Affairs

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Capt. Maria Urso, (second from left) a researcher at USARIEM/USAMRMC, and other members of the U.S. Army Women’s Marathon Team placed second in the military team competition at the 34th Annual Marine Corps Marathon held Saturday, Oct. 25, in Arlington, Va.



Command Sgt. Maj. Michael Kelley of the U.S. Army Medical Research and Materiel Command was invited to speak at the Frederick County September 11th tribute in Frederick, Maryland. The theme this year was “Patriotism in Post 9/11 America.”



## USAISR Scientist Makes Front Page of *USA Today*

If you picked up a copy of the Oct. 15 issue of *USA Today*, you undoubtedly saw a front page article entitled “Lost in Space Race: Female Pilots.” This article addressed a report of which U.S. Army Institute of Surgical Research scientist, Dr. Kathy Ryan, was the lead author. Dr. Ryan’s report, “A Forgotten Moment in Physiology: The Lovelace Woman in Space Program (1960–1962)” was published in the September 2009 issue of *Advances in Physiology Education*.

“Most Americans don’t know that in the early 1960s, 19 women aviators underwent the same medical and physiological testing as the Mercury astronauts and 13 of them passed, a higher pass percentage than the men tested,” said Ryan. Upon learning this, Ryan was compelled to find out more about the women and the testing process.

What Ryan learned was that the Women in Space program of the early 1960s was never an official NASA program, but was started by Dr. W. Randolph (Randy) Lovelace, who performed the same tests for NASA. Lovelace hoped that the performance of these tests by women aviation pioneers might be able to overcome the traditional gender roles of the period and permit selection of the best applicants for the space program. Unfortunately, despite the fact that many of these women had more flight time than their male counterparts and were medically and physiologically qualified for space flight, the program was ended due to political pressures on the military and on Lovelace.

Ryan said, “As a physiologist, I think it is incredibly unfortunate that all these data were collected in the 1960s but never published; thus, when it be-



Dr. Kathy Ryan is a combat casualty care research physiologist at USAISR.  
*Photo by Glen Gueller of USAISR IMO*

came socially acceptable for women to be considered as viable astronaut candidates, these same studies had to be performed again.”

*Mike Feeley*  
*USAISR Public Affairs*

## USARIEM Hosts VIP Visit

The U.S. Army Research Institute of Environmental Medicine hosted a visit from Brig. Gen. Nachman Ash of the Israeli Defense Force Aug. 14. It was a familiarization visit of USARIEM’s research capabilities and facilities. The tour included briefings from USARIEM and the Natick Soldier Research, Development and Engineering Center.

Ash was accompanied by Lt. Col. Yehezkel Oushia, logistics and technology attache, and Lt. Col. Dani Moran, research physiologist, who has worked on many research collaborations at USARIEM. The group was treated to a ration sampling for lunch in the Warfighter Café at



Sgt. 1st Class Raymond Persaud, Dr. Harris Lieberman, Lt. Col. Dani Moran, Col. Keith Hiatt, Brig. Gen. Nachman Ash, and Lt. Col. Hezi Oushia.

NSRDEC. This briefing highlighted the collaboration between USARIEM’s Military Nutrition Division and the Combat Food Developers.

*Terry Rice*  
*USARIEM Public Affairs*

## USARIEM’s Lean Six Sigma Project Reduces Lead Time of the Human Protocol Approval Process Phase II

The U.S. Army Research Institute of Environmental Medicine, Natick, Mass., conducts human research on factors that affect the Warfighter in training and in combat. As part of the research process, every study protocol must be reviewed by the Human Use Review Committee (the name of the Institutional Review Board at USARIEM) to ensure protection of the rights, safety, and welfare of human subjects in research. Regulatory oversight has been increasing dramatically for a number of years, imposing additional requirements on principal investigators and the HURC. With changing requirements, protocol approval times have become unacceptably long. This project focused on just one aspect of the protocol approval process, review by a HURC primary reviewer who thoroughly reviews protocol materials in advance of a meeting to identify issues that need to be discussed at the meeting.

A baseline assessment of protocols showed that on average reviewers took 34 days to complete a review with some reviews taking in excess of 100 days. This was unacceptable.

USARIEM’s mission statement is to Protect, Sustain and Enhance the Health and Performance of Warfighters through Basic and Applied Research in Environmental (Heat, Cold, and Altitude) and Occupational Medicine. Answering research questions that matter to the Warfighter in the field often needs to be timely to be relevant. The USARIEM commander selected the human research protocol approval process as a project of great importance that needed improvement. A six-person team of subject matter experts (including the eventual process owners) assessed this process through the Lean Six Sigma DMAIC (Define, Measure, Analyze, Improve, and Control) process. A total of nine major causes to delays in the system

were identified. Some were addressed with “quick wins,” such as replacing paper copies of approval memos with electronic notifications. Others were more complex in nature, such as changing the institute culture to recognize the importance of the review process, the HURC membership, and to support the time commitment required of HURC members. All HURC members have research or other responsibilities besides their commitment to the HURC.

The hard work by the Lean Six Sigma team reduced the average review time for this part of the approval process from 34 days to 27 days (a 20% improvement). More importantly, the variability in the process was reduced from 29 days to 12 days (a 58% improvement). The results these changes represent are a benefit to principal investigators who seek to implement their research quickly. It also benefits HURC reviewers by providing for more efficient reviews and increases recognition of their work. This should lead to greater job satisfaction for both principal investigators and HURC reviewers. Ultimately, answers to Warfighters’ questions are answered more expeditiously, which allows USARIEM to meet its stated mission more effectively and efficiently.

Editor’s Note: Congratulations to William Tharion (USARIEM) for obtaining his LSS Green Belt certification.

*Source information provided by USARIEM*





## USAMRMC Funds Orthopaedic Clinical Studies

The U.S. Army Medical Research and Materiel Command's Orthopaedic Extremity Trauma Research Program signed an \$18.4 million cooperative agreement with the Johns Hopkins Bloomberg School of Public Health on Aug. 14. Twelve civilian medical centers and several military treatment centers will enroll patients who have wounded extremities in their trauma centers.

"In order to improve practices and outcomes, a larger multicenter clinical trial is necessary because no one center is capable of enrolling enough patients," said Josh Wenke, program manager at the U.S. Army Institute of Surgical Research at Fort Sam Houston, Texas. "This agreement is important because before this there was no funding for research like this. This consortium has the potential to change practices," said Wenke.

Eighty-two percent of Soldiers in battle have an extremity injury. This research will help medical personnel improve healing for open traumatic bone defects,

prevent musculoskeletal infection and heterotopic bone formation, improve standards of care with emphasis on tissue viability assessment and wound irrigation/debridement technologies, and repair massive muscle defects.

"The Johns Hopkins Bloomberg School of Public Health is very pleased to be working closely with DoD to establish the OETRP Consortium," said Ellen J. MacKenzie, Fred and Julie Soper professor and chair, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health. The Bloomberg School of Public Health will serve as the Data Coordinating Center for the consortium. "In this role we will provide overall leadership in the design and analysis of the clinical trials conducted by the consortium. We will also coordinate data collection across the clinical centers and make sure the data collected are of the highest quality," said MacKenzie.

Large, multicenter, randomized clinical trials have the best chance of being able to change practice and improve

outcome of injured Warriors. The trials to be conducted by the consortium will include patient follow-up for up to two years after injury and include measures of both functional and quality of life outcome as well as clinical outcome. "We can find the best way to treat our patients," said Wenke.

"Results will be used to develop clinical guidelines that will assist the surgeon and the patients formulate a good treatment plan. The initial results will also be considered as the 'baseline,' and future technologies will be compared to the baseline to determine possible changes in care," said Dr. Michael Bosse, chair of the consortium and director of Clinical Research for the Department of Orthopaedic Surgery at Carolinas Medical Center. The Carolinas Medical Center will serve as one of the core research centers for the consortium. Bosse also said that his team feels honored to be allowed to work collaboratively with our military counterparts on issues that are critical to the care of the wounded Warrior and to many of our civilian trauma patients. "This is likely to be one the most significant orthopaedic clinical research opportunities of the last 50 years. It's pretty exciting," he said.

"This unique study offers the opportunity to tackle a variety of problems common in the military and civilian community" said Dr. Andrew Pollack, co-chair of the consortium and head of the Division of Orthopaedic Traumatology, Department of Orthopaedics, University of Maryland School of Medicine. "We haven't had sufficient funding for definitive studies on severe open extremities," said Pollack. "The results of the trials to be conducted by the consortium will give us better

insight into the treatment of severe high energy lower extremities."

"Military orthopaedic surgeons are challenged by often devastating extremity injuries more commonly seen on the battlefield amongst our Warriors. This consortium enables military surgeons, with these challenges and unique internal perspectives, to partner with our civilian colleagues to capitalize on their expertise and impressive ability to unite such a powerful collaborative consortium. This is indeed a thrilling cooperation," said Col. James Ficke, chairman, Department of Orthopaedics and Rehabilitation, San Antonio Military Medical Center, and senior orthopaedic consultant.

Wenke said future efforts include securing more funding to increase the number of participating centers and expand the scope of the effort. This will also include a rehabilitation program. "A lot of people came together to do something great," he said. The 12 core clinical centers currently participating in the consortium include: Boston University Medical Center; Florida Orthopaedic Institute; Carolinas Medical Center; Denver Health and Hospital Authority; OrthoIndy and the Indiana Orthopaedic Hospital; Orthopaedic Associates of Michigan; Orthopaedic Trauma Institute at the University of California, San Francisco, San Francisco General Hospital; University of Maryland Medical Systems R. Adams Cowley Shock Trauma Center; University of Mississippi Medical Center; University of Texas Southwestern Medical Center; University of Washington Harborview Medical Center; and Vanderbilt University Medical Center.

*Tiffany Holloway  
USAMRMC Public Affairs*

## USAMMCE Receives ISO Certification



Col. Mitchell Brew, Col. William Stubbs, Thomas Konermann, Master Sgt. David Hunt, and Maj. Gen. James Gilman proudly display the three certificates.

Representing the International Organization for Standardization certification authority, Thomas Konermann from TUEV Rheinland presented the U.S. Army Medical Materiel Center, Europe with three ISO certificates during an awards ceremony Oct. 21.

The ISO is the world's largest developer and publisher of international standards. These standards ensure desirable characteristics of products and services, such as quality, environmental friendliness, safety, reliability, efficiency, and interchangeability, and at an economical cost.

Once a company or organization has been independently audited and is

certified to be in conformance with ISO standards, it may publicly state that it is "ISO certified." USAMMCE received its first ISO certification for ISO 9001:2008 (Quality Control) in 2002. Since then, USAMMCE was certified in two additional areas, ISO 18001:2007 (Safety and Occupational Health, OSHAS) and ISO 14001:2004 (Environmental). With the external audits in June 2009, USAMMCE became the only Medical Command unit to be certified in all three standards.

*Doris Crittenden  
USAMMCE Public Affairs*



## USAMRICD Breaks Ground on New Building

The U.S. Army Medical Research Institute of Chemical Defense held a groundbreaking ceremony for its new replacement facility at the Edgewood area of Aberdeen Proving Ground Sept. 15. Hosted by Maj. Gen. James K. Gilman, commander of the U.S. Army Medical Research and Materiel Command, USAMRICD's parent organization, the ceremony included a keynote address by Lt. Gen. Eric B. Schoomaker, commanding general of the U.S. Army Medical Command and the Army surgeon general. "This new state-of-the-art laboratory is going to be home to some of our nation's leading experts and the world's leading experts as they continue this all important work in research, education, and developing and sharing knowledge that is going to mitigate the effects of chemical weapons," said Schoomaker as he addressed the crowd of 400 public officials, Army and recapitalization project representatives, and employees. "The lessons that are found here and are shared from this lab are going to make the world safer for not only its Warriors but for America's citizens and for the global human family."

Budgeted at more than \$300 million and scheduled for completion in 2013, the new 526,000 square foot facility will consolidate numerous dispersed structures into a single modern, energy-efficient building with a central utility plant. Additionally, the improved research laboratories and training facilities will be able to accommodate 395 employees.

"The design of the new ICD will enhance communications, collaborations, and cooperation," said Gilman.



Key individuals from Aberdeen Proving Ground and the organizations involved in the recapitalization of the USAMRICD participated in the ceremonial turning of dirt: (from left to right) Mike Bednarczyk, corporate officer from Clark Construction; John A. Becker, director, Portfolio Planning and Management Division (Facilities), TRICARE Management Activity; Col. Orlando Ortiz, commander, APG Garrison; Col. Harry F. Slife, Jr., commander, USAMRICD; Lt. Gen. Eric B. Schoomaker, commander, MEDCOM and the Army surgeon general; Maj. Gen. James K. Gilman, commander, USAMRMC; Richard Decker, technical director of ECBC, representing Maj. Gen. Paul S. Izzo; Col. David Anderson, commander and district engineer, Baltimore District U.S. Army Corps of Engineers; Trillis Birdseye, director, Project Management Division, Health Facilities Planning Agency; Jerry Polly, FLAD Architects; and Sgt. 1st Class John Evans, senior enlisted advisor, USAMRICD.

Photo by Cary Sisolak, USAMRICD

"It will provide collaborative space that is flexible and adaptable to future research priorities and technologies." These design factors will be important for recruiting and retaining quality employees to carry out the institute's mission, Gilman pointed out. "It is the people inside, not the building itself, who have carried on the work of the ICD for so many years." "Simply put," said Gilman, "ICD is great people doing the research necessary to protect us from attacks that many prefer not to even think about. It is appropriate that they will soon have a place to work that matches their level of service and dedication to a tough and too often thankless mission."

For Col. Harry F. Slife, Jr., USAMRICD's commander, the day

was "truly awe inspiring" and "a great day in MRICD's history." "I think an even better day for the beneficiaries of what we do," said Slife. "I am confident that as exceptional as the U.S. Army Medical Research Institute of Chemical Defense has been in delivering products to the Warfighter, our best days are ahead of us."

USAMRICD is the Department of Defense lead laboratory for research to identify new or improved medical countermeasures against chemical warfare agents and for training DoD and other health care professionals in the medical management of chemical warfare agent casualties.

Cindy Kronman  
USAMRICD Public Affairs

## USAMRICD-Led Effort Results in Publication of Comprehensive Textbook

Two years of effort by many individuals at the U.S. Army Medical Research Institute of Chemical Defense came to fruition recently with the publication of the second edition of the *Medical Aspects of Chemical Warfare*. The volume is one of 18 in the series *Textbooks of Military Medicine*, which is produced by the Borden Institute, an agency of the U.S. Army Medical Department Center and School.

Lt. Col. Shirley D. Tuorinsky, who during the volume's preparation was a member of USAMRICD's Chemical Casualty Care Division, served as the senior editor of the book, and USAMRICD's Dr. Margaret Filbert, now retired, served as the associate editor. Other support for the book's preparation was provided by operational security, editorial, graphics, and library staff members. Many of USAMRICD's scientists and medical professionals served as subject matter experts and peer review board members for the volume. In addition, they authored or coauthored nearly all of the book's 23 chapters, which discuss various types of chemical warfare agents, decontamination, long-term health effects, triage of chemical casualties, and chemical detection equipment. Historical perspectives of chemical warfare, including the history of the chemical threat and of the medical management of chemical casualties, are also provided. Moreover, this second edition goes further than the first to discuss therapeutic measures and medical diagnostics as well as domestic preparedness.

The textbook is dedicated to the memory of two notable USAMRICD employees: Dr. Frederick Sidell, who is responsible for developing chemical defense training and education, and Dr. Brennie E. Hackley, Jr., USAMRICD's former scientific advisor as well as an instructor for the institute's training in the medical management of chemical casualties, who made significant contributions to the medical chemical defense research program.

Lt. Gen. Eric B. Schoomaker, surgeon general of the Army, calls the textbook "the most comprehensive source of information available on chemical agents." "It will serve to both enhance the knowledge and skills, and increase the level of preparedness and response capability, of those responsible for chemical casualty care," continued Schoomaker.

Maj. Gen. George Weightman, former commander, U.S. Army Medical Research and Materiel Command, said of the textbook, "This expanded second edition will not only continue to be an essential reference tool for the military but should also become a requisite guide for civilian health care providers, for first responders, and for government agencies responsible for emergency preparedness, response, and management."

According to the Borden Institute, active-duty Soldiers are eligible for one free copy of the textbook, which can be ordered from [www.bordeninstitute.army.mil](http://www.bordeninstitute.army.mil). The text book is also available for purchase from the Government Printing Office.

Cindy Kronman  
USAMRICD Public Affairs





## New Sprayable Liquid Wound Dressing to Improve Care on the Battlefield

Researchers are developing a new, sprayable liquid wound dressing technology that an injured Warrior could apply one-handed in a combat setting. The spray forms a tough hydrogel in seconds that conforms directly to the wound without sticking to it when removed.

The GelSpray™ Liquid Bandage was approved by the U.S. Food and Drug Administration for minor cuts and irritations in 2008, and its developers are preparing for a human clinical study required to extend the technology to battlefield care. The team is also working on variations that include medications to treat infection, speed healing, and relieve pain.

Explains investigator Dr. Joachim Kohn of Rutgers University, “Because GelSpray conforms to the wound bed while in direct contact with the wound margins, it offers significant clinical advantages: the thick, protective film limits bleeding, absorbs wound fluids, and directly transports medication to the entire wound bed. It does not significantly adhere to the wound bed, unlike most other dressings, where there is re-bleeding or delayed healing due to removal of granulation tissue whenever the wound dressing is removed.”

The GelSpray product for the far-forward Soldier is designed for lacerations, small burns, and gunshot and shrapnel wounds that are often on irregular surfaces such as the hand, face, neck, and outer ear. It is meant to provide flexible protection that enables the Soldier to complete his or her mission.



The GelSpray™ sprayable liquid wound dressing sets in seconds to a protective, flexible hydrogel that conforms to wounds yet is easily removed by gentle peeling. Photos courtesy of BioCure, Inc.

Col. Dallas Hack, director of the U.S. Army Medical Research and Materiel Command’s Combat Casualty Care Research Program says, “This technology shows promise for quicker wound healing with less care needed. The dressing is breathable, and if it can include an antimicrobial to prevent infection, then we may not need to damage tissue further through debridement [removing dead or contaminated tissue].”

Kohn is the principal investigator of the Center for Military Biomaterials Research, a network of academic, industry, and military organizations whose mission is to support wounded Warriors on and off the battlefield with practical, leading-edge innovations. He notes, “CeMBR partnered with BioCure, Inc., to develop the GelSpray technology. Under the leadership of BioCure co-investigator Sameer Shums, we have made significant progress.”

CeMBR research programs are supported and guided by USAMRMC’s Telemedicine and Advanced Technology Research Center. “Feedback provided by TATRC’s national expert review panels has guided our product design efforts,” says Kohn. “TATRC and our program manager there, Wilbur Malloy, have provided us unwavering support.”

Kohn adds, “Our goal is to address the most critical needs of injured Warriors for improved wound dressings. There is no other product that provides all these benefits and is specifically designed to meet military requirements.”

*Barb Ruppert  
TATRC science and technology  
writer*

## USAMMCE Human Assistance Program Under Way

U.S. Army Medical Materiel Center, Europe Humanitarian Assistance Program State Department Operation Provide Hope is back in full swing with its 2009–2010 mission to Simferopol, Crimea, Ukraine.

A team of USAMMCE HAP logisticians, biomedical engineers, and seven clinicians (three from the U.S. Air Force) are deploying Nov. 4–17 to conduct the Phase I assessment of medical facilities designated to receive aid. The team will visit five major medical facilities (two general hospitals, one children’s hospital, and the major tuberculosis and oncology/

cancer hospitals for the Crimea) and a major dental clinic.

Phase II of putting the package of equipment and supplies together will take place Jan. 4 through June 30, 2010 with three additional Air Force medical personnel TDY at USAMMCE. Phase III, the delivery of all materiel, installation, and training on equipment provided, will take place Aug. 1 through Sept. 15, 2010 in Simferopol with the full team.

*Lou DeAndrade*

## USAARL Book Now Available

The U.S. Army Medical Research and Materiel Command is pleased to announce that the U.S. Army Aeromedical Research Laboratory’s most recent book, *Helmet-Mounted Displays: Sensation, Perception and Cognition Issues*, can now be viewed and downloaded from the USAARL web site at [http://www.usaarl.army.mil/new/publications/HMD\\_Book09/](http://www.usaarl.army.mil/new/publications/HMD_Book09/).

The book also can be accessed from USAARL’s home page by clicking “USAARL” on the far left tab and then clicking “New HMD Book 2009.” Requests for hard bound copies should be sent to [HMDBookRequests@amedd.army.mil](mailto:HMDBookRequests@amedd.army.mil).

## USAMRMC Adds New Options to Web Site

The U.S. Army Medical Research and Materiel Command announces recent improvements to its web site, including two new user-friendly links located on the left navigation bar:

*Strategic Communications Toolbox* Features downloadable information products, such as books, brochures, and information papers, about USAMRMC programs and subordinate commands

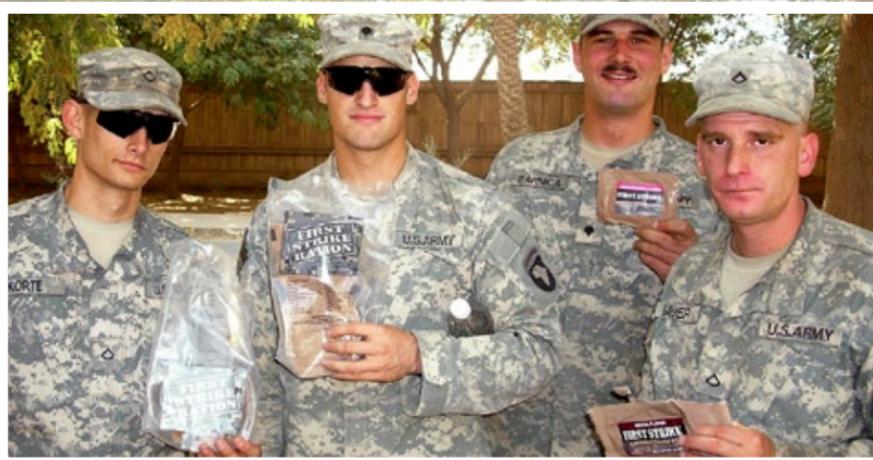
*MRMC Headquarters* Features general contact information for USAMRMC Headquarters staff and subordinate command offices

In addition, users can now check e-mail anytime from anywhere by scrolling down on the main page to the Hot Links & Resources box and clicking Outlook Web Mail. Visit <https://mrmc.amedd.army.mil> to check out these new features and more!





# Warfighters on the Move Need Meals on the Go



Soldiers in Iraq supporting their use of the First Strike Ration  
Photo courtesy of the Combat Feeding Directorate, NSRDEC

Meals on the go have just gotten better thanks to the U.S. Army Research Institute of Environmental Medicine and the U.S. Army Natick Soldier Research, Development and Engineering Center, collocated at the U.S. Army Natick Soldier Systems Center.

“During patrols, Soldiers eat as time permits and often have difficulty eating enough to meet their energy needs. The Army was also looking for ways to reduce the Soldier’s load. So, the solution was to make an individual field ration that contained food that required no preparation, was easy to eat on the move, and was small and lightweight” said Dr. Scott Montain, USARIEM research physiologist of the Military Nutrition division. The two organizations have collaborated to design the First Strike Ration® and the Modular Operational Ration Enhancement, better known as MORE. “The First Strike Ration was engineered to better fit the lifestyle of today’s Soldier,” said Montain.

“When I was in the Light Infantry Division, we had three-day missions

and had to take everything. This meant we took out food that was in our MREs because it was too big and only took a few things we ate. I had to make sure I was able to carry my medical equipment and pack items to keep me warm and dry. Therefore, our unit was down to the bare essentials. With the FSR, food is compact and there is more food inside. It has all the essentials we need,” said Sgt. 1st Class Raymond Persaud, Military Operations manager at USAARIEM.

Richard Haddad, equipment specialist at NSRDEC, said he first encountered the ration while serving in Afghanistan as a Platoon Sergeant in 2004 and 2005 with Alpha Company 2/22 Infantry, 25th Infantry Division, Schofield Barracks, Hawaii. “I was serving in a remote location in the Paktika province and was asked to evaluate the rations during our combat operations. The DoD Combat Feeding Program sent over uniformed representatives to our location in Afghanistan to issue and evaluate our use of the FSR,” said Haddad. Since Warfighters are de-

ploying in high-intensity and mobile combat operations, the First Strike Ration increases consumption, nutritional intake, and mobility. Haddad said the First Strike Ration provided more energy as most of the components had needed carbohydrates that were useful during long mountainous movements. “It was easier to replenish on the move because the items require zero preparation. This resulted in the Soldiers spreading out the components to give them replenishment when they need it. My Soldiers loved the FSR.”

“The First Strike Ration has a special purpose. It is meant for the first few days of combat,” said Julie Smith, NSRDEC food technologist. “Currently, there are three menus that provide 2,900 calories each.”

Montain and his team ran several tests and determined that the First Strike Ration helped give Soldiers more energy and enhanced performance. He said, “We have repeatedly found that Soldiers who were provided the FSR consumed more energy compared to those who ate MREs, and the Soldiers give the FSR higher acceptability scores. This is probably due to picking items that taste great and the ease by which the components can be snacked on while on the go. Associated with the increase in food intake, we have demonstrated improvements in physical and cognitive performance.”

“USARIEM researchers found the Soldiers rely more on carbohydrate as a substrate when operating at higher altitudes, and they prefer foods with higher carbohydrate content. When Soldiers are fed carbohydrate at high altitude, physical performance is improved. The Modular Operational

Ration Enhancement-High Altitude is specifically designed to meet these unique nutritional needs,” said Smith.

The MORE is exactly what it says it is—an enhancement pack that targets Warfighters’ nutritional needs in high-stress and extreme environments. The MORE is designed to augment the Meals Ready to Eat, not replace it. However, research has indicated that Warfighters at altitude can benefit from additional calories. The MORE-High Altitude provides the correct amount of fat, carbohydrate, and protein needed in specific environmental settings while providing food components that need little or no preparation and can be consumed on the go.

There are currently three menus of the First Strike Ration and two packs of the MORE. Menu 1 of the First Strike Ration consists of a filled French toast pocket, bacon cheddar pocket sandwich, pepperoni pocket sandwich, jalapeno cheese spread, wheat snack bread, energy beverage, two mini First Strike™ bars, peanut butter desert bar, beef snacks, Zapplesauce®, trail mix, and caffeinated gum. An example of food that is in the MORE includes crackers, jalapeno cheese spread, Zapplesauce, a fudge brownie, a First Strike bar, and a carb-electrolyte beverage. “Our team is always coming up with new menus and components,” said Smith.

Look for First Strike Rations Coming to a Theater Near You™. The First Strike Ration and MORE-High Altitude are available through the Defense Supply Center in Philadelphia. The First Strike Ration National Stock Number is 8970-01-543-3458 and the MORE-High Altitude National Stock Number is 8970-01-577-9691.

Tiffany Holloway  
USAMRMC Public Affairs

### Army Achievement Medal

- Sgt. Pedro Cruz
- Ms. Melody King
- Staff Sgt. David Lopez
- Sgt. 1st Class Bryon Pieper
- Spc. Navdeep Saini
- Sgt. Sean Tracy
- Ms. Katherine Webb

### Commander’s Award for Civilian Service

- Dr. Melvyn Kalich
- Dr. Amanda Kelley

### NCO of the Year

- Sgt. William McGilberry

### Soldier of the Year

- Spc. Bradley Wilson

### Certificate of Achievement

- Spc. Nikkeyla Barbee
- Sgt. Pedro Cruz
- Sgt. Denise Dartez
- Sgt. William McGilberry
- Sgt. Macario Patten
- Sgt. 1st Class Bryon Pieper
- Pfc. Adam Thompson
- Sgt. Sean Tracy
- Spc. Bradley Wilson

### USAARL Announcements

Maj. Jose E. Capo-Aponte has been appointed adjunct associate research professor of The State University of New York, State College of Optometry, effective July 1, 2009 through June 30, 2010.

Dr. Parrish Balcena has been named USAARL representative for the USAMRMC Human Subjects Research Review Board Aug. 31.

Donnie DeRouen with building contraction company, JWK, was promoted and left USAARL on Oct. 23 to work as site manager for the Soldier Service Center.

Ms. Dayna Hochstein, Mr. Andrew Sixsmith, and Mr. George Montiel from Spectrum Science visited USAARL Aug. 11 to shoot video footage of the helmet laboratory for a Military Health Research Forum multimedia press release.

### Certificate of Appreciation

- Ms. Katherine Webb

### Other Achievements

Mr. Alan Roddy received a certificate for successful completion of the Health Care Construction Workshop conducted by the American Society of Healthcare Engineers Aug. 17.

Capt. Kenneth Emerson received Security+ Certification Sept. 25.

### Promotions

- Lt. Col. Kristen Casto
- Sgt. 1st Class Bryon Pieper
- Sgt. 1st Class Victoria Reeves

### Re-Enlistments

- Sgt. Jonathan Hewett
- Spc. Navdeep Saini

### Recognitions

- Mr. Ronnie Reynolds, 30 years of government service
- Ms. Sharon Fales, 25 years of government service
- Mr. Bradley Erickson, 10 years of government service
- Mr. Tyronne Leonard, 10 years of government service

# Officials Break Ground for New USAMRIID Building Project



Hefting shovels for the USAMRIID groundbreaking, from left to right: Mr. Ted Baker, Manhattan-Torcon Joint Venture; Col. Brad Dunbar, commander, U.S. Army Health Facility Planning Agency; Col. Judith Robinson, commander, U.S. Army Garrison, Fort Detrick; Col. David Anderson, Army Corps of Engineers; Col. John Skvorak, commander, USAMRIID; Maj. Gen. (Ret.) Lester Martinez-Lopez, former commander, USAMRMC; Maj. Gen. James Gilman, commander, USAMRMC; Lt. Gen. Eric Schoomaker, commanding general, U.S. Army Medical Command/The Army Surgeon General; Maj. Gen. (Ret.) Garrison Rapmund, former commander, USAMRMC; Sgt. Maj. Hoyt Williams, USAMRIID; Dr. Arthur Friedlander, USAMRIID; Dr. Darrell Galloway, Defense Threat Reduction Agency; and Maj. Gen. (Ret.) John Parker, former commander, USAMRMC.

Construction of the new U.S. Army Medical Research Institute of Infectious Diseases building kicked off at Fort Detrick with more than 300 employees and distinguished guests on hand for the groundbreaking ceremony Aug. 27. The 800,000-square foot facility, estimated for completion in 2014, is expected to cost about \$680 million, according to USAMRIID commander Col. John P. Skvorak. It

will be the long-awaited new home of the Department of Defense's lead laboratory for medical biodefense research.

"There are too many features for me to list them all, but suffice it to say, this building will contain the latest in biocontainment technology," Skvorak commented. "It will also have new and expanded capabilities in many areas, to include imaging, animal

telemetry, aerobiology, medicinal chemistry, and molecular studies. And also very important, it will contain appropriate administrative and office space for our staff."

He thanked two USAMRIID employees—Col. Gary Zaucha and Diane Negley—for the "countless hours" they have devoted to planning the new building. He also paid tribute to four current employees—Richard Dinter-

man, John Kondig, Charles Rapp, and Dr. Robert Wannemacher—who were present for the original USAMRIID groundbreaking in 1967. "I think it's pretty clear that a lot has changed at USAMRIID over the years," Skvorak said. "With great effort, we have been able to keep pace with the rapid advances in technology—equipment has been updated, laboratories have been renovated, and Fort Detrick itself has grown by leaps and bounds." Despite the changes, he added, "One thing has remained constant through the years and that's the dedication and skill of our personnel—civilian, military, and contractors—performing research that helps protect our nation."

That research, which leads to vaccines, drugs, diagnostics, and other medical solutions to protect the Warfighter, often has applications that benefit society as a whole. Despite its importance, "the work here is often poorly understood and, from time to time, even maligned," said Maj. Gen. James K. Gilman, commander of the U.S. Army Medical Research and Materiel Command. "Much more than a building, USAMRIID is great people doing the research necessary to protect us from truly unthinkable things," Gilman added. "It is high time that they had a place to work that matches the level of their service and dedication to a tough and, too often, thankless mission." Gilman commented that the new USAMRIID will be one anchor of the National Interagency Biodefense Campus at Fort Detrick, joining new laboratory facilities from the Departments of Homeland Security, Health and Human Services, Agriculture, and the Navy. The close proximity and sharing of resources among campus partners is intended to facilitate interagency research on

biodefense that will benefit military personnel and civilians alike.

Keynote speaker and Army Surgeon General Lt. Gen. Eric B. Schoomaker thanked the city of Frederick, local officials, and residents, adding that the new laboratory building would not have been possible without their support. Calling USAMRIID a "team player," Schoomaker cited several examples of the institute's critical capabilities in preparing for, and responding to, emerging diseases and biological threats around the world. These included providing support to the 1999 outbreak of West Nile virus in the eastern United States and evaluating antiviral drugs for severe acute respiratory syndrome, or SARS, during a global outbreak in 2003. He also praised USAMRIID's collaborative work with the Centers for Disease Control and Prevention and the DoD on diagnostic assays for avian influenza and swine flu.

"The United States needs the capabilities that the new USAMRIID will bring," commented Skvorak, "but the USAMRIID scientists and technicians—and support and administrative staff—have earned this incredible building through a 40-year record of unwavering dedication to excellence, to science, and above all, to the Warfighter."

*Caree Vander Linden  
USAMRIID Public Affairs*

### Promotions

October 2009

Col. William M. Stubbs  
Lt. Col. John R. Bailey

### Award

William Tharion, LSS Green Belt Certification

### Promotions

July 2009

Sgt. Mark Kryskow

August 2009

Staff Sgt. Erik Jacobsen

October 2009

Capt. Lee Margolis

Sgt. Bryan Wiley

### Meritorious Service Medal

September 2009

Lt. Col. Stephen M. Downs

Col. Susan D. Fracisco

Lt. Col. Mark M. Fukuda

Staff Sgt. Marnie D. Gilbertson

Sgt. 1st Class Michael W. Hanaway

Lt. Col. Louis R. Macareo

Maj. Kurt N. Martin

Capt. Denise M. Milhorn

Col. Robert S. Miller

Capt. Kara E. Schmid

USAMMGE

USARIEM

USAMRMC





## In the Blink of an Eye: Wireless Drowsiness Detector Will Soon Be Preventing Accidents



The Eye-Com™ is an unobtrusive, wireless electronic device on an eyeglass-type frame that monitors and records head tracking and 20 eye measures.

It is another routine nighttime surveillance, but the Black Hawk helicopter pilot has been pulling long shifts due to the nature of the mission. As he begins to blink drowsily, the small electronic biosensor within his goggles detects the change in eye movement and triggers an alert. The pilot turns over the controls to his partner, and instead of becoming another fatigue-related crash, the flight is completed without incident. This scenario is now possible through an unobtrusive, wireless electronic device on an eyeglass-type frame that is easily worn or fits conveniently under a helmet, visor, or night-vision goggles.

The device, the Eye-Com™ Biosensor Communicator and Controller, is the brainchild of Nevada neurologist Dr. William Torch. It has great potential in averting accidents because it takes action before a driver or machine operator actually drifts into sleep. The Eye-Com uses pulsed infrared light, such as that used in a TV remote, to dis-

tinguish the longer blinks that accompany drowsiness from normal blinks. It then triggers an arousal alarm, which could be a vibrating seat or voice synthesizer. It can also send the alarm to a remote source such as 911 in the case of loss of consciousness.

Torch expects that the Eye-Com will be in the field for all uses within two years. It received airworthiness certification for Black Hawk helicopter use after Army tests proved it could identify drowsiness in sleep-deprived pilots. The Air Force found that in simulated high-altitude, low-oxygen conditions, it predicted jet pilots' loss of ability to both accurately control their planes and discriminate enemy from friendly aircraft. The Navy used it in scuba masks and showed that it could identify Navy SEAL swimmer fatigue. Torch explains, "The Eye-Com is simply more reliable in more situations than a dashboard-mounted system, which fails when the driver turns his or her head away, has a lot of head movement,

or wears sunglasses or contacts. And it uses a nontrackable wideband signal, which ensures privacy."

The device uses microchips and newly developed software to wirelessly monitor and record head tracking and 20 eye measures, from blinks and eye gaze to the size and speed of pupil dilation. It is showing promise in diagnosing sleep disorders as well as studying the side effects of medication and the effectiveness of various wakefulness treatments.

Through translating eye blinks into the dots and dashes of Morse code or linking with an accompanying Eye Mouse™ to move a cursor, the Eye-Com can also operate any computer-based program. The possibilities include enabling seriously injured Soldiers to operate wheelchairs and speech devices by simply gazing in a certain direction. It could also enhance target selection and detection and the use of robotics in the field through eye-controlled mechanisms.

The Eye-Com is one of the many promising biomonitoring technologies supported by the U.S. Army Medical Research and Materiel Command's Telemedicine and Advanced Technology Research Center. TATRC coordinates a variety of research projects at private and public organizations throughout the country to put the latest medical technology to work for the nation's Warfighters and veterans. It is supporting approximately 500 ongoing research projects.

Dr. Eva Lai, who manages the Biomonitoring Technologies portfolio at

TATRC, notes, "The Eye-Com technology is different from other eye-tracking systems because it's wearable, portable, easy to use, and works in all lighting conditions. It has potential to benefit our Soldiers, not only by enabling them to perform their duties more efficiently and effectively, but also by saving their lives. Additionally, Dr. Torch is using the technology to detect the effects of jet lag and shift work fatigue that reflect conditions in battlefield operations. This way we can predict when drowsiness may occur, taking prevention a step further." She adds, "There is a lot of excitement about the many potential applications to be derived from this technology, such as its possible development for diagnosing traumatic brain injury. Accurate detection and treatment is a high priority in light of estimates that some type of brain injury could affect up to 70 percent of U.S. troops injured in

### HIV

To think, we have come this far in our research and to be part of this trial while I was at MRMCM is full circle." The vaccine combination was based on HIV strains commonly circulated in Thailand.

"Given its modest level of efficacy, this prime-boost regimen is likely unsuitable in its current form for public health purposes. Again, this vaccine was developed for HIV strains commonly circulated in Thailand. Based on the available published data, it is likely that different vaccines may be required for different regions in the world," said Col. Jerome Kim, MHRP deputy director and HIV vaccines product manager for the Army.

This successful international collaboration involved more than 16,000 Thai volunteers who were HIV-negative.

Iraq. Alternatively, just think of what it would mean to a Soldier with limb loss to be able to continue contributing in some way—to still be a Soldier—through the use of eye-controlled assistive devices."

Adds Dr. Sylvain Cardin, who is managing this effort for TATRC, "The beauty of TATRC is that we can connect technology such as the Eye-Com with research in other fields in order to greatly expand its use." In the near future, Eye-Com will be working with the U.S. Army Research Institute of Environmental Medicine and the University of California, Santa Barbara to further advance this technology and leverage the skills and expertise contained in this collaboration.

*Barb Ruppert*  
TATRC Technology and Science  
Writer



Nevada neurologist Dr. William Torch is wearing the Eye-Com™ Biosensor Communicator and Controller he developed, which can detect drowsiness and trigger an alert to avoid an accident.

Both men and women between the ages of 18 to 30 participated in the study. Half of the participants received the prime-boost vaccine regimen and half received a placebo. Volunteers received vaccinations over the course of 6 months and were followed for an additional 3 years. Volunteers also received HIV tests every 6 months for 3 years following the vaccination and received counseling on how to prevent becoming infected with HIV.

"While these results are very encouraging, we recognize that further study is required to build upon these findings," said Col. Nelson Michael, director of the WRAIR Retrovirology Division and MHRP director.

However, the trial data established a new clinical benchmark to guide fu-

ture vaccine development. This study may result in significant changes in the way researchers choose which vaccines to test; evaluate immune responses to a vaccine, both in the laboratory and in animal models; and design vaccine candidates. The total cost of the trial was \$105 million, which was less than expected.

"The Army will continue to be an aggressive sponsor and is committed to developing a globally effective HIV vaccine to protect U.S. and allied troops from infection and to support the U.S. National Security Strategy by reducing the global impact of the disease," said Schoomaker.

*Tiffany Holloway*  
USAMRMC Public Affairs