



## MILITARY MEDICINE: FREQUENTLY ASKED QUESTIONS

### **Why is military medical research important?**

The Military Health System is charged with the critical task of preserving the health and well-being of U.S. service members, who can be exposed to a variety of threats, from battlefield injuries and infectious diseases to chemical and biological agents. From the initiation of widespread penicillin use in World War II to the present-day testing and deployment of lifesaving vaccines, military researchers and clinicians have been at the forefront of efforts to ensure that the latest and best preventive care, treatment and rehabilitation options are available to service members.

The Military Health System also is charged with caring for tens of thousands of military family members. To that end, the armed forces operate extensive, world-renowned cancer research programs, along with initiatives to investigate heart disease, diabetes and other health concerns.

### **What makes military medical research unique?**

In many ways, much of the research within the military medical system is similar to that undertaken in the private sector. However, military scientists in many cases have access to tools and assets beyond those available to most civilian researchers because of the military's vast network of labs and medical research facilities. The armed forces operate laboratory and clinical sites throughout the U.S. and around the world. This network provides military medical researchers with unique and extensive resources, enabling them to conduct state-of-the-art scientific investigations on a global scale.

#### **Example**

Besides operating a network of static laboratories around the world, the military also has deployable labs in the form of naval craft. Scientists from the Department of Respiratory Disease Research at the Naval Health Research Center (NHRC) in San Diego, operating in conjunction with the Department of Defense's Global Emerging Infections Surveillance and Response System, have equipped fleet vessels with disease surveillance equipment and trained on-board personnel on how to obtain and test samples for diseases such as avian influenza.

This has significantly broadened the DoD surveillance network's reach, especially throughout the Pacific Rim.

These samples then become part of an extensive collection of well-characterized clinical respiratory specimens housed in San Diego. It is one of the largest repositories of its kind. The benefits of this vast resource are many. NHRC scientists have teamed with a private corporation to use the specimens to conduct trials for a rapid test to detect avian influenza. Such a test could have a significant impact in protecting public health.

### **Why is military medicine important to civilians?**

Advances in military medical research enhance patient care for members of our armed forces and lead to improvements in public health. For decades, scientific advances with roots in military medicine have led to new and improved therapeutics, clinical care methods and preventive strategies. The military's success in areas such as preventive medicine and infectious disease research has helped protect our deployed troops and has improved the lives of millions of children and adults around the world.

#### **Example**

Africa continues to battle HIV/AIDS on a massive scale, with the disease leaving a devastating legacy in its wake. Indeed, nearly an entire generation could be lost to HIV/AIDS. According to estimates by the World Health Organization and the United Nations, 33 million people worldwide were living with HIV at the end of 2007. That same year, some 2.7 million people became newly infected and 2 million died of AIDS, including 270,000 children. Two-thirds of HIV infections are in sub-Saharan Africa.

U.S. troops deployed to Africa, Asia and other areas face increased risk of exposure, so the military has a vital interest in working to prevent and treat the deadly disease.

Since 1988, the U.S. Military HIV Research Program (USMHRP)—one of the most extensive and longest-running HIV/AIDS research programs in the world—has worked to advance research and treatment to protect U.S. troops from infection and reduce the global impact of the disease. At each of its four sites in Africa, USMHRP provides local residents who wish to receive treatment a level of anti-retroviral therapy equivalent to that available in the United States, regardless of whether they opt to enroll in a trial.

Since 2004, USMHRP has enrolled 45,000 patients in anti-retroviral therapy. Another 400,000 have received care and support services. More than 200,000 have been helped through prevention of mother-to-child transmission efforts, according to program officials.

Besides providing the highest level of care available, USMHRP also operates testing and prevention programs to help stop the spread of HIV/AIDS in Africa. In this way, efforts to protect U.S. troops also are helping protect African families, as well as advancing HIV/AIDS research efforts worldwide.

### **How has the face of military medicine changed with the conflicts in Iraq and Afghanistan?**

Several signature injuries have arisen from these conflicts, including traumatic brain injury, amputations and posttraumatic stress disorder. This has led military researchers and clinicians to place added focus on these issues, along with related areas such as pain management, wound care, rehabilitation and mental health care. With approximately 90 percent of service members injured on the battlefield surviving their wounds—compared with 76 percent in Vietnam and 70 percent in World War II—the challenge extends beyond saving lives to how to provide better long-term care.

#### **Example**

Traditionally, amputees are older patients with chronic medical conditions. In stark contrast, military amputees constitute a much younger, more physically active group. The increase in the population of young amputees in the military has heightened the demand for new and better rehabilitation and prosthetic technologies. The Military Amputee Research Program (MARP) is engaged in a comprehensive range of studies designed to enhance quality of life for the wounded and, to the fullest extent possible, help them return to highly active lifestyles.

In one ongoing study with promising results, mirror therapy is used to address phantom limb pain. Approxi-

mately 90 percent of amputees experience this sensation, in which they feel that a missing limb is still attached to the body and feel the pain associated with that limb. After one month of treatment, nearly all of those treated with mirror therapy reported a decrease in pain. This groundbreaking study will likely lead to changes in standards of practice for the care of military and civilian amputees alike. Further, advances in prosthetic technologies by MARP are making new and better prosthetics available to all active populations, including children suffering limb loss.

### **How does military medicine affect America's reputation around the world?**

Many U.S. civilians are unaware that some U.S. military missions center on medical diplomacy. By sharing new developments in medical technologies with other nations, the military is helping to enhance relationships between the United States and its global neighbors.

#### **Example**

The Army Regional Anesthesia and Pain Management Initiative is transforming the military's approach to pain by using peripheral nerve blocks. Using the technique, in which a tiny catheter delivers highly targeted doses of anesthetic to the nerves surrounding an injured area, military anesthesiologists are "turning down the volume" on patients' pain. The technique is resulting in pain-free air evacuations for wounded service members and decreased pain after surgery.

The Army's success with regional anesthesia techniques such as the peripheral nerve block is broadly applicable to the civilian population. Patients who once would have received traditional anesthesia for typically painful but relatively common surgeries, such as knee and hip replacements, could instead, in many cases, receive peripheral nerve blocks. However, many anesthesiologists simply are not trained on how to administer the blocks. The program is in the midst of an ambitious training initiative aimed at current and future military and civilian anesthesiologists in the U.S. and around the world.

In 2007, program staff traveled to Vietnam to teach anesthesia techniques to local medical personnel. Such missions to medically underserved regions of the world not only improve local care and create goodwill, but also provide opportunities for military medical personnel to train in challenging environments, helping them prepare for the demands of administering anesthesia on the battlefield.

## Do military researchers collaborate with civilian institutions?

Military researchers have a rich history of collaboration with other federal groups, such as the National Institutes of Health and Centers for Disease Control and Prevention, as well as private partners, including researchers at civilian academic institutions.

### Example

The military is home to one of the world's leading breast disease research and treatment programs—the Clinical Breast Care Project (CBCP). The project undertakes visionary research and provides leading-edge care with a direct connection between the lab and the clinic. This approach has made the center a model for translational research.

Since its inception in 2000, the program has made major advances in breast disease research, undertaking wide-ranging investigations that encompass areas such as diagnostic tools, the cancer process and vaccine approaches. In the process, CBCP has created an internationally renowned tissue bank containing approximately 29,500 highly annotated tissue and serum/blood samples procured by state-of-the-art techniques. Researchers are studying the tissues to determine how breast cancer forms and the best ways to prevent the disease.

Approximately 70 percent of these samples were obtained from patients seen at the Walter Reed Army Medical Center clinical site. The center's extensive tissue bank and informatics initiative has enabled collaborations with leading civilian programs around the world. Further, CBCP operates in conjunction with the civilian institutions Windber Research Institute and Windber Medical Center.

Facilitating these partnerships is a primary mission of the Henry M. Jackson Foundation for the Advancement of Military Medicine (HJF), a not-for-profit organization created to further research at the Uniformed Services University of the Health Sciences (USU) and throughout the entire Military Health System.

## How does HJF help advance military medical research?

HJF is congressionally authorized to support research at USU and throughout military medicine. For 25 years, HJF has served as a vital link between the military medical community and federal and private partners. HJF staff members provide critical administrative and scientific support to advance military medical research. More than

90 percent of HJF's 1,700-plus employees work side-by-side with military and federal staff in the field.

Research often is accompanied by significant administrative and logistical burdens. HJF provides services to minimize these burdens and facilitate scientific progress. The Foundation supports more than 1,000 research programs around the world, from small, basic science initiatives to large, multicenter clinical trials. As these programs have grown in size and scope, HJF has grown to meet their increased and varied needs. Today, HJF provides an extensive range of scientific and management services, ranging from infrastructure development, financial administration and clinical trials management to staffing and the organization of continuing medical education events.

HJF also has an active technology transfer department that works to bring advances in the military research community to the public.

### Example

HJF played a key role in commercializing the technologies, developed in part by USU researchers, behind two preventive measures for Respiratory Syncytial Virus—a leading cause of respiratory illnesses in young children. As the result of an agreement among USU, HJF, Virion Systems Inc. and the precursor to what is now MedImmune Inc., RespiGam and Synagis are now the only FDA-approved preventive measures against the virus. These drugs represent the culmination of more than 20 years of research initiated at USU.

## What is USU?

Often referred to as “the West Point of military medicine,” USU is the nation's federal school of medicine and graduate school of nursing. Students are active-duty uniformed officers in the Army, Navy, Air Force and Public Health Service who are being educated to deal with wartime casualties, national disasters, emerging infectious diseases and other public health emergencies. USU's nationally ranked military and civilian faculty members conduct leading-edge research in the biomedical sciences and in areas specific to DoD's health care mission.

USU is on the grounds of the National Naval Medical Center and near the National Institutes of Health in Bethesda, Md. With the recommendations of the 2005 Base Realignment and Closure committee, DoD will create on the campus an academic health center of the 21st century, with USU at its core.

HJF administers more than 200 research projects and employs more than 350 people at USU. The Foundation and the university are partners in advancing military medicine and, in so doing, improving public health.