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
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.

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. Isaiah 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.

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.

“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 Material 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 communication 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 excellence in human subject protections while streamlining the processes. The topic of establishing an Army Medical Command IRB for multicenter, 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 Kline
Clinical Investigation Regulatory Office Director

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


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 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 management, 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 PPAE 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 Karaskeycz 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.
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 “knockdown” 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 expression 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 in the National Cancer Institute, and the National Institute of Allergy and Infectious Diseases.

Carence Vander Linden
USAMRIID Public Affairs

References:

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

Mike Feeley
USAISR Public Affairs

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 USAISR) 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.

USAISR’s mission statement is to Protect, Sustain and Enhance the Health and Performance of Warriors 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 USAISR 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 USAISR to meet its stated mission more effectively and efficiently.

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

Source information provided by USAISR.
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 before this there was no funding for definitive studies on severe 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; Ortholndy 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

Representing the International Organization for Standardization certification authority, Thomas Konernann 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.

Doris Crittenden
USAMMCE Public Affairs


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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 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 USAMRICD 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, USAMRICD; Richard Decker, technical director of ECBC, representing Maj. Gen. Paul S. Izee; 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, FLAID Architects; and Sgt. 1st Class John Evans, senior enlisted advisor, USAMRICD. Photo by Gary Slosiak, 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 Fibbert, 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. The textbook 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 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.

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 Shum, 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 Malley, 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 logistics, 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/. 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@amodd.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 MBMC 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://amrmc.amodd.army.mil to check out these new features and more!
Warfighters on the Move Need Meals on the Go

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 Haddad. “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 good 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. While 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 bar, beef snacks, Zapplesauce®, trail mix, and cafefeeded 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
USAMRIC 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 Kalish
Dr. Amanda Kelley

NCO of the Year
Sgt. William McGibbey
Soldier of the Year
Spc. Bradley Wilson

Certificate of Achievement
Spc. Nikkeyla Barbee
Sgt. Pedro Cruz
Sgt. Denise Bartz
Sgt. William McGibbey
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. Patrick Balenza has been named USAARL representative for the USAMRMC Human Subjects Research Review Board Aug. 31.
Donnie DelRouen with building construction company, JMK, 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.
Officials Break Ground for New USAMRIID Building Project

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 former employees—Col. Gary Zaucha and Diane Negley, Col. John P. Skvorak, and Dr. Robert Wannemacher—who were present for the original USAMRIID groundbreaking in 1967. “It 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 bring, “commended 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

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 capability 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, science, and above all, to the Warfighter.”
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 uses infrared light, such as that used in a TV remote, to distinguish 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 control 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 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

HIV

To think, we have come this far in our research and to be part of this trial while I was at MRMC 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.

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 future 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.

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USAMRC Public Affairs

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