MARCH 2009

RESEARCH ADVANCES

DISCOVERY — INNOVATION — ADVANCEMENT

Obesity

Women's Health

Prosthetics/Amputations

Afghanistan/Iraq

Tramatic Brain Injury

Mental Health

Post-traumatic Stress Disorder (PTSD)

Alzheimer's Disease

Depression

Personalized Medicine

Vision Loss

Parkinson's Disease

Diabetes

Osteoarthritis

Pain Management

Cardiovascular Disease

Hepatitis C

Mental Health

Kidney Disease

Substance Abuse

Hearing Loss

Infectious Diseases

Spinal Cord Injury

Veterans Health Administration

Research Development

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"VA's Research and Development program is an essential part of our mission to provide cutting-edge health care to our nation's Veterans. As we seek to transform VA, three fundamental attributes mark the starting point for framing a 21st-Century Organization: people-centric, results-driven, and forward-looking; these attributes require continued and increased emphasis on discovery, innovation, and best practices."

– Eric K. Shinseki, *Secretary, Department of Veterans Affairs*

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VA Research & Development Program:

Improving Veterans' Lives through Innovation & Discovery

For more than 60 years, the Veterans Affairs (VA) Research and Development program has been improving Veterans' lives. VA Research is unique in that it is the only research program focused entirely on conducting groundbreaking research to meet the full spectrum of Veterans' medical needs. The program benefits from being part of a comprehensive health care system with state-of-the art electronic medical records. Through this dynamic combination, VA Research has become an acclaimed model for conducting superior bench-to-bedside research. The program is positioned to attract the best and brightest investigators, most of whom also work as VA clinicians, and is able to promote the quick translation of research findings into advances in care.

Offers a promise for a brighter tomorrow – Veteran-centric at its core, the program identifies needs in the treatment setting and brings them through the research process to application in as few steps as possible. In addition to improving Veterans' lives, VA Research improves the lives of Veterans' families and caregivers, and ultimately many others in the nation who benefit from VA's research advancements. One Veteran has said of the program, "Sometimes it works miracles."

Serves as a model of research excellence – Designed to take full advantage of its unique position within an integrated health care system with state-of-the art electronic health records, VA Research is able to foster the development of patient-centered evidence for clinical care decision-making and serves as a model for conducting superior bench-to-bedside research.

Attracts exceptional investigators – The distinctive opportunity to conduct top-quality, pioneering research in an integrated health care system and also provide patient care draws the highest-caliber investigators to the program. VA investigators have won three Nobel prizes, six Lasker awards, and numerous other distinctions.

Fosters dynamic collaborations – While realizing the advantages of an intramural research program, the VA research program embraces its close affiliations with academic institutions and fosters strong collaborations with federal agencies such as the Department of Defense and the National Institutes of Health, private industry sponsors, patient-advocacy organizations, and disease-focused nonprofits. These partnerships allow VA Research to leverage resources, accelerate the translation of research findings into care, and strengthen the program's impact on the health of Veterans and the nation.

Priority Areas for Research

Examples of deployment-related priority areas:

- Traumatic brain injury
- Polytrauma
- Post-deployment mental health
- Prosthetics and amputation care
- Spinal cord injury
- Hearing and vision loss
- Pain management

Examples of priority areas related to Veterans' ongoing health needs:

- Neurodegenerative diseases
- Mental health
- Diabetes
- Heart disease
- Vision and hearing loss
- Substance abuse
- Access to care

Improving Veterans' Lives

"The future of medicine is determined by life-saving and enriching advancements brought about by research. VA Research has contributed to many of the medical treatments and diagnostic tools in use today, such as the cardiac pacemaker, CT scan, and high-performance artificial limbs. By spearheading research that directly advances the medical care of Veterans, the VA Research and Development program has become an acclaimed model for conducting superior bench-to-bedside research."

– Joel Kupersmith, MD, *Chief Research & Development Officer, Department of Veterans Affairs*

Examples of VA Research Advances

The purpose of VA Research is to advance the health care and overall well-being of Veterans, with benefits to the entire nation, through innovation and discovery. The following examples illustrate some of the activities through which VA researchers have been accomplishing this goal:

- Using cutting-edge technology such as robotics and nanotechnology to create lighter, more functional prostheses that look, feel, and respond more like natural arms and legs.
- Gaining new knowledge of the biological roots of posttraumatic stress disorder and developing and evaluating effective PTSD treatments.
- Learning how to deliver low-level, computer-controlled electric currents to weakened or paralyzed muscles to allow people with incomplete spinal cord injury to once again walk and perform other everyday functions.
- Exploring new approaches to pain treatment that will help Veterans with burn injuries to persevere through rehabilitation and make optimal progress toward regaining function.
- Developing a system that decodes brain waves and translates them into computer commands to allow quadriplegics to perform daily tasks like using email or TV.
- Establishing a pharmacogenomics analysis laboratory to help advance personalized medicine for Veterans.
- Identifying genes associated with Alzheimer's disease and diabetes.
- Pioneering new home-dialysis techniques.
- Developing and testing the nicotine patch and other therapies to help smokers quit.
- Conducting research that has helped to increase pneumonia and influenza vaccination rates for Veterans with spinal cord injury.
- Using animal models of Alzheimer's disease to identify promising new targets for early-detection tests and new drug therapies.

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For more information about VA research,
please visit the web at: **www.research.va.gov**

Afghanistan/Iraq

VA's Office of Research and Development has implemented a comprehensive research agenda to address the deployment-related health issues of the newest generation of Veterans—those returning from Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). In addition to exploring new treatments for traumatic brain injury and other complex blast-related injuries, VA researchers are examining ways to improve the delivery of health care services for these Veterans.

Examples of VA Research Advances

Texas center to focus on war injuries – The recently established Center of Excellence for Research on Returning War Veterans, based at the Central Texas Veterans Healthcare System, is studying brain and mental health conditions common among troops returning from OEF/OIF, such as posttraumatic stress disorder (PTSD), traumatic brain injury, depression and substance abuse. The program features a $3.5-million mobile MRI machine that travels between the Waco and Temple VA sites and nearby Fort Hood, the largest Army base in the U.S.

Polytrauma care 'on the map' – Investigators at VA's Rehabilitation Outcomes Research Center used specialized geographic software to track access to care for traumatically wounded OEF/OIF Veterans. The researchers plotted the home ZIP codes, counties, and regions of nearly 8,000 seriously wounded Veterans nationwide—anonymous, for purposes of the study—and found that about 88 percent had "reasonable" access to VA's multi-tiered system of polytrauma care. VA planners are using the data to help further improve access to care.

Consortium will study PTSD, brain injury – A psychiatrist with VA and the University of California, San Diego, is leading a $60-million, five-year, multisite consortium funded by the Psychological Health and Traumatic Brain Injury Research Program of the Department of Defense to study PTSD and traumatic brain injury. The research effort will pay special attention to the link between the two conditions, which affect significant numbers of OEF/OIF Veterans.

Facts About Deployment Health

The changing nature of warfare poses new challenges to VA's health care system. Due to improved body armor and battlefield medicine, many troops are surviving injuries that in the past would have been fatal. These soldiers, however, are returning home with complex, multiple injuries. These "polytrauma" cases often include brain and spinal cord injuries, vision and hearing loss, nerve damage, burns, amputations, musculoskeletal injuries, infections, and emotional adjustment problems. As of the end of 2008, VA had treated 641 OEF/OIF Veterans who were injured in theater as inpatients at its four main polytrauma clinics. The VA polytrauma system of care also includes network sites and support teams around the nation (www.polytrauma.va.gov).

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Alzheimer's Disease

Areas of focus for VA research on Alzheimer's disease include finding potential drug therapies for prevention and treatment, exploring the genetic and environmental causes of the disease, and studying the best ways to provide long-term care. Additionally, VA researchers are working to better understand the connection between Alzheimer's and other chronic diseases, such as diabetes.

Examples of VA Research Advances

New center will refine brain-scan methods – A team at the San Francisco VA will receive $6.04 million over five years from the National Institutes of Health to develop new ways to examine the brain through magnetic resonance imaging (MRI). The award will create a "Biomedical Technology Research Center" focused on improving several MRI methods. Among the end goals: to better diagnose and track neurodegenerative diseases such as Alzheimer's.

Caregiver study expanded – An individualized approach to helping family caregivers of older Veterans with Alzheimer's, shown successful in earlier research, is being rolled out in community-based VA programs in 20 cities. The program, called "Resources for Enhancing Alzheimer's Caregiver Health," or REACH, works with caregivers over six months to give them the skills and resources they need most. An economic analysis of the program showed that it costs only about five dollars a day to give caregivers an extra hour in their day, free from the stress of caring for their relative.

Protecting the brain with natural compounds – VA investigators have been studying a number of natural compounds believed to ward off cognitive decline and Alzheimer's disease. Among them are grape seed extract; curcumin, the compound that gives turmeric its yellow color; and DHA, an omega-3 fatty acid found mainly in fatty, cold-water fish. DHA supplements are now being tested in a nationwide clinical trial led by a geriatric neurologist at the Portland VA.

Facts About Alzheimer's Disease

One of the most common forms of dementia is Alzheimer's disease, a progressive neurodegenerative condition. In this biological disease of the brain, deterioration occurs in nerve cells and parts of the brain controlling thought, memory, and language. As the disease progresses, symptoms range from mild forgetfulness to serious impairment and inability to perform everyday tasks. Alzheimer's is estimated to affect some 4.5 million Americans, and this figure is expected to triple by 2050. About five percent of men and women ages 65 to 74 have the disease, and nearly 50 percent of those age 85 and older may be affected. The annual direct and indirect costs of caring for Americans with the disease are estimated to be around $100 billion.

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Cardiovascular Disease

Areas of focus for VA research on cardiovascular disease include evaluating and developing new treatments, probing the genetic and lifestyle causes of cardiovascular disease, and developing new rehabilitation methods, especially for stroke. Studies range from biomedical lab experiments on animal models of heart disease to large, multisite clinical trials involving thousands of patients.

Examples of VA Research Advances

Treadmill gains seen even decades after stroke – In a study by VA, the University of Maryland, and Johns Hopkins University, people who took part in a treadmill exercise program years after their stroke—in one case, even 20 years later—achieved major gains in fitness and mobility. Furthermore, brain scans showed increased activity in those brain areas linked to walking. The researchers said the results show that long-term stroke damage is not necessarily permanent and that it is never too late to improve function.

Self-monitoring of anti-clot drug has benefits – Results from a VA trial involving nearly 3,000 Veterans may help doctors know how to best manage patients taking the drug warfarin to prevent harmful blood clots. The drug, prescribed for those with irregular heart rhythms and other cardiovascular problems, usually requires frequent blood tests and close monitoring by a physician to get the dose just right. But easy-to-use blood analyzers now allow patients to monitor their own clotting rate at home. The study found no difference in outcomes such as stroke or bleeding between patients who monitored themselves at home and those who visited the clinic. And self-testing appeared to boost patients' satisfaction with warfarin therapy.

Grape-derived compound may help heart – A VA scientist and colleagues found that even low doses of a natural antioxidant called resveratrol—found in grape skins—preserved the heart and musculoskeletal system in middle-aged mice. It was previously thought that only high doses were effective.

Facts About Cardiovascular Disease

Cardiovascular disease, which includes coronary heart disease (chest pain or acute heart attack), congestive heart failure, high blood pressure, stroke, and congenital heart defects, is America's number one killer and the leading cause of hospitalization in the VA health care system. A stroke involves the sudden death of brain cells due to a lack of oxygen, caused when blood flow to the brain is impaired by the blockage or rupture of an artery. Each year, more than 15,000 Veterans are hospitalized for stroke. The after-effects range from mild or moderate loss of function to severe disability. In recent years, research has demonstrated that therapy can help restore lost function to stroke survivors even after many years.

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Depression

As part of a comprehensive research agenda aimed at advancing the care of Veterans with depression, VA researchers are developing, testing, and implementing new models of primary care; studying ways to improve outcomes among Veterans affected by depression along with other conditions, such as heart disease, diabetes, or hepatitis C; and exploring the genetic and molecular roots of the condition, with the goal of developing more effective medications.

Examples of VA Research Advances

Research to assist the most vulnerable – Depression often develops in conjunction with other chronic medical problems. Therefore, some studies are strategically targeting Veterans who experience depression along with conditions such as posttraumatic stress disorder, cardiovascular disease, or chronic pain. A further example is research focused on Veterans with hepatitis C who develop depression as a result of their interferon treatment. VA scientists are seeking ways to ease depression in these patients so they can receive the most effective hepatitis C treatment.

Translating Initiatives for Depression into Effective Solutions (TIDES) – TIDES is a model of care for Veterans with depression that involves collaboration between primary care providers and mental health specialists with support from a depression-care manager. The implementation of TIDES has yielded impressive results at demonstration clinics in three VA regions, with 8 of 10 depressed Veterans being treated effectively in primary care without the need for referrals to additional specialists. Patients' compliance with medication and follow-up visits improved dramatically.

Substance abuse and depression care – Investigators with VA's Quality Enhancement Research Initiative have begun a project to expand the use of cognitive behavioral therapy to treat depression in Veterans enrolled in substance-abuse treatment programs.

Facts About Depression

Depression is one of the most common and costly mental disorders. Depression costs the U.S. an estimated $66 billion per year, which includes both direct health care costs and indirect costs, such as lost work days. Veterans with depression account for slightly more than 14 percent of total VA health care costs. While there are effective pharmacologic treatments and psychotherapies for depression, studies show that the condition is under-diagnosed. An untreated episode of depression may last several months, and most people with depression experience repeated episodes over their lifetime.

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Diabetes

VA researchers are studying innovative strategies and technologies—including group visits, telemedicine, peer counseling, and Internet-based education and case management—to enhance access to diabetes care and improve outcomes for patients. In addition, VA researchers are seeking to develop better ways to prevent or treat diabetes, particularly in special populations such as the elderly, amputees, minorities, spinal cord injured Veterans, and people with kidney or heart disease.

Examples of VA Research Advances

VA study finds no added heart benefit from tighter sugar control – The seven-year VA Diabetes Trial found that intensive control of blood glucose in type 2 diabetes, mainly through higher doses of medication, did little to cut the risk of stroke, heart attack, and other cardiovascular complications, compared with standard treatment. Unlike some other recent studies, the trial also found no added benefits for the kidneys or eyes, which are often harmed by the extra blood sugar present in diabetes. The American Diabetes Association and other major health organizations issued statements and published articles to guide doctors and patients in light of the results of the VA study and other recent research.

Special thermometer warns of foot ulcers – In a VA study that included 225 Veterans with diabetes, patients who used an infrared thermometer to check their feet every day for "hot spots" were three times less likely to develop foot ulcers—a common complication of diabetes that often leads to serious wounds requiring amputation. The study was led by a foot doctor with VA and Rosalind Franklin University of Medicine and Science in Chicago.

Registry helps research – VA's diabetes registry contains data on hundreds of thousands of Veterans with the disease, including information on prescribed drugs, test results, blood pressures, and vaccinations. The database is useful for many VA studies, such as a recent project that identified factors linked to high blood pressure in Veterans with diabetes.

Facts About Diabetes

Diabetes is a chronic disease in which the body can not produce or properly use insulin, the hormone needed by the body to change food sugar into energy. About a quarter of the Veterans receiving care from VA have diabetes, and an even greater number are at risk due to overweight or obesity. Of the estimated 16 million Americans with the condition, more than 90 percent have type 2, or non-insulin-dependent, diabetes. While it has been long known that type 2 diabetes runs in families and that certain populations (e.g., Hispanics and Native Americans) are at a higher risk, it was not until recent advances in genetics were made that researchers began to investigate the link between specific genes and diabetes.

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Hearing Loss

VA researchers, engineers, and clinicians are studying ways to prevent, diagnose, and treat hearing loss, addressing a wide range of technological, medical, rehabilitative, and social issues. One group of VA researchers is working to develop and implement a new diagnostic test for tinnitus, a potentially debilitating condition that commonly accompanies hearing loss and involves ringing, whistling, or other noises in the ears.

Examples of VA Research Advances

VA partners with Army on study of blast effects – VA researchers at the National Center for Rehabilitative Auditory Research are collaborating with audiologists at Walter Reed Army Medical Center to study central auditory processing—how the brain interprets incoming sounds—in soldiers who have been exposed to blasts. Those who show symptoms of auditory processing disorders will be evaluated again within a year, either at Walter Reed or the Portland VA. In addition to auditory tests, the researchers will analyze medical records, details of the blast exposure, scores on overall tests of brain function, posttraumatic stress disorder measures, and other health data. The study will be used to determine which auditory processing disorders are more often associated with exposure to high-explosive blasts, whether there is spontaneous recovery of auditory function after blast exposure, how much recovery may be expected, and how rapidly it occurs.

Detection of noise-induced hearing loss – VA researchers are developing new, more sensitive methods to detect changes in the cochlea that occur before the onset of permanent noise-induced hearing loss. The methods are designed to identify problems that would not show up in standard audiometric tests. Early detection may provide the opportunity for military health care providers to implement precautionary procedures more effectively, preventing hearing loss among troops exposed to high levels of noise.

Treating tinnitus – A study at four VA audiology clinics has been comparing different tinnitus treatments. The treatments all feature some variation of sound therapy and educational counseling. One treatment, for example, involves special hearing aids that generate low-level white noise, which appears to help the condition.

Facts About Hearing Loss

Hearing loss affects some 28 million Americans, including more than half of those over age 65. The most common cause of hearing loss is exposure to harmful levels of noise, either in military or civilian environments. Other possible causes are allergies, infections, drugs, genetics, or simply aging. Some hearing loss can be reversed through surgery or medication. In other cases, hearing loss is permanent but can be helped through the use of hearing aids. Noise-induced hearing loss is among the most common disabilities affecting Veterans. VA pays more than $1.2 billion annually in compensation costs for hearing loss and tinnitus.

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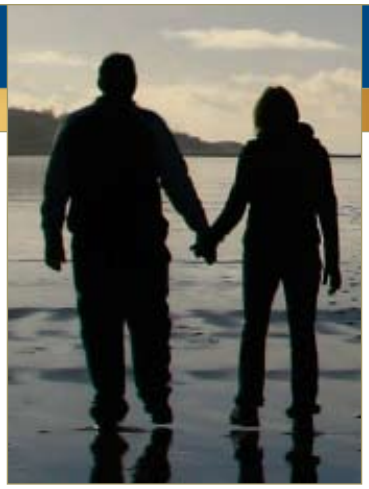

Hepatitis C

VA research on hepatitis C includes clinical trials of treatments, epidemiologic studies, investigations into the biological mechanisms of infection, and studies on improving quality of life for patients with this condition. A particular focus for VA researchers is improving the care of Veterans who are infected with both the hepatitis C virus and HIV.

Examples of VA Research Advances

Hepatitis C, PTSD, and telehealth – VA researchers in Boston are testing a telehealth intervention to help Veterans who have both posttraumatic stress disorder (PTSD) and hepatitis C. PTSD is linked with poor self-care and non-compliance with drug regimens, so these hepatitis C patients may be at higher medical risk. The study will involve 70 Veterans, half of whom will receive a face-to-face counseling intervention and half a telephone intervention. The study will look at factors such as self-care, emotional distress, motivation to participate in treatment, and overall quality of life over six months. It will also evaluate the cost-effectiveness of each approach.

Identifying barriers to treatment – VA investigators in Pittsburgh and Seattle are exploring why many Veterans with hepatitis C do not initiate or complete the evaluations needed to begin antiviral treatment. The study will follow Veterans referred by their primary care doctors to gastroenterologists for treatment of their hepatitis C. The study will examine factors that may be affecting patients' willingness or ability to move ahead with antiviral therapy. The research will include in-depth interviews exploring patients' knowledge and understanding of the disease and its treatment, as well as issues such as trust and communication in the patient-doctor relationship.

VA website on care, research – Log on to VA's special website on hepatitis C (www.hepatitis.va.gov) to find general information about the condition as well as an overview of VA's efforts in this area. Included are descriptions of VA research sites with special hepatitis C programs: Minneapolis, San Francisco, Seattle/Portland, and West Haven, Conn.

Facts About Hepatitis C

The liver disease hepatitis C is caused by the hepatitis C virus. It is spread through contact with infected blood or contaminated IV needles, razors, tattoo tools, or other items. Hepatitis C is particularly prevalent among Veterans, especially those who received blood transfusions prior to 1992. Between 4 and 17 percent of Veterans are infected, compared with 2 percent in the non-Veteran population. Most people with hepatitis C do not have any signs or symptoms of the disease for decades. By the time the disease is diagnosed, there can be significant damage to the liver, leading to complications such as liver cancer and sometimes resulting in death. Treatments using the protein interferon can be effective, but potential side effects such as mood disorders must be managed carefully.

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Infectious Disease

One of the earliest contributions of VA researchers to medical science was the establishment of effective treatments for tuberculosis, back in the 1930s and 1940s. Since then, VA scientists have helped advance the understanding, prevention, and treatment of numerous infectious diseases, ranging from the common cold to major public-health threats such as AIDS.

Examples of VA Research Advances

VA scientist leads effort toward preferred AIDS vaccine – Susan Zolla-Pazner, PhD, of VA and New York University, has been leading an international team of scientists in an $8.4-million effort to develop vaccines against the AIDS virus. The group, funded by the Gates Foundation, has been working to isolate the most powerful antibodies found in patients infected with various HIV strains. The next step will be identifying structures on the virus surface that are targeted by these antibodies and incorporating them into genetically engineered vaccines.

Privacy curtains in hospitals could spread germs – The curtains between hospital beds can harbor drug-resistant bacteria and may be playing a role in the spread of the germs, according to a recent VA study. The researchers found that 42 percent of curtains were contaminated with vancomycin-resistant enterococci; 22 percent with methicillin-resistant Staphylococcus aureus; and 4 percent with Clostridium difficile. Moreover, it appeared the germs were easily transferred when study personnel wearing gloves touched the curtains and then pressed their hands into "hand imprint cultures." Most hospitals wash privacy curtains every few months or whenever they are visibly soiled.

Predicting HIV disease progression – A team led by a VA researcher in San Antonio, Tex., found that specific combinations of two genes—CCL3L1 and CCR5—could be a more accurate predictor of the progression of HIV infection to AIDS than currently used laboratory markers, such as CD4 cell counts and viral loads.

Facts About Infectious Diseases

Infectious diseases are generally classified according to the source of the infection. The major types are viral, bacterial, parasitic, and fungal. In the VA health care system, two viral diseases of special concern are HIV-AIDS and hepatitis C. VA maintains special websites devoted to these conditions: www.hiv.va.gov and www.hepatitis.va.gov. VA investigators are studying these and a wide range of other infectious diseases and working toward developing effective new preventive strategies, vaccines, and drugs. In recent years, bioterror—the use of bacteria, viruses, or toxins to harm people—has become a concern for public health officials, and VA hospitals take part in a national program called BioSense to help track and investigate suspected bioterror events.

Kidney Disease

VA has a comprehensive research portfolio aimed at preventing and slowing the progression of chronic kidney disease and advancing the treatment of kidney failure. There are many causes of chronic kidney disease, but the two main causes—accounting for up to two-thirds of cases—are diabetes and high blood pressure. VA research on these two conditions may thus help reduce the prevalence of chronic kidney disease in the veteran population.

Examples of VA Research Advances

Artificial kidney will offer 'dialysis on the go' – A new device called an AWAK—short for "Automated Wearable Artificial Kidney"—may enable patients with kidney failure to undergo continuous treatment without being hooked up to a stationary dialysis machine. This portable artificial kidney would be the first wearable model based on peritoneal dialysis—a process that requires no transfer of blood outside the body. The AWAK, invented by two VA kidney specialists, is expected to be ready for clinical trials by 2010.

No survival benefit from B vitamins – Patients with chronic kidney disease are at high risk for hardening and narrowing of the arteries, and prior studies have identified the amino acid homocysteine as a risk factor for these conditions. But a recent study involving more than 2,000 veterans with advanced chronic kidney disease found that lowering homocysteine through high doses of folic acid and other B vitamins did not reduce the rate of death or cardiovascular events. The authors speculated that "possibly the underlying burden of disease was too great for a measurable benefit" from lowering the amino acid.

Tracking heart risk in patients with kidney disease – VA researchers are exploring how the progression of heart disease in those with chronic kidney disease is affected by various cardiovascular risk factors. They are looking at traditional risk factors such as diabetes and high blood pressure and newer ones such as homocysteine, C-reactive protein and lipoprotein (a), the roles of which are still under investigation. The study will use an innovative ultrasound method that measures the thickness of the inner lining of neck arteries as a marker of how much artery-clogging plaque exists in the whole body.

Facts about Chronic Kidney Disease

The kidneys are a pair of bean-shaped, fist-sized organs located on either side of the spinal column. Kidneys perform life-sustaining functions that keep the rest of the body in balance, such as helping to remove waste and excess fluid from the body, regulating water and minerals in the blood, and releasing vital hormones. As kidney disease worsens, complications such as high blood pressure, arteriosclerosis, anemia, weak bones, and nerve damage can develop. If the disease progresses to kidney failure, when the kidneys shut down, dialysis or a kidney transplant is needed to maintain life. Currently, some 26 million adults in the U.S. have chronic kidney disease.

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Mental Health

Major areas of focus for VA research on mental health include substance abuse, posttraumatic stress disorder (PTSD), adjustment and anxiety disorders, depression, bipolar disorder, and schizophrenia. Researchers are studying and testing new drug therapies, enhancing collaborative care models in the primary care setting, and further improving access to mental health care through telehealth and other innovative approaches.

Examples of VA Research Advances

New brain-imaging techniques – A team of VA invetigators in the forefront of schizophrenia research is using "diffusion tensor imaging"—a relatively new form of MRI—to study the nerve fibers that form pathways within the brain. With this technology, researchers can now identify brain abnormalities that were previously undetectable with standard MRI scans, possibly leading to new targets for treatments for patients with schizophrenia and other mental conditions.

Effective team care for bipolar disorder – A three-year study of 306 Veterans with bipolar disorder at 11 VA medical centers found that those receiving care through a new collaborative model had better outcomes than those receiving usual care, without added costs. The new care model featured close teamwork between psychiatrists and nurse care coordinators, with an emphasis on teaching patients self-management skills.

Link between anxiety, alcoholism – A VA research team in Chicago has discovered a genetic and biochemical pathway linking anxiety and alcoholism. The study focuses on a molecule called CREB, which turns various genes on and off, and may point the way to new medication targets for both conditions.

Homeless Veterans with mental illness – Researchers with VA's Northeast Program Evaluation Center, in West Haven, Conn., recently documented the effectiveness of a program to help improve housing and mental-health outcomes for homeless Veterans after hospitalization.

Facts About Mental Health

Mental health conditions such as schizophrenia, depression, and anxiety are common in the United States, with more than a quarter of Americans suffering from a diagnosable mental disorder in any given year. Mental health is a major focus for VA's healthcare system. A recent health survey of 1.5 million Veterans enrolled in VA health care found that more than a third had at least one mental health diagnosis. Depression was the most common diagnosis, followed by anxiety disorders —including PTSD—and schizophrenia. Schizophrenia alone affects some 100,000 VA patients and accounts for nearly 12 percent of VA's total health care costs.

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Obesity

VA research on obesity focuses on areas such as examining the biological mechanisms involved in weight gain and weight loss; comparing the safety and effectiveness of various obesity treatments; and identifying the best strategies to promote exercise and healthy eating among Veterans, thus preventing overweight and obesity in the first place. These efforts complement VA's "MOVE!" program, a national weight-management and exercise program designed by the VA National Center for Health Promotion and Disease Prevention.

Examples of VA Research Advances

Cash incentives spur weight loss – Researchers with VA's Center for Health Equity Research and Promotion and the University of Pennsylvania's School of Medicine and Wharton School divided overweight study volunteers into three groups. One group had a "deposit contract" that enabled them to earn cash for losing weight, up to $252 per month if they were able to lose 16 pounds over 16 weeks. Volunteers in a second group were entered into a cash lottery when they met the goals. A third group had monthly weigh-ins but no cash incentives. All the groups were given scales and initial counseling on diet and exercise. After four months, about 50 percent of those in the incentive groups had met the target—a loss of 16 pounds—compared with only 10.5 percent in the control group. Those who received incentives maintained some, but not all, of their weight loss after seven months.

Obesity and prostate cancer risk – A team at the Durham VA and Duke University Medical Center challenged past study findings suggesting that obesity is associated with a lower risk for prostate cancer. They analyzed 441 prostate biopsies and found, after adjusting for certain clinical characteristics, that obesity was actually associated with a 98-percent higher risk.

'Fidgeting' and weight – Studies by VA researchers and colleagues in Minneapolis have suggested that spontaneous, unconscious movement throughout the day plays a surprisingly large role in calorie-burning and weight control. The team is investigating the exact biochemical pathways involved in this mechanism.

Facts About Obesity

Obesity has skyrocketed in the past four decades and reached epidemic proportions. Two out of three Americans are overweight, and nearly one out of three is obese. The problem may be even more severe among those who turn to VA for their health care, with one study finding that 68 percent of these Veterans were overweight and 37 percent obese. This trend has major implications for American health care, since obesity increases the risk of heart disease, high blood pressure, diabetes, arthritis, and other diseases.

Osteoarthritis

VA researchers are working to understand the biological causes of cartilage degeneration and are testing new drugs and other medical and rehabilitative treatments for osteoarthritis. Among the VA sites conducting important work in this area is the Bone and Joint Rehabilitation Center of Excellence, based at the Palo Alto, Calif., VA Medical Center.

Examples of VA Research Advances

Hyaluronic acid found effective for ankle arthritis – A study at the Miami VA Medical Center found that injections of a natural liquid called sodium hyaluronate, or hyaluronic acid, may be a safe and effective option to treat ankle pain caused by osteoarthritis. The therapy, which helps lubricate and cushion the joints, has been in use for knee osteoarthritis for several years—mainly for those who still need relief after trying medications, exercise, or physical therapy. Researchers are increasingly exploring its potential benefits for other joints affected by osteoarthritis.

Racial disparities in joint replacement – Researchers at VA's Center for Health Equity Research and Promotion are studying how to better educate African American patients about knee replacements. African Americans are up to five times less likely than whites to undergo the procedure. In a new study involving up to 600 older African American Veterans in Pittsburgh and Cleveland, the researchers are testing whether an educational video plus counseling helps close the racial gap in the use of the procedure.

Improving self-care – Researchers at the Durham VA and Duke University are conducting the Self-Management of Osteoarthritis in Veterans Study to test whether providing special educational materials and following up with monthly telephone support can help patients with arthritis reduce their pain levels. The study will include 519 Veterans with osteoarthritis of the hip or knee.

Facts About Osteoarthritis

Osteoarthritis, or degenerative joint disease, is the most common form of arthritis. It affects up to 20 million Americans, most of them elderly. Symptoms include pain, stiffness, and swelling in the joints. Scientists once thought the disease resulted simply from "wear and tear" on the joints; now they are exploring a complex web of biological factors that may contribute to cartilage breakdown. Increased attention in recent years to the adverse side effects of some pain relievers has underscored the urgency of research on the prevention of arthritis and alternative treatments for pain symptoms.

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Pain Management

VA is working to develop new approaches to alleviate Veterans' pain, which may result from spinal cord injury, burns, amputations, traumatic brain injury, cancer, arthritis, or any number of other conditions. VA's research portfolio in this area covers a remarkably wide range of topics, from drug discovery to alternative treatments such as yoga or massage. VA investigators are also leaders in studying the impact of pain on daily function and quality of life.

Examples of VA Research Advances

Yoga for back pain – Researchers at the VA San Diego Healthcare System found that Veterans with chronic low-back pain who took part in at least eight weekly yoga classes reported a significant reduction in pain. The Veterans also had improvements in mood, energy, and quality of life. The more classes they attended, the greater the gains.

Gene therapy for cancer pain – In a trial involving 12 patients with cancer pain, scientists with VA and the University of Michigan are testing a new way of delivering a pain-relieving gene to the nervous system. The team is using a gene transfer vector—a carrier molecule used to ferry genes into cells—created from herpes simplex virus, the virus that causes cold sores. The vector will carry the gene for enkephalin, one of the body's natural pain relievers.

Probing pain's biological roots – VA researchers are examining changes at the cellular and molecular levels for clues about what causes pain and how to treat it. For example, using a rat model they developed to resemble a debilitating pain condition called complex regional pain syndrome (CRPS), investigators are working to characterize cellular changes in support of promising new therapies for pain and inflammation. In other work, investigators have identified a cellular pathway that conveys pain signals to the brain and hope to use the discovery as the basis for a new treatment.

Facts About Pain

Pain is one of the most common reasons people consult a physician and is cited as the most common symptom in service members returning from combat. Research suggests that a quarter of returning Operation Enduring Freedom/ Operation Iraqi Freedom Veterans report chronic pain that interferes with their daily activities—among the most common types, back pain from the weight of body armor and equipment and pain from traumatic nerve injury. In the belief that no patient should suffer preventable pain, VA requires its doctors and nurses to treat pain as "a fifth vital sign," to be assessed and recorded along with blood pressure, pulse, temperature, and breathing rate.

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Parkinson's Disease

VA Research has six Centers of Excellence focused on Parkinson's disease, based in Houston, Philadelphia, Portland, Richmond, San Francisco, and Los Angeles. Researchers at these sites are studying the biochemical pathways involving dopamine—a brain chemical implicated in Parkinson's disease—and testing a variety of treatment approaches, including medication, surgery, and electrical stimulation.

Examples of VA Research Advances

VA-NIH trial backs brain implants for some patients – Deep brain stimulation—a treatment in which a pacemaker-like device sends pulses to electrodes implanted in the brain—is riskier than drug therapy but may hold significant benefits for those with Parkinson's disease who no longer respond well to medication alone, reported researchers with VA and the National Institutes of Health who conducted a six-year study comparing deep brain stimulation with "best medical therapy." The trial, the largest of its kind to date, included 255 patients at seven VA and six university sites. Significantly, the trial included patients ranging in age from 37 to 83 and found that older patients—a group typically excluded from brain stimulation research and treatment—did about as well as younger ones with deep brain stimulation.

Impaired sense of smell could figure in early detection – Validating the results of some earlier studies, a team led by researchers at the Honolulu VA Medical Center showed that an impaired sense of smell—long known to be an early sign of Parkinson's—may in fact precede key symptoms of the disease by at least four years.

Adult stem cells may replace depleted brain cells – VA researchers in Richmond are exploring the use of adult stem cells that, when transplanted into the brain, may transform into dopamine-producing neurons to help combat Parkinson's.

Possible link to toxins – VA researchers are studying whether exposure to neurotoxins may trigger Parkinson's.

Facts About Parkinson's Disease

Parkinson's disease is a disorder of the central nervous system resulting in rigidity of the muscles, delayed movement, poor balance, and tremors. It affects as many as 1.5 million Americans, mostly people over age 50. Some 50,000 new cases are diagnosed annually. VA treats at least 40,000 Veterans with this debilitating disorder each year. Parkinson's patients have a progressive loss of the brain chemical dopamine, caused by the death of dopamine-producing nerve cells. Experts suspect that a combination of genetic and environmental factors is responsible for this loss.

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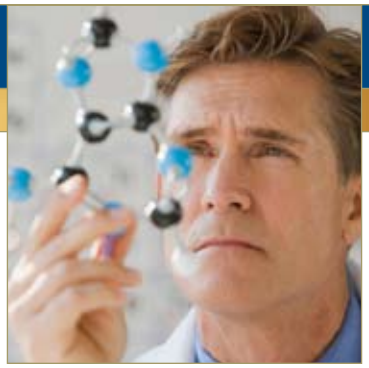

Personalized Medicine

VA's Office of Research and Development is at the forefront of developing safer, more effective treatments based on new knowledge about the role of genes in health and disease. The goal is to provide medical care that is personalized to the genetic makeup of individual Veterans. This approach is referred to as personalized medicine. Genomic analysis has already provided tremendous insights into the origins of diseases that affect large numbers of Veterans, such as diabetes and cancer. Genomic analysis may also help predict Veterans' response to certain drug treatments.

Examples of VA Research Advances

Pharmacogenomics Lab – VA established its first pharmacogenomics analysis laboratory at the Little Rock, Ark., VA Medical Center. The lab will run genetic tests for individual Veterans to help predict their response to certain drugs. The lab will also work with VA's Cooperative Studies Program, which coordinates clinical trials involving up to thousands of patients at multiple sites. The lab will scan DNA from study participants—with their consent—to determine if certain genetic variations are linked to particular medical conditions.

Assessing Veterans' attitudes – To learn about Veterans' attitudes toward genomic medicine and explore issues of concern, VA worked with the National Human Genome Research Institute and the Genetics and Public Policy Center at Johns Hopkins University. The joint effort included surveys and focus groups with Veterans recruited through various sources nationwide, including Veterans Service Organizations, VA medical centers, outpatient clinics, and readjustment counseling centers. Results of the process are expected to be published sometime in 2009 and will inform VA's genomics research agenda.

Genetics of alcoholism – VA researchers have been working with colleagues to probe which genes may be linked to alcoholism risk and treatment response. Some of these efforts are conducted through the Collaborative Studies on Genetics of Alcoholism initiative of the National Institute on Alcohol Abuse and Alcoholism.

Facts About Personalized Medicine

With the recent completion of the Human Genome Project and other gene-mapping efforts, researchers have a detailed map of humans' genetic structure. Research is now focused on how to apply this knowledge to medical care, with the goal of customizing patients' care based on their individual genetic make-up. This might involve, for example, predicting patients' risk for a certain condition or their response to a particular drug. Researchers have been laying the groundwork for this field by scanning huge batches of DNA—often obtained through research studies—and analyzing which genetic variations are statistically associated with particular diseases or other health characteristics.

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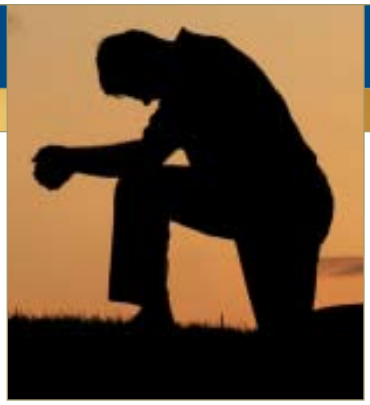

Posttraumatic Stress Disorder

VA's Office of Research and Development supports numerous studies aimed at understanding, treating, and preventing posttraumatic stress disorder (PTSD). These studies range from investigations of the genetic or biochemical underpinnings of the disease to evaluations of new or existing treatments, including large multisite clinical trials. A VA study published in 2007 found that of 103,788 Veterans of Operations Enduring Freedom and Iraqi Freedom who were seen at VA facilities between 2001 and 2005, some 13 percent had received a diagnosis of PTSD.

Examples of VA Research Advances

Drug may help PTSD nightmares – In pilot studies, VA researchers based at the Puget Sound, Wash., VA found that prazosin, an inexpensive generic drug already used by millions of Americans for high blood pressure and prostate problems, may improve sleep and reduce trauma nightmares for Veterans with PTSD. No drug has previously been found to effectively improve these PTSD symptoms. A large, multisite trial to confirm the effectiveness of prazosin for this purpose is now under way.

Prolonged-exposure therapy shown effective – VA researchers showed that prolonged exposure therapy—in which therapists help patients recall their trauma memories under safe, controlled conditions—was effective in reducing PTSD symptoms in women Veterans who developed PTSD after experiencing sexual trauma. Women in the trial who received prolonged-exposure therapy had greater reductions of PTSD symptoms than those who received only emotional support and counseling focused on current problems.

Clinical trial for Veterans with chronic PTSD – VA has launched the first-ever multi-center clinical trial of a drug to treat military-related chronic PTSD. The study will involve 400 Veterans at 20 VA medical centers nationwide and will evaluate whether risperidone, one of the safest and most extensively studied antipsychotic medications, is effective in Veterans with chronic PTSD who continue to have symptoms despite receiving antidepressant medications.

Facts About PTSD

PTSD is a psychiatric disorder that can affect people who have experienced life-threatening events, such as combat, a terrorist attack, or a personal assault. Symptoms include flashbacks, nightmares, depression, and social withdrawal, as well as physical health changes. Treatment often includes anti-anxiety drugs or other medication along with psychotherapy. Current evidence-based psychological treatments for PTSD include prolonged-exposure therapy, in which patients recall their traumas in a safe setting and gradually learn to adjust their emotional response; and cognitive-processing therapy, a systematic 12-session program that helps patients release the negative emotions linked to the trauma.

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Prosthetics/Amputations

VA researchers are exploring the use of leading-edge technology such as robotics, tissue engineering, and nanotechnology to design and build lighter, more functional prostheses that look, feel, and respond more like real arms and legs. They are also exploring new methods to improve and maximize the reconstruction of injured extremities. Additionally, researchers are studying how best to match available prosthetic components to the needs of amputees, especially those who seek to maintain an active lifestyle and require versatile, high-performance prostheses.

Examples of VA Research Advances

Blurring the line between man and machine – Researchers at the Center for Restorative and Regenerative Medicine—a collaboration among VA, Brown University, and MIT—are working to improve function for people who have lost limbs by developing high-tech "biohybrid" limbs that merge biological and non-biological materials and work in a natural, lifelike manner. The effort involves clinicians and investigators with expertise in orthopedics, tissue engineering, neurotechnology, prosthetic design, and rehabilitation. In one project, a team is developing a brain-computer interface called BrainGate that may allow people with paralysis to operate computers—or amputees to control prosthetic devices—using only their thoughts.

Limb loss prevention – Researchers at VA's Center of Excellence for Limb Loss Prevention and Prosthetic Engineering in Seattle studied nearly 3,000 feet of people with diabetes and tracked which patients later developed foot ulcers, a common complication of diabetes that can lead to amputation. They found certain foot deformities, such as hammer toe or Charcot foot, to be a risk factor for ulcers.

New type of electrode may be used in prosthetics – Implanted brain electrodes may play a role in control of high-tech prosthetic arms. A team with VA and Case Western Reserve University has developed a "smart" material, inspired by the natural properties of the sea cucumber, that changes from a hard plastic to a soft rubber upon contact with water. Electrodes made from the material may be easier to implant and stay viable in the brain for a longer time.

Facts About Prosthetics

As of Aug. 1, 2008, the Department of Defense had reported 1,214 service members who suffered limb loss in Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). Many are now in care in the VA system. Foot ulcers caused by diabetes, which affects more than a quarter of VA patients, are another major cause of amputations. In the U.S., people with diabetes account for about two-thirds of all lower-limb amputations. VA has long been a world leader in prosthetics research and care, and is now in the forefront of developing and testing innovative prosthetic devices for OEF/OIF Veterans who have experienced the loss of a limb.

Spinal Cord Injury

VA researchers are studying the biological processes involved in spinal cord injury (SCI), in hopes of finding a cure. They are also working to develop better treatments and adaptive technologies for Veterans with SCI. Another focus of research is preventing the medical complications that often develop as a result of this disability. For example, VA investigators are developing microstimulators that help to prevent respiratory problems by recreating natural breath and cough patterns. Respiratory problems are the leading cause of death in patients with SCI.

Examples of VA Research Advances

Brain-computer interfaces – A team at VA's Center for Restorative and Regenerative Medicine—a collaboration among VA, Brown University, and MIT—is advancing a system called BrainGate, which has already shown promise in enabling patients with paralysis to use only their thoughts to control external devices. The system uses a tiny sensor implanted in the brain. The sensor sends brain signals to an external decoder that translates them into commands for electronic or robotic devices.

Easing chronic pain – Chronic pain is experienced by more than 50 percent of patients with SCI. Researchers at the West Haven, Conn., VA Medical Center and Yale University have identified a particular form of sodium channel—a specialized protein in the membranes of brain cells that regulates the flow of sodium into the cells—that is responsible for conveying pain signals to the brain. The investigators are working to develop a new therapy based on this knowledge. Other research teams are exploring the possibility of grafting specially cultured neurons, or nerve cells, into the spinal cord. The cells would release natural body chemicals that have a pain-relieving effect.

Functional Electrical Stimulation (FES) – VA researchers and colleagues in Cleveland are developing FES-based walking systems, hand-grasp systems, and other devices that expand the abilities of patients with spinal cord injury and increase their opportunities for employment and independence. Researchers at the site are now collaborating with the "BrainGate" group (see above) to develop applications that may benefit those with spinal cord injury as well as those who have suffered the loss of a limb.

Facts About SCI

Spinal cord injury impairs the brain's ability to send messages to the rest of the body, and can result in paralysis, loss of feeling, chronic pain, and many other serious medical problems. Spinal cord injuries are estimated to affect some 250,000 Americans, with 10,000 new injuries occurring each year, mostly among young males. VA cares for more than 25,000 Veterans with spinal cord injuries or disorders, making it the largest integrated health care system in the world providing spinal cord care.

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Substance Abuse

A leader in the field of addiction research for decades, VA Research continues to support a broad portfolio examining substance-abuse prevention, screening, and treatment, including studies aimed at understanding the genetic factors that may predispose people to alcohol or drug abuse and addiction. One area of particular focus is improving substance-abuse treatment for homeless Veterans.

Examples of VA Research Advances

Predicting relapse after alcohol abuse treatment – VA researchers compared remission and long-term relapse rates among people with alcohol-use disorders who entered treatment or Alcoholics Anonymous (AA) within their first year of seeking help, and those who did not initially obtain treatment or join AA. They found that those who entered treatment or AA early on were far more likely to be in remission after three years and to stay in remission even after 16 years. The researchers said the findings support the notion that "natural remission"—getting sober without formal treatment or help—may be less stable than remission that comes about through participation in AA or treatment.

Study tracks cognitive impairment – In a study at the Jackson, Miss., VA Medical Center, Veterans entering treatment for alcohol or substance abuse were administered cognitive and memory tests. Significant impairments were found in about a third of the nearly 300 Veterans in the study. The researchers hope to draw attention to the implications of their findings for clinicians and counselors interested in identifying barriers to treatment compliance and retention.

VA screening program a success – A recent study documented VA's successful implementation of a new alcoholism and alcohol abuse screening program in more than 800 outpatient clinic sites nationwide. Medical record reviews covering a one-year period showed that 93 percent of VA outpatients were screened. A quarter of these Veterans tested positive and were referred for appropriate follow-up care.

Facts About Substance Abuse

Substance use disorders—a term that includes alcohol and drug abuse and addiction—have been called the nation's number one health problem, taking a huge toll on individuals and families and costing the U.S. about $414 billion each year. During fiscal year 2007, more than 375,000 Veterans received care in VA for substance use disorders. More than half of these patients also had a psychiatric disorder. In addition to those treated for substance use disorders, nearly 500,000 Veterans received care for nicotine dependence. Moreover, an estimated 1.4 million Veterans smoke tobacco.

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Traumatic Brain Injury

VA researchers are conducting cutting-edge research aimed at improving care for Veterans with traumatic brain injury (TBI). VA research in this area focuses on gaining a better understanding of the brain changes that occur in TBI; refining screening and diagnostic tools; developing drugs to treat TBI, either long-term or immediately after an injury; helping Veterans with TBI reintegrate into the community; and identifying the best coping strategies for families.

Examples of VA Research Advances

Trial compares rehab methods – Researchers from the Defense and Veterans Brain Injury Center published the results of one of the first studies of its kind: a randomized clinical trial comparing different treatment approaches for those with TBI—"cognitive-didactic" versus "functional-experiential." The former approach seeks to explicitly reteach thinking skills—for example, through computerized tests—while the latter emphasizes practice with everyday tasks. The study found that both approaches resulted in long-term improvements, though younger and older patients tended to benefit in different ways. The trial took place at VA's four main polytrauma centers, in Tampa, Richmond, Palo Alto, Calif., and Minneapolis, and involved 360 Veterans and active-duty personnel, mostly men, with moderate to severe TBI.

Recovery from coma – A VA research team in Hines, Ill., is working to develop new ways to restore consciousness to those who are in a coma or vegetative state as the result of a severe brain injury. One of the methods they are exploring is transcranial magnetic stimulation, which involves holding an electromagnetic coil over specific areas of the brain to excite the underlying neurons. Another is familiar vocal stimulation. In this approach, family members record narratives about events they shared with the patient. The researchers believe the recordings may stir a brain response.

VA hosts international conference – Creating a registry of Veterans who have suffered a TBI and tracking long-term effects of the condition were among the priorities outlined at an international conference of TBI experts hosted by VA in November 2008. A full summary is available at www.research.va.gov.

Facts About Traumatic Brain Injury

Traumatic brain injury (TBI) is estimated to affect some 20 percent of U.S. troops injured in Afghanistan or Iraq. The cause is usually an explosive. Most of the injuries are considered mild, but even these cases can involve serious long-term effects on areas such as thinking ability, memory, mood, and focus. Symptoms may also include headaches and other forms of chronic pain. Treatment typically includes a mix of cognitive, physical, speech, and occupational therapy, along with medication to control specific symptoms, such as headaches or anxiety. As of September 2008, there were more than 22,000 Veterans being compensated for TBI, of whom more than 5,800 were Veterans of the current wars.

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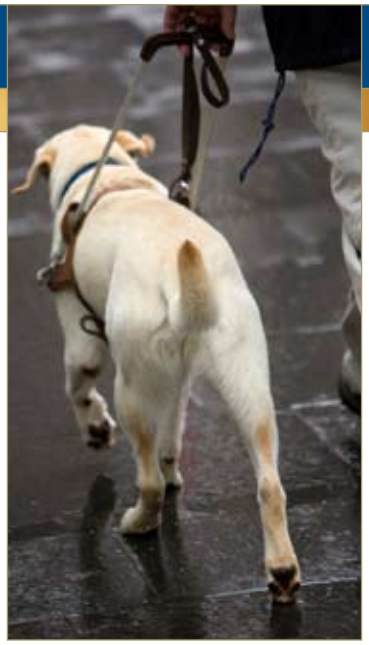

Vision Loss

One of the most exciting areas of VA research in this field is the development of an artificial retina to restore vision to those affected by macular degeneration or retinitis pigmentosa. VA researchers are also working to improve or design new assistive devices for the visually impaired, and to develop more accurate and efficient methods of vision assessment.

Examples of VA Research Advances

Vision problems in PTSD and TBI – Many Veterans with posttraumatic stress disorder (PTSD) and traumatic brain injury (TBI) also have vision problems, such as difficulty focusing or sensitivity to light. But experts are unsure about the exact roles of PTSD and TBI in these problems, and how each condition may affect the pathway between the eyes and the brain. Researchers at the Palo Alto, Calif., VA Medical Center hope to shed light on this issue by studying vision disorders among two groups of Veterans—one with PTSD, and the other with PTSD and mild TBI.

Study backs expansion of low-vision program – A two-year study that involved 126 legally blind Veterans documented the effectiveness of providing low-vision therapy on an outpatient basis. Until 2007, Veterans with low vision were treated mainly at regional centers that required extended stays. Now, the therapy is available at far more sites, making it more convenient for Veterans and cost-effective for VA. The therapy doesn't improve eyesight per se, but it does teach patients how to use various adaptive devices so they can keep doing everyday tasks.

Help for macular degeneration – In a Chicago-based VA study, Veterans with age-related macular degeneration who took the antioxidant lutein by itself or in combination with other nutrients showed major improvements in several symptoms. The study was the first to show that lutein could not only slow the progression of the disease but could actually help reverse it.

Facts About Vision Loss

VA estimates that by 2010 there will be nearly a million Veterans coping with severe visual impairment. In older Veterans, major causes of vision loss include age-related macular degeneration, glaucoma, cataracts, stroke, and diabetic retinopathy. Many of these Veterans are helped through VA's extensive network of Low Vision Rehabilitation programs. Among the newest generation of war Veterans, many of those who have suffered brain injuries as the result of blasts also experience vision problems, such as blurred vision, double vision, sensitivity to light, and difficulty reading. One study at a VA polytrauma center found that 38 percent of patients had a visual impairment; in those injured by blasts, the figure jumped to 52 percent.

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Women's Health

In response to the increasing number of women Veterans, VA Research has focused additional attention on the unique health needs of this population. Current studies are examining the general health issues and health care usage of women Veterans; exploring the experiences of women Veterans regarding sexual and military-related traumas; and assessing the delivery of VA care for female Veterans and identifying opportunities for improvement.

Examples of VA Research Advances

Study examines women's perceptions of VA – Many women Veterans who are not enrolled in the VA health system are unaware that VA provides women's health care, according to a recent study by VA researchers in Los Angeles. The study also found that overall quality of care, access to gender-appropriate services, and a gender-sensitive environment that respects and allows for privacy were among the health care issues that matter most to women Veterans.

Screenings yield data on sexual assault – A VA study found that about 15 percent of female Veterans of the wars in Afghanistan and Iraq who use VA health care experienced sexual assault or harrassment during their military service. The rate among men was much lower—less than 1 percent. The finding was based on screening data on more than 125,000 Veterans who were seen at VA facilities between 2001 and 2007. The researchers noted that VA screening data may not reflect the actual overall rate of sexual trauma in the military but are useful for planning mental health care for VA patients.

Wealth and mammography – A team at the San Francisco VA Medical Center collected health data from more than 4,000 older women on Medicare and asked whether they had received a screening mammography in the past two years. The researchers found that poorer older women with greater life expectancies are at risk for not receiving screening mammographies, whereas wealthier women with limited life expectancies are often screened when they are unlikely to benefit.

Facts About Women's Health

As of Sept. 2008, there were more than 1.8 million women Veterans in the United States and Puerto Rico, accounting for nearly 8 percent of the U.S. Veteran population. More than 250,000 of these women rely on VA health care. In response to the growing number of women Veterans in recent years, VA has taken steps to significantly increase the participation of women Veterans in VA studies and to develop an expansive research agenda focused on their specific needs. Today, VA is recognized as a national leader in the investigation of women's health.

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2009