

In this issue...

The Wounded Warrior Recovery Project	1
COs Messages	2
DHA Welcomes New Director	4
BDRD Researchers Speak to First Year USUHS Students	5
NAMRU-6 Holds International Accreditation Course	6
NHRC Hosts Chinese Staff from PLA (N) Peack Ark	7
Dysentery Still Plagues Military	8
R&D Chronicles	9
NMRC-A Acting CO Assumes Command	10
NMRC Volunteers for NMHM Halloween Event	10
My First Tour in Cairo	11
NAMRU-SA Celebrates 240th Navy Birthday	12

More Stories Inside

NMR&D News is a publication of the Naval Medical Research Center, 503 Robert Grant Avenue, Silver Spring, MD 20910. *NMR&D News* is published monthly by the NMRC Public Affairs Office, 301-319-9378, 301-319-9425 or [click here](#) to email us.

Commanding Officer
Capt. Jacqueline D. Rychnovsky

Executive Officer
Capt. Eric R. Hall

Director for Administration
Steven S. Legette

Public Affairs Officer
Doris Ryan

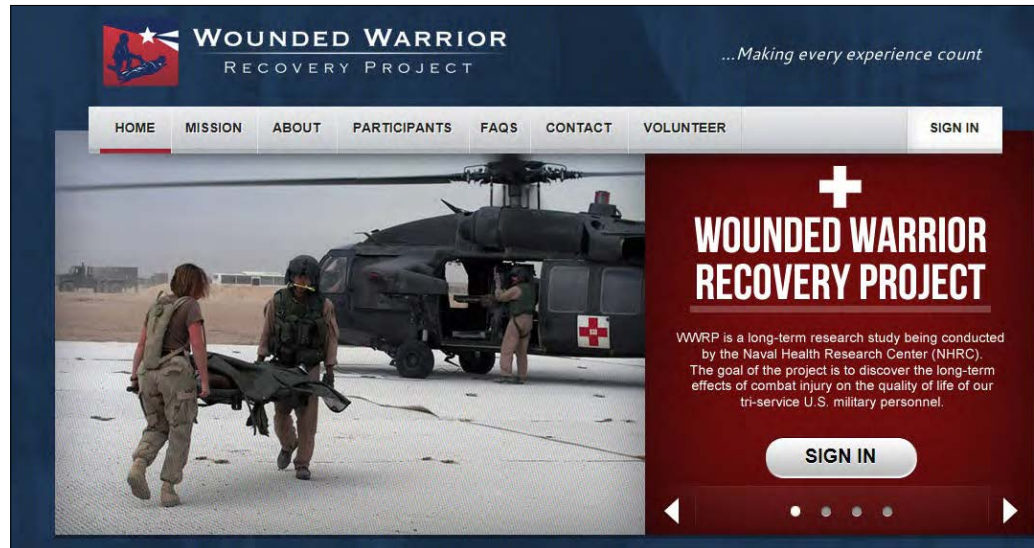
Graphic Layout & Design Artist & Editor
Mikelle D. Smith



Use your smartphone to access our website!

The Wounded Warrior Recovery Project

Story by Regena Kowitz, Naval Health Research Center Public Affairs



The Wounded Warrior Recovery Project (WWRP), a longitudinal study funded by BUMED and led by researchers at the Naval Health Research Center (NHRC). The primary goal of the WWRP is to learn what long-term quality of life and readiness issues our combat-injured service members face. (Screenshot of Wounded Warrior Recovery Project Web site)

SAN DIEGO - Navy Medicine is dedicated to saving lives using medical innovations developed by naval personnel, researchers and medical departments of sister services, led to an unprecedented battlefield survival rate of greater than 90 percent. With more warfighters surviving traumatic injuries, military health and research professionals have also made incredible advances in recovery and rehabilitative care. And, there is another part of the story.

The Wounded Warrior Recovery Project (WWRP), a longitudinal study funded by BUMED and led by researchers at the Naval Health Research Center (NHRC), seeks to tell the rest of the story. The primary goal of the WWRP is to learn what long-term quality of life and readiness issues our combat-injured service members face. When they finish with their initial medical and rehabilitative

care and go home from the hospital, how are these wounded warriors adjusting to their new normal?

“The WWRP was launched in 2009 and underwent a rigorous process to obtain Institutional Review Board approval, provide data-collection safeguards, and obtain a Certificate of Confidentiality from the U.S. Department of Health and Human Services to protect the privacy of participants,” said Michael Galarneau, the principal investigator for the WWRP and the director of operational readiness at NHRC. “Data collection began in January 2013, and the WWRP currently has over 3,000 enrolled participants.”

Active duty and separated service members are encouraged to participate with current enrollment rates averaging

(continued on page 3)

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE NOV 2015	2. REPORT TYPE	3. DATES COVERED 00-00-2015 to 00-00-2015			
4. TITLE AND SUBTITLE Naval Medical Research And Development News.Volume VII, Issue 11		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Medical Research Center,,503 Robert Grant Avenue,,Silver Spring,,MD, 20910		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES Volume VII, Issue 11					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 15	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

NMRC Commanding Officer Message



This month events have me thinking about the history and legacy of our enterprise. Our work, begun in the past, contributes to what we do today, and continues the momentum as we move forward, and this month we have seen that process in real time. Recent retirements, including those of Capt. (ret.) Stephen Walz and Capt. Stephen Savarino, speak to a new chapter in Navy Medicine research and development on many fronts, both administratively and scientifically. Walz's long career as a distinguished Medical Service Corps officer, with extensive overseas experience including the Commanding Officer of NAMRU-2, brought his pragmatism, institutional knowledge and diplomatic nature to NMRC when he transitioned to be the civilian NMRC Director of Overseas Labs. While here, he continued to mentor and impart wisdom to a growing family of enterprise personnel. Cmdr. David Brett-Major is now serving in that position and I am sure he will tell you those are big shoes to fill, as well as an excellent opportunity and challenge. Savarino, a top enteric vaccine researcher and pillar within the Navy Medicine R&D community, turned over the leadership of the NMRC Enterics Department to Cmdr. Ramiro Gutierrez, to lead the team forward toward success. Walt Whitman said, during the Civil War, "War is 999 parts diarrhea to 1 part glory." Historically, finding treatments and vaccines for enteric diseases has been vitally important to DoD. The recent conflicts in Afghanistan and Iraq report a 70 percent incidence of diarrhea among deployed warfighters. There is so much more to do, including building strong collaborative partnerships and technology licenses which are key to moving NMRC's research into commercialized products and treatments for the warfighter. Because of his many advances, Savarino's research caught the interest of Sanofi Pasteur, a major vaccine developer. A successful partnership was created to advance a vaccine for Enterotoxigenic Escherichia coli (ETEC). The retirements of the two Stephens remind us how important each of us are in our contributions toward supporting the warfighter. The retirements also remind us that others will step up and continue the momentum and always move forward, continuing to build on past research successes and leadership efforts, and find that next breakthrough, and that search will span many notable careers.

**NMRC Commanding Officer Sends,
Jacqueline D. Rychnovsky, CAPT, NC, USN**

NAMRU-3 Commanding Officer Message

Greetings from Cairo! On the occasion of this Month of the Military Family, as we recognize the contributions and sacrifices of military families serving "on the home front" at home and abroad, I'd like to share with you some reflections from NAMRU-3. Our mission is infectious disease research and global health engagement in Egypt and the region. These days, prominent media themes of regional extremism and conflict can make it hard for NAMRU-3 families and spouses back home. In truth, though, daily life for NAMRU-3 staff is dominated not by conflict or violence, but by the camaraderie and excitement of a challenging and fundamentally worthwhile mission. One of the best ways to help families back home is personal news: the reassuring details of daily life and prudent observance of security measures. NAMRU-3 families in Cairo are immersed in a daily life of unique expatriate experiences. For many with children, the social hub is the Cairo American College (CAC), a pre-K through 12th grade US and internationally accredited day school now celebrating its 70th anniversary. CAC's walled 11-acre campus is a 24/7 controlled-access haven of green space containing individual elementary, middle, and high school buildings, playing fields, a heated competition-length pool, and beautiful performing arts spaces. Although the historic Maadi neighborhood around CAC is easily walkable, high schoolers also learn to get around by taxi, and move on to downtown areas with an ease and confidence that amazes newcomers. Families without children can find an active social life in Maadi and farther afield, linking up with fellow service members and spouses from the Office of Military Cooperation; Embassy and USAID colleagues; and other diplomats, contractors, business people, and many Egyptian friends and associates. In this supportive network, inconveniences and security precautions become manageable components of a fascinating and rewarding tour.



In summary: NAMRU-3 salutes our families, for your dedication, support, patience, and concern for us. And to families thinking about coming to Cairo: we welcome and encourage you. You'll find a vibrant family community here, and an absolutely unique setting for personal and family growth.

**NAMRU-3 Commanding Officer Sends,
John Gilstad CAPT, MSC, USN**

(continued from page 1)

300-400 each month.

The WWRP will follow participants for 15 years with surveys administered every six months to track physical and mental health, as well as their quality of life.

Currently the quality of life surveys focus on four components of daily living known to affect injured persons including social interaction; physical functioning; mobility; and symptom expression, such as pain.

The survey is a confidential, self-report survey that can be completed online, over the phone or by mail. The survey typically takes 20-30 minutes to complete and measures quality of life using the Quality of Well-Being Scale, which assesses depression using the Center for Epidemiological Studies Depression Scale, and post-traumatic stress syndrome using the PTSD Checklist.

“Prospective participants are identified by using the Expeditionary Medical Encounter Database (EMED),” said Galarneau. “The EMED is a tri-service data repository developed by our staff at NHRC that provides objective clinical and injury data on U.S. military personnel. Based on our preliminary work with EMED, over 55,000 service members are potential candidates for the WWRP.”

By conducting research that specifically targets long-term quality of life issues and outcomes, NHRC is collecting and analyzing information that health care providers can use to assess and develop new treatments. The program



The WWRP will follow participants for 15 years, with surveys administered every six months to track physical and mental health, as well as their quality of life. (Photo courtesy of the Wounded Warrior Recovery Project Web site)

allows Department of Defense (DoD) personnel to identify those treatment and rehabilitation interventions that move forward the quality of life meter in this population, allowing clinicians to focus resources where they are helpful.

The data can also be used by leaders to inform health policy and resource allocation to help meet the long-term health and wellness needs of our wounded warriors.

Findings from the study are compiled quarterly and provided to staff from BUMED and also the Extremity Trauma and Amputee Center of Excellence, the joint DoD and Department of Veterans Affairs entity, that provides research and development for the mitigation, treatment and rehabilitation of traumatic extremity injuries and amputation.

Additionally, staff from the WWRP continually educates DoD personnel by presenting findings at the Walter Reed National Military Medical Center, the Center for the Intrepid and Wounded Warrior Battalions.

The military has a longstanding tradition of taking care service members. When combat-injured service members participate in the WWRP, they are doing just that. By sharing their experiences, wounded warriors are providing important information about the long-term impact of combat injuries that could lead to improvements in quality of life, more effective treatments, and better recovery and rehabilitation care for all service members.

facebook

Naval Medical Research Center is on Facebook!
Stay connected with us via social media.
Please visit and like our page
@ Naval Medical Research Center for updates.



Graphic illustration by Mikelle D. Smith, Naval Medical Research Center Public Affairs

DHA Welcomes New Director; Bids Farewell to Agency's First Leader

Story courtesy of Defense Health Agency Public Affairs



Navy Vice Adm. Bono, a 36-year veteran of the Navy Medical Corps, takes the reins as the director of the Defense Health Agency, in a change of responsibility ceremony Nov. 2. (Photo courtesy of DHA Public Affairs)

FALLS CHURCH, Va. — The Defense Health Agency (DHA) marked its first change of responsibility ceremony, Nov. 2.

During the ceremony the agency honored its first leader, outgoing director Air Force Lt. Gen. Douglas Robb, who passed the DHA flag to his successor Navy Vice Adm. Raquel Bono.

“We congratulate two trailblazers in military medicine; Lt. Gen. Doug Robb and Vice Adm. Raquel ‘Rocky’ Bono,” said Dr. Jonathan Woodson, assistant secretary of Defense for Health Affairs. “In the case of Doug Robb, no one has been a more central leader in conceiving, negotiating, shaping and ultimately establishing the Defense Health Agency.”

Robb presided over the initial standup of the organization and led it to full operational capability status in October. Woodson praised Robb and the entire DHA team for laying the foundation and establishing the operating principles that will make the Military

Health System (MHS) “better, stronger and more relevant for the decades ahead.”

“The military, civilian and contractors of our agency know what it means to persevere and succeed,” said Robb. “Nothing could make me happier than to know the nominative process selected someone who is intimately familiar with our operations ... someone who came from within the agency.”

Robb moves on to retirement after a 36-year Air Force career. The U.S. Air Force Academy graduate practiced aerospace medicine in support of Air Force, joint and coalition aviation forces, and has maintained crewmember status in a variety of cargo, refueling and fighter aircraft.

Bono recently served as Director of DHA’s National Capitol Region Medical Directorate headquartered in Bethesda, Maryland. Shortly before the change of responsibility ceremony, Woodson promoted Bono and her family put on the three-starred shoulder boards of a

vice admiral.

He pointed out how her history as a surgeon deployed in wartime, a hospital commander and chief of staff at the former TRICARE Management Activity, will help her take on tasks DHA faces.

“She thrives in the joint world where her responsibilities align with her natural desire to build consensus across the Army, Navy, Air Force and Marine Corps in service to our senior military and civilian leaders,” said Woodson.

Taking the podium, Bono, a 36-year veteran of the Navy Medical Corps, thanked Woodson and Robb for their praise.

“Thank you for honoring me,” said Bono. “With the team that we’ve got assembled here, we can’t go wrong.”

Rats, Bats and Mosquitoes – Researchers Talk to First Year Graduate Students at USUHS

Story By Doris Ryan, Naval Medical Research Center Public Affairs



Dr. Kimberly Bishop-Lilly (second from left), Deputy Head of the Genomics Department in the Biological Defense Research Directorate (BDRD) from the Naval Medical Research Center and adjunct faculty in the EID program, was invited to present information on the BDRD Genomics Department. (Photo courtesy of NMRC Public Affairs)

SILVER SPRING, Md. - Navy Medicine researchers spoke at a seminar to first year Emerging Infectious Disease (EID) graduate students at the Uniformed Services University of the Health Sciences (USUHS), in Bethesda, Maryland, Nov. 4.

Dr. Kimberly Bishop-Lilly, deputy head of the Genomics Department in the Biological Defense Research Directorate (BDRD) from the Naval Medical Research Center (NMRC) and adjunct faculty in the EID program, was invited to present information on the BDRD Genomics Department and some of their research, including application of the next generation of genomic sequencing to survey viruses in nature.

“It’s really great to interact with students at this early stage in their graduate career and share information with them about the application of cutting edge technologies to the study of infectious diseases,” said Bishop-Lilly, who is an alumnus of the EID program at USUHS.

Also participating and interacting with students and faculty were Cmdr. Matthew Doan, Deputy Director of BDRD, and Lt. Cmdr. Theron Hamilton, Head of the BDRD Genomics Department.

According to Hamilton, advances in next generation sequencing (NGS) are prompting scientists across many disciplines to apply NGS to their work. Many researchers are looking to replace microarray-, PCR- (polymerase chain reaction), and other traditional assays with NGS-based assays. The field of viral genomics is similarly being affected with many researchers transitioning from Sanger-based sequencing to NGS platforms.

Hamilton went on to say, BDRD researchers are currently investigating methods for focusing the power of NGS on specific fractions of samples, such as relevant viral targets within insects and mammals that interact with human populations and vectors diseases.

Mosquitoes, are known to carry a wide variety of genetic materials from the organisms within their environments, and are ideal subjects for this type of analysis.

“Despite the knowledge that many mosquito-transmitted viruses are pathogenic to humans and domestic animals; the diversity of the mosquito virome is not well studied, even within the United States,” said Bishop-Lilly. “The health of populations in the U.S. as well as military personnel stationed in a

variety of mosquito-inhabited areas overseas has the potential to be severely impacted by mosquito-borne diseases.”

A question and answer session followed Bishop-Lilly’s seminar and students asked about research being conducted by the Genomics Department and the opportunities for students.

“Genomics and bioinformatics are very relevant to the study of emerging infectious diseases,” said Doan. “[It] represents great opportunities for these students to train in.”

In addition to the metagenomics and virus discovery work highlighted in this seminar, BDRD Genomics Department is currently working on creation and testing of a user-friendly bio-informatics software package. This creation will be deployed in laboratories that are new to sequencing, including our overseas labs like the NAMRUs (a collaborative project with Los Alamos National Laboratory); methods for increasing sensitivity of NGS; therapeutic and prophylactic applications of bacteriophages; and bacteriophage genomics.

NAMRU-6 Holds International Course on Accreditation of Animal Research Programs

Story courtesy of NAMRU-6 Public Affairs

LIMA, Peru – The U.S. Naval Medical Research Unit No. 6 (NAMRU-6), in collaboration with the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International and Universidad Peruana Cayetano Heredia, held the course “Accreditation of Animal Research Programs” in Lima, Peru, Sept. 30 – Oct. 1.

The course was held in Lima and broadcasted live to three other cities in Peru (Cusco, Iquitos, Arequipa) and to Guatemala City in Guatemala. Speakers from Spain, Mexico, Colombia and Peru were part of the effort and with their institution’s support the course to be available at no cost to the participants.

All co-hosts were academic organizations. A total of 105 attendees participated both days in Lima, and an additional 100 attended by videoconference in Cusco, Arequipa, Iquitos (Peru) and Guatemala City, Guatemala.

In the words of the keynote speaker, Javier Guillen, DVM, AAALAC Senior Director for Europe and Latin America, animal welfare is not simply an ethical issue, “it is directly related to the quality of science and the quality of the researcher.”

Comments collected from the participants agreed that international accreditation needs to be recognized as a standard for reliability on results and for good science.

Disseminating awareness and enhancing capabilities for humane

animal research following accreditation standards serves to further the role of the U.S. military research and training programs, ensures public trust and accountability.

As Peru conducts more animal research under international standards and moves toward accreditation, important discussions were held during the course on the benefits of accreditation and the need for training, biosafety and occupational health standards for personnel working at these institutions.

Course topics included structural, environmental, and management aspects of animal use installations, with an emphasis on the health and wellbeing of laboratory animals and the three “Rs”: replacement, reduction and refinement.

There are only five AAALAC accredited laboratories in Latin America: one in Peru, one in Chile, and one in Mexico and two in Brazil. Accreditation of animal research programs is a requirement for the accreditation of academic organizations which have an animal research component.

NAMRU-6’s leading role as an accredited institution in animal research and Universidad Peruana Cayetano Heredia as an accredited university in biomedical research will continue to play an important role in strengthening Peruvian institutions for research following international standards.

According to the AAALAC website, AAALAC International is a

private, nonprofit organization that promotes the humane treatment of animals in science through voluntary accreditation and assessment programs.

More than 950 companies, universities, hospitals, government agencies and other research institutions in 41 countries have earned AAALAC accreditation, demonstrating their commitment to responsible animal care and use. These institutions volunteer to participate in AAALAC’s program, in addition to complying with the local, state and federal laws that regulate animal research.

NAMRU-6 is hosted by the Peruvian Navy and co-located at their flagship hospital in Lima, at the Naval Hospital in Iquitos, and in Puerto Maldonado. NAMRU-6 conducts research on and surveillance of a wide range of infectious diseases that are of military or public health significance in the region, including malaria and dengue fever, yellow fever, viral encephalitis, leishmaniasis, and enteric diseases such as shigellosis and typhoid fever.

The goal of the laboratory is to research, understand, and develop protective strategies against infectious diseases affecting uniformed service members and the general population in Peru and throughout Central and South America.

NHRC Hosts Medical Staff from PLA (N) Peace Ark

Story by Regena Kowitz, Naval Health Research Center Public Affairs

SAN DIEGO -- Capt. Rita Simmons, commanding officer of the Naval Health Research Center (NHRC), hosted personnel from the Republic of China, People's Liberation Army Navy (PLA[N]) hospital ship Peace Ark (T-AH 866) and provided a tour of one of the command's research laboratories, Nov. 6.

"We were appreciative of the opportunity to host medical staff from Peace Ark and participate in this cooperative exchange of medical and health information while building mutual understanding," said Simmons.

Staff from NHCR showcased advanced diagnosis and rehabilitation research for wounded service members with musculoskeletal injuries.

Personnel from the Peace Ark were able to see the Computer Assisted Rehabilitation Environment (CAREN), which is used to support patients with traumatic brain injuries undergoing vestibular therapy and help lower extremity amputees adapt to prosthetics, reduce falls, and gain full mobility.

CAREN technology incorporates motion capture cameras, a large curved screen with video projectors, surround sound, an integrated scent system, and a motion platform that combine to create an immersive virtual environment.

Several Peace Ark personnel experienced the CAREN for themselves as they tried the CAREN's virtual boating scenario that simulates a moving boat.

NHRC's sleep lab was also a focus of the visit with staff discussing their



Lt. Cmdr. Jose Dominguez (far right), department head warfighter performance, discusses research being done at NHRC to enhance diagnosis and rehabilitation for wounded service members with medical personnel from the Chinese PLA (Navy) during their visit to the Naval Health Research Center Nov.6. (Photo courtesy of NHRC Public Affairs)

work to use, expand, and improve commercially available technology for sleep diagnostics.

Peace Ark staff learned about research to extend the capabilities of a smart textile shirt to detect the different sleep stages as well as sleep disorders.

NHRC partners with staff at the Naval Medical Center San Diego to conduct sleep studies aimed at early identification of sleep disorders and improving the quality of service members' sleep.

"The doctors and nurses from the Peace Ark were very engaged with our staff," said Simmons. "This was an excellent learning opportunity and our researchers are always happy to share their expertise in clinical and health research and development."

As the DOD's premier deployment health research center, NHRC's cutting-edge research and development is used to optimize the operational health and readiness of the nation's armed forces.

In proximity to more than 95,000 active duty service members, world-class universities, and industry partners, NHRC sets the standard in joint ventures, innovation, and translational research.

Dysentery Still Plagues the Military – But Navy Researchers are Confident a Vaccine is Imminently Possible

Story by Doris Ryan, Naval Medical Research Center Public Affairs

SILVER SPRING, Md. Dysentery still plagues deployed personnel and seriously impacts operational readiness. Historically, dysentery caused serious illness for deployed U.S. military personnel and continues to the present day. Shigellosis is a principal cause.

“Shigellosis, a food and waterborne disease, is characterized by fever, cramps and sometimes severe bloody diarrhea,” said Cmdr. Christopher Duplessis, lead researcher in the Enteric Diseases Department at the Naval Medical Research Center (NMRC). “It is estimated that worldwide shigellosis causes at least 80 million people to get seriously ill and 700,000 die from dysentery each year. Ninety-nine percent of *Shigella* infections occur in developing countries where the disease can significantly affect deployed personnel, but the majority of cases and deaths occur among children less than five years of age.

According to Duplessis, it only takes 10-100 microorganisms to cause disease.

“*Shigellae* disseminate easily in settings where there is a high population density and insufficient medical care. Overcrowded situations combined with reduced personal hygiene and inadequate sanitation, as is typically the case for travelers or military personnel deployed to less industrialized countries, represent an ideal setting for *Shigella* outbreaks to occur,” said Duplessis. “Additionally, after recovery dysentery can engender serious post infectious sequelae including reactive arthritis and

functional bowel disorders, including irritable bowel syndrome.”

Another problem is antimicrobial resistance that mandates efforts to prevent infection including using effective vaccines.

“As therapeutic options narrow, the need for a safe and effective *Shigella* vaccine becomes more pressing,” said Duplessis.

The Department of Defense (DoD) has issued directives for the development of vaccines against *Campylobacter*, Enterotoxigenic *E. coli* (ETEC), and *Shigella*. Also, an expert panel convened by the Child Health and Nutrition Research Initiative of the World Bank identified *Shigella* as one of the highest priorities for long-term vaccine development.

A research team at Walter Reed Army Institute of Research (WRAIR) and NMRC have been working for several years to develop a vaccine against *Shigella*. The team is actively investigating two vaccine candidates. The first is composed of highly conserved *Shigella* proteins and serotype-specific lipopolysaccharide (LPS). The invasion complex vaccine or Invaplex, designed to be administered intranasally using a spray device, is currently in a Phase 1 clinical study at the WRAIR Clinical Trials Center.

A Phase 1 clinical study typically enrolls 20 to 100 volunteers and lasts for several months, with the goal of evaluating the safety and dosage of a potential vaccine.

Although the study is on-going,

the clinical development path of the Invaplex vaccine could lead to evaluating the vaccine in follow-on Phase 2 studies (specifically assessing efficacy in a vaccine-challenge trial) followed by additional phase 1 trials to increase vaccine coverage against different *Shigella* strains.

Phase 2 studies enroll a larger number of volunteers and can last from several months to two years with the goal of evaluating efficacy and identifying side effects.

Clinical trials will continue in cooperation with WRAIR and as well as academic, industry and other government partners to achieve the goal of developing a new-generation of vaccines against dysentery and other diarrheal diseases.

Ideally, the researchers desire a polyvalent vaccine; this implies they identify a vaccine which may be effective against multiple potential pathogens. For example, the DoD has issued directives for the development of vaccines against *Campylobacter*, ETEC, and *Shigella* (DoD Directive 6205.3; BUMEDINSTR 5450.171).

The WRAIR and NMRC team is actively seeking vaccines which may be efficacious in preventing diarrhea due to any of these three important diarrheal pathogens.

R&D Chronicles

Navy Medical Research and Project Mercury:

Part III: The Mercury Seven Visit Naval Medical Research Institute

By Andre B. Sobocinski, Historian, Bureau of Medicine and Surgery

“We spent two years doing many things and following up many avenues to make sure we had not overlooked anything. We crammed ourselves full of knowledge. We built up our stamina on the big machines. And we got thoroughly familiar with the spacecraft that we would fly. Some of this was fairly exotic stuff...For we were preparing to penetrate an environment that no one had ever dealt with before. Some of it, however, was just plain down-to-earth work.”

~Alan Shepard Jr., We Seven, 1962

On March 12, 1959, Dr. Robert Gilruth, Director of NASA's Project Mercury asked the Naval Medical Research Institute (NMRI) in Bethesda, Maryland, for assistance “in procuring and preparing” test animals for investigation of acceleration forces related to rocket flight and recovery.

Just two months later NASA would again call upon NMRI, this time to be part of a comprehensive training program to provide the astronauts the “best available experience” related to space flight operations.

Since its commissioning, October 27, 1942, NMRI had grown from a wartime test and development command to the Navy's preeminent medical research laboratory. From endocrinology to biophysics, organ transplantation and experimental surgery, to hot and cold weather medicine, NMRI was on the vanguard of unlocking the great mysteries of biomedical science.

The Mercury Seven team was scheduled to visit NMRI over a two-week period in 1959 (June 1 to 13) and take part in a series of training activities designed to acquaint them with the command's capabilities and prepare them for space flight.

The astronauts spent two hours in NMRI's low-pressure chamber and were subjected to an atmosphere of three percent carbon dioxide. A NASA documentary film of this shows the astronauts huddled in the chamber dressed in business attire (white shirt, tie, and pocket pens) playing cards, jotting notes and conversing with each other.

While in space, there was a danger of the capsule's environmental control systems failing leading to increased



carbon dioxide levels in the cabin. The Mercury astronauts would have to be prepared to withstand such conditions while making orbit around earth and for reentry.

Maintaining an optimal body temperature in space was another medical concern for the astronauts. While at NMRI, astronauts spent time in the human gradient calorimeter to test their heat tolerance.

Designed by NMRI scientist and bio-thermodynamics pioneer Dr. Theodor Benzinger, the calorimeter allowed for the study of human temperature regulation, heat production and loss. It also enabled scientists to establish the heat exchange of each astronaut while allowing them to become familiar with their own body's thermal response.

NMRC-Asia Acting CO Officially Assumes Command

Story by Mikelle D. Smith, Naval Medical Research Center Public Affairs

SILVER SPRING, Md. - Naval Medical Research Center (NMRC) Commanding Officer, Capt. Jacqueline D. Rychnovsky, recently pinned Capt. Marshall Monteville with the pin worn by all commanding officers as he officially took charge of Naval Medical Research Center-Asia (NMRC-A), November.

A small ceremony was held at NMRC with current and former colleagues of Monteville attending.

For more than a year, Monteville served as the acting commanding officer for NMRC-A, shortly after assuming the role as the executive officer. His outstanding take-charge-attitude and initiative earned him the acting position and his diligence in bringing NMRC-A to the forefront earned him the title of Commanding Officer.

NMRC-A's mission is to identify infectious disease threats of military and public health importance, and development and evaluate interventions and products to mitigate those threats.



Naval Medical Research Center (NMRC) Commanding Officer, Capt. Jacqueline D. Rychnovsky (right), recently pinned Capt. Marshall Monteville (left) with the pin worn by all commanding officers as he officially took charge of Naval Medical Research Center-Asia (NMRC-A), Nov. 5. (Photo by Mikelle D. Smith, Naval Medical Research Center Public Affairs)

NMRC Volunteers Dressed Up For Halloween at NMHM

Story by Doris Ryan, Naval Medical Research Center Public Affairs



Naval Medical Research Center researcher, Lt. Kimberly Edgel (far left in costume) speaks to an interested guest during the National Museum of Health and Medicine "Deadly Bites" event on Halloween. (Photo by Doris Ryan, Naval Medical Research Center Public Affairs)

SILVER SPRING, Md. – There was no trick or treating at the National Museum of Health and Medicine on Halloween. It was all discerning facts from fiction mixed in with a lot of fun and some costumed volunteers welcoming local families attending the museum's "Deadly Bites" afternoon event.

Volunteers from the Naval Medical Research Center join their Army counterparts as they shared facts and dispelled myths about animal and insect bites. Black Widow spiders, tiny snakes, mosquitoes that could carry malaria, and even bedbugs and hissing cockroaches and other bugs were on display, some available for patting and cuddling. There might have been quiet conversations about vampire bats, rabid animals, and plague-infected prairie dogs.

The mission of the museum is to inspire interest in and promote the understanding of medicine -- past, present, and future -- with a special emphasis on tri-service American military medicine. As a National Historic Landmark recognized for its ongoing value to the health of the military and to the nation since 1862, the museum identifies, collects, and preserves important and unique resources to support a broad agenda of innovative exhibits, educational programs, and scientific, historical, and medical research.

My First Tour in Cairo, Egypt

Blog by Lt. Nathaniel Christy, NAMRU-3 Public Affairs



Lt. Nathaniel Christy, a microbiologist working at the U. S. Naval Medical Research Unit No. 3 (NAMRU-3) located in Cairo. (Photo courtesy of Lt. Nathaniel Christy)

CAIRO - Sabah Alkhyr! As way of introduction, I am Lt. Nathaniel Christy, a microbiologist at U. S. Naval Medical Research Unit No. 3 (NAMRU-3) in Cairo, Egypt.

We operate under U.S. Embassy Chief of Mission authority, which means we have diplomatic status and report to the Ambassador.

My wife accompanied me to Egypt and we have found Cairo to offer opportunities for adventure and to meet a lot of interesting people.

Being a regional economic center at the junction of three continents, Cairo is filled with expatriates

working in the many international schools and businesses.

A typical weekend may include a camel ride and Bedouin dinner with friends in the desert, an all-inclusive cruise on the Nile River, or stopping at the Valley of the Kings to see ancient archeological sites.

For shopping for local goods, nothing beats the ancient Khan El Khalili bazaar. Needless to say, the hustle and bustle of Cairo can keep one busy! But the real exciting reason to be at a NAMRU-3 is being part of phenomenal research and disease surveillance activities.

The combination of a quality laboratory facility with unprecedented access to clinically and epidemiologically interesting sample sets and study populations means there are many opportunities to conduct infectious disease surveillance research.

With local partners across Africa and the Middle-East, we can field test new products to enhance Force Health Protection and support public health in the area.

Also, NAMRU-3 staff assists DoD, WHO and Egyptian officials to decipher the etiologies of unknown infectious disease outbreaks.

I was able to accompany the NAMRU-3 team on extended TAD that helped respond to the 2014 Ebola epidemic in Liberia. Out of a mobile laboratory setup, we performed sample testing each morning and assisted in training our Liberian lab counterparts in the afternoons.

The Liberian team we helped train ultimately took over diagnostic operations after Operation United Assistance redeployed back home.

NAMRU-3 has definitely broadened my experience and has proven to be an adventure. A wise man I know once said, "the air in Cairo has a certain spicy quality to it." I would say that both the air and the opportunities in Cairo have turned out to be of the "spicy" variety!

NAMRU-San Antonio Celebrates Navy Birthday

Story courtesy of NAMRU-SA Public Affairs

SAN ANTONIO - Staff from the Naval Medical Research Unit - San Antonio (NAMRU-SA) along with 11 other Navy commands and detachments in the area collaborated to celebrate the U.S. Navy's 240th year of honor, courage and commitment, during the 2015 Navy birthday ball held at the Omni Hotel and Resort, October 10.

Capt. Denise Smith, commanding officer, Navy Medicine Training Support Center, hosted the San Antonio 2015 Navy Ball. NAMRU-SA staff filled several tables at the gala event attended by hundreds of Sailors, spouses, veterans and their friends. The ball events included a formal colors presentation, a singing of the national anthem, a drill team presentation, a history of the Hospital Corps demonstration, and a Prisoner of War/Missing in Action remembrance ceremony.

The guest speaker for the evening was Fleet Master Chief April D. Beldo, Senior Enlisted Advisor to the Chief of Naval Personnel. Beldo talked about women's historical and expanding roles in the Navy.

Following Beldo's speech was the ceremonial cake cutting and formal toasts. NAMRU-SA and other service members danced and enjoyed the festivities long into the evening.



Naval Medical Research Unit-San Antonio (NAMRU-SA) Commanding Officer, Capt. Elizabeth Montcalm-Smith (left) with Capt. Denise Smith, commanding officer of Navy Medicine Training Support Center (center) and host of the San Antonio 2015 Navy Ball, and NAMRU-SA Executive Officer, Capt. Mark Goto (right), rang in the Navy's 240th birthday. (Photo by Flisa Stevenson, NAMRU-SA Public Affairs)

Naval Medical Research Center would like to wish the United States Marine Corps Happy 240th Birthday!
Thank you for your continued service and dedication to protecting the freedom of American citizens worldwide.



Graphic Illustration by Mikelle D. Smith, Naval Medical Research Center Public Affairs

NHRC Sailors Volunteer aboard USS Midway Museum

Story by Regena Kowitz, Naval Health Research Center Public Affairs



Lt. Cmdr. Lori Perry, a preventive medicine physician, and Cmdr. Abigail Marter, researcher and nurse practitioner, from the Naval Health Research Center (NHRC), volunteer aboard the USS Midway Museum. The event was organized to give back to the community and experience naval history. (U.S. Navy photo by Regena Kowitz/Released)

SAN DIEGO – Active duty personnel from the Naval Health Research Center (NHRC) volunteered aboard the USS Midway Museum to help keep this piece of naval history ship-shape, Nov. 12.

Cmdr. Abigail Marter, a researcher at NHRC, organized the event as an opportunity to give back to the local community while also building camaraderie among NHRC's active duty staff.

“Being in the Navy, we are already volunteers, but getting out in the community allows us to give back in more ways,” said

Marter. “This was a great opportunity to come together and do something that helps others while also being able to connect with our Navy’s history. As researchers, we are finding solutions to modern problems or concerns, but knowing our history can inform what we do today and how we approach things.”

The Midway was commissioned in 1942 and served until April 11, 1992, when she was decommissioned, making her the longest serving aircraft carrier of the 20th century. Even though Midway is now a museum, visitors can glimpse what life aboard ship is

like for today’s Sailors.

“We are really fortunate in San Diego to have the USS Midway,” said Cmdr. Kellie McMullen, a microbiologist with the DoD HIV/AIDS Prevention Program (DHAPP) that is headquartered at NHRC. “This is a really great way for people to remember their history, and I’m glad we were able to come out as a team and support it. My dad was in the Navy, so I’ve been on aircraft carriers before. As soon as I walked on, the smell is something I remembered from my childhood.”

In terms of the research NHRC conducts, McMullen said that being able to visit the carrier and interact with the environment is important. “Being on the ship and walking through the spaces just helps you have some perspective on what our operational Navy experiences. Whether you’re doing human factors or warfighter performance research, it really puts things in context. You can see how small and cramped the spaces are and better understand what shipboard life is like.”

According to Steve Suslik, the volunteer coordinator for the USS Midway Museum, thousands of people visit the museum every month, so the work that volunteers do to help keep the Midway in top shape is important.

“This is an old ship and there’s a lot to do,” said Suslik. “The NHRC group is helping us today with a community relations project by cleaning—what we call ‘detailing’—along our tour routes.”

NHRC staff spent the day dusting, polishing, and detailing spaces in several areas of the ship including the chapel, galley, engine room, and berthing spaces.

As the DoD’s premier deployment health research center, NHRC’s cutting-edge research and development is used to optimize the operational health and readiness of the nation’s armed forces. In proximity to more than 95,000 active duty service members, world-class universities, and industry partners, NHRC sets the standard in joint ventures, innovation, and translational research.

GREETINGS FROM THE NEW NMRC OMBUDSMAN

My name is Jennifer Walker and I am the new Ombudsman for the Naval Medical Research Center (NMRC). I am the wife of Lt. Cmdr. Peter Walker and mother of our three children. In addition to being a wife and mother, I am also a Registered Nurse. As it stands, I have decided to be a stay-at-home mother, which enables me time to dedicate myself to my immediate family and my extended military family.

We have been a proud military family for more than 10 years and do our best to contribute to our fellow Sailors, as well as their families. Being an ombudsman gives me the opportunity to help fellow military families and strengthen the production of all the Sailors, knowing their families will be taken care of. I volunteered for this position in hopes of providing their families the same kind of support.

I think our families are very important and instrumental in providing support for the Sailors. Deployments and mobilization can be stressful and I believe if the Sailors know that they don't have to worry about their families then they will be able to do their jobs to the best of their ability.

I would like extend my gratitude to the command and encourage anyone to contact me for any reason or no reason at all. I look forward to my role and I am excited to represent the NMRC and Navy Medicine as the ombudsman.

-Jennifer



Naval Medical Research Center would like to wish all U.S. military veterans, Happy Veterans Day!

Depicted in the graphic are actual veterans that work at NMRC. We were not able to include everyone of them, but we certainly thank and honor them all for their amazing sacrifice and dedication.

Thank you for your service to the American people and for your continued diligence as citizens of this country!



Graphic Illustration by Mikelle D. Smith, Naval Medical Research Center Public Affairs