

USAWC STRATEGY RESEARCH PROJECT

**FEDERALLY SPONSORED HEALTH CARE RESEARCH:
GULF WAR ILLNESSES AND BEYOND**

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ABSTRACT

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The United States Congress has poured vast amounts of money into Gulf War illnesses research projects. From 1994 through 2005, the Department of Veterans Affairs, the Department of Defense, and the Department of Health and Human Services collectively spent \$284 million on Gulf War illnesses research. Some question whether there is sufficient oversight and collaboration directed at ensuring that the most appropriate and strategic priorities aimed to improve the health status of deployed soldiers and veterans are being addressed. Who is conducting what research where? Is this research resulting in America's sons and daughters getting the care they need and deserve? Gulf War illnesses are defined and the evolution of the interagency committees that coordinated and conducted federal Gulf War illnesses research from its inception are highlighted. Congressionally directed funding trends, where the funds are spent, and significant impacts and improvements resulting from research findings are explored. Regardless of partisan or political views, there is great interest in the federal response to health concerns of Gulf War and Global War on Terrorism veterans as well as a significant interest in aid provided to our service men and women who endure great sacrifice to protect our freedom.

FEDERALLY SPONSORED HEALTH CARE RESEARCH: GULF WAR ILLNESSES AND BEYOND

More than fifteen years after the end of the 1991 Persian Gulf War, there is continued and avid interest in the federal government's response to the health concerns of Gulf War veterans. This increased attention has resulted in monumental strides and deliberate capacity with focused commitment and intensity directed at serving this population with health concerns. The United States Congress has poured vast amounts of money into Gulf War illnesses research projects with the bulk of the research accomplished by the Department of Veterans Affairs (VA), the Department of Defense (DoD), and the Department of Health and Human Services (HHS).¹ Though no comprehensive and cumulative listing of these expenditures exists in any one source, totals have been derived from various Department of Veterans Affairs and Government Accountability Office reports. From fiscal year 1994 (FY94) through FY05, the VA, DoD and HHS collectively spent \$284 million on Gulf War illnesses research² with DoD providing the majority of the funding, or about 74 percent, of all federal Gulf War illnesses research funding within the 1994 through 2003 timeframe.³ Our nation, the United States Congress, the federal healthcare system, and the American public are concerned and eager to provide the necessary support to enable affected veterans to be fully productive and functional members of society.

While about 700,000 U.S. military personnel were deployed during the Gulf War conflict, casualties were relatively light compared with previous major conflicts.⁴ Despite this relatively low casualty rate, the overall health status of these veterans is a significant public concern. Some question whether there is sufficient oversight and collaboration directed at ensuring that the most appropriate and strategic priorities aimed to improve the health status of deployed soldiers and veterans are being addressed. Who is conducting what research where? Is this research resulting in America's sons and daughters getting the care they need and deserve?

This strategy research project defines Gulf War illnesses and highlights the evolution of the interagency committees which coordinated and conducted federal Gulf War illnesses research from its inception through FY05. It will explore congressionally directed funding trends, identifying in which agencies the funds are spent, and significant impacts and improvements resulting from research findings. Additionally, this project will address the impact of public opinion as it affects the national response. Regardless of partisan or political views, there is great interest in the federal response to health concerns of Gulf War and Global War on Terrorism veterans as well as a significant interest to assist our service men and women who endure great sacrifice to protect our freedom.

Gulf War Illnesses Defined

Gulf War Syndrome or Gulf War Illnesses have been used to describe a collection of chronic signs and symptoms reported by U.S., British, Canadian, Czech, Danish, Saudi, Egyptian, Australian and other Coalition Armed Forces that were deployed to Operation Desert Storm in 1991.⁵ Over 100,000 American veterans of Operations Desert Storm/Desert Shield, or approximately 15% of deployed U.S. Armed Forces, returned from the Persian Gulf and slowly (6-24 months or more) presented with a variety of complex signs and symptoms characterized by such symptoms as disabling fatigue, intermittent fevers, night sweats, headaches, confusion, irritability, and unexplained aches and pains, to name a few.⁶ However, these veterans did not exhibit a single type of health problem or unique symptom complex (or syndrome) that could be labeled as such. Consequently, these veterans must be evaluated and treated as unique individuals. As such, assumptions cannot be made about the health of a Gulf War veteran who presents for clinical evaluation. Each veteran requires a medical history and screening examination, with treatment tailored to the specific needs of each and every patient.⁷

The Institute of Medicine (IOM) recently released *Gulf War and Health, Volume 4*, a report that summarizes in one place the current status of health effects in veterans deployed to the Persian Gulf irrespective of exposure information. The charge of the IOM committee was to review, evaluate, and summarize peer-reviewed scientific and medical literature addressing the health status of Gulf War veterans.⁸ Extensive searches of the scientific and medical literature were conducted and over 4000 potentially relevant references were retrieved. After assessment of the titles, abstracts and references found in the initial searches, the committee focused on 850 potentially relevant epidemiologic studies for its review and evaluation.⁹ While examining these health outcomes in Gulf War-deployed veterans, it is quite evident that numerous researchers over the past decade have attempted to determine whether a set of symptoms reported by veterans could be defined as a unique syndrome or illnesses. These investigators have attempted, by using factor or cluster analysis, to define a unique health outcome; none however, has been identified. Although veterans who had deployed during the first Gulf War report more symptoms of illnesses than non-deployed veterans, no symptoms unique to Gulf War veterans have been found nor any increase in mortality or hospitalizations, though there may be increased incidence of a rare neurologic disease (amyotrophic lateral sclerosis or ALS).¹⁰ Many Gulf War veterans rejected the IOM study's findings, as they did previous reports and studies that did not support their conclusions.¹¹

Yet, many Gulf War veterans who report health problems are definitely ill. It is clear that numerous veterans are suffering; compelling testimonials abound. In many cases, the veterans

in question are the last individuals one would expect to complain about their health. These are Type A individuals, people who worked two jobs, were active and aggressive. Upon review of veterans' statements to various fact-finding commissions and congressional committees over the years, one finds a plethora of individuals describing their superb prewar energy and physical prowess. Men and women alike, appear to have been high achievers, now stunned and angered by their declines.¹² The health effects resulting from service in military operations have been a topic of increasing interest since the conclusion of the Gulf War and such interest has further evolved with renewed intensity as a result of continued operations in Afghanistan and Iraq. So much so, that Congress and the administration have continued to support these health effects resulting from service in military operations by increasing the DoD and VA budgets.¹³

Military history reveals that war-related conditions and subsequent health effects are not new. Almost every major war in the last century involving western nations has seen combatants diagnosed with a form of post-combat disorder.¹⁴ These modern wars have been associated with a syndrome characterized by unexplained medical symptoms. The form that these maladies assume, the terms used to describe them, and the explanations offered by servicemen and doctors seem to be influenced by advances in medical science, changes in the nature of warfare, and underlying cultural forces.¹⁵ In what is considered the seminal overview of wartime maladies published in the September 1996 *Annals of Internal Medicine*, the authors conclude that, "despite enormous progress in medical science, poorly understood war syndromes have recurred at least since the Civil War and the symptoms were more alike than different."¹⁶ Though the direct causes of these syndromes are typically elusive, it is clear that war sets in motion an undeniable cycle of physical, emotional, and fiscal consequences for war veterans and for society.¹⁷ In light of the current war on terrorism with its increased operational tempo, longer and more frequent deployment cycles, and exposure to nontraditional, hostile combat conditions, it is critical that society become sensitive to and anticipate such war-related conditions to continue to manifest. Such modern conditions and influences, coupled with lessons learned as military history suggests, advocate the probability that we will see many more of these same post-combat disorders. Healthcare professionals must be ever vigilant in recognizing and appropriately treating these unexplained medical symptoms.

Evolution of the Interagency Committees

Within months of returning home from the Gulf War in 1991, some veterans began to report a variety of symptoms such as fatigue, headache, sleep disturbances, memory problems, and joint pain. For the first year after the war, veterans who left active duty, either to re-enter

the inactive Reserves/National Guard or to become civilians, were ineligible for no-cost health care from the VA unless they could demonstrate a service-related health problem or financial need. In response to this issue of ineligibility, Congress acted appropriately with the needed change in legislation. With the passage of Public Law 103-210 in 1993, Gulf War veterans were granted special eligibility for health care within the VA for any illnesses possibly related to wartime service.¹⁸

As reports emerged in 1992 and 1993 of increasing health problems among these veterans, it was clear that the government needed a comprehensive response to this emerging health issue. Immediate answers to veterans' health concerns were not forthcoming, and many veterans blamed the federal government for not doing enough to respond.¹⁹ With thousands of ill Gulf War veterans and so many potential causes, the VA, in concert with other federal departments and agencies, developed an evaluation program to respond to this great need.²⁰ The VA Gulf War Registry Health Examination Program was a nationwide effort to provide Gulf War veterans with access to high quality evaluation and health care. This clinical evaluation program served as entree into the VA health care system for a new generation of war veterans.²¹ In response to veterans reporting health problems that they believed might be due to their participation in the war, and in concert with this new examination program, the VA, DoD, HHS, and other federal agencies initiated research studies and investigations into these health concerns and the consequences of possible hazardous exposures.

In 1993, President Clinton designated that the Secretary of the VA be responsible for coordinating research activities undertaken or funded by the executive branch of the federal government on the health consequences of service in the Gulf War.²² As part of this coordination role, the VA is required to submit a yearly report to Congress on the results, status, and priorities of federal research activities related to health consequences of military service in the Gulf War. This report has been prepared by various interagency working groups over the years throughout the evolution of this initiative as coordination efforts shifted from strictly Gulf War-related to focusing on all deployment-related health concerns. As the landscape of the war zones changed, so did the federal response and its resulting research activities.

Compelled by efforts to streamline interagency access to care for all Gulf War veterans, in 1994, DoD developed the Comprehensive Clinical Evaluation Program (CCEP) and in parallel, the VA upgraded its own Gulf War Registry. Working toward the goal of seamless information sharing between DoD and the VA, these two clinical evaluation programs were designed to collect comparable data on the health of Gulf War veterans. The findings from "registry" examinations were used to generate research hypotheses about the health effects of

Gulf War service. Additionally, these clinical registries have been utilized extensively in outreach and education efforts.²³

By 1996, both the VA and DoD were well on the way to establishing robust Gulf War illnesses research and clinical evaluation programs. To track the myriad of ever-growing issues, the Secretary of Defense designated that a Special Assistant for Gulf War Illnesses (OSAGWI) oversee all DoD efforts related to these Gulf War conditions. To complement its investigations, the OSAGWI commissioned the RAND National Defense Research Institute and RAND Health Center for Military Health Policy Research to examine the scientific literature and conduct other policy investigations on the health effects of eight areas of possible causes of Gulf War illnesses. The eight areas of investigation included infectious diseases, pyridostigmine bromide, immunizations, wartime stress, chemical and biological warfare agents, oil well fires, depleted uranium, and pesticides. It was hoped that combining what scientific investigations had to say about what happened in the Gulf War would produce a more complete understanding of these illnesses.²⁴

Although no definitive cause was found to explain the health symptoms reported by Gulf War veterans, RAND's research, along with the investigations of other researchers, identified a number of areas that could not be ruled out as possible causes of symptoms and, as such, required further research. Based on the published RAND work to date, these areas for further research included health effects from pyridostigmine bromide and pesticides. Moreover, because the battlefield is "dirty" in the sense that troops are exposed to many occupational hazards and to high levels of stress, RAND suggested additional investigations into the effect of factors in combination and of individuals' susceptibility to such exposures. These RAND studies also pointed to the critical need for better data collection and record keeping related to possible causes of Gulf War illnesses, an effort that DoD already has begun to significantly enhance and remedy.²⁵

It was this lack of service member health and deployment data that hampered early investigations into the nature and causes of illnesses reported by many veterans and active duty service members following the Gulf War.²⁶ In response, Congress enacted legislation in November of 1997 requiring that DoD establish a system for assessing the medical condition of service members before and after their deployments to locations outside the United States. This legislation also required the centralized retention of certain health-related data (namely, blood samples) associated with the service member's deployment and the establishment of a quality assurance program to ensure compliance.²⁷

DoD, however, was slow to respond. In September 2003, the Government Accountability Office, formerly known as the General Accounting Office, found that the services had not complied with DoD's force health protection and surveillance policies. Deficiencies were identified relating specifically to the policies requiring that active duty service members be assessed before and after deploying overseas, that the services document receipt of certain immunizations, and that health-related documentation be maintained in a centralized location.²⁸ One reason cited for these deficiencies and varied degrees of compliance was the lack of automated systems to record, capture, and retain this information. The process was such that pre and post-deployment health assessments were completed in hard copy and mailed to the Army Medical Surveillance Activity (AMSA), DoD's executive agent for collecting and retaining all the military services' deployment health-related documents, including the pre-deployment and post-deployment health assessments and immunizations.²⁹ DoD officials responded that automation of deployment health assessment forms and recording of service member immunizations would greatly improve the completeness of deployment data in the AMSA centralized database. DoD has addressed these shortcomings and has ongoing initiatives to accomplish these goals which will be discussed later in this writing.

In 1998, in response to growing concerns of ill Gulf War veterans, Congress enacted two additional laws: Public Law 105-277, the Persian Gulf War Veterans Act, and Public Law 105-368, the Veterans Programs Enhancement Act. In addition to these laws expanding the VA's coordination efforts to include all health-related activities for Gulf War veterans, these laws directed the Secretary of Veterans Affairs to partner with the Institute of Medicine of the National Academy of Sciences. The charge of this venture was to review and evaluate the scientific and medical literature regarding associations between illnesses and exposure to toxic agents, environmental or wartime hazards, and preventive medicines or vaccines associated with Gulf War service.³⁰

Additionally, Public Law 105-368 legislated the establishment of the VA Research Advisory Committee on Gulf War Veterans' Illnesses. This congressionally mandated federal advisory committee, was appointed in 2002 to provide advice on federal Gulf War illnesses research needs and priorities to the Secretary of VA.³¹ The committee is made up of members of the general public, including non-VA researchers and veterans' advocates.³² According to its charter, the Committee measures all research on Gulf War veterans' illnesses against a single standard: the potential for that research to improve the health of ill veterans.³³

Congressionally Directed Funding Trends

From fiscal year 1995 (FY95) to FY05, Congress has directed the DoD to manage numerous targeted research initiatives. Congress tends to manage these initiatives by directing appropriated funding through DoD, specifically the U.S. Army Medical Research and Materiel Command. Congress does this largely due to DoD's long history of medical research, appropriate scientific rigor, discipline, adaptable management structure, and its ability to produce quality results.³⁴

Section 707 of Public Law 102-585, as amended by Section 104 of Public Law 105-368, requires that an annual report be submitted to the Senate and House Veterans' Affairs Committees on the results, status, and priorities of research activities related to the health consequences of military service in the Gulf War.³⁵ The VA has complied and has provided these reports to congressional committees since 1995. Additionally, the VA has carried out its coordinating role through the auspices of interagency committees, which have changed over time in response to federal research priorities and needs.³⁶

The annual report was originally prepared by the Persian Gulf Veterans Coordinating Board. In December 1999, this board was subsumed within the Military Veterans Health Coordinating Board (MVHCB) which was officially established to oversee the interagency plan to improve the federal response to the health needs of military veterans and their families as it relates to all deployments. In October 2002, within the VA/DoD Health Executive Council (HEC), the Deployment Health Work Group (DHWG) was established to provide to Congress recommendations and coordination for all matters that relate to the health of all troops in military deployments. For the sake of efficiency, DoD thought that it would be best to have one channel for VA/DoD coordination, so the decision was made to disband MVHCB and subsume its activities under the HEC, more specifically under the broader mission of the DHWG.³⁷ In 2003, the DHWG established its own Research Subcommittee to provide coordination of the interagency research strategy related to the health of troops in all military deployments, for active duty military personnel and veterans. The Deployment Health Working Group Research Subcommittee has subsequently assumed responsibility for preparing the annual report to Congress.

Regardless of this complicated evolution of interagency committees that coordinated Gulf War illnesses, the VA, DoD and HHS sponsored 300 distinct projects related to health problems affecting Gulf War veterans from FY92 through FY05.³⁸ A review indicates the scope of these federal research projects is very broad ranging from small pilot studies to large-scale epidemiology studies involving large populations and major center-based research programs.

As of September 30, 2005, 210 projects had been completed (70% of the 300 projects), and 90 projects (30%) were newly initiated or ongoing.³⁹ Additionally, federal funding for these research projects totaled \$284.1 million during the period FY94 through FY05.⁴⁰ The following table depicts the 12-year funding trends for Gulf War research in millions of dollars.

Department	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	Total Costs FY94-05
DoD	\$6.5	\$11.0	\$11.9	\$28.9	\$13.2	\$22.7	\$23.8	\$28.8	\$18.8	\$12.4	\$15.3	\$ 6.2	\$199.5
HHS	\$0.0	\$2.5	\$ 1.6	\$ 0.0	\$ 1.6	\$ 1.6	\$ 1.6	\$ 1.0	\$ 0.8	\$ 1.0	\$ 0.5	\$ 0.5	\$ 12.7
VA	\$1.2	\$15.8	\$ 3.9	\$ 2.8	\$ 4.7	\$ 9.0	\$12.0	\$ 8.6	\$ 4.5	\$ 5.7	\$ 7.7	\$ 9.5	\$ 71.9
Total	\$7.7	\$15.8	\$17.4	\$31.7	\$19.5	\$33.3	\$37.4	\$38.4	\$24.1	\$19.1	\$23.5	\$16.2	\$284.1

Table 1: Funding Trends for Gulf War Research in Millions of Dollars

As depicted in the chart above, funding for this research in recent years has decreased. This decrease is largely the result of federal research priorities having expanded to incorporate the long-term health effects of all hazardous deployments, not solely the Gulf War.⁴¹ This point is consistent with the recently released IOM *Gulf War and Health, Volume 4*. The IOM committee does not recommend more such studies be undertaken for Gulf War veterans, but, recommends there would be value in continuing to monitor the veterans for some health end points, specifically, cancer, neurologic diseases and causes of death.⁴² Also contributing to the downward funding trend is DoD's deliberate focus and shift beginning in FY00 from research solely on Gulf War illnesses to research on medical issues of active duty troops in current or future military deployments.⁴³

Significant Impacts

A wide variety of health related data collection improvements and policy changes have resulted over the years from the efforts, increased attention, and congressionally funded research activities focusing on Gulf War illnesses and deployment-related issues. Screening the medical conditions of service members prior to deployment and upon redeployment is now required by law. As was pointed out previously in the *GAO Defense Health Care* report of November 2004, one reason contributing to the deficiencies and varied degrees of compliance

of pre and post-deployment health assessments was the lack of automated systems to record, capture, and retain this very important health information. Service members hastily completed hard copy surveys as they prepared to deploy and again prior to departing the combat zone, which were then mailed to AMSA for analysis, electronic storage, and retention. Needless to say, this method of information capture was extremely inefficient and labor intensive resulting in deficient and unreliable data. Significant and renewed levels of commitment were invested and efforts to migrate from paper to electronic versions of these assessments were eventually accomplished by each of the services with DoD oversight and support.

In response to the GAO identified shortcomings, The Medical Protection System, or MEDPROS, was developed by the Army Medical Department to track all immunization, medical readiness, and deployability data for all active Army and reserve components.⁴⁴ The Air Force and Navy each have their own versions of a similar program and electronic tracking system. Additionally, DoD is currently implementing a comprehensive electronic medical records system which is scheduled to be fully operational and deployed across the services in all locations by 2008.⁴⁵ The Armed Forces Health Longitudinal Technology Application (AHLTA), formerly known as the Composite Health Care System, includes pre-deployment and post-deployment health assessment forms and the capability to electronically record immunizations given to service members.⁴⁶ AHLTA is considered the DoD companion electronic health record to the VA's health information system and will greatly enhance the increasing exchange of digital health records for those veterans transitioning between DoD and the VA for their health care. Further efforts are underway between DoD and VA as they continue to work cooperatively toward the development and implementation of a unified health data system that will ultimately include all health information of personnel through their military service and seamless transition into the VA healthcare system.⁴⁷

Another significant improvement demonstrating greater attention and compliance by DoD during the post-deployment period is the creation and implementation of the Post Deployment Health Reassessment Program. On March 10, 2005, the Assistant Secretary of Defense for Health Affairs directed an extension of the current Post Deployment Health Assessment program to provide a reassessment of global health with a specific emphasis on mental health at the three to six month post-deployment window.⁴⁸ As such, an interservice working group devised the Post Deployment Health Reassessment (PDHRA) program screening process to assist in identifying health concerns which may arise after service members redeploy from the combat zone. Recent field research indicates that health concerns, particularly those involving mental health, are more frequently identified several months following return from an operational

deployment.⁴⁹ The PDHRA program facilitates early identification and treatment of emerging mental health and other deployment-related health concerns. Unlike the previous paper version of pre and post-deployment health assessments, the PDHRA survey was mandated from its inception to be performed electronically with the data to be sent directly to AMSA. Results from the PDHRA then become a permanent part of the individual's military health record and are included in the Defense Medical Surveillance System (DMSS). The DMSS serves as the central repository of medical surveillance data for the U.S. armed forces. The DMSS integrates data from sources worldwide in a continuously expanding relational database that documents the military and medical experiences of service members throughout their careers.⁵⁰ With the change in policy and process, thereby mandating electronic data collection of the PDHRA, data capture issues are far less problematic resulting in increased compliance and data quality.

The power and capabilities of the DMSS cannot be overstated in its contribution to revolutionizing the effective conduct of comprehensive medical and/or public health surveillance. Public health surveillance is the routine and systematic collection, analysis, interpretation, and reporting of population-based data for the purposes of detecting, characterizing, and countering threats to health, fitness, and performance of members of defined populations.⁵¹ As a public health surveillance tool, DMSS is unprecedented, and has contributed greatly to data collection efforts in Gulf War illnesses research. Longitudinal health records are established and continuously updated for all individuals who have served in the armed forces since 1990. The DMSS documents the status of and changes in demographic and military characteristics as well as military and medical experiences of service members throughout their entire military careers.⁵² What is impressive and most useful from the public health perspective is the fact that longitudinal comparisons can be made to follow the same service members over time, something that had been identified in previous GAO reports as lacking. Over time, the linkages of data relevant to individual characteristics, exposure states, medical events and specimens will provide powerful capabilities as medical events accrue among aging cohorts of service members.⁵³

Innovative support programs focusing on Gulf War illnesses and deployment-related issues, however, do not stop with the DoD. The VA recognized that the healthcare providers themselves, specifically nurse practitioners, physicians, and physician assistants require focused education and training to better prepare them to recognize, respond to, and treat this new and emerging patient population with unique needs. As part of the Veterans Health Initiative, a continuing medical education independent self-study program was created and first released in early March 1998, then revised and re-released in 2002. This *Guide to Gulf War*

Veterans' Health provides an overview of the Gulf War experience, discusses the most common symptoms and diagnoses of these veterans, and describes the current VA and DoD health programs available on behalf of Gulf War participants.⁵⁴ In keeping with the previously presented IOM recommendation, efforts are underway to transition this program from its Gulf War focus and update the study guide to be more reflective of the current operational environment.

Both the VA and DoD have established deployment health research centers to determine the causes and most effective treatments for veterans' health problems. One condition receiving a tremendous amount of support is Post Traumatic Stress Disorder (PTSD). Previous to 1980, PTSD was dismissed as "combat fatigue" or "shell shock." However, since that time, PTSD has been officially accepted as a diagnosed condition. In addressing this growing concern, President Bush signed into law December 22, 2006, a \$3.2 billion comprehensive benefits and health care bill for veterans. Among its provisions, the Veterans Benefits, Healthcare, and Information Technology Act of 2006 adds \$65 million to increase the number of VA clinicians treating PTSD.⁵⁵

The federal government has also expended considerable funding on explicit treatment-related research for Gulf War veterans' illnesses as opposed to broad Gulf War medical research. VA and DoD projected spending over 21 million dollars on treatment research for veterans' on such issues as sleep disorders, antibiotic therapy and unexplained illnesses, through 2003.⁵⁶ Over 15 million dollars of this funding was used to conduct two large clinical trials of treatments for Gulf War veterans' illnesses. Additional funding was allocated for demonstration projects at several VA medical centers. These demonstration projects focused on identifying innovative case management strategies that would improve veterans' quality of life and satisfaction with health care.⁵⁷

As a result of this treatment-related research, considerable progress has been made in evaluating and treating illnesses among Gulf War veterans and in determining the prevalence of symptoms. Most Gulf War veterans are healthy today and have successfully readjusted to post-war life, or they have readily diagnosable health problems. The VA asserts it has been able to respond to the complexity of veterans' health problems; most of which are readily diagnosed with effective treatments available. Nevertheless, some veterans continue to report symptoms that cannot be easily diagnosed and may be debilitating. Although nearly all symptoms examined are found to be more prevalent among Gulf War veterans, the clustering of symptoms is not unique in this group. Some difficult to diagnose illnesses among Gulf War veterans are very similar to conditions commonly diagnosed in the general population.⁵⁸

Evidence-based approaches have found useful treatments for certain chronic symptom-based illnesses such as chronic fatigue syndrome and muscle pain.⁵⁹ To this end, the DoD, in collaboration with the VA, is using an evidence-based approach to develop clinical practice guidelines for a more standardized approach and evaluation of military personnel and veterans following hazardous deployments.⁶⁰ Additionally, the DoD/VA Post-Deployment Health Clinical Practice Guideline was developed specifically to assist primary care clinicians in evaluating and managing patients seeking care for potentially deployment-related health concerns and conditions. Implementation of this IOM recommended clinical practice guideline began in January 2002.⁶¹ The IOM clearly recommended clinical practice guidelines for the most common presenting symptoms and the difficult-to-diagnose, ill-defined, or medically unexplained conditions.⁶² The DoD and VA have complied with twenty-six such clinical practice guidelines created.

Though significant contributions as a result of congressionally funded research activities are appreciable, there remains yet one additional compelling advancement worth emphasizing. As previously mentioned, the Veterans Programs Enhancement Act of 1998 provided for a partnering relationship between the VA and the IOM. This association, grounded in scientific and clinical excellence, led to a plan for establishing national centers for the study of war related illnesses and post-deployment issues. Accordingly, on May 10, 2001, the Secretary of Veterans Affairs announced the establishment of two War Related Illness and Injury Study Centers located at the VA New Jersey Health Care System, East Orange, NJ, and the VA Medical Center, Washington, D.C. These centers, selected through a competitive peer-review process, have strong academic affiliations with medical and public health schools.⁶³ Charged with focusing on the most challenging medical issues, the mission of these centers is to provide service to combat veterans who have difficulty diagnosing disabling illnesses through clinical care, risk communication, education and research addressing potential environmental exposures and adverse health outcomes.⁶⁴

Public Impact on Federal Support

The effect of public support of veterans has far ranging impact and influence, not the least of which is the impact upon the individual service member and the federal medical research environment. In stark contrast to the convulsive public support of veterans during the Vietnam War, public support for today's Gulf War and Global War on Terrorism veterans is unyieldingly positive. Though partisan politics abound in the heated debate as to the appropriate and most effective strategy for success in Iraq, the U.S. citizenry is united in its resolve to support our

troops. In the aftermath of Vietnam, the public has learned how to detach and exhibit their political feelings from the encouragement and respect for the troops who are fighting our nation's wars. No greater evidence of this support can be found than in the public's outrage over the recently publicized outpatient treatment endured by some wounded veterans.

Perhaps in response to public opinion, the VA issued Veterans Health Administration Directive 2005-020, which establishes policy for providing two years free medical care for recently discharged veterans. Thus, veterans who served in a theater of combat operations or hostilities after November 11, 1998, have no copayment responsibilities during the two-year period after separating from military service for hospital care, medical services (to include medications), and nursing home care.⁶⁵

While public opinion is effective in shaping health care policy, public awareness of military health care issues is equally vital to garner bipartisan public support. To help shape public awareness and public support, there is evidence of concerted U.S. themes and messages being coordinated both laterally and horizontally across the government which do positively impact public opinion. Ambassador Karen Hughes' role as the Under Secretary of State for Public Diplomacy and Public Affairs helps ensure public diplomacy is practiced in harmony with public affairs efforts, particularly outreach to Americans.⁶⁶ Perhaps a natural adjunct to Ambassador Hughes' efforts would be to assimilate and integrate deployment-related health issues into national level information operations and public awareness campaigns. Efforts such as this would greatly standardize the messages received by the public and enable our legislators to set the conditions for unified, bipartisan action and appropriate health care funding and policy support. We owe our veterans continued vigilance and attention to their health issues. As stated by Senator Joseph Biden, "It's only when there is overwhelming public opinion that you're able to get overwhelming bipartisan congressional opinion."⁶⁷

The Future

Fifteen years after the end of the Gulf War, it appears federally sponsored health care research and clinical evaluation programs have made substantial contributions to the health care of Gulf War service members and veterans. Most importantly, these programs paved the way to improved systems of health care for the future service members and veterans fighting the current Global War on Terrorism. The American public, service men and women, their families, elected officials, and healthcare providers are all sensitive to and increasingly interested in the health care status of those who fight our nation's wars. No previous military population has been as extensively evaluated as have Gulf War veterans and this trend is likely

to continue. There may be no greater reflection of this commitment to our military forces than found in the recently released FY08 Defense budget request. In it, the President reaffirms his commitment to ensure a high state of military readiness and ground force strength; to enhance the combat capabilities of the United States Armed Forces; to continue the development of capabilities that will maintain traditional U.S. superiority against potential threats; and to continue the DoD's strong support for service members and their families.⁶⁸ Thus, given the public mandate and the resultant response from national leadership with regard to veterans' healthcare, it would seem that as the U.S. continues to pursue the war on terrorism in Iraq and Afghanistan, the federal medical research community will continue its obligation to monitor, evaluate and address the health of our war veterans to ensure they get the medical care they need and deserve.

This strategy research project defined Gulf War illnesses and highlighted the evolution of the interagency committees which coordinated and conducted federal Gulf War illnesses research from its inception through FY05. It explored congressionally directed funding trends, identified where the funds were spent, and discussed significant impacts and improvements resulting from research findings. Finally, this project addressed the impact of public opinion and suggests that public opinion coupled with appropriate national resolve and federal funding will continue to lead the national response addressing the health needs of all American veterans.

Endnotes

¹ U.S. General Accounting Office, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment* (Washington, D.C.: U.S. General Accounting Office, June 2004), 1.

² U.S. Department of Veterans Affairs Annual Report To Congress, *Federally Sponsored Research on Gulf War Veterans' Illnesses for 2003*, Deployment Health Working Group Research Subcommittee (Washington, D.C.: Department of Veterans Affairs, February 2005), 28; and U.S. Department of Veterans Affairs Annual Report To Congress, *Federally Sponsored Research on Gulf War Veterans' Illnesses for 2005*, Deployment Health Working Group Research Subcommittee (Washington, D.C.: Department of Veterans Affairs, June 2006), 39 (hereafter cited as VA annual reports to Congress).

³ GAO report, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment*, 12.

⁴ Ibid, 4.

⁵ *The Gulf War Illnesses Research Home Page*, available from http://www.immed.org/illness/gulfwar_illness_research.html; Internet; accessed 21 November 2006.

⁶ Ibid.

⁷ U.S. Department of Veterans Affairs, Veterans Health Administration and U.S. Department of Defense, Office of the Assistant Secretary of Defense, Health Affairs, *Combined Analysis of the VA and DoD Gulf War Clinical Evaluation Programs, September 2002*, available from http://www.gulflink.osd.mil/combined_analysis/conclusion.htm; Internet; accessed 30 November 2006.

⁸ Institute of Medicine of the National Academies, *Gulf War and Health, Health Effects of Serving in the Gulf War*, (Washington, D.C.: The National Academies Press, 2006), vol. 4, 1.

⁹ Ibid, 2.

¹⁰ Ibid, 3.

¹¹ Benjamin Radford, "New Report Casts Doubt on Gulf War Syndrome," *Skeptical Inquirer*, 31 (2007): 14.

¹² Jeff Wheelwright, *The Irritable Heart: The Medical Mystery of the Gulf War* (New York, N.Y.: W. W. Norton & Company, 2001), 111.

¹³ Ed Lammon and Ana E. Lopez, eds., *The Year in Veterans Affairs and Military Medicine*, (Faircount LLC, 2006-2007), from editors' forward.

¹⁴ Edgar Jones, "Historical Approaches to Post-Combat Disorders," *Philosophical Transactions of the Royal Society of London*, 361 (Series B, Biological Sciences, 2006): 533.

¹⁵ Edgar Jones, Robert Hodgins-Vermaas, Helen McCartney, Brian Everitt, Charlotte Beech, Denise Poynter, Ian Palmer, Kenneth Hyams and Simon Wessely, "Post-Combat Syndromes From the Boer War to the Gulf War: A Cluster Analysis of Their Nature and Attribution," *British Medical Journal*, 324, (February, 2002): 1.

¹⁶ Kenneth C. Hyams, F. Stephen Wignall and Robert Roswell, "War Syndromes and Their Evaluation," *Annals of Internal Medicine*, 125 (September, 1996): 398-405.

¹⁷ Charles C. Engel, Ambereen Jaffer, Joyce Adkins, James R. Riddle, and Roger Gibson, "Can We Prevent a Second 'Gulf War Syndrome'? Population-Based Healthcare for Chronic Idiopathic Pain and Fatigue after War," *Advanced Psychosomatic Medicine*, 25 (2004): 102.

¹⁸ "President Signs Legislation Extending Authority for Priority Treatment," *Persian Gulf Review*, 3 (January 1995): 5.

¹⁹ U.S. Department of Veterans Affairs, Veterans Health Initiative, *Independent Study Course: A Guide to Gulf War Veterans' Health, March 2002*, 1; available from <http://www1.va.gov/gulfwar/docs/VHlgulfwar.pdf>; Internet; accessed 20 January 2007.

²⁰ Ibid, 6.

²¹ *Combined Analysis of the VA and DoD Gulf War Clinical Evaluation Programs, September 2002*, Internet; accessed 30 November 2006.

²² GAO report, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment*, 4.

²³ *Combined Analysis of the VA and DoD Gulf War Clinical Evaluation Programs*, September 2002, Internet; accessed 30 November 2006.

²⁴ *RAND National Defense Research Institute and RAND Health Website*, available from http://www.rand.org/pubs/research_briefs/RB7544/index1.html; Internet; accessed 13 November 2006.

²⁵ *Ibid*, 5.

²⁶ U.S. Government Accountability Office, *Defense Health Care: Force Health Protection and Surveillance Policy Compliance Was Mixed, but Appears Better for Recent Deployments* (Washington, D.C.: U.S. Government Accountability Office, November 2004), 1.

²⁷ *Ibid*.

²⁸ *Ibid*, 2.

²⁹ *Ibid*, 3.

³⁰ *Institute of Medicine of the National Academies Website*, available from <http://www.iom.edu/CMS/3793/24597/36955.aspx>; Internet; accessed 2 October 2006.

³¹ GAO report, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment*, 1.

³² *Ibid*, 2.

³³ Research Advisory Committee on Gulf War Veterans' Illnesses, *Scientific Progress in Understanding Gulf War Veterans' Illnesses: Report and Recommendations, 2004*, 1, available from http://www1.va.gov/rac-gwvi/docs/ReportandRecommendations_2004.pdf; Internet; accessed 12 December 2006.

³⁴ Staff Member, Office of the Secretary of Defense, Health Affairs, telephone interview by author, 10 January 2007.

³⁵ *U.S. Department of Veterans Affairs Research and Development Website*, available from <http://www.research.va.gov/resources/pubs/GulfWarRpt05.cfm>; Internet; accessed 30 November 2006.

³⁶ GAO report, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment*, 4.

³⁷ *Ibid*, 6.

³⁸ U.S. Department of Veterans Affairs Annual Report To Congress, *Federally Sponsored Research on Gulf War Veterans' Illnesses for 2005*, Deployment Health Working Group Research Subcommittee (Washington, D.C.: Department of Veterans Affairs, June 2006), 38.

³⁹ Ibid.

⁴⁰ VA annual reports to Congress.

⁴¹ GAO report, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment*, 11.

⁴² IOM report, *Gulf War and Health, Health Effects of Serving in the Gulf War*, preface ix.

⁴³ GAO report, *Department of Veterans Affairs: Federal Gulf War Illnesses Research Strategy Needs Reassessment*, 15.

⁴⁴ MEDPROS Website, available from https://apps.mods.army.mil/MEDPROS/Secured/about_medpros.asp; Internet; accessed 10 January 2007.

⁴⁵ Nancy Ferris, "CHCS II is Dead; Long Live AHLTA!" available from <http://www.govhealthit.com/article91517-11-21-05-Web>; Internet; accessed 4 February 2007.

⁴⁶ GAO report, *Defense Health Care: Force Health Protection and Surveillance Policy Compliance Was Mixed, but Appears Better for Recent Deployments*, 27.

⁴⁷ RAC report, *Scientific Progress in Understanding Gulf War Veterans' Illnesses: Report and Recommendations*, 10.

⁴⁸ U.S. Assistant Secretary of Defense for Health Affairs William Winkenwerder, Jr., MD, "Post-Deployment Health Reassessment," memorandum for Assistant Secretaries of the Military Departments, Manpower and Reserve Affairs, Washington, D.C., 10 March, 2005.

⁴⁹ U.S. Army Medical Command Chief of Staff William H. Thresher, "OTSG/MEDCOM Implementation Plan for Active Component Post-Deployment Health Reassessment Program (PDHRA)," memorandum for Commanders of MEDCOM Regional Medical Commands, Fort Sam Houston, TX, 7 March 2005.

⁵⁰ Mark V. Rubertone, MD, MPH, and John F. Brundage, MD, MPH, "The Defense Medical Surveillance System and the Department of Defense Serum Repository: Glimpses of the Future of Public Health Surveillance," *American Journal of Public Health* 92, no.12 (December 2002): 1900.

⁵¹ Ibid.

⁵² Ibid, 1901.

⁵³ Ibid, 1903.

⁵⁴ Department of Veterans Affairs, Veterans Health Initiative, *A Guide to Gulf War Veterans' Health, March 2002*, iv, available from http://www.hanford.gov/hanford/files/VA_GuidetoGulfWarVeteransHealth.pdf; Internet; accessed 19 December 2006.

⁵⁵ Alex Keenan, "VA Devotes More Resources to Diagnosing, Treating PTSD," *Springfield (VA) Army Times*, 22 January 2007, 28.

⁵⁶ RAC report, *Scientific Progress in Understanding Gulf War Veterans' Illnesses: Report and Recommendations*, 29.

⁵⁷ Ibid, 30.

⁵⁸ *Guide to Gulf War Veterans' Health*, March 2002, 6, Internet; accessed 19 December 2006.

⁵⁹ *Combined Analysis of the VA and DoD Gulf War Clinical Evaluation Programs*, September 2002, 4, Internet; accessed 30 November 2006

⁶⁰ Ibid.

⁶¹ *Deployment Health Clinical Center Home Page*, available from <http://www.pdhealth.mil/guidelines/gtk.asp>; Internet; accessed 12 December 2006.

⁶² Department of Defense and Veterans Health Administration, *DoD/VHA Clinical Practice Guideline for Post-Deployment Health Evaluation and Management*, September 2000/updated December 2001, preface iv, available from <http://www.pdhealth.mil/guidelines/gtk.asp>; Internet; accessed 12 December 2006.

⁶³ U.S. Department of Veterans Affairs, *War-Related Illness and Injury Study Centers*, New Jersey Health Care System Home Page, available from http://www1.va.gov/environagents/docs/WRIISCBrochure_IB10-165_April03.pdf; Internet; accessed 7 March 2007.

⁶⁴ U.S. Department of Veterans Affairs, *War-Related Illness and Injury Study Centers*, New Jersey Health Care System Home Page, available from <http://www.wri.med.va.gov/index.html>; Internet; accessed 7 March 2007.

⁶⁵ U.S. Department of Veterans Affairs, *Determining Combat Veteran Eligibility*, Veterans Health Administration Directive 2005-020 (Washington, D.C.: Department of Veterans Affairs, 2 June 2005), 1.

⁶⁶ U.S. Department of State, Senior Officials: Under Secretary for Public Diplomacy and Public Affairs, Karen Hughes, available from <http://www.state.gov/misc/19232.htm>; Internet; accessed 19 December 2006.

⁶⁷ John M. Donnelly, "Democrats Mull Ways to Steer Iraq War Policy," *Congressional Quarterly*, 8 January 2007.

⁶⁸ Budget of the United States Government, Defense Budget Submission for FY2008, available from <http://www.whitehouse.gov/omb/budget/fy2008/defense.html>; Internet; accessed 5 February 2007.