

Gulf War and Health, Volume 10: Update of Health Effects of Serving in the Gulf War Executive Summary

The Institute of Medicine (IOM, part of the National Academies of Sciences, Engineering, and Medicine) convened a committee of experts to review and evaluate the scientific and medical literature regarding associations between illness and exposure to toxic agents, environmental or wartime hazards, or preventive medicines or vaccines associated with Gulf War service. The committee was asked to pay particular attention to neurological disorders (e.g., Parkinson's disease, multiple sclerosis, amyotrophic lateral sclerosis, and migraines), cancer (especially brain cancer and lung cancer), and chronic multisymptom illness (also known as Gulf War illness). The committee updated two earlier *Gulf War and Health* reports, Volume 4 (2006) and Volume 8 (2010). The committee did not address service connection, compensation, or the cause of or treatment for Gulf War illness.

The Volume 10 committee followed the approach used by earlier Gulf War and Health committees, including the categories of association. It held public information-gathering sessions, conducted an extensive literature search, reviewed primary and secondary epidemiologic studies, and considered other types of studies—such as animal toxicology, neuroimaging, and genetics. It also considered the conclusions of the Volumes 4 and 8 committees.

The committee found that in spite of the many millions of dollars that have been spent on researching the health of Gulf War veterans there has been little substantial progress in our understanding of their health concerns. The committee's findings are similar to those in Volume 8 regarding the strength of the association between deployment to the Gulf War and adverse health outcomes. Veterans who were deployed to the Gulf War have an increased risk for PTSD (causal) and for Gulf War illness, chronic fatigue syndrome, functional gastrointestinal conditions, generalized anxiety disorder, depression, and substance abuse (sufficient evidence of an association). Amyotrophic lateral sclerosis, fibromyalgia and chronic widespread pain, and self-reported sexual difficulties had limited/suggestive evidence of an association. Evidence showed that Gulf war deployment was not associated with objective measures of peripheral neuropathy, multiple sclerosis, decreased lung function, mortality from cardiovascular, infectious, or parasitic diseases, or mortality due to mechanical trauma or external causes. For the many other health outcomes the committee assessed, there was inadequate/insufficient evidence to determine whether an association existed for deployment to the Gulf War; these conditions included cancers, most neurodegenerative conditions, migraines, respiratory, musculoskeletal, genitourinary, structural gastrointestinal, skin, cardiovascular, and endocrine systems, as well as birth defects and adverse pregnancy outcomes.

The committee made several recommendations pertaining to future research, including that follow up for conditions with long latencies (e.g., cancer, neurodegenerative diseases) be conducted and that reporting of sex and race/ethnicity specific results be included in studies. The committee found that some lines of research are unlikely to yield informative results including attempts to associate particular Gulf war chemical exposures (such as pyridostigmine bromide or sarin) with Gulf War illness and other conditions. The committee recommended that priority be placed on research into treatments for conditions related to Gulf war deployment, particularly Gulf War illness.

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