

# Executive Summary

The 670,000 service members deployed in 1990–1991 to Southwest Asia for Operations Desert Shield and Desert Storm (the Gulf War) were different from the troops deployed in previous similar operations: they were more ethnically diverse, there were more women and more parents, and more activated members of the Reserves and National Guard were uprooted from civilian jobs. The overwhelming victory that they achieved in the Gulf War has been shadowed by subsequent concerns about the long-term health status of those who served. Various constituencies, including a significant number of veterans, speculate that unidentified risk factors led to chronic, medically unexplained illnesses, and these constituencies challenge the depth of the military's commitment to protect the health of deployed troops.

Recognizing the seriousness of these concerns, the U.S. Department of Defense (DoD) has sought assistance over the past decade from numerous expert panels to examine these issues (DoD, 1994; National Institutes of Health Technology Workshop Panel, 1994; IOM, 1996a,b, 1997; Presidential Advisory Committee on Gulf War Veterans' Illnesses, 1996). Although DoD has generally concurred in the findings of these committees, few concrete changes have been made at the field level. The most important recommendations remain unimplemented, despite the compelling rationale for urgent action. A Presidential Review Directive for the National Science and Technology Council to develop an interagency plan to address health preparedness for future deployments led to a 1998 report titled *A National Obligation* (National Science and Technology Council, 1998). Like earlier reports, it outlines a comprehensive program that can be used to meet that obligation, but there has been little progress toward

implementation of the program. Recently, the Medical Readiness Division, J-4, of the Joint Staff released a capstone document, *Force Health Protection*, which also describes a commendable vision for protecting deploying forces (The Joint Staff, Medical Readiness Division, 2000). The committee fears that the vision outlined in that report will meet the same fate as the other reports.

With the 10th anniversary of the Gulf War now here, the Committee on Strategies to Protect the Health of Deployed U.S. Forces has concluded that the implementation of the expert panels' recommendations and government-developed plans has been unacceptable. For example, medical encounters in theater are still not necessarily recorded in individuals' medical records, and the locations of service members during deployments are still not documented or archived for future use. In addition, environmental and medical hazards are not yet well integrated in the information provided to commanders. The committee believes that a major reason for this lack of progress is the fact that no single authority within DoD has been assigned responsibility for the implementation of the recommendations and plans. The committee believes, because of the complexity of the tasks involved and the overlapping areas of responsibility involved, that the single authority must rest with the Secretary of Defense.

The committee was charged with advising DoD on a strategy to protect the health of deployed U.S. forces. The committee has concluded that immediate action must be taken to accelerate implementation of these plans to demonstrate the importance that should be placed on protecting the health and well-being of service members. This report describes the challenges and recommends a strategy to better protect the health of deployed forces in the future. Many of the recommendations are restatements of recommendations that have been made before, recommendations that have not been implemented. Further delay could result in unnecessary risks to service members and could jeopardize the accomplishment of future missions. The committee recognizes the critical importance of integrated health risk assessment, improved medical surveillance, accurate troop location information, and exposure monitoring to force health protection. Failure to move briskly on these fronts will further erode the traditional trust between the service member and the leadership.

The four reports completed from the work of the first 2 years of this study (IOM, 1999; NRC, 2000a,c,d) provide detailed discussions and recommendations about areas in which actions are needed to protect the health of deployed forces. The committee has been informed by those reports and endorses the recommendations within them. In the present report, the committee describes six major strategies that address the areas identified from the earlier reports that demand further emphasis and require greater effort by DoD. The committee selected these strategies on the basis of the contents of the four reports, briefings by the principal investigators of those reports, and input from members of the military and other experts in response to the four reports.

- Strategy 1. Use a systematic process to prospectively evaluate non-battle-related risks associated with the activities and settings of deployments.

- Strategy 2. Collect and manage environmental data and personnel location, biological samples, and activity data to facilitate analysis of deployment exposures and to support clinical care and public health activities.
- Strategy 3. Develop the risk assessment, risk management, and risk communication skills of military leaders at all levels.
- Strategy 4. Accelerate implementation of a health surveillance system that spans the service life cycle and that continues after separation from service.
- Strategy 5. Implement strategies to address medically unexplained symptoms in populations that have deployed.
- Strategy 6. Implement a joint computerized patient record and other automated record keeping that meets the information needs of those involved with individual care and military public health.

In the following sections and in the full report that follows this summary the committee outlines recommendations relating to each of these important strategies.

## STRATEGY 1

*Use a systematic process to prospectively evaluate non-battle-related risks associated with the activities and settings of deployments.*

### Recommendations

**1.1 DoD should designate clear responsibility and accountability for a health risk assessment process encompassing non-battle-related risks and risks from chemical and biological warfare agents as well as traditional battle risks.**

- **The multidisciplinary process should include inventorying exposures associated with all aspects of the anticipated activities and settings of deployments.**
- **Commanders should be provided with distillations of integrated health risk assessments that have included consideration of toxic industrial chemicals and long-term effects from low-level exposures.**
- **Service member perceptions and concerns should be factored into the process of risk assessment. This will require assessing common concerns of the affected populations and evaluating whether the contents of risk assessments address those issues critical to cultivating effective risk management and trust in the process.**

**1.2 Incidents involving toxic industrial chemicals should be among the scenarios used for military training exercises and war**

games to raise awareness of these threats and refine the responses to them.

**1.3 DoD should provide additional resources to improve medical and environmental intelligence gathering, analysis, and dissemination to risk assessors and to preventive medicine practitioners. DoD should provide a mechanism for information feedback from the medical community to the medical intelligence system.**

**1.4 DoD should ensure that medical intelligence is incorporated into the intelligence annex to the operations plan and is considered in shaping the operational plan.**

**1.5 DoD should devise mechanisms to ensure that state-of-the-art medical knowledge is brought to bear in developing medical annexes to the operational plans and preventive medicine requirements, drawing on expertise both inside and outside DoD.**

**1.6 DoD should adopt an exposure minimization orientation in which predeployment intelligence about industrial and other environmental hazards is factored into operational plans.**

## **STRATEGY 2**

*Collect and manage environmental data and personnel location, biological samples, and activity data to facilitate analysis of deployment exposures and to support clinical care and public health activities.*

### **Recommendations**

**2.1 DoD should assign single responsibility for collecting, managing, and integrating information on non-battle-related hazards.**

**2.2 DoD should integrate expertise in the nuclear, biological, chemical, and environmental sciences for efficient environmental monitoring of chemical warfare agents and toxic industrial chemicals for both short- and long-term risks.**

**2.3 For major deployments and deployments in which there is an anticipated threat of chemical exposures, during deployments DoD should collect biological samples such as blood and urine from a sample of deployed forces. Samples can be stored until needed to test for validated biomarkers for possible deployment exposures or analyzed in near real time as needed for high-risk groups.**

**2.4 DoD should clearly define the individuals permitted access to and the uses of biological samples and the information derived from them. DoD should communicate these policies to the service members and establish a process to review ethical issues related to operational data collection and use.**

**2.5 DoD should ensure that adequate preventive medicine assets including laboratory capability are available to analyze deployment exposure data in near real time and respond appropriately.**

**2.6 DoD should ensure that the deployed medical contingent from command surgeons to unit medics has mission-essential information on the likely non-battle-related hazards of the deployments and access to timely updates.**

**2.7 DoD should implement a joint system for recording, archiving, and retrieving information on the locations of service member units during operations.**

**2.8 Environmental monitoring, biomarker, and troop location and activity databases should all be designed to permit linkages with one another and with individual medical records. It is crucial that means be developed to link environmental data to individual records.**

### **STRATEGY 3**

*Develop the risk assessment, risk management, and risk communication skills of military leaders at all levels.*

#### **Recommendations**

**3.1 DoD should provide training in the contemporary principles of health risk assessment and health risk management to leaders at all levels to convey understanding of the capabilities and uncertainties in these processes.**

**3.2 DoD should institutionalize training in risk communication for commanders and health care providers. Periodic formal evaluation and monitoring of the quality of training programs should be standard procedure. Risk communication should be framed as a dynamic process that is responsive to input from several sources, changing concerns of affected populations, modifica-**

tions in scientific risk evidence, and newly identified needs for communication.

**3.3 DoD should jump start training in risk communication by delivering it at appropriate settings for various levels of service, including at the time of initial entry into service and at the service schools. DoD should give particular attention to the training of medical officers on initial entry into service. Opportunities for supplemental training and support of ongoing education in risk communication should be formally identified.**

**3.4 DoD should include the stakeholders (service members, their families, and community representatives) in the development of a plan for DoD risk communication to include when and how risk communications should take place when new concerns arise.**

#### STRATEGY 4

*Accelerate implementation of a health surveillance system that spans the service life cycle and that continues after separation from service.*

#### Recommendations

**4.1 DoD should establish clear leadership authority and accountability to coordinate preventive medicine—including environmental and health surveillance, training, and investigation—within and across the individual services and DoD. DoD should ensure that adequate preventive medicine personnel and resources are available early on deployments.**

**4.2 DoD should collect health status and risk factor data on recruits as they enter the military, as planned through the Recruit Assessment Program, now in the pilot stage. DoD should maintain health status data for both active-duty and reserve service members with annual health surveys.**

**4.3 DoD should continue to collect self-reported health information from service members after their deployments to permit comparisons with their predeployment health and with the health of other service members. For a representative sample of those who leave the military health system, DoD should continue to administer the annual health status survey for 2 to 5 years after a major deployment to learn about health changes after deployments.**

**4.4 DoD should mandate central reporting of notifiable conditions including laboratory findings across the services. DoD should strengthen public health laboratory capabilities and integrate laboratory and epidemiological resources to facilitate appropriate analysis and investigation.**

## **STRATEGY 5**

*Implement strategies to address medically unexplained symptoms in populations that have been deployed.*

### **Recommendations**

**5.1 DoD should include information about medically unexplained symptoms in the training and risk communication information for service members at all levels.**

**5.2 DoD should complete and implement guidelines for the management of patients with medically unexplained symptoms in the military health system. DoD should provide primary health care and other health care providers with training about medically unexplained symptoms and in the use of the guidelines. DoD should carry out clinical trials to accompany the implementation of the guidelines and evaluate their impact.**

**5.3 DoD should establish a treatment outcomes and health services research program within DoD to further provide an empirical basis for improvement of treatment programs to address medically unexplained symptoms. This program should be carried out in collaboration and cooperation with the U.S. Department of Veterans Affairs health system and the U.S. Department of Health and Human Services.**

**5.4 DoD should design and implement a research plan to better understand predisposing, precipitating, and perpetuating factors for medically unexplained symptoms in military populations.**

## **STRATEGY 6**

*Implement a joint computerized patient record and other automated record keeping that meets the information needs of those involved with individual care and military public health.*

## Recommendations

**6.1 DoD should treat the development of a lifetime computer-based patient record for service members as a major acquisition, with commensurate high-level responsibility, accountability, and coordination. Clear goals, strategies, implementation plans, milestones, and costs must be defined and approved with input from the end users.**

**6.2 DoD should accelerate development and implementation of automated systems to gather mission-critical data elements. DoD should deploy a system that fills the basic needs of the military mission first but is consistent with the architecture and data standards planned for the overall system.**

**6.3 DoD should implement the electronic data system to allow the transfer of data between DoD and the U.S. Department of Veterans Affairs.**

**6.4 DoD should establish an external advisory board that reports to the Secretary of Defense to provide ongoing review and advice regarding the military health information system's strategy and implementation.**

**6.5 DoD should include immunization data, ambulatory care data, and data from deployment exposures with immediate medical implications in the individual medical records and should develop a mechanism for linking individual records to other databases with information about deployment exposures.**

**6.6 DoD should develop methods to gather and analyze retrievable, electronically stored health data on reservists. At a minimum, DoD should establish records of military immunizations for all reservists. DoD should work toward a computerized patient record that contains information from the Recruit Assessment Program and periodic health assessments and develop such records first for those most likely to deploy early.**