The Point

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

MRMC Goes Global: USAMRIID Finds Cause of "Mystery Disease" Outbreak in Afghanistan

The cause of a "mystery disease" outbreak in Afghanistan last year that sickened 50 people and killed eight has finally been determined thanks to experts at the U.S. Army Medical Research Institute of Infectious Diseases. Perhaps the most striking about the incident is the microbe responsible for it—*Yersinia pestis*—the causative agent of plague. The cases were quickly traced to consumption of infected camel meat. Because of the disease severity and the nature of the patients' gastrointestinal symptoms, the outbreak was initially suspected to be anthrax, according to microbiologist Dr. Chris Whitehouse. However, the diagnostics for *Bacillus anthracis*—and everything else—came back negative.

After several months of the disease going undiagnosed, Maj. Sam Yingst, who had served in Afghanistan before

——— *See "**Mystery Disease**" page 20*

WRAIR: Leading the Way in Malaria Research

Most people, when subjected to a mosquito bite, think nothing of it. The result is a bump. However, in areas like sub-Saharan Africa, South East Asia, Central and South America, and India, mosquito bites can turn deadly if they are infected with *Plasmodium* parasites, the pathogen responsible for malaria. This severe and incapacitating disease is a global problem that is estimated to lead to 350–500 million cases of malaria and 1–3 million deaths worldwide, mostly in children. Today, at least half of the world's population or 3.3 billion people are at risk of malaria. Unfortunately, there is no licensed or approved malaria vaccine available. Antimalarial drugs have either already failed in parts of the world or are threatened with the specter of rapidly developing resistance. According to the Centers for Disease Control and Prevention, a vaccine against malaria is considered to be one of the most important research projects in public health.

The worldwide threat of malaria transmission limits the U.S. ability to deploy a strong, credible military presence whether for peacekeeping, special operations, or major combat. Hence, the Walter Reed Army Institute of Research and the Naval Medical Research Center are working toward developing an effective malaria vaccine for the Warfighter. "Soldiers are supposed take malaria pills (medicines) to prevent malaria, but often times forgetting to take the pill for even one day makes them susceptible to the ravages of the disease and makes them ill with fever. If left untreated or misdiagnosed, the infection could lead to severe life-threatening consequences," said Col. Christian Ockenhouse, director of the U.S. Military Malaria Vaccine Program. The good news is that WRAIR and NMRC are on the verge of a vaccine to prevent infection in both Warfighters and children who are exposed to the deadly parasite.

"WRAIR and GlaxoSmith-Kline have codeveloped the malaria vaccine, RTS,S. The vaccine is the result of a 23-year collaboration between WRAIR and GlaxoSmithKline. RTS,S is the most advanced malaria vaccine in development in the world. This vaccine has demonstrated about 50 percent effectiveness in volunteers who were exposed to malaria parasites by being bitten by mosquitoes. Although the level of protection is below that required for military use, the vaccine has tremendous potential to save millions of lives in infants and children throughout the world," said Ockenhouse. "This is one example on how the medical research at WRAIR has benefited the world." This vaccine is now in the last stage of clinical testing in thousands of infants and small children throughout Africa before eventual licensure.

Because the level of protection by RTS,S is below that required (80 percent) for the Warfighter, the vaccine has not been approved for military personnel. The U.S. Military Malaria Vaccine Program is aggressively testing different experimental malaria vaccines against both *P. falciparum* and *P. vivax* malarias in its Clinical Trials Centers located in Silver Spring and Bethesda, Md., and also in WRAIR and NMRC overseas laboratories in Western Kenya (U.S. Army Medical Research Unit, Kenya), Thailand (Armed Forces Research Institute of Medical Sciences), Ghana, and Peru.

Not only has WRAIR helped develop RTS,S, but the institute also developed intravenous Artesunate, a drug for severe malaria. The disease can be so severe that a person can no longer take oral medications, and an intravenous drug is all that can be used to save a person's life.

"Malaria today still kills, not as much in the U.S. as in other parts of the world, but we still have people die from severe malaria in the U.S. every year. In the last few years alone, there are over 1,500 cases of malaria in the U.S. every year. Overseas the toll is more striking. In Africa, it is estimated that 3,000 kids (enough to fill six 747 planes) die every day from malaria. We owe something socially to the rest of the world and more pragmatically, the military operates every day in malaria-endemic areas of the world and military [personnel] get malaria all the time. There are, on the average, 100 cases of malaria in the U.S. Army alone in Afghanistan every year since we started operations there in 2001," said Col. Peter Weina, chief of Pharmacology at the Division of Experimental Therapeutics.

The U.S. Army Medical Research and Materiel Command donated 1,000 vials to the CDC and assisted in getting a compassionate use protocol through the U.S. Food and Drug Administration. Over the first year of use under this protocol, almost 50 lives were saved by this drug, including U.S. military personnel. Compassionate use means that the drug is still under investigation and will be used under very strict guidelines because it is considered lifesaving, and there are no other options available to save the lives of individuals afflicted with a disease. USAMRMC also donated 500 vials of the drug to the Canadian Malaria Network operating out of the Ottawa Hospital in February where the drug will be made available under compassionate use just like through the CDC in the United States.

"There have been several other requests recently for the drug to be used under compassionate use from allies in Australia, several European countries, and Israel. USAMRMC recently has authorized the funding necessary to make another 'bridge' clinical lot of the drug until the final commercial lot and licensure make the drug widely available. Currently, this licensure could happen as early as 2010," said Weina.

Tiffany Holloway
USAMRMC Public Affairs Office

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Marathoner Kaime Goes the Distance

The following is an interview of Naval Captain E. Melissa Kaime, M.D., Director of the Congressionally Directed Medical Research Programs, Fort Detrick, Md., which took place after her successful completion of the Boston Marathon April 20. The interview was conducted by Gail Whitehead, CDMRP Public Affairs Coordinator.

GW: Capt. Kaime, why did you take up running?
Capt. Kaime: In the military I've always had to run just to maintain the physical fitness standards, but I didn't start doing long distance until I was stationed in Iraq. In the times when we were not busy, running was a healthy activity. A friend and I would regularly run the perimeter of Camp Fallujah, a total distance of 11 miles. I ran my first half-marathon in Fallujah in January 2005. I've continued it after returning to CONUS for many reasons; it is a great way to reduce stress, maintain fitness, avoid weight gain, see the world in ways you might not otherwise see it, get close to wildlife, and get a sense of accomplishment from conquering long distances.

GW: Compare running in Fallujah with Maryland or when based in San Diego?
Capt. Kaime: They all have their advantages! When I first arrived in Iraq in August 2004 I was stationed at Al Asad, many miles west of Baghdad. The afternoon temps rose to the 130s so we would do our running before sunrise in the cool part of the day when it was only 120 degrees! The amazing thing is that the body really can acclimate to those temperatures. I got used to running in the heat and find it a challenge to run in the cold, which for me is anything under freezing! I love running the back country roads here in Maryland. I get to watch the corn grow over the summer, watch the calves grow up, enjoy the seasons, get intoxicated with the fragrance of lilacs or honeysuckle, be inspired by sunrises. In San Diego, it is a treat to run along the beach. It's both humbling and empowering to run next to the ocean, it brings out the poet/philosopher.

GW: What benefits have you gained by running?
Capt. Kaime: When I got back from Iraq I began doing marathons and enjoyed the long distance. As I was turning 50, I challenged myself to qualify for and run THE marathon, Boston Marathon. I was able to qualify and run! In the year I turned 50, I ran five marathons. I'm very grateful for what I've been given that allows me to run long distance. As a cancer specialist, I see way too many people not have such an opportunity. I don't take my good health for granted.

GW: Tell me about how you train for races?
Capt. Kaime: All the running magazines and web sites have great training plans for whatever distance you plan to race. I try to maintain a baseline level of 25 miles per week but then increase that to 30–40 miles per week as I approach a marathon. I do some cross training with swimming, hiking, and occasionally biking. I've done two half-marathons and seven marathons now, and each has been different. I learn something new each time.

GW: Do you train while traveling for CDMRP?
Capt. Kaime: That's a challenge, but I'm always so glad when I make the effort to get out and run in a new venue. Running allows me to see the city in a very intimate way. I've come to know some wonderful running trails in various parts of the country.

GW: Why is the Boston Marathon such an important event for so many runners?
Capt. Kaime: The Boston Marathon has a mystic about it that is not just hype—it is, after all, the oldest organized marathon in the U.S. It is one of the largest and has probably the most enthusiastic and encouraging crowds that line the course. It's special because most of the runners have to qualify within a certain time per age group and sex to be able to run. There are some local runners and charity runners allowed in the race as well. So almost everyone running is a serious runner and happy about being there. I've run two Boston Marathons and hope to run more.

GW: Are you planning any other races this year?
Capt. Kaime: I will do the Frederick Marathon on May 3 and then the Marine Corps Marathon in October. After having deployed with the Marines in Iraq, they will always have a piece of my heart. I will do the MCM as long as I'm able. I have several other 10-mile races and a triathlon over the summer.

GW: What would you say to other women thinking about turning their jogging into distance running?
Capt. Kaime: First, there's no reason to feel guilty if you are not running marathons—doing something, anything, to keep fit is the key. Some people find joining a running group helps keep them motivated, and the group provides running tips, safety, and camaraderie. My schedule makes trying to join a group more difficult. I like the freedom to set my own plans and time line. If you decide to increase distance, do it gradually. Get expert advice from the running magazines or web sites to increase without overtraining or injury.

Godard Promoted to Colonel

Brig. Gen. Malinda Dunn, assistant judge advocate general for Military Law and Operations, and Lee Godard, his mother, pin Col. Brian J. Godard, staff judge advocate at Fort Detrick during his promotion ceremony

Lt. Col. Brian J. Godard, staff judge advocate, U.S. Army Medical Research and Materiel Command and Fort Detrick, was honored during a promotion ceremony held April 24. Col. Godard is head of the USAMRMC&FD Office of the Staff Judge Advocate, which provides legal support to both USAMRMC and the Fort Detrick Garrison.

Godard is from Cody, Wyo. He attended the University of Wyoming where he received a bachelors degree in general business management in 1986. He then attended the University of Wyoming College of Law where he received a juris doctorate degree in 1989. After being licensed to practice law in Wyoming and briefly working in the Wyoming State Public Defenders Office, Godard joined the U.S. Army Judge Advocate General's Corps.

Godard is married to Suzanne MacAffer Godard, who served for eight years as an Army nurse. They have two children.

Source information provided by USAMRMC&FD Office of the Staff Judge Advocate

Oh No, There's Something in My Eye!

It's Monday morning. You start your day off by finishing up an experiment. You put on your personal protective equipment before you pour the chemical into the test tube. The chemical splashes. Fortunately, you have on your safety eyewear. It's Saturday morning. You decide to do some gardening. You proceed to the garage to grab your tools. You don't have any safety eyewear. Dirt flies in your eye. As a result, your eye becomes irritated and red. You have a corneal foreign body. It was the one you didn't expect. It's important to remember eye safety whether on the job or at home.

Eyesight is one of the senses we sometimes take for granted. Some common eye injuries that could be avoided are corneal abrasions (scratches on the cornea) and corneal foreign bodies (something on the front of the eye, such as sand). Outpatient injuries—generally less severe—outnumber inpatient injuries—generally more severe—by roughly 98 to 1. "The best way to promote eye safety is through a culture of safety in the workplace and during off-duty activities as well. If employees know that their employer puts a premium on safety, they are more likely to pay attention and follow the rules and guidance that is put in place to protect them. Having this culture in place makes it easier to get results when highlighting specific injury prevention topics like eye safety," said Col. David Hilber, U.S. Army program manager for Tri-Service Vision Conservation and Readiness.

Eye injuries can result in anything from a minor inconvenience to a severe problem such as blindness or other loss of visual function. Hilber said the Army has increased the validation impact on industrial and eye protection devices. Another reason Soldiers are more apt to wear safety eyewear is that they are more stylish. An update in design is side protection. This is not a new invention, but side protection is being updated in personal protective equipment standards.

Hilber personally tracks eye injury trends on a coded data system called AHLTA. From these data, military health care professionals are able to see who received what eye injury, where, and when based on these data as to the impact of eye protection.

"We generally look by year rather than by month. For the last 10 years, the overall rate was approximately 13.3 injuries per 1,000 person-years for active duty (low 1998 10.95, high 2006 14.8). This is slightly higher than the most recent civilian trend data I have, which ranged from 13/1,000 to 8.2/1,000 over the period 1992 to 2001. Some of this difference can be attributed to the effects of the war effort and some to a more comprehensive capture of data by the military. In general, the rate is lower now than it was in the 80s and early 90s for both military and civilian populations," said Hilber. This higher number in the Army could be due to the type of working environment. Hilber said Soldiers work in motor pools, serve in deployments, and participate in many training exercises. One of the challenges now is to get Soldiers and civilians more aware of safety procedures when off duty.

An article in the April 2009 edition of *Knowledge,* the official safety magazine of the U.S. Army, stated in 1985, 48 percent of eye injuries occurred at the workplace, and 27 percent of those injuries occurred at home. Currently, 45 percent of eye injuries occur at home, and 20 percent occur at the workplace. "Now we need to start pushing more marketing tools out to decrease eye injuries at home," said Hilber.

Tiffany Holloway
USAMRMC Public Affairs Office

G-Eyes Web Site Making a Big Impact

Previously, when deployed Soldiers lost or broke their glasses, it often led them on a journey to find an optometrist. This journey could be dangerous, and in some cases took Soldiers away from their missions, possibly for days. G-Eyes is a unique initiative for deployed Soldiers. It is a web site that allows deployed Soldiers to conduct a search of a central server for their last optical order. Once a Soldier's prior orders are found, G-Eyes sends the prescription to the Soldier and places a replacement optical order with the theater optical laboratory. The laboratory fabricates the glasses and sends them to the Soldier by the Military Postal System.

Sgt. 1st Class Robert White, senior optical lab noncommissioned officer within Iraq, reports that the G-Eyes web site is beginning to have a big impact. The program was implemented less than a year ago, yet its benefits are already becoming apparent. Within the first three months of 2008, the primary optical laboratory in Iraq had fabricated more than 2,200 optical items from G-Eyes requests, and the laboratory sees an increasing trend toward G-Eyes use. In fact, by mid-April, approximately 42 percent of the primary optical laboratory's workload came from G-Eyes.

The laboratory finds it can fill approximately 88 percent of the orders on-site. Remaining orders are forwarded for fabrication in Europe or at Brooke Army Medical Center. The majority of difficult orders are multifocals, which are not fabricated in theater. To support G-Eyes, both alternate laboratories have agreed to mail requested orders directly to the patient so as not to delay receipt or burden the theater laboratory. The turnaround time between order placement and receipt of replacement glasses is about 7 to 10 days. Thus far, survey results are highly positive. On a 1 to 5 scale (with "5" being very satisfied), service members rate the ease of web site use at 4.91, satisfaction with delivery at 4.57, prescription accuracy at 4.96, and overall satisfaction standing at 4.74.

For more information on G-Eyes, please visit https://g-eyes.amedd.army.mil.

Source information compiled and distributed by Col. Neil Glenesk, optometry staff officer, Office of the Surgeon General

WRAIR and USAMMDA Team Up to Develop Freeze-Dried Plasma

Freeze-dried plasma has been used to treat wounded warriors since World War II. However, the manufacturing process exposed patients to many blood donors, which resulted in the spread of viral diseases like hepatitis.

Currently, the Walter Reed Army Institute of Research and the U.S. Army Medical Materiel Development Activity are working with several industry partners to develop a safe and stable dried plasma product. The freeze-dried plasma program is an important initiative because it would provide doctors with a more accessible method of treating wounded warriors who have suffered blood loss. In addition, freeze-dried plasma's storage requirements and shelf life would allow it to be readily available for use in treating life-threatening and non-life-threatening casualties.

So, what is plasma, and how will it help the wounded warrior in a dried state? Plasma is one of three blood components. It is a clear, straw-colored fluid consisting mostly of water in which proteins and nutrients are dissolved and cellular particles float. The remaining components are the packed red blood cells, which transport oxygen and give blood its red color, and platelets, which are little bits of cells that support clotting and wound healing. The body is the only place where all three components of blood can be stored and survive as a whole unit, and even there it is not really stored—the old is cycled out and replaced with new. It became necessary to develop methods to store these components separately after blood has been taken from a donor to be preserved for future use.

Over the past hundred years or so, scientists have learned how to separate the units of blood. Whole units of blood received from donors are placed in a centrifuge where the denser red blood cells are pulled down, the platelets remain in the middle, and the less dense plasma is expressed off the top. The plasma is then frozen and called fresh frozen plasma. Fresh frozen plasma is used in hospitals for many things, including massive transfusions; however, it is not an option for physicians in the most forward combat hospitals where freezers are not available.

"What we are trying to do with freeze-dried plasma is get rid of the freezer," explains Elizabeth Barrows, USAMMDA product manager. "We don't really care whether it is freeze-dried, spray-dried, or liquid. We just care that we don't have a freezer involved." Since freezers are essential to keeping fresh frozen plasma stable, it is not a viable blood solution for use in the field. The development of a dried plasma product offers a possible solution to the freezer dilemma. Freeze-dried plasma would not require cold storage and would have a possible shelf life of two years.

The goal of the freeze-dried plasma program is to develop a product that can be deployed and safely used in combat support hospitals. Freeze-dried plasma is created by using a freeze-drying method. It is a controlled process that takes a couple of days to transform the liquid plasma to a solid, cake-like product. The plasma is placed in a special container and positioned in a freeze-drying machine to freeze at a set rate. After the plasma is frozen, the machine pulls a vacuum and replaces the air mix in the chamber with an inert gas. This gas protects the proteins from being broken down by oxygen. Then the machine gradually warms the frozen plasma causing water to sublimate off of it like freezer burn. In the end, the trays are sealed with lids, and the plasma looks like little cakes.

The product, freeze-dried plasma, is in the preclinical development stage. WRAIR and USAMMDA are working with several companies that are developing product formulations for clinical trials. Each company is working on different versions of freeze-dried or spray-dried plasma with varying rates of funding. At least one of the companies is expecting its formulated product to enter clinical trials within the next 8–12 months, with others to follow. The Phase 1 clinical trials will be small, 6- to 10-subject studies for U.S. Food and Drug Administration licensure.

Carey Phillips
USAMMDA

Maps Are Still a Valuable Resource

There is an old Sammy Cahn song from the end of World War II called "You Never Know Where You're Going Till You Get There." The gist of the song is about Soldiers not knowing where their mission will take them until they arrive at their destination. Had maps been provided, the Soldiers would have related much better to the process of their trip. Maps are an invaluable tool because they lead to a better understanding of the available routes, familiarity with the geography, and the travel time involved in planning the trips.

In Lean Six Sigma, mapping is the foundation of process improvement. Building high-level process maps allows a team to become more familiar with the inputs (routes), process steps (geography), task time (travel time), and the overall process (the trip).

Lean Six Sigma process maps will "allow us to know where we're going and how we got there." There are three types of high-level process maps typically employed in Lean Six Sigma projects: the SIPOC (suppliers, inputs, processes, outputs, customers), the value stream map, and the process flow diagram.

The SIPOC is a simple diagram that identifies the basic elements of an organization's process. It helps identify the interaction among suppliers, inputs, outputs, and customers of the overall process. A SIPOC is developed at the beginning of a project to capture a high-level view of the process to translate customer requirements into key outputs.

The value stream map is a process map with data. It identifies task time, setup time, wait time, error rates, work backlog, and rework at each step in the process. If the mission of the organization is to speed up the process and reduce non-value-added activities, a value stream map is an essential tool.

A process flow diagram is a team effort where each process step is arranged in sequence. Duplicate steps are eliminated and similar steps are combined into one main process step. The process "flows" in one main direction, reversing only to represent rework. Since the team develops the map, agreement on terms of reference, the number of tasks, and level of detail become standardized. Upon completion, the process flow diagram provides the team a visual of how each step fits into the overall process.

These high-level maps accomplish five main goals: visually documenting the process, providing a fact-based process description for understanding current problems and opportunities, enabling the team to quickly identify improvement opportunities, helping the team see how the process should work once unnecessary steps are eliminated, and helping with communication both within and outside of the organization.

So, the next time your organization seeks to employ process improvement, use the Lean Six Sigma mapping tools to "show you how to get there."

Kelly Garrett
USAMRMC
Quality Management Office

USAMRIID Supports Improved Disease Diagnostics in Sierra Leone

Dr. Randy Schoepp and Dr. Joseph Fair at work in the Kenema Government Hospital Diagnostic Laboratory, Sierra Leone

An ongoing effort to help the West African nation of Sierra Leone improve its diagnostic laboratory capability is paying off thanks to a diverse group of organizations that includes the U.S. Army Medical Research Institute of Infectious Diseases. According to Dr. Randy Schoepp of USAMRIID's Diagnostic Systems Division, the enhanced capability will allow faster detection and reduced lag time in implementing treatment, vaccination, and other measures to curb disease outbreaks.

Schoepp and Dr. Joseph Fair (formerly of USAMRIID) visited the Kenema Government Hospital in eastern Sierra Leone earlier this year. The facility serves as the regional hospital for the diagnosis and treatment of Lassa fever, a fatal disease that causes as many as 300,000 infections and 5,000 deaths in the region per year. Situated in a Lassa virus hyperendemic area, the hospital serves as an ideal location to test and evaluate Lassa virus diagnostic assays. During their visit, Schoepp and Fair encountered not only a surge of Lassa fever cases, but also two outbreaks of yellow fever, one in neighboring Guinea and another near Kenema. "Until our recent site visit, there was no capability in Sierra Leone or the neighboring countries to diagnose yellow fever," Schoepp commented, adding that samples had to be sent to either Ivory Coast or Senegal for confirmatory testing. "For the first time in over 20 years, we were able to preliminarily detect and identify yellow fever infection in Sierra Leone."

The hospital is supported by the Sierra Leone Ministry of Health & Sanitation, the World Health Organization, Tulane University, the United Nations, the U.S. Office of Foreign Disaster Assistance, and USAMRIID. Through a network established in 2004, the agencies work to develop national and regional prevention and control strategies for Lassa fever and other dangerous diseases, including enhancement of laboratory diagnostic capacity and training in laboratory diagnosis, clinical management, and infection and environmental control.

Schoepp said that in addition to the Lassa virus diagnostic assays currently in use at the hospital's diagnostic laboratory, USAMRIID has supplied reagents for the detection and identification of yellow fever, chikungunya, Rift Valley fever, and West Nile viruses. Using a small, well-defined set of serum samples collected from 254 patients suspected of having Lassa fever, he and Fair have begun to implement this improved laboratory capacity. "These samples were from 254 patients admitted to the ward who were suspected of having Lassa fever," said Schoepp. "Of those patients, only 29 percent were confirmed as having Lassa fever. Therefore, 71 percent had diseases of unknown origin. We brought these other assays to Kenema to investigate the possible causes and to add laboratory capacity."

Schoepp said the newly renovated diagnostic laboratory and trained personnel at the Kenema Government Hospital are performing well. This trip also allowed for field testing of diagnostics for yellow fever and chikungunya viruses, demonstrating the utility of these developed assays in a real-world situation. A trip report prepared by Schoepp summarizes the enhancement of diagnostic capability for acute febrile illnesses as a "win-win-win" situation. For the people of Sierra Leone, it provides faster and better disease management; for the scientific community, it adds to the body of knowledge about the viruses that occur in the region; and for the Department of Defense, it allows the testing and evaluation of diagnostic reagents that benefit the Warfighter. In addition, it is an important and relevant example of our government's willingness to engage in medical diplomacy.

Caree Vander Linden
USAMRIID Public Affairs Office

Two Soldiers Invent a Medical Tube Securing Device

Not expecting their "simple" solution to a medical problem would turn into a winning invention, two Soldiers entered a Department of Defense 2009 Hot Technologies Contest and submitted an invention called a Medical Tube Securing Device. Spc. Brendan Beely and Staff Sgt. Gabriel Wright of the U.S. Army Institute of Surgical Research, a subcommand of the U.S. Army Medical Research and Materiel Command, recognized a problem and invented a device for securing medical tubes and catheters intubated within a patient that will prevent damage to the incisors by locating separate bite blocks on the molars. It also helps to prevent pressure sores on patients' lips.

"The Respiratory and Pulmonary Studies Department presented a problem to us and told us that they needed a solution. We drafted up a couple of sketches and then took supplies we had on the shelf and made the device. Someone from MRMC noticed our invention and submitted it for the contest," said Beely. That person was Paul Mele, director of the Office of Research and Technology Applications at Fort Detrick. "We looked for technologies that met a real Army need and also had application in the civilian sector. The Medical Tube Securing Device showed outstanding initiative and creativity on the part of MEDCOM Soldiers," said Mele. The invention costs less than $1,000.

The Burn Center, located in the Brooke Army Medical Center, receives approximately 300 burn patients each year. Often, these patients have problems breathing on their own due to scorched esophagi, damaged airways due to smoke inhalation, or organ failure. Therefore, it becomes necessary to intubate so that a patient can breathe. The current method of securing endotracheal tubes often leaves patients with cuts or tears in their mouths. In addition, several patients have lost their incisors due to prolonged forceful clamping of the jaw on the semirigid bite block. "We wanted to help prevent tears in mouths and put the pressure back on the molars," said Wright.

The prize for winning the DoD Hot Technologies contest is a marketing video. USAMRMC's technology transfer office will use this video to attract potential licensing partners to commercialize this technology. If a patent is issued, each inventor will receive an additional $250. If their technology is licensed, the inventors split royalties under the license and as much as an additional $2K/year each on top of the royalties. The same technology also was chosen for the World's Best Technology showcase March 24–25 in Arlington, Texas. This event spotlights the largest collection of undiscovered technologies emanating from the world's leading universities, laboratories, and research institutions.

For more information about the U.S. Army Institute of Surgical Research, visit http://www.usaisr.amedd.army.mil/.

Tiffany Holloway
USAMRMC Public Affairs Office

Mother of Four Earns Two Degrees

From left to right: Danielle Robertson, Victoria Robertson, William Robertson, Katherine Robertson, Katrina Robertson, and Faith Robertson

Being a wife, a mother of four, and a hard-working grant specialist for the U.S. Army Medical Research Acquisition Activity is a recipe for a busy life. Add on more ingredients, such as college classes, and the recipe gets complicated. Even though Katrina Robertson was not a traditional college student, she received an associates degree in December and a bachelors degree in May while working four days a week, which increased her work days to 10 hours.

Her boss, Cheryl Miles, knew Robertson was taking classes and encouraged her to pursue a bachelors degree. While Robertson was finishing up her associates degree at Frederick Community College, she decided to apply to Bellevue University to earn her bachelors degree, and she went to both schools simultaneously. Robertson took one class per month at Bellevue University under an accelerated program. She said, once the university accepted her military credits, she only had 21 courses remaining.

Robertson said her husband and four children helped out with cooking and cleaning while she was busy working on assignments. "My 18-year-old daughter would pick up my youngest from school. Sometimes I would bargain with my kids. I would tell them if I accomplished a certain amount of school work, on the weekends, then we could go out for dinner," said Robertson. "I can remember feeling like I studied all day." The Army veteran said she wanted to further her education so she could take on more responsibility at work and also seek more opportunities. "It's difficult to go to school and work. I would advise college students to keep going and don't give up," said Robertson. Robertson now has a degree in general studies and business management. The Robertson family knows how to cook up a recipe for success because they will have three graduates this year—Katrina, her oldest daughter, and her husband. Robertson already has started her masters degree.

Tiffany Holloway
USAMRMC Public Affairs Office

MOMRP Director Invited as Keynote Speaker

Col. Carl Castro speaks at the Combat Stress Intervention Program conference

Col. Carl Castro, director of the Military Operational Medicine Research Program located at Fort Detrick, Md., was the keynote speaker at a day-long conference hosted recently by the Combat Stress Intervention Program at Washington & Jefferson College in Washington, Pa. The conference was held to review the initial results of the first year of the study. More than 750 Operation Iraqi Freedom and Operation Enduring Freedom and OEF Reserve Component veterans were surveyed to examine incidence of post-traumatic stress disorder, combat stress-related issues, and other post-deployment transition challenges.

Tiffany Holloway
USAMRMC Public Affairs Office

WRAIR Hosts Third Annual "Bring Your Child to Work Day"

On April 23, the Walter Reed Army Institute of Research hosted its third annual "Bring Your Child to Work" day. About 120 first through ninth graders attended the event, which was supported by more than 90 scientists, civilians, college students (near-peer mentors), and military volunteers. The day included a variety of inquiry-centered activities, a "Basics of Botany" lesson, a bug-finding hike, an explosive mentos and cola experiment, a three-dimensional presentation on molecules, and information about veterinary medicine. Students had an opportunity to touch a human brain; create necklaces with their own extracted DNA; hold a variety of insects, including a tarantula and scorpion; and see liquid nitrogen-cooled copper rings being shot out of a Thompson's coil. The day concluded with an egg-drop contest from the roof with prizes for the ingenious winners whose eggs survived the fall.

Helen Ann McCormick, WRAIR

Dr. Edgar Rowton accompanies first, second, and third graders on a nature hike through Rock Creek Park to collect insects and wildlife

Helen Ann McCormick displays a tarantula, and Maj. James Lee shows off a walking stick to fourth, fifth, and sixth graders

Stargate SG-1 Actor Visits USAARL

On Jan. 23, actor Cliff Simon visited the U.S. Army Aeromedical Research Laboratory. He is most well-known for his portrayal of Ba'al in the television series, *Stargate SG-1* and the movie, *Stargate: Continuum*. Simon's tour included flight time in USAARL's NUH-60 Black Hawk simulator, demonstrations of the TSAS (Tactile Situation Awareness System) and MARS (Multi-Axis Ride Simulator), and a visit to the Aviation Life Support Equipment Retrieval Museum. Following the tour, Simon signed autographs for USAARL Soldiers, Department of the Army civilians, and contractors.

Source information provided by USAARL

U.S. Army Medical Command "Best Warrior" Competition Determines NCO, Soldier of the Year

Sgt. David Dasilma, 121st Combat Support Hospital, Yongsan Army Garrison, Korea, representing the Pacific Regional Medical Command, swam his way to the finish line as part of the 2009 U.S. Army Medical Command Noncommissioned Officer and Soldier of the Year "Best Warrior" competition *(Photo by Lorin T. Smith)*

One noncommissioned officer and one Soldier, both with less than five years of Army service between them, were named the 2009 U.S. Army Medical Command NCO and Soldier of the Year "Best Warrior" competition winners after a grueling five-day competition held at Madigan Army Medical Center and Fort Lewis, Wash.

Sgt. David Dasilma, 28, originally from Surrey, British Columbia, Canada, with the 121st Combat Support Hospital, Yongsan Army Garrison, Korea, Pacific Regional Medical Command, will represent the MEDCOM in the Army NCO of the Year "Best Warrior" competition slated for later this year. He has served three years in the Army.

Earning Soldier of the Year honors was Spc. Jonathan Jordan, 25, from Marietta, Ga., with the Fort Huachuca Medical Activity, Fort Huachuca, Ariz., Great Plains Regional Medical Command. Jordan had the least amount of Army service time compared to all of the other candidates, serving only 1½ years.

Both winners and the other 18 candidates (10 NCOs and 10 Soldiers) were recognized for their dedication to the event during an awards luncheon April 3 at the McChord Club at McChord Air Force Base, Wash. The competition was held March 29 to April 3 and was hosted by the Western Regional Medical Command and Madigan. This was the first time the event was not held at Fort Sam Houston, Texas, the home of MEDCOM.

"The Soldiers were ready because of their personal determination as well as their leaders' engagement," said Maj. Gen. Patricia Horoho, commander of the Western Regional Medical Command and Madigan Army Medical Center, at the luncheon. Horoho went on to say that because of the Soldiers' accomplishments, Army senior leaders have complete confidence that those Soldiers coming up in the ranks will be able to make the Army Medical Department remain strong and continue its mission. Participants were tested in the following events:

- Completing a 50-question exam;
- Writing a timed essay;
- Answering questions from MEDCOM command sergeants major in an oral board;
- Completing an Army Physical Fitness Test;
- Walking about 15 miles around Fort Lewis, finding points as part of a day and night urban orienteering course;
- Climbing over obstacles, clearing buildings, and using tactical medical and Soldier battle skills and drills in a field environment;
- Shooting as many targets as possible during a day and night rifle qualification;
- Swimming with a "drowning" buddy the length of a pool and then performing CPR on a manikin; and
- Beating out other Soldiers in their weight class in a no-holds-barred combative tournament.

The NCOs and Soldiers began training for these five days last year as they first started competing at their respective unit's NCO and Soldier of the Quarter boards. They then won their local NCO and Soldier of the Year competitions, and regional events were held within the past few months. Vying for the most coveted enlisted award in MEDCOM were the six regional winners who joined representatives of the Dental Command, Veterinary Command, Army Medical Department Center and School, and U.S. Army Medical Research and Materiel Command for the finals.

U.S. Army Medical Command Sgt. Maj. Althea Dixon, the top enlisted Soldier of the Army's Medical Department, informed the luncheon crowd that the competitors represented the best the Army had to offer. "We are proud of each and every one of you, and the training and development programs for these Soldiers is what it is all about," Dixon said. Both Dasilma and Jordan received an Army Commendation Medal, a trophy that will remain with their units until next year's competition, various prizes including a duffle bag, a limited edition Patriot Warrior Award knife, camping gear items, and more than $1,400 in cash.

"I'm shocked," Dasilma said, immediately after he heard the announcement that he had won. "This feels really good, and it's kind of a surreal moment. I haven't weighed in how big this is." Dasilma is an immunizations NCO and is looking to finish his degree in film production in the next few years.

Jordan is a medical supply specialist with a bachelors degree in Health Services Administration and is waiting to hear if he has been accepted to attend Officer Candidate School. "If you put in the time and work, you can do [this]," Jordan said. "You have to do this on your own and put in the extra time. It takes a lot of effort."

All of the candidates received a U.S. Army Medical Command Commanders and Command Sergeant Major's Certificate of Achievement.

Lorin T. Smith
Madigan Army Medical Center
Public Affairs Office

Sgt. 1st Class Maurice Gibson, a laboratory technician at Weed Army Community Hospital, Fort Irwin, Calif., representing the Western Regional Medical Command, treated a casualty's wounds after a simulated improvised explosive device detonated as part of the 2009 U.S. Army Medical Command Noncommissioned Officer and Soldier of the Year "Best Warrior" competition *(Photo by Jay Ebbeson)*

2009 U.S. Army Medical Command NCO and Soldier of the Year "Best Warrior" Candidates

Western Regional Medical Command
Sgt. 1st Class Maurice Gibson
Spc. Daniel Cantu

North Atlantic Regional Medical Command
Staff Sgt. Henry Wilson
Spc. Andrea Nixon

U.S. Army Medical Department Center and School
Sgt. 1st Class Jesus Gonzalez
Spc. Philip Lea

U.S. Army Medical Research and Materiel Command
Staff Sgt. Eddie Dickerson
Spc. Patrick Sorensen

Pacific Regional Medical Command
Sgt. David Dasilma
Spc. Sandra Contero

European Regional Medical Command
Sgt. 1st Class Marlon Derecho
Spc. Ted Rowe

Great Plains Regional Medical Command
Staff Sgt. Martha Jasso
Spc. Jonathan Jordan

Southeast Regional Medical Command
Staff Sgt. Seneca Tutor
Spc. Oscar Ortega

U.S. Army Dental Command
Sgt. Steven Rovelstad
Spc. Jeremyh Warnken

U.S. Army Veterinary Command
Sgt. Francisco Olivo
Spc. Ronald Busby

USAARL Receives 2008 Modeling and Simulation Award

A team of scientists and engineers from the U.S. Army Aeromedical Research Laboratory (represented by Frederick Brozoski and Dr. John Crowley), the Virginia Tech-Wake Forest Center for Injury Biomechanics (represented by Dr. Stefan Duma), and Denton, Inc., received the Department of the Army Testing and Evaluation Modeling and Simulation Award for 2008. The team was commended for developing the Facial and Ocular Countermeasures Safety headform. The FOCUS headform is a state-of-the-art physical model capable of measuring impact loads to the face and eyes and represents the beginning of the next generation of higher fidelity anatomical test devices. The FOCUS headform provides Army materiel developers the ability to assess face and eye injury risk, determine the benefit of potential face and eye protection devices, and characterize any residual injury risk due to behind-armor effects or novel threats. This device will advance the development of standards for eye and face protection devices and has been favorably tested in explosive environments to characterize blast injury. Ultimately, FOCUS will help save Warfighter's eyesight and reduce morbidity and mortality associated with facial injury, allowing Soldiers to continue to shoot, move, and communicate.

Source information provided by USAARL

The FOCUS headform

Frederick Brozoski and Dr. Stefan Duma accept the Modeling and Simulation award at the Interservice/Industry Training, Simulation, and Education Conference awards banquet

USAARL Researcher Receives National Hearing Conservation Association Outstanding Lecture Award

Dr. John G. Casali (Virginia Tech) and collaborators Dr. William Ahroon (U.S. Army Aeromedical Research Laboratory) and Jeff A. Lancaster (Virginia Tech) won the 2008 Outstanding Lecture Award from the National Hearing Conservation Association. Casali and colleagues were honored for their research presentation titled "Hearing Protection and Hearing Enhancement in One Device: Perspective of the Soldier Whose Ears and Life Depend upon It." The award was based on the ratings of more than 300 academic and industry subject matter experts who attended the three-day NHCA conference. A cash prize was awarded to Casali who in turn contributed it to an NHCA-sponsored scholarship program that focuses on educating new hearing conservation researchers.

Source information provided by USAARL

Major Receives National Academies of Practice Award

Mary E. Costanza, M.D., NAP president; Maj. Jose Capo-Aponte, O.D., Ph.D.; and William Padula, O.D., NAP chair, were honored as Distinguished Scholars and received NAP Medallions

Maj. Jose Capo-Aponte was inducted as a Distinguished Scholar of the National Academies of Practice in Optometry and received the NAP Medallion for his significant and enduring contributions to the health care practice. The NAP Medallion was presented to him on 28 March during the annual NAP Banquet in Arlington, Va.

NAP is composed of 10 academies representing health care practice in the areas of dentistry, medicine, optometry, osteopathic medicine, pharmacy, podiatric medicine, nursing, psychology, social work, and veterinary medicine. Each of the academies is limited to 150 Active Distinguished Practitioners or Scholars. Thus, a limited number of members are honored each year.

NAP members include many leaders in the optometry field such as past and current presidents and deans of optometry schools and colleges, AOA and AAO, renowned professors, and VA and Army optometry leaders. Past recipients include Francis McVeigh, George L. Adams, Irvin Borish, Kevin L. Alexander, Thomas L. Lewis, Jimmy D. Bartlett, Ron Melton, Linda Casser, Timothy Petito, Murray Fingeret, Paul B. Freeman, Alden N. Haffner, John C. Townsend, Randall K. Thomas, Paul Karpecki, and Bruce Onofrey, to mention a few.

For a members list, please visit http://www.napractice.org/displaycommon.cfm?an=1&subarticlenbr=52.

NAP is a nonprofit organization founded in 1981 to advise public policy makers on health care issues, using NAP's unique perspective—that of expert practitioners and scholars joined in interdisciplinary dialogue. NAP is the only interdisciplinary group of health care practitioners dedicated to these issues. For more information, please visit http://www.napractice.org/index.cfm.

Lori St. Onge
USAARL

Reenlistment
Sgt. Dina Snyder

Capt. Robert Schlau, 70B Company Commander, and Sgt. Dina Snyder, 68J, USAISR, at the Texas State Capital for Snyder's reenlistment for Alaska MEDAC

Awards
Ludmila Asher
Amy Campbell
Trenene Dinkins
William Fields
June Holton
Richard Gordon
Carolyn Holland
Reginald Johnson
Craig Morrissette
M. Nambiar
Roberta Owens
Ruthie Ratcliffe
Mathew Robert
Cheryl Robinson
Cynthia Whitaker

USAARL Receives 2008 Best Research Poster Award

The U.S. Army Aeromedical Research Laboratory's Epidemiology and Prevention of Injury in Combat team was awarded the Best Research Poster Award at the 11th Annual Force Health Protection Conference for its work entitled "Prevention of Injury in Tactical Vehicle Rollover Accidents – HMMWV." The USAARL research team consisting of Robert Giffin, Kraig Pakulski, Dr. Paul St. Onge, Dr. Parrish Balcena, Joseph McEntire, and Lt. Col. Shean Phelps also received a congratulatory letter from Brig. Gen. Michael Cates, Commanding General of the U.S. Army Center for Health Promotion and Preventive Medicine. The award-winning research poster presents a comprehensive, epidemiological review of ground vehicle accident data and focuses on the incidence of morbidity and mortality associated with High Mobility Multipurpose Wheeled Vehicle rollover mishaps. The results of the study provide a foundation for discussion of preventive and occupational modalities to examine and reduce injuries. The findings also reinforce the importance of "buckling up." The authors recommend improved education regarding the benefits and consequences of restraint use and increased enforcement of restraint use to reduce fatalities in the event of a rollover.

Dr. Parrish Balcena, Robert Giffin, and Lt. Col. Shean Phelps represent the HMMWV research team during a USAARL award ceremony

Source information provided by USAARL

TATRC Scientist Selected to Receive the Arthur S. Flemming Award

The Telemedicine and Advanced Technology Research Center's senior research scientist, Dr. Jaques Reifman, has been selected to receive the Arthur S. Flemming Award June 1 at the George Washington University Marvin Center Continental Ballroom, 6–8 p.m.

Reifman was selected for this award because of his achievements in applied science, engineering, and mathematics while serving as the director of two cutting-edge research organizations: the U.S. Army Medical Research and Materiel Command Bioinformatics Cell and the Department of Defense Biotechnology High Performance Computing Software Applications Institute for Force Health Protection, which he created.

Within his seven years of leadership, Reifman has led his team of scientists to the forefront of computational biology research to help improve Soldiers' health by leveraging bioinformatics and high-performance computing technologies. These technologies enable the U.S. Army Medical Research and Materiel Command and other Department of Defense organizations to more rapidly develop diagnostic devices, drugs, and vaccines to reduce the occurrence of nonbattle injuries and the morbidity and mortality of battlefield casualties.

"In 35 years for serving in the Army or working for the Army, I have seen an awfully lot of very dedicated and patriotic people but never have seen anybody who works so hard and is so thorough and demands so much from himself as does Dr. Reifman," said Gary R. Gilbert, Ph.D., TATRC's chief of the Knowledge and Engineering Group.

The Flemming Awards were established in 1948 in honor of Arthur Flemming's commitment to public service throughout his distinguished career, which spanned seven decades. The award is recognized by the President of the United States, agency heads, and in the private sector. Twelve annual winners are selected from all areas of the federal service from among three categories: (1) Applied Science, Engineering, and Mathematics, (2) Basic Science, and (3) Managerial or Legal Achievement.

For more information about the Telemedicine and Advanced Technology Research Center, visit http://www.tatrc.org/

Tiffany Holloway
USAMRMC Public Affairs Office

USAARL Research Technician Receives Army Achievement Medal

The Army Achievement Medal was awarded to Sgt. Jonathon Hewett for his work as a research technician during the research study entitled "A Comparison of the Efficacy of Modafinil and Dextroamphetamine as Alertness Promoting Agents in Aviators Performing Extended Operations." Hewett also was recognized for winning the U.S. Army Aeromedical Research Laboratory's Noncommissioned Officer of the Year Award.

Source information provided by USAARL

USAARL Receives Survival and Flight Equipment Association Symposium Team Award

The 2008 Survival and Flight Equipment Association Symposium Team Award was presented to Lt. Col. Richard Roller and members from Aqualung® for their work in developing the Portable Helicopter Oxygen Delivery System. While at the U.S. Army Aeromedical Research Laboratory, Roller and other USAARL investigators conducted multiple research studies on the Aqualung PHODS. The PHODS delivers oxygen via nasal cannula or oronasal mask to an aircrew member from a standard portable survival egress air bottle (located on the aircrew member's survival vest). An oxygen pulse controller automatically provides on-demand oxygen regulated to altitude based on detected barometric pressure (pressure altitude). Other features of the regulator include algorithms to detect and react to the aviator's breathing patterns.

Source information provided by USAARL

USAARL's Hewett to Serve on HPEE Board of Directors

Kate Hewett of the U.S. Army Aeromedical Research Laboratory's Warfighter Performance and Health Division was selected to serve a three-year term on the Board of Directors of the Society for Human Performance in Extreme Environments. HPEE is an interdisciplinary organization made up of experts in the field of human performance in complex, high-stress, and demanding environments and occupations. The primary objective of HPEE is to discover ways to use science and technology to advance the boundaries of human abilities.

Source information provided by USAARL

USAARL Technician Reenlists

In a recent ceremony, Sgt. Corrick Mitchell reenlisted for four years. Mitchell is a technician for the U.S. Army Aeromedical Research Laboratory's Vision Science Branch. Among his regular responsibilities and tasks, he has assisted with a study of Marine breachers and organized the unit's participation in morale, welfare, and recreation events. In the future, Mitchell plans to attend flight school.

Source information provided by USAARL

USAARL Detachment Commander Promoted to Major

On Feb. 25, Capt. Troy Chinevere, Ph.D., of the U.S. Army Aeromedical Research Laboratory was promoted to the rank of major. He also was recognized for attaining the Lean Six Sigma status of Black Belt. Prior to his assignment at USAARL, Chinevere was assigned to Brooke Army Medical Center followed by an assignment to the U.S. Army Research Institute of Environmental Medicine. Chinevere, who earned a doctorate in physiology from Brigham Young University, is currently serving as USAARL's detachment commander and regulatory compliance officer.

Source information provided by USAARL

USAARL Hosts Blood Drive

On Feb. 12, the U.S. Army Aeromedical Research Laboratory hosted an African American/Black History Month Blood Drive and Health Fair. The blood drive was sponsored by the Armed Services Blood Program of Fort Benning, Ga. According to Elmaree Gordon of USAARL, approximately 15 Soldiers and civilians from the ASBP Blood Donor Center conducted a very successful blood drive. Fifty pints of useable life-saving blood (54 registered) were collected to support injured Warfighters in Iraq and Afghanistan and active duty Soldiers and their family members. That is 10 pints more than collected in the blood drive held at USAARL in February 2008. As part of the event, Victoria Knighton, a nurse at Fort Rucker's Lyster Army Medical Clinic Health and Wellness Center, conducted health screenings.

Source information provided by USAARL

Mystery Disease

being assigned to USAMRIID, arranged with that country's Ministry of Health to have samples of patient blood and camel tissue sent to USAMRIID for analysis. "This project highlights our system's ability to identify something we may not even be looking for," said Whitehouse. The "system" is the Ibis T5000 PCR/ESI-MS (polymerase chain reaction/electrospray ionization-mass spectrometry) system, a novel diagnostic tool capable of unbiased identification of multiple pathogens within a sample. Simply put, it can provide the right answer when dealing with an unknown.

Whitehouse is quick to point out that having a tool like the Ibis T5000 does not replace other diagnostic methods. Bacterial culture, microscopic analysis, and immunological tests like ELISA (enzyme-linked immunosorbent assay) and PCR all have their place. The advantage of the Ibis T5000 is that it can identify virtually every microbe in a given sample—and can do so in minutes. Other methods can take much longer and are limited in the number of agents they can identify in a single reaction. In this case, the USAMRIID team's broad-range testing, which only took about one day to complete, showed that both the camel tissues and the patient samples were infected with *Y. pestis,* thus proving the outbreak had been caused by plague and that camel meat was the source of infection.

Real-time PCR assays, which identify a sample by its genetic "fingerprint," confirmed the results given by the Ibis T5000. Additional follow-up testing was performed by Cindy Rossi and her team, whose immunological assays further demonstrated that at least one patient had seroconverted (i.e., having detectable levels of antibody to plague in the blood). "Once again, USAMRIID's critical capabilities were brought to bear to solve an international issue," said Whitehouse. The team recently presented its work at the 2009 American Society for Microbiology's biodefense meeting in Baltimore, Md.

Caree Vander Linden
USAMRIID Public Affairs Office