

## NMRC Set to Begin Phase 1 Dengue DNA Vaccine Trial

Researchers from the Naval Medical Research Center's (NMRC) Infectious Diseases Directorate will begin a Phase 1 dengue vaccine trial in December at the Walter Reed Army Institute of Research (WRAIR) Clinical Trials Center in Silver Spring, Md. Transmitted by the *Aedes aegypti* mosquito, dengue is one of the most common viral infections deployed personnel can acquire when stationed in tropical areas of the world. Dengue infection can be incapacitating and harmful to Department of Defense missions and no treatment is available to prevent infection; a vaccine is critically needed.

"The increase in dengue endemicity worldwide raises the likelihood of multiple exposures for deployed U.S. military personnel, potentially increasing their risk for developing the more severe forms of the disease – dengue hemorrhagic fever and dengue shock syndrome," said Lt. Cmdr. Janine R. Danko, principal investigator on the study and an internist and infectious diseases subspecialist. "The goal of our dengue vaccine program is to develop a safe and effective vaccine that protects against dengue."

The NMRC team has been preparing for this study for the past two years. The core team incorporates NMRC scientists and physicians, three physicians from the Walter Reed Army Institute of Research, and industry partners.

A Food and Drug Administration (FDA) phase 1 trial is the first clinical study in a small number of volunteers that evaluates the safety of the new vaccine. This 12-month study includes forty volunteers who will be assigned to three dose groups and followed through several visits and laboratory assessments with the study team physicians. The research team intends to compare the immune responses among the three groups.

The FDA's positive review of



NMRC team, back row: Thomas Luke, MD, Lt. Cmdr. Tad Kochel, Capt. Kevin Porter. Front row: Peifang Sun, Ph.D, Lt. Cmdr. Janine Danko, Seema Mirje. Not pictured: Cmdr. Teneza-Mora, Dr. Kankatte Raviprakash, Maj. James Moon, Lt. Col. Stephen Thomas, Maj. Luis Martinez, Cmdr. Timothy Burgess. Photo by Phil Collins.

NMRC's Investigational New Drug application for the vaccine this fall permits the research team to move forward to the next stage in the vaccine development process. This approval is the result of a successful preclinical development program and a sound, practical and safe clinical trial design as described in the clinical trial protocol. The FDA will provide oversight, ensuring the study will produce useful information to assess the safety and efficacy of the vaccine.

"Our vaccine is DNA-based and was created and patented by several scientists in our department. The advantages of DNA-based vaccines include their simplicity of construction and modification, their relatively low cost of production, stability at room temperature, and their safety based on published data," said Danko. "We're

excited to start this clinical trial and are hopeful for promising data to lead us to a larger and dose-finding Phase II trial."

### In this issue...

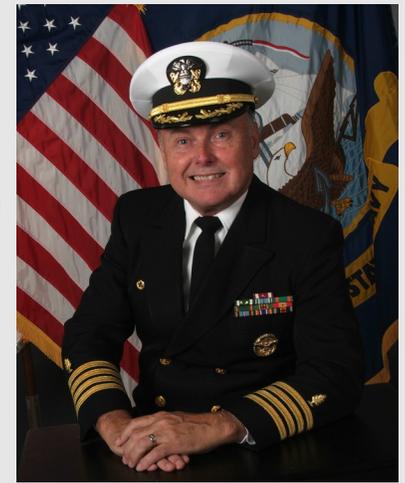
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## Commanding Officer's Message

Our success is based on the scientific expertise present at all our laboratories, in the U.S. and overseas. Our efforts are clearly supporting today's deployed warfighters, and at the same time we are looking to the readiness and well-being of future forces. We also apply our expertise supporting humanitarian assistance efforts. Two articles in this issue are illustrative of the dedicated people who make up our global team. This month NMRC researchers will begin a Phase 1 Dengue DNA vaccine trial in Silver Spring, Md. This is a milestone in a multiyear effort to develop a vaccine to protect our warfighters. Dengue is one of the most common viral infections deployed personnel can acquire in tropical areas of the world.

How serious is dengue? A recent outbreak in the Republic of the Marshall Islands (RMI) in November shows the incredible impact an infected mosquito bite can have on a population. What started as a report of three infected individuals grew to many hundreds of people seriously ill in a very short time. NAMRU-2 sent a five-man vector control team to the island of Majuor, RMI to assist the Ministry of Health, CDC and WHO. Working closely with the CDC's epidemiologists, entomologists, and the Dengue Branch in Puerto Rico and the WHO, the vector control team assisted in mosquito identification, control and capacity building, which included teaching the local Marshallese to identify and apply pesticides. Whether we are working at the bench or in the field – we are always focused on our mission.

As we celebrate the 2011 holiday season and bring the year to a close, I want to say thank you to everyone in our enterprise. We could not do all the good things we do for our Sailors and Marines, our country and the world without your commitment and dedication to our mission. I also want to say thank you to our troops who serve and sacrifice every day – every day we are working to keep you healthy and ready to do your job. It is important to let our warfighters know we are all indebted to them and their families and grateful for their selflessness and commitment to America's security. Their personal sacrifices are gifts to all of us, and it is important for us to reflect on what our warfighters are doing for us this holiday season and throughout the year. Thank you for all you do. Stay safe!



Commanding Officer sends,  
Richard L. Haberberger, Jr.  
CAPT, MSC, USN

## NMRC Launches Mentorship Seminar Series in December

The inaugural Naval Medical Research Center ([NMRC](#)) Mentorship Seminar Series begins December 19 in the Behnke Auditorium at the Forest Glenn Annex in Silver Spring, Md. The guest speaker will be Capt. Steven "Doc" Simon, director, Center for Cyber Security Studies at the U.S. Naval Academy. Simon's lecture will be "Cyber Security: Challenges and Opportunities" and he will discuss the role cyber security and information dominance play in modern warfare, cyber terrorism and cyber crime.

"In addition to our current mentorship program, I am excited to announce a new Mentorship Seminar Series," said Capt. Richard L. Haberberger, Jr., NMRC commanding officer. "The Mentorship Seminar

Series will complement our organizational culture and provide opportunities for all NMRC employees to engage with leaders and experts from outside the command. For those of you in the local Silver Spring area, I highly encourage you to take advantage of these opportunities. For those of you carrying out our mission in distant and overseas laboratories, we will make every effort to record these events and make them available for distribution."

The purpose of the NMRC Mentorship Program is to expand the leadership, interpersonal and technical skills throughout the organization. These key aspects of professional development are critical to the achievement of NMRC's unified

vision: world-class, operationally relevant health and medical research solutions – anytime, anywhere!

"As 2011 comes to a close, I would like to take this opportunity to thank all of the men and women who selflessly share their time, energy, resources, knowledge and passion with the next generation within the Naval Medical Research Center enterprise," said Haberberger. "Your contributions are critical to the accomplishment of our mission. I would also like to encourage those new to NMRC to actively seek a mentor if you do not already have one. You have access to world-class talent and world-renowned leaders in many fields. Please take advantage of these opportunities."

## New Surgeon General: “Challenges and Opportunities Abound”

As I start my journey as the 37th Surgeon General of the U.S. Navy, I thank every one of you throughout Navy Medicine for your leadership and your accomplishments to date. I thank you for your service and the difference you make. I am proud and humbled to take the helm of this 63,000 person organization that is Navy Medicine. Though numerous challenges abound, I sleep better at night given the leadership team I inherited and I want to thank Vice Adm. Robinson and Rear Adm. Flaherty for their service, leadership and the reputation Navy Medicine has earned on their watch.

However, it is our watch now – yours and mine. In that vein, I would like to share some thoughts and direction with you as we complete the transition with a new leadership team and orient ourselves to the real-time situational analysis of where we are, what we do and where we need to be going. Headlines evolve daily, and we know there will be a shifting landscape and new opportunities as we align ourselves with the strategic imperatives and direction of the Chief of Naval Operations and the Commandant of the Marine Corps. It is our responsibility to take their direction and vision and implement it into what we do each day and how we shape and utilize our capabilities.

Priority Number One – We will drive with strategic vision to a new position in order to maintain the equities and capabilities needed from Navy Medicine. Retreat is not an option.

For those of you who heard my [change-of-command remarks](#), you heard some areas that need our continued emphasis. They are meant to be both strategic and tactical, and my job will be to create traction in them via a headquarters element that 1) leads, 2) is responsive to your issues, and 3) fosters strategic message alignment so you are saying what I am saying. Here is what I outlined...

- Combat Casualty Care / Support of the Warfighter. This is Job #1! It represents a continuum of training from battlefield to bedside to rehabilitative care and support. It includes care

for the caregiver and leveraging technology to optimize care.

- Readiness. This is our ethos. Whether a kinetic action or humanitarian assistance and disaster response (HA/DR), our hallmark has always been we are already there or we get there soonest! When the world dials 911, it is not to schedule an appointment, and I am proud of the Navy/ Marine Corps team and our role in leaning forward in this effort.

- Value. We must look intently at the value of what we provide. Think of the concept of “quality multiplied by capability all divided by cost.” Think of “value” as the numerator or denominator goes up or down (“juice for the squeeze”). Expect to hear me ask a lot about that. I want that to become part of your battle rhythm in all you do as you evaluate current processes and proposed ones. We will take a hard look at our unique capabilities as well as those we provide with others...and we will talk value as we make strategic/tactical decisions.

- Health Care Informatics. We will not make true headway on the cost or access to health care without continued leverage of IM/IT, both at the micro level (patient care, PHR, Medical Home, etc.) and the macro level (EMR, CPOE, DOD/VA/Referral Care transparency). Good people are doing hard work on this, but make no mistake, get on this bus and create that expectation at the deck plate while I work strategically at headquarters to find enterprise solutions.

- Joint. The synergy of creating efficiencies, removing redundancies and allowing transparency will elevate care and reduce costs. Joint does not mean loss of identity or service culture. There is amazing joint care on the battlefield and we are seeing joint staffing at major medical centers and within our graduate medical education programs. Joint C2 cannot happen overnight and must grow from the deck plates with coordinated efforts from the services and those best informed to provide input so that more light than heat is generated. This is a strategic issue, but we need your support and



*Vice Adm. Matthew L. Nathan, 37th Surgeon General of the Navy and Chief of the Navy's Bureau of Medicine and Surgery.*

alignment.

- Global Engagement. I touched briefly on what we're doing in theater and also what we're doing in HA/DR efforts, but many of our other missions are of a global nature and the execution of them around the world is crucial to maintain our positive global footprint. Whether it's with our research units around the world or our overseas military treatment facilities, Navy Medicine personnel serve as ambassadors worldwide and we must stay focused on presenting the very best in our pursuit to be a “Global Force for Good.”

Again, it is not my intention to list every single imperative on our plates. If everything is listed as a priority then nothing becomes a priority, so I wanted you to see what the “new guy” feels should be within reach in your strategic/tactical toolbox.

I am excited about the future! I am encouraged by the opportunities and the shaping that will occur as we find our equilibrium with the evolving tactical and strategic imperatives. I am grateful we are shipmates and I look forward to rolling up our sleeves together and doing what we do best: providing “World-class Care...Anytime, Anywhere!”

# NAMRU-2 Responds to Marshall Islands Dengue Fever Outbreak

By Lt. Dustin J. Harrison, NAMRU-2 Pacific Public Affairs

The U.S. Naval Medical Research Unit No. 2 (NAMRU-2) Pacific sent a five-man vector control team to the island of Majuro, Republic of the Marshall Islands (RMI) November 4 to assist the RMI Ministry of Health (MoH), the Centers for Disease Control and Prevention (CDC), and the World Health Organization (WHO) in stemming the tide of the worst dengue fever outbreak to hit the Pacific island nation in more than 15 years.

The vector control team, led by NAMRU-2 Pacific entomologist Lt. Ian Sutherland, included one preventive medicine technician (PMT) from NAMRU-2 Pacific augmented by three PMTs from the Navy Environmental and Preventive Medicine Unit No. 6 (NEPMU-6), Pearl Harbor, Hawaii; three personnel from the U.S. Army Public Health Command Region Pacific, Camp Zama, Japan; and six local Marshallese volunteers. The team deployed at the request of the government of the RMI in response to a massive outbreak of dengue fever that began at the end of October.

The team has been busy educating the local population, emphasizing the MoH's community cleanup campaign to reduce the sources where the mosquitoes that transmit the disease breed.

The team has also been hard at work applying pesticides to control both adult and larval mosquitoes.

"We have been working with CDC, WHO, and MoH to get educational brochures out to people's houses," said Sutherland. "We've spent some time training local volunteers to identify and spray for mosquitoes, and they are doing an excellent job. They are motivated partners!" added Sutherland.

Radio New Zealand International, Wellington, New Zealand, first reported on the dengue outbreak October 21 when RMI Health Secretary Justina Langidrik said three people had been diagnosed with dengue fever; all three patients were hospitalized. To date no deaths have been reported from this outbreak. Other islands (Ebeye, Utirik, and Arno) in the RMI have also reported cases of dengue fever, but most cases have occurred on the Majuro Atoll, the country's largest population center. The CDC Dengue Branch, lo-



HM1 Williams, NEPMU-6, sprays a landfill with insecticide to control the mosquitoes that transmit dengue fever. Old tires and trash that holds water make a perfect habitat for the mosquitoes to breed.

cated in San Juan, Puerto Rico, has performed the confirmatory testing and has attributed this outbreak to infection with the dengue 4 virus.

"CDC is privileged to have the opportunity to work with NAMRU-2 and WHO in helping the people of the Republic of the Marshall Islands to stop this epidemic," said Cmdr. Tai-Ho Chen, U.S. Public Health Service, Quarantine Medical Officer, CDC Division of Global Migration and Quarantine, who has helped coordinate the multinational and cross-organizational disease response effort.

## HM1 Valencia Retires after 20-year Navy Career

Hospital Corpsman First Class Erwin D. Valencia enlisted in the Navy on February 21, 1992 at Subic Naval Base, Philippines. His first duty station was USS Detroit (AOE-4) from July 1992 to January 1994. He completed Hospital Corps "A" School in May 1994 in Great Lakes, Ill. and Advance Medical Laboratory Technician School in September 1995 in San Diego, Calif. His duty stations after graduating from Lab School were U.S. Naval Hospital, Okinawa, Japan; Naval Ambulatory Care Clinic, Newport, R.I.; Naval Health Clinic, Quantico, Va.; Naval Branch Clinic, Diego Garcia; Naval Medical Research Center (NMRC), Silver Spring, Md.

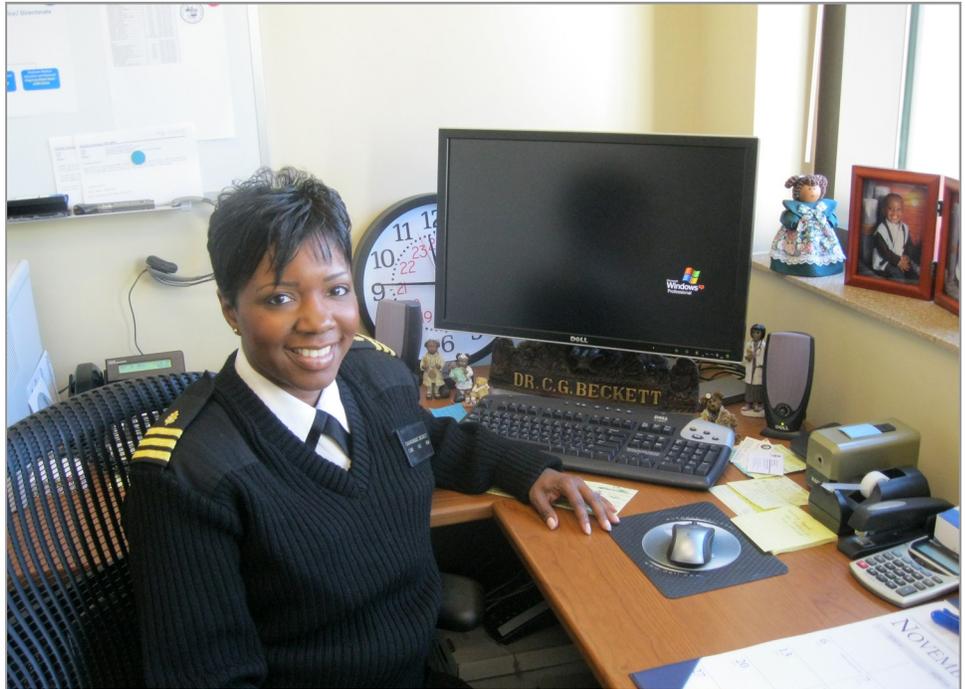
At NMRC, Petty Officer Valencia was assigned to the Biological Defense Research Directorate (BDRD) Operations Department. He was one of the last fleet biological program instructors who taught polymerase chain reaction to fleet personnel at the NMRC facility and the first Sailor to hold a retirement ceremony at the newly built BDRD facility in Fort Detrick, Md.



# NMRC Clinical Trials Center Open House at WRNMMC

The Naval Medical Research Center (NMRC) hosted an open house for the Clinical Trials Center (CTC) located in Building 17 at the Walter Reed National Military Medical Center (WRNMMC) November 8. The center conducts outpatient clinical trials, supports collaborative medical treatment facility clinical trials and provides limited regulatory support for Phase 1 and Phase 2a studies.

“Clinical research is conducted by military scientists who understand the military culture. It is important for the military to develop in-house expertise to serve our warfighters’ health and medical needs. The center supports the NMRC enterprise and is a gateway that links the clinical side with the research and development side,” said Cmdr. Charmagne Beckett, director of the Translational Research Office at the center. “We have licensed privileged



*Cmdr. Charmagne Beckett, director of the Translational Research Office at the NMRC Clinical Trials Center.*

clinical providers who are also researchers and we can connect

our high-quality research with staff in the hospital.”

Capt. Judith Epstein, director of the NMRC CTC, noted that, “The NMRC CTC has long served as a site on campus for cutting-edge research in malaria vaccine development, resulting in publications in prestigious journals such as *Science*, *PLoS ONE* and *Vaccine*. We are excited to move to this next stage.”

“The new facility highlights the opportunities available for meaningful collaboration among medical professionals in the clinical, research, operational and educational arenas” added Cmdr. Cindy Tamminga, deputy director of the Translational Research Office and a principal investigator at the CTC.

NMRC researchers often involve graduate students, medical students, residents and fellows at one or more stages of research activities. The center will also provide learning opportunities in executing

*(Continued on page 9)*



*Cmdr. Charmagne Beckett (left), director, and Cmdr. Cindy Tamminga (right), deputy director of the Translational Research Office, cut the cake for the official open house of the NMRC Clinical Trials Center in front of guests and staff.*

## NSMRL Participates in Second Annual 4H Science Day

The Naval Submarine Medical Research Laboratory (NSMRL) participated in the second annual 4H Science Day at the Submarine Force Library and Museum, Groton, Ct., October 19. NSMRL joined the Coast Guard and a dozen other participants, along with Operation Military Kids and McGruff the Crime Dog, to engage children in experiments and show them how much fun learning can be.

"Our future is dependent on these young minds. It is important for us to play an active role in exciting students about careers in science and technology," said NSMRL's Commanding Officer, Capt. Paul C. Kelleher, who was enthusiastic about this year's expanded displays. "The 4H Science Day is a unique opportunity to reach students at a critical age. And it is fun!"

As part of the hands-on NSMRL display, MDV(R) Rick Donlon; NDC Jack McPherson; ND2 Dillan Miller, and ND3 Christopher Johnston set up a complete wet suit and a hot water suit, a USN Mk-21 deep-sea helmet, a Mk-20 full face mask and an EXO BR-26 saturation diving mask. A complete scuba tank and regulator were set up for the children to experience HeO<sub>2</sub>, the helium and oxygen mixture used by divers for deeper dives.

"This is the second time we have participated in the science fair; I'm amazed at the interest level of the children," said Donlon. "They not only enjoy seeing and touching the dive gear, but also have very technical questions. Each group has one or two young future Navy divers and when asked 'who knows what the acronym S.C.U.B.A. stands for?' eyes light up and the report is loud and clear! They then receive their congratulatory Hoo-Yah!"

The NSMRL team also set up a hearing conservation display. Geared towards the fair's school-age attendees, the thumping chair was a huge hit!

"Many young people incur hearing loss by playing music too loud. Often, they will play the sound high enough to feel the bass of the music. In order to give people the sensation of being in a



*ND2 Dillan Miller, Navy diver (left), shows a future Navy diver how to use the diving regulator while the boy's father looks on. Photo from NSMRL public affairs.*

high-level sound field, we sent the low frequency portion of the music to a dynamic vibration source attached to a chair and we played the music into headphones," said Derek Schwaller of the Warfighter Performance Department. "Someone listening to music played this way would not turn the music up so loud, but would still get the sensation of feeling the music. But since the sound presented to the ears is lower, the potential for hearing damage is less."

At another hearing display, set up by the Submarine Medicine and Survival Systems Department, students were shown a simple model of eardrum mechanics. Plastic wrap was stretched tightly over a bowl and a handful of dry rice was placed on the wrap. Jennifer McCluskey produced sound waves by hitting a metal baking pan just above the rice, moving the rice. Students could see how their eardrum reacts to sounds in their environment. McCluskey and Heather Huebner also demonstrated the sound library tool in the Military Hearing Preservation Training Kit currently under

development by Dr. Lynne Marshall and an industry partner. Students donned headphones and listened to a sound of their choice, first through normal hearing and then through degraded hearing. Students were surprised at how difficult it was to understand the second sound. Huebner and McCluskey took the opportunity to stress the importance of protecting their hearing and showed them various types of hearing protection that are available.

Also on display was a submarine escape suit. The survivor puts on the suit and leaves the escape trunk after filling it with air, floating to the surface. A one-man raft, which is attached to the suit, was also on display.

NSMRL, based at the New London Submarine Base in Groton, conducts research into undersea human factors, submarine survival and rescue, submarine medicine, diver bio-effects, hearing conservation and situational awareness. All of the laboratory's efforts relate to its mission of protecting the health and enhancing the performance of today's warfighters.

## Pathogen Surveillance Demonstrates Dual Influenza Infection

From NHRC Public Affairs

A recent report in the November issue of the *American Journal of Tropical Medicine and Hygiene* co-authored by scientists at the Naval Health Research Center, the Cambodian National Institute of Public Health, the Navy Medical Research Unit No. 2 (NAMRU-2) Phnom Penh and the J. Craig Venture Institute, documents a rare incidence of individuals becoming simultaneously infected with seasonal influenza and a pandemic strain.

This work raised awareness of the ongoing risk of zoonotic and seasonal influenza viruses reassorting in human hosts to produce a more lethal virus. While the individuals recovered and no recombination occurred, coinfections in Southeast Asia are of concern given the ongoing transmission of the avian influenza virus A/H5N1 and circulation of seasonal and pandemic influenza viruses. The transmission of avian influenza cases in Asia since 2003 and the 2009 H1N1 outbreak point to an inability to predict either the emergence or the potential severity of viruses of pandemic potential.

Reservoired primarily in aquatic

waterfowl, over decades subtypes of influenza A viruses infect and adapt to humans. In the northern hemisphere, influenza transmission is largely confined to the winter months. In areas of the tropics such as Cambodia, influenza circulates year round, with infections increasing during the monsoon. Immune evasion in influenza viruses is related to an inherent problem of proofreading during RNA replication—a process termed antigenic drift. In addition to generating genetic diversity by rapid mutation, when multiple subtypes co-infect a single cell, as in the cluster of cases in the published study, the influenza virus genome can reassort and yield progeny with novel gene segments, a process called antigenic shift.

This report highlights two important aspects of infectious disease response – surveillance and pathogen characterization. Global partnerships built through funding by the Armed Forces Health Surveillance Center have resulted in a powerful sentinel surveillance network.



*A physician in Oudong province, Cambodia, examines a child enrolled in the NAMRU-2 Phnom Penh Febrile Surveillance Study.*

While influenza viruses continue to adapt, surveillance tied to agile vaccine development can blunt the impact of future outbreaks.

## Congressional Staffers Visit NMRC/WRAIR, Learn About Malaria

Navy and Army researchers provided a tour of the U.S. Military Malaria Vaccine Program (USMMVP) for the staff of the House Caucus on Malaria and Neglected Tropical Diseases October 29.

The group was welcomed by Col. Pete Weina, deputy director of the Walter Reed Army Institute of Research (WRAIR), and heard briefs from Col. Chris Ockenhouse, director, Malaria Vaccine Branch, covering vaccine development research and from Col. Colin Ohrt covering drug and diagnostic development research at WRAIR's Military Malaria Research Program.

After the staffers toured the malaria laboratories and the insectary, Capt. Thomas Richie, research coordinator for the USMMVP (NMRC/WRAIR),

described the challenges and significance of the battle against malaria, a critical mission to protect travelers to tropical areas, such as deployed military, and to protect those living in malaria-endemic areas.

The briefs highlighted malaria as the number one infectious threat to the U.S. military and current research on drugs to prevent malaria and treat those infected; diagnostics for rapid tests to determine infection and monitor disease patterns; and vaccines to prevent illness – all critical for future force health protection.

Capt. Richie emphasized that there is no licensed vaccine against any parasitic infections and that the USMMVP is developing novel vaccine platforms to induce more potent im-

mune responses capable of protecting against this devastating infection.

A warfighter with malaria can be incapacitated for one to three weeks, and some malaria infections can rapidly become life threatening if not promptly diagnosed and treated. In addition, warfighters can be exposed to more than one malaria species in today's complex military operations. Despite having very effective drugs to treat individuals suffering from malaria, the most cost-effective measure to fight this disease is to develop preventive malaria vaccines.

Malaria is also a global health tragedy. Each year, malaria infects 350-500 million people, impacting progress in economic development and contributing to poverty and political instability.

## DoD Marrow Donor Program Sponsors Drive for College Student

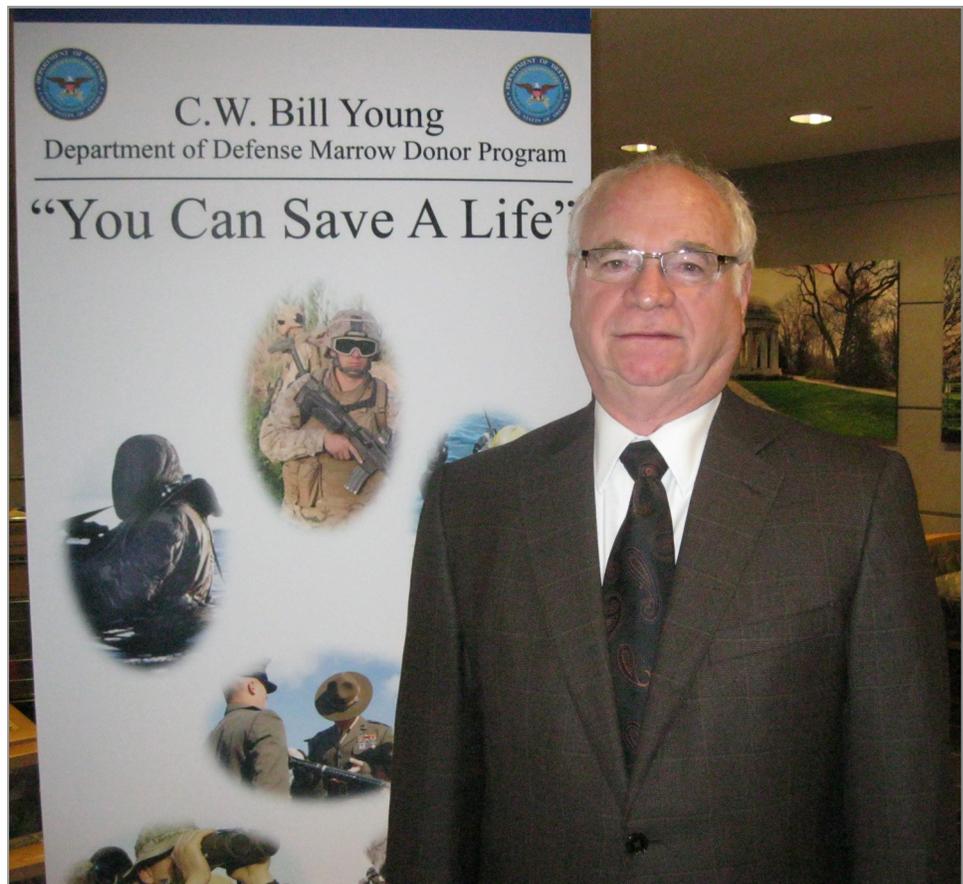
The Naval Medical Research Center (NMRC) and the Walter Reed Army Institute of Research conducted a bone marrow donation drive at the Forest Glen Annex in Silver Spring, Md. for an 18-year-old college student named Kara. In May she was diagnosed with lymphoma while a biblical studies major at Ground Zero Masters Commission in New London, Pa.

In a bone marrow transplant, the basic concept is to replace a patient's diseased marrow with a donor's healthy marrow. About 80 types of diseases, such as sickle cell anemia, lymphoma, leukemia and multiple myeloma, are affected by the bone marrow. Seventy-one new volunteers were added to the National Marrow Donor Registry November 9. Their consent forms and oral swabs were sent to the C.W. Bill Young DoD Marrow Donor Program Donor Center, which is part of NMRC.

"Each swab is treated to isolate pure DNA from the chromosomes," said Dr. Robert Hartzman, director of the NMRC Bone Marrow Research Directorate. "The HLA (human leukocyte antigen) are the critical genes from the chromosomes that must be matched between the potential donor and patient. The types for each of the HLA genes are then tested in our laboratory."

Hartzman went on to say that the ability to do transplants has changed over the years. "When the first transplants were conducted, we could only do a bone marrow transplant from a brother or sister. There was a thirty percent chance of finding a match from a sibling, or you had to find another alternative therapy. With technology advances and an international database, it is now possible for almost every patient to have the potential to find a close match. This has changed medicine."

Not only is the goal of this program to treat diseases, but its efforts also provide a medical countermeasure to the potential for exposure to ionizing radiation. Bone



*Dr. Robert Hartzman, director of the NMRC Bone Marrow Research Directorate, participated in the November 9 bone marrow drive in Silver Spring, Md.*

marrow is the most sensitive tissue in the body to ionizing radiation. When a certain level of radiation is reached, it can wipe out the bone marrow. For some warfighters potentially exposed to ionizing radiation, it would be necessary to replace the bone marrow with marrow from a donor.

The C.W. Bill Young DoD Marrow Donor Center is one of 46 donor centers in the U.S. working with the National Bone Marrow Program (NMDP). The center was established to recruit volunteer marrow donors from active-duty military, their immediate family members, civil service employees, Coast Guard, National Guard and Reservists. The U.S. Navy has been doing transplant research dating back to the mid-1950s. They have supported the

NMDP since it began in 1986. The first transplant was recorded in 1987.

About 700,000 donors are added each year to the NMDP registry; of these, 450,000 are from the U.S. and 250,000 are from international registries. About 50,000 of the U.S. donors are DoD volunteers.



## The Human Challenge Model - Application to Diarrheal Diseases

The Naval Medical Research Center's (NMRC) Infectious Diseases Directorate (IDD) continued the IDD Seminar Series with a presentation November 18 by Dr. Chad Porter of the NMRC Department of Enteric Diseases. Porter discussed the value of the human challenge model as it applies to diarrheal disease clinical trials.

"Infectious diarrhea causes significant morbidity in deployed military personnel, and according to data from the National Center for Medical Intelligence, bacterial diarrhea is a greater threat to the U.S. military than malaria or dengue fever combined," said Porter. "Finding a vaccine against the leading causes of diarrhea, namely *Campylobacter*, enterotoxigenic *E. coli* (ETEC) and *Shigella*, is an important effort to minimize disease burden on the troops. One tool utilized in vaccine development efforts to understand the disease pathogenicity is the human challenge model."

Porter went on to elaborate on the science behind human challenge models. For *Shigella*, only two strains have been assessed in a challenge-rechallenge study and both have shown immune responses sufficient to prevent disease, though the level of protection may vary by strain. For ETEC, one strain, H10407, induces a more severe disease as



*Dr. Chad Porter, NMRC scientist for the Clinical Trials Branch, Department of Enteric Diseases, presented on "The Human Challenge Model: Application to Diarrheal Diseases" November 18.*

measured by diarrheal output and other constitutional symptoms leading to efforts to modify the model for utilization in future vaccine-challenge studies with the lead NMRC prototype ETEC vaccine. Researchers at NMRC have led recent modifications of the *Campylobacter* challenge model and developed a well-defined model to assess current and future vaccine candidates.

"Not unlike other clinical trials,

the development and utilization of human challenge models require considerations of sample size and statistical power," said Porter. "However, from a practical perspective, those considerations have to be balanced with logistical and budgetary constraints unique to a human challenge model."

The next IDD seminar will be held January 20, 2012 in NMRC Building 503, Behnke Auditorium.

## NMRC Clinical Trials Center Open House at WRNMMC

*(Continued from page 5)*  
clinical trials.

The center follows Good Clinical Practice guidelines and adheres to the Code of Federal Regulations and the U.S. Food and Drug Administration when it comes to a broad spectrum of processes such as documenting the informed consent process, conducting screening procedures,

taking blood pressures, collecting cells or handling of vaccines. The state-of-the-art facility uses current and innovative technologies, and these advanced technologies guide management in every operational function that is done at the center.

The mission of NMRC is to conduct research and development to find medical

solutions for the warfighter. The solutions range from vaccines aimed at preventing mission-aborting infectious diseases to novel treatment strategies for combat-related traumatic injuries. Researchers engage in bench to bedside research, taking early basic science laboratory discoveries through pre-clinical evaluation to clinical trials.

## Greetings and Happy Holidays from the NMRC Ombudsman!

It is that time of year again – the Holiday Season! Hopefully everyone had a wonderful Thanksgiving with friends and family and is looking forward to another month of holiday celebrations! Take an opportunity to spend time with your families and take time to remember all of our fellow Sailors who are currently overseas and away from their loved ones during this season.

The American Red Cross, with support from Walmart, has developed the Coming Home series for military families to assist with managing the challenges of reintegration. The series uses individual and small group discussions to enhance the likelihood of positive connections between family members and the successful reintegration of service members.

Workshops include:

- Communicating clearly
- Exploring stress and trauma
- Identifying depression
- Relating to children
- Working through anger.

Go to [www.redcross.com](http://www.redcross.com) and search for “coming home” for more information.

Because one of the biggest stressors we often deal with around the holidays is money, here are some holiday money traps to avoid:

- Simply do not spend more than you can afford. Make a budget and stick to it. Your friends and family will understand.
- Always read the fine print before any large purchase, especially on those that promise “no interest until February.”
- Watch hidden transaction fees on debit cards. Banks often charge a small fee for every use.
- Don't wait until the last minute to shop. Keep your options open and do your homework.

Also, let us keep in mind any of our fellow Sailors that may be struggling financially. Assistance is available through both the Navy-Marine Corps Relief Services (NMCRS) (<http://nmcrs.org/>) and Operation Homefront (<http://www.operationhomefront.net/MafaQualify.aspx>). NMCRS offers financial counseling, no-interest loans, grants, various support services and referrals to other community-based resources when available. Operation Homefront provides emergency financial and other support to the families of all servicemembers, with a focus on wounded warrior care and transition assistance. This includes cash grants — not loans — paid directly to mortgage lenders, auto mechanics, utility companies, doctors and other providers.

If you need help finding all the great resources the military has to offer or just need someone to talk to, please feel free to contact me at 217-722-4981 or [angela.prouty@med.navy.mil](mailto:angela.prouty@med.navy.mil).

Happy Holidays,  
Angela Prouty  
Ombudsman, NMRC

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