As the largest integrated health care system in the country, the Veterans Health Administration (VHA), part of the Department of Veterans Affairs (VA), provides health care to more than 6 million Veterans each year.

VA is committed to providing the best care possible to all Veterans, including our newest generation of Veterans—the men and women returning from combat in Afghanistan and Iraq.

Many of the brave men and women who served and were injured in Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) are returning home with complex medical conditions such as traumatic brain injury, limb amputations, and burn injuries. Furthermore, due to improved body armor and improvised explosive devices provided at the battlefield, many service members can return with more blast-related injuries and will require long-term, specialized care for their wounds.

For some of the newest Veterans, readjustment to civilian life will be an ongoing concern, and mental health challenges such as post-traumatic stress disorder and depression may be critical issues.

In an effort to provide the highest quality and most care effective specialized care for returning OEF/OIF service members, VA Research and Development collaborates with other programs within the Veterans Health Administration and with other federal agencies, including DoD and NIH.

Below are just a few examples of collaborative work:

- VA researchers are collaborating with clinical staff at the four regional VA Polytrauma Rehabilitation Centers, which provide specialized rehabilitation treatment to expand clinical expertise in polytrauma and blast-related injuries throughout VA and between VA and DoD. Research projects include evaluation of a pain assessment tool and a study aimed at improving family support and provider-family communication during an injured service member’s stay at the Polytrauma Rehabilitation Centers.
- DoD, NIH, and VA researchers are collaborating to develop a family intervention program with spouses of service members being treated for land mine or traumatic brain injury. This project was designed to teach spouses techniques in alternative/complementary medicine that have been shown to lessen anxiety and pain levels and allow for reduced use of pain medication.
- VA, in collaboration with the National Institute of Mental Health and DoD, issued a call for collaborative research focusing on combat-related moral distress and stress reactions involving active-duty or recently separated National Guard and Reserve troops from OEF/OIF. Funding has begun for projects to assess and provide direct care (that is, early intervention, prevention, treatment, rehabilitation, and maintenance) to groups and individuals who are at risk because of their combat exposure or who have been diagnosed with posttraumatic stress disorder.

VA’s Research and Development program has a comprehensive research agenda to address the deployment-related health issues of the newest generation of Veterans—those returning from Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF).

As part of the Research to Improve the Lives of Veterans Who Served in Afghanistan & Iraq program, VA Research and Development has a comprehensive research agenda to address the deployment-related health issues of the newest generation of Veterans—those returning from Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF).

In addition to returning OEF/OIF service members, VA researchers are working to develop new treatments and tools for clinicians to care for the physical and psychological pain of returning service members, improve access to health care services, and accelerate discoveries of new and innovative ways to evaluate and treat OEF/OIF Veterans’ needs.

This research will also benefit Veterans of other military conflicts and improve the lives of civilians suffering from disability due to injury or disease. In addition, the VA Office of Research and Development works collaboratively with other organizations, such as the Department of Defense (DoD) and the National Institutes of Health (NIH), to advance research aimed at improving the health and care of all generations of Veterans.

Research Agenda

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Many of the bravest men and women who served and were injured in Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) are returning home with complex medical and psychological needs, including their needs for medical care provided to the battlefield, many service members are carrying war-related injuries and will require long-term, specialized care for the rest of their lives. For some of the newly injured veterans, readjustment to civilian life and psychological pain of returning service members, VA’s Office of Research and Development has a comprehensive research agenda to address the deployment-related health issues of the newest generation of Veterans—those returning from Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF).
Polytrauma

Many of the wounded servicemembers returning from the OEF/OIF conflicts are victims of body shots, head wounds, and other injuries that often require complex medical care. The majority of these injuries are classified as polytrauma. Polytrauma can include a combination of injuries to internal organs (lungs, liver, spleen, intestines), head and face, and psychological disorders. An estimated 70% of the seriously wounded returning from Iraq and Afghanistan will have experienced polytrauma.

Some key research questions include:

- How can we most effectively care for polytrauma patients?
- What treatments work best for these patients?
- How can we develop new technologies to help these patients return to normal life?

VA researchers are working to address these critical questions by:

- Developing new technologies to help these patients return to normal life.
- Creating new treatments to help these patients return to normal life.
- Developing new ways to assess and treat these patients.

Mental Health

VA researchers developed a screening test for depression in primary care settings. This test has been adopted in other health care systems in the U.S. and the United Kingdom.

VA researchers are investigating the biology of depression, as well as the impact of stress and trauma on mental health.

Traumatic Brain Injury

The VA has conducted several studies on traumatic brain injury (TBI) and its long-term effects. These studies have shown that TBI can cause significant disability and impairments, including memory loss, difficulty with attention and concentration, and changes in mood and behavior.

Spinal Cord Injury

The VA has conducted several studies on spinal cord injury (SCI) and its long-term effects. These studies have shown that SCI can cause significant disability and impairments, including paralysis, difficulty with mobility, and changes in sensation and bladder function.

Amputation and Prosthetics

The VA has conducted several studies on amputation and prosthetics. These studies have shown that amputees can lead full and active lives with the proper care and support.

A New Generation of Veterans

The VA is working to improve the care and support of veterans who have returned from recent conflicts in Iraq and Afghanistan. These veterans have experienced a variety of physical and mental health challenges, including traumatic brain injury, posttraumatic stress disorder, and amputations. The VA is committed to providing the best possible care and support to these veterans.

Healthcare and Care of Veterans

While the VA has been a leader in caring for veterans, it is also working to improve the care and support of veterans who are facing new challenges, such as those with PTSD and TBI.

Polytrauma

Polytrauma is a condition that occurs when a person is involved in a severe accident that results in multiple injuries to the body. The injuries can affect the brain, spinal cord, bones, and other organs. Polytrauma is a complex injury that can cause significant disability and impairments, including memory loss, difficulty with attention and concentration, and changes in mood and behavior.

Mental Health

Mental health conditions, such as posttraumatic stress disorder and major depression, are common among veterans. These conditions can cause significant disability and impairments, including difficulty with daily activities, changes in mood and behavior, and increased risk of suicide.

Traumatic Brain Injury

Traumatic brain injury (TBI) is a common injury among veterans who have served in recent conflicts in Iraq and Afghanistan. TBI can cause significant disability and impairments, including memory loss, difficulty with attention and concentration, and changes in mood and behavior.

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Polytrauma

One of the most prevalent service members returning from the OEF/OIF conflicts is victims of war-related trauma, both seen and unseen in Iraq and Afghanistan. Service members may experience symptoms of psychological distress, ‘shell-shock disorder,’ or more serious problems such as posttraumatic stress disorder (PTSD). Defense and anxiety are familiar, remaining service members, especially younger Veterans, may turn to alcohol or drugs in an attempt to deal with their psychological distress. Use of alcohol or drugs can escalate these mental and emotional disorders.

VA researchers are working to:

- Improve coordination of care for Veterans with multiple injuries
- Identify subtle indicators of potentially significant psychological and emotional problems, such as disordered perception and judgment
- Repair the injured brain, spinal cord, and other organs, and protect them from further damage
- Advance technologies such as hearing and vision implants and computerized or robotic prostheses
- Develop strategies that will decrease the burden for family members of injured Veterans

Mental Health

VA researchers developed a screening tool for depression for use in primary care settings. The tool has been adopted by other health care systems in the U.S. and the United Kingdom.

Some key research questions include:

- What determines which individuals will develop PTSD?
- How can we correctly identify those at risk for PTSD and determine the most effective interventions?
- Can we identify biological markers that might help guide psychological evaluations, treatment selection, and outcomes?

To help answer these critical questions, VA researchers are:

- Testing whether computer simulated, ‘virtual reality’ combat stressors can enhance the effectiveness of prolonged exposure therapy
- Developing new ways to provide care to Veterans living far from VA medical facilities, such as VA mobile units, telemedicine, and videoconferencing
- Testing to ensure that evidence-based, state-of-the-art care is available to all Veterans with PTSD by quickly moving scientific breakthroughs from the laboratory into patient care.

Polytrauma

Approximately 6 percent of wounded service members returning from Iraq or Afghanistan have injuries that ankylose vertebrae, tendons, ligaments, or skin that prevents normal movement or function. VA researchers are:

- Developing new pain treatments.
- Implementing cutting-edge technology using microelectronics and microchips (very small electronic components) as well as implants to create lighter, more functional prosthesis that look, feel, and respond like natural arms and legs.

Burns

Many burn injuries result in the loss of tissue. VA researchers are developing new technology to enhance the art of regenerative medicine for people who still have a burn but have lost their fingers due to burns or other injuries.

Amputation and Prosthetics

Currently, VA researchers are conducting important studies that are:

- Developing new prostheses for transtibial (below the knee) amputees
- Testing tiny stimulators implanted into breathing muscles to reduce respiratory complications
- Intercepting nerve signals that cause people to experience pain during labor and birth.

VA has the largest network of care for spinal cord injury (SCI) in the nation and provides primary and specialty care at 23 regional SCI centers. VA leads the health care profession in defining new methods of rehabilitation through research. For example, VA researchers identified a particular strain of “phantom pain” a phenomenon described as the sensation of pain in a limb that has been lost due to natural causes, in SCI, or in a limb that is in no way affected by SCI. This discovery has enabled a better understanding of phantom pain and may eventually lead to new methods of pain control.
Health and Care of Veterans

Polytrauma

Many of the wounded servicemembers returning from the OEF/OIF conflicts are victims of car bombs or improvised explosive devices (IEDs) that can sever injuries to several parts of the body. These multiple injuries are called polytrauma. Polytrauma can include a combination of injuries to internal organs, limb loss, vision loss, hearing loss, psychiatric trauma, burns, and psychological disorders.

To help address these critical needs, VA researchers are working to:

• Improve coordination of care for Veterans with multiple injuries.
• Identify subtle indicators of potentially significant injuries, such as disorientation and confusion, for faster detection and treatment.
• Repair the injured brain, spinal cord, and other organs, and prevent them from further damage.
• Advance technologies such as hearing and vision implants to improve quality of life.
• Develop strategies that will reduce the burdens for family members of injured Veterans.

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• Testing to ensure that evidence-based, state-of-the-art care is available to all Veterans with PTSD by quickly moving scientific breakthroughs from the laboratory into patient care.

Posttraumatic Stress Disorder

VA researchers have found that prazosin, an inexpensive generic drug already used by millions of Americans for high blood pressure and prostate problems, improves sleep and patient outcomes.


VA researchers have identified a molecular engineering approach to characterize PTSD. For example, VA scientists have used proteomics to study the brain’s response to stress and using a mass spectrometry analysis of the blood, they identified a number of proteins that may be involved in the development of PTSD. Understanding the role of these proteins may provide a means to accurately diagnose and treat PTSD.

Spinal Cord Injury

A neuroprosthesis (NP) is a brain-computer interface that helps replace or restore lost movement in paraplegic patients. The technology was inspired by methods of exercising the intact brain to control paralysed limbs and sends signals to a computer for decoding.

VA researchers were able to demonstrate that an NP could enable paralyzed patients to operate an artificial hand, rotate, or computer, or television by using only their thoughts.

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VA researchers are:

• Testing new approaches that will help Veterans continue rehabilitation and achieve maximum functional recovery.
• Collaborating with DoD colleagues to assess new low-cost systems of OEF/OIF Veterans with burn injuries.
• Working on the spinal cord-related NIH and DoD research agenda on burn injuries to address priority areas such as managing pain, improving mobility, reducing complications, managing scars, congestion, rigidity, or skin that prevents normal movement; focusing successful psychological adjustment, and developing reliable outcome studies to guide clinical care.

VA researchers are developing important SCI initiatives that include:

• Testing tiny stimulators implanted into breathing muscles of Veterans with SCI that can help reduce respiratory complications, the leading cause of death in SCI patients.
• Developing systems that deliver low-level, computer-controlled electric current to the muscles, which may allow individuals with incomplete SCI to walk and maintain their dignity in their environment.
• Developing new pain treatments.

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Many of the heroes and heroines who served and are injured in Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) are returning home with complex medical conditions such as traumatic brain injury, blast injuries, and burn. Furthermore, due to improved body armor and improvised explosive device technology, many service members are returning with more blast-related injuries and will require longer-term, specialized care. Some will die. For some of the new Veterans, readjustment to civilian life will be critical issues.

VA’s Office of Research and Development has a comprehensive research agenda to address the deployment-related health issues of the newest generation of Veterans—those returning from Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF). This research will also benefit Veterans of other military conflicts and improve the lives of civilians suffering from disability due to injury or disease. In addition, the VA Office of Research and Development works collaboratively with other organizations, such as the Department of Defense (DoD) and the National Institutes of Health (NIH), to advance research aimed at improving the health and care of all generations of Veterans.

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VA’s Office of Research and Development will continue to discover new knowledge and create innovations to help advance the health and care of Veterans and the nation.