Protecting the Health of United States Military Forces in Afghanistan: Applying Lessons Learned since the Gulf War

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Four weeks after the terrorist attacks on the World Trade Center and the Pentagon, US combat troops began bombing missions over Afghanistan in Operation Enduring Freedom. Additional Reserve and National Guard personnel were called to active duty to support the war effort and to ensure security throughout the United States. All of these troops will require health care and assistance during and after this war on terrorism. They will benefit from recent federal legislation that has increased access to health care and from the changes implemented by the Departments of Defense and Veterans Affairs since the Gulf War. An innovative Defense Department “Force Health Protection” strategy places greater emphasis on helping service members and families stay healthy and fit and on preventing injury and illness. The two agencies also have developed new post-deployment clinical practice guidelines, established deployment research centers, and made further improvements in preventive medicine, health surveillance, and risk communication and are thus better prepared for this newest generation of war veterans.

After the terrorist attacks on the World Trade Center and the Pentagon on 11 September 2001, the United States began deploying military personnel to south Asia. Four weeks later, on 7 October 2001, Operation Enduring Freedom commenced when US war planes began bombing operations in Afghanistan. More than 30,000 male and female troops were involved in the initial deployment [1]. The air and sea campaign was waged from 3 aircraft carriers and 2 Marine amphibious assault ships stationed off the coast of Pakistan [2]. This fleet included destroyers, frigates, cruisers, and other support ships. Bombing missions also were carried out by Air Force B-52 and B-1B bombers flying from the island of Diego Garcia in the Indian Ocean and by B-2 bombers flying round-trip missions from Missouri in the continental United States. In addition to the air campaign, ground troops were deployed to Afghanistan, Pakistan, and neighboring ex-Soviet republics. The first US troops to operate within Afghanistan were special forces. Conventional ground troops began moving into southern Afghanistan on 25 November 2001 [3].

Adding to the deployment of combat troops, >50,000 Reserve personnel were called to active duty. These troops provided support for military operations in south Asia. Five thousand National Guard personnel also served in New York City, where they assisted in the rescue and recovery efforts. To ensure security, additional National Guard troops were stationed throughout the United States in airports and around government buildings [4].

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sistance during and after this war on terrorism. Unique health risks confront military personnel deployed to south Asia. Troops stationed in the United States may also have special health care needs. This article focuses on the fundamental changes in health care and assistance that have been implemented since the Gulf War within the Department of Defense (DoD) and Department of Veterans Affairs (VA). These changes will directly apply to this newest generation of war veterans and their families.

**THE GULF WAR**

The initial impetus for changing DoD and VA health care and assistance was provided by the health questions that arose following the Gulf War [5]. When hostilities ended on 28 February 1991, a total of 697,000 US troops had been deployed to the Arabian Gulf theater of operations. Unlike prior wars, a larger proportion of US troops were from the Reserves and National Guard (17%) and were women (7%) [6]. Because of the harsh desert environment and endemic infectious diseases, high morbidity rates were expected; however, surveillance programs conducted during the war indicated that troops were in good overall health [7, 8]. Fortunately, there were far fewer deaths (147 died from combat injuries) during this wartime deployment than anyone had hoped [9].

Although Gulf War veterans appeared healthy on returning home, within a few months reports began to emerge of varied illnesses and multiple somatic symptoms [5]. Eventually, similar health problems were reported among Gulf War veterans in the United Kingdom, Canada, Australia, and most recently France [10]. To evaluate these health problems, clinical assessment programs were established in the United States by the VA and DoD and in the United Kingdom and Canada. Systematic clinical examination of >100,000 American, British, and Canadian Gulf War veterans found a wide range of both medical and psychiatric health problems, but no new or unique syndrome was identified [11–13].

In addition to special clinical programs, >$170 million has been allocated in the United States to study Gulf War health questions [14]. Epidemiological surveys of varied populations of Gulf War veterans consistently have found increased rates of numerous symptoms and illnesses, and some clinical studies of small populations of veterans have found evidence of neurological abnormalities [15]. However, epidemiological studies based on hospital records have not shown an increased rate of hospitalizations among Gulf War veterans or of birth defects among their children [16, 17]. Importantly, since the war the mortality rate of US Gulf War veterans has been less than one-half that of the demographically comparable civilian population [18].

Twelve independent scientific panels have reviewed Gulf War health issues [19]. No single cause has been found to have produced widespread health problems among Gulf War veterans, and a unique “Gulf War syndrome” has not been confirmed [20]. More intensive study currently is focusing on the possibility of neurological disorders [14]. Additionally, $24 million has been allocated by the VA for 2 randomized, controlled treatment trials involving veterans with unexplained symptoms [14]. One trial is assessing whether doxycycline benefits Gulf War veterans with evidence of infection with *Mycoplasma* species, and the other is evaluating cognitive-behavioral therapy.

**HEALTH CARE**

One of the most important lessons learned after the Gulf conflict is that war veterans require greater access to high-quality health care. After the Gulf War, >100,000 Reservists and National Guard personnel were quickly deactivated so that they could return to their families and civilian jobs. In the process, they lost eligibility for routine DoD health care. The rapid downsizing of the military following the Gulf War meant that many more active-duty Gulf War veterans became ineligible for military health care in the early 1990s. Furthermore, VA health care was not freely available just after the war unless the Gulf War veteran could demonstrate a service-connected health problem or financial need.

Without ready access to military and VA health care providers, who are familiar with veterans’ health problems and unique military health risks, Gulf War veterans had trouble obtaining answers to basic questions about their wartime experiences. Even healthy veterans were frustrated and understandably concerned about the potential health effects of Gulf War service. It became clear that the provision of comprehensive health care is essential after modern wars, not only to treat traumatic injuries and diseases but also to deal with patients’ concerns, which is the foundation of good health care.

The need for access to high-quality health care was addressed in 1993 by Congress and the President through Public Law 103-210, which provided special eligibility for VA health care to all Gulf War veterans with any illness possibly related to wartime service. A more permanent solution was furnished in 1998 by passage of the Veterans Programs Enhancement Act of 1998 (Public Law 105-368). This law provides VA health care benefits for 2 years to veterans serving in a designated war zone. The troops returning from the current conflict in Afghanistan will have greater access to health care, even after they resume their civilian careers.

Another clear lesson learned after the Gulf War is that DoD and VA clinicians need timely education on deployment health risks and on the causes and treatment of chronic symptoms [21]. Because knowledgeable health care during the post-deployment period is crucial in preventing long-term health...
problems, DoD and VA developed a Post-Deployment Evaluation and Management Clinical Practice Guideline (CPG) [22]. An additional supporting guideline was developed by both agencies to assess veterans for chronic fatigue syndrome and fibromyalgia. Another CPG for posttraumatic stress disorder is being formulated.

The Post-Deployment Evaluation and Management CPG was developed to assist primary care physicians in the evaluation of patients seeking care after hazardous deployments. This guideline provides a structure, clinical tools, and linked resources, which allow primary care providers to diagnose and treat patients with deployment-associated health concerns. The post-deployment CPG also applies to family members of deployed troops and is designed to support comprehensive education efforts related to deployment health risks.

The post-deployment CPG is patterned on standard outpatient health care practices but with several critical differences. DoD and VA health care providers are more thoroughly educated about deployment health risks and have readily available sources of detailed information on these risks. As a result, health care providers can more quickly and accurately identify the causes of veterans’ complaints, provide more effective treatment, and more thoroughly inform patients and their families about the nature of the health problem. The guideline also ensures that there is more complete documentation of health risk, particularly related to a recent deployment. For example, in addition to a routine medical history, the patient is assessed for occupational and deployment history (including possible toxic exposures), traumatic events during deployment, and the use of prophylactic drugs and vaccines. Last, the guideline provides for further evaluation of veterans whose health problems remain unexplained in new DoD and VA deployment health clinical centers.

The regular use of CPGs will decrease the need for special clinical evaluation programs. For the first time, troops will be specifically screened in the primary health care setting for illnesses that may be related to a military deployment. The Gulf War clinical registry programs were excellent tools for bringing veterans into the VA and DoD health care systems, providing knowledgeable health care, and facilitating outreach and educational efforts [11, 12]. However, special clinical programs reach only a minority of veterans, and the clinical findings from self-selected populations are difficult to interpret. In contrast, the post-deployment CPGs will ensure that the health problems of all veterans returning from hazardous deployments are addressed whenever they seek care in the DoD or VA health systems.

In addition to direct patient care in 163 VA hospitals, the VA maintains a national system of 206 “Vet Centers” to provide readjustment counseling to returning combat veterans. These community-located facilities originally were established to help Vietnam veterans but have since been expanded to include later cohorts of combat veterans. The Vet Center program features psychological counseling, family counseling, community outreach and education, and social and economic referral programs.

FORCE HEALTH PROTECTION

During the 11 years since the Gulf War, the US military has been engaged in a series of hazardous deployments. Troops have been stationed continuously in the Arabian Gulf to enforce the no-fly zone over Iraq and guard against further Iraqi aggression. US troops also were deployed to Somalia in 1992–1993 and Haiti in 1994 for peacekeeping duties. More recently, US troops have been deployed to the Balkans and conducted an aerial war in 1999 to free Kosovo from Serbian occupation.

During this arduous period of continuous deployments, the US military has refined its health strategies [23]. The result has been the development of the unified policies that constitute “Force Health Protection” (FHP) [24]. FHP is an evolving strategy that balances DoD’s responsibility to perform its war-fighting mission while at the same time promoting and sustaining health and wellness throughout military service; preventing acute and chronic illnesses and injuries during training and deployment; and rapidly stabilizing, treating, and evacuating casualties [25].

FHP is a significant departure from prior medical readiness planning that focused on acute casualty care. In contrast to conventional combat medicine, FHP places greater emphasis on helping service members and families stay healthy and fit and on preventing injury and illness. Because of the changing missions and increasing use of US forces around the globe, greater attention has to be focused on non-battle-related health risks, including infectious diseases, exposure to toxics, environmental extremes, and physical and psychological stress—all of which must be prevented and treated in a different manner from traumatic battle wounds.

Combat operations in southern Afghanistan present the latest example of new FHP strategies. Medical doctors, surgeons, and nurses accompanied the first contingents of conventional ground troops [26]. At the same time that a trauma facility was being established, preventive medicine technicians were deployed to ensure high levels of camp sanitation [27]. Simple but effective hygienic measures, such as hand washing and waste disposal, were emphasized to prevent the kinds of health problems that plagued the Soviet troops sent to Afghanistan [28, 29]. For protection against malaria, a major infectious disease threat in this region, doxycycline prophylaxis was administered to troops [27].
To promote the health of the total force, the FHP strategy has integrated preventive medicine, clinical, and operational programs. The successful integration of programs and policy is dependent on continuous assessment of the health status of military members through medical surveillance, longitudinal health studies, adequate medical record documentation, and clinical follow-up. Comprehensive health surveillance is critical to provide accurate risk assessment, direct preventive health measures, and assess the effectiveness of military health care. FHP policies therefore mandate increased health surveillance activities, particularly during major deployments that pose a substantial health risk to troops [30, 31].

The necessity of basing FHP policies and programs on increased surveillance and more thorough medical record keeping was derived from lessons learned after the Gulf War. A major obstacle in trying to understand the causes of Gulf War veterans’ health problems was the lack of surveillance data. As a result, one of the earliest initiatives in FHP was to initiate pre- and post-deployment health screening [32]. For hazardous overseas missions, such as recent combat operations in south Asia, the health status of troops is assessed before and after deployment. Furthermore, newly activated Reservists receive more thorough health screening and medical record documentation than occurred during the Gulf War deployment. Last, troops sent to Afghanistan have provided a pre-deployment serum sample for long-term storage in the DoD serum repository, which contains >26 million frozen serum specimens from military personnel [25].

There are limitations associated with pre- and post-deployment screening because of the hurried, chaotic, and stressful circumstances surrounding a combat deployment. Only limited medical and psychological data can be obtained and documented while troops are preparing to deploy. Most of the emphasis has to be on ensuring that troops do not have unresolved health problems and are up-to-date on immunizations. Moreover, it is clear from evaluating the health problems of Gulf War veterans that surveillance has to begin long before the start of a hazardous deployment. Without comprehensive baseline and longitudinal health data, it may not be possible to determine the effects of wartime service, either in leading to new health problems or in exacerbating existing disorders.

To address the limitations of deployment surveillance, DoD has initiated pilot testing of the Recruit Assessment Program (RAP) [33]. The RAP is designed to collect comprehensive baseline health data on all military personnel at the start of basic training. Recruits complete a questionnaire that elicits detailed information related to their medical history, family history, health risk factors, and prior work-related exposures. If the feasibility of this program is demonstrated, the RAP will become the initial module of a computerized system of continuous medical record keeping and surveillance commencing on the first day of military service and following through to the last day in uniform, when health records will become accessible by the VA. At present, the RAP is in developmental testing at Marine Corps, Navy, and Army recruit training centers.

Other health surveillance activities within FHP include the Defense Medical Surveillance System, which was established in 1997 [34, 35]. The Defense Medical Surveillance System continuously collects health data on diseases and medical events and longitudinal data on personnel and deployments. Information on hospitalizations, ambulatory visits, reportable diseases, HIV tests, and health risk appraisal results are reported to the Defense Medical Surveillance System. A related aspect of FHP is the newly established DoD birth and infant health registry, which is based on both active and passive surveillance [36].

In addition to greater health surveillance of troops, increased environmental surveillance has been instituted during deployments as part of FHP [37]. Preventive medicine, environmental surveillance, and forward laboratory teams are now a routine component of military deployments [38]. In conjunction with environmental surveillance, deploying troops and medical staff are provided health threat briefings and written guidelines for identifying and avoiding health hazards [39, 40]. The health guideline for the Afghanistan conflict was distributed to troops at the start of Operation Enduring Freedom [40]. Additionally, pocket-sized handbooks, with guidance on the management of casualties from exposure to nuclear, biological, and chemical agents, are routinely published and provided to military health care personnel.

The usefulness of increased medical and environmental surveillance hinges on improvements in medical record keeping and data access within both DoD and VA [41]. What is needed is an integrated information system that collects all health and exposure data and provides this information to military forces worldwide. A critical goal of FHP therefore is for each military member to have a lifelong health record of all illnesses and injuries, immunizations, medical and dental care, and exposures to potential health hazards [42].

The Composite Health Care System II (CHCS-II) is the principal information technology being implemented within the military health system. This computer system eventually will maintain a comprehensive, lifelong medical record for each military health system beneficiary. The Theater Medical Information Program, which will be integrated with CHCS-II, will gather individual medical information throughout operational deployments. At the end of military service, the military health record will be shared with the VA to ensure continuity of medical care and to document service-connected health problems.
RISK COMMUNICATION

Another important lesson learned after the Gulf War is the need for effective risk communication, even after a brief and successful war. More extensive risk assessment and communication efforts have to be initiated before the start of major conflicts. When veterans cannot obtain answers to questions about wartime exposures and their effects, health concerns inevitably increase. Moreover, when appropriate health information is not available, many competing sources of health data, such as the Internet, may provide misleading and erroneous information.

This lesson has been incorporated into FHP and VA programs [43, 44]. Effective communication with military members, veterans, and families regarding health risks is a key element of health care and preventive medicine efforts. To be effective, risk communication cannot focus just on veterans and their families. The media, political leaders, and the general public all need accurate information to understand the health care needs of military personnel and veterans.

Numerous publications have been produced and Web sites established by VA and DoD to provide service members, veterans, and health care personnel with accurate health information. For example, DoD maintains the PDHealth.mil Web site to continuously provide clinicians working in a wide range of military and civilian practice settings with up-to-date health information pertaining to military deployments [45]. In addition, the VA regularly conducts briefings for the veterans’ service organizations, organizes national meetings on military health topics, and publishes national newsletters, fact sheets, and other educational materials on health issues related to military service [44, 46].

To provide evidence-based data on the health risks of military service, DoD and VA have established 5 centers for the study of deployment health [47, 48]. In coordination with the US Department of Health and Human Services, these centers specialize in the investigation of deployment-related health problems. They will help develop new ways to minimize illness and injury before, during, and after future conflicts and peacekeeping missions. The centers also will explore ways to improve health care for active-duty troops and veterans. Along with deployment research centers, a major new initiative is DoD’s Millennium Cohort Study, which involves an initial cross-sectional sample of 100,000 military personnel [49]. This population will be followed prospectively for 20 years by DoD and VA using medical records and postal surveys.

AFTER THE WAR IN AFGHANISTAN

The kind of health problems that arise during and after the conflict in Afghanistan will depend on the magnitude and length of this combat deployment. The number of military and civilian peacekeepers needed to assist in relief and reconstruction efforts also will influence health care needs [50]. Regardless of the scale of the conflict and subsequent peacekeeping activities, veterans of this hazardous deployment will benefit from recent federal legislation and from the changes that DoD and VA have implemented in health care, preventive medicine, surveillance, and risk communication.

Troops sent to the war in southern Asia can be expected to present with a wide variety of health problems. Deployed troops will be at risk for infectious diseases endemic to this region, as noted in this supplement issue. Other troops will return with traumatic injuries. There may be injuries caused by cold exposure, which has not been a major problem since the Korean War [51]. As in all wars, troops will experience psychological effects that result from surviving a life-threatening experience. Although less well understood, the physical and mental stress of deployment will exacerbate preexisting medical and psychological health problems [52].

Predictably, some troops will return with difficult-to-explain health problems. As occurred after the Gulf War, there have been questions about the causes of debilitating symptoms among veterans of more recent deployments. Unique deployment-related illnesses have been postulated, including a Balkan syndrome [53, 54], a Cambodia syndrome [55], and a Chechnya syndrome [56]. In addition, the historical record shows that war veterans have experienced unexplained health problems after every major conflict since the US Civil War [57]. Consequently, questions about unique “war syndromes” should be anticipated after any dangerous combat or peacekeeping mission. The repeated occurrence of difficult-to-explain symptoms among military personnel indicates that these health problems are an inherent aspect of hazardous deployments [58].

CONCLUSION

Although the troops engaged in the war on terrorism are being monitored for the development of health problems and provided medical care, they will need additional health care and assistance after the current crisis ends. Both the DoD and VA are better prepared for this new generation of war veterans because of changes implemented since the Gulf War. Nevertheless, more needs to be done to provide for the health care needs of deployed troops and veterans. The complex task of instituting a comprehensive, lifelong medical record should be completed as soon as possible. Also, questions about health risks during deployment should be anticipated and more effective risk communication and management strategies developed in advance.

If history teaches us anything, it is that men and women are changed by war. No one returns from war unaffected by the
experience. Veterans inevitably have questions about the health effects of wartime service, and some veterans require specialized health care and financial assistance. Furthermore, veterans can be expected to have chronic, difficult-to-explain health problems because the wounds of combat are not always visible. Whenever we contemplate sending troops to war, we have to plan for more than traumatic injuries. We have to consider the long-term human costs of every war.

References


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