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Despite considerable research on health issues affecting the nearly 700,000 U.S. veterans of the 1991 Persian Gulf War, fundamental questions and challenges remain. There is still no widely-accepted case definition for Gulf War illness (GWI) and little current information related to its characteristics. Nor has there been a comprehensive assessment of rates of more familiar diagnosed medical conditions. Gulf War veterans—many still looking for answers about unexplained health problems—have been anxious to participate in studies, while researchers commonly report enormous difficulty identifying adequate numbers of Gulf War veterans for their studies. This project addresses these challenges with a coordinated research effort. Investigators at Baylor University are using a multifaceted survey research strategy to obtain current information on symptoms and medical conditions from a nationally representative sample of 5,000 1991 Gulf War era veterans. These data will be used to optimize a GWI case definition, based on current symptoms, and to provide insights concerning rates of other medical conditions in Gulf War veterans. Parallel to this effort, the project is inviting a broad national sample of Gulf War era veterans to complete health questionnaires by mail or online, and to participate in the 1991 Veterans Research and Information Network (91VetNet), a national research and information resource for Gulf War era veterans and for investigators.

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Gulf War veterans, Gulf War illness, epidemiology, survey research, case definition, research network

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**Establishing a 1991 Veterans Research Network  
to Improve Characterization of Gulf War Illness  
and Provide a National Resource for Veterans and Investigators**

**Table of Contents**

	<u>Page</u>
<b>Introduction.....</b>	<b>1</b>
<b>Body.....</b>	<b>4</b>
<b>Key Research Accomplishments.....</b>	<b>7</b>
<b>Reportable Outcomes.....</b>	<b>7</b>
<b>Conclusion.....</b>	<b>7</b>
<b>References.....</b>	<b>8</b>

## **Introduction**

Despite considerable research on health issues affecting U.S. veterans of the 1990-1991 Persian Gulf War, fundamental questions remain about the health consequences of military service in that conflict. The signature health problem associated with 1991 Gulf War military service has been Gulf War illness (GWI), the complex of undiagnosed symptoms that have persisted, for many veterans, for over 20 years. Studies indicate that at least one in four veterans are affected by a generally consistent pattern of excess symptoms, variously defined, that is not attributable to established medical or psychiatric diagnoses, and not explained by clinical diagnostic tests.<sup>1-4</sup> This problem has long been the focus of scientific studies, Congressional inquiries, media reports, and scientific panels.

**The need for current population health data to support an evidence-based Gulf War illness case definition.** The GWI symptom profile typically includes some combination of cognitive difficulties, widespread pain, and unexplained fatigue—accompanied, in many veterans, by chronic digestive problems, respiratory difficulties, and skin abnormalities. Because there are no objective tests that can be used to diagnose GWI, it is currently identified only on the basis of veterans' symptoms. More than 20 years after Desert Storm, however, there is still no widely-accepted case definition for GWI. The 2008 report of the federal Research Advisory Committee on Gulf War Veterans' Illnesses describes eight different approaches used by different investigators to define or characterize GWI.<sup>1</sup> Some case definitions have characterized GWI either very broadly,<sup>5-7</sup> or very narrowly,<sup>8-9</sup> and most were not developed in a systematic, data-driven manner. Despite hundreds of research studies conducted in this population, the lack of a consistent, evidence-based GWI case definition has made study results difficult to interpret and compare and has slowed progress in addressing this problem. Further, there is little available information related to current characteristics of GWI or its impact on the lives of Gulf War veterans.<sup>10</sup>

**The need for systematic, population-based data on other medical conditions affecting 1990-1991 Gulf War era veterans.** Although GWI has been the most prominent health concern associated with the 1991 Gulf War, it is not the only condition of importance. More than 20 years after the war, however, there have been no published studies that provide systematic assessments, in nationally representative samples, of rates at which more familiar diagnosed medical conditions affect 1991 Gulf War veterans.<sup>10</sup> Several studies have reported that 1991 Gulf War veterans have an excess rate of amyotrophic lateral sclerosis (ALS),<sup>11-13</sup> compared to nondeployed veterans of the same era, and one study has provided an indication that 1991 Gulf War veterans suffer from an elevated rate of lung cancer.<sup>14</sup> Mortality studies have also reported that the subgroup of Gulf War veterans potentially exposed to nerve agents in connection with the 1991 Khamisiyah demolitions have died from brain cancers at twice the rate of unexposed veterans.<sup>15,16</sup>

Overall, however, rates of most medical conditions have never been ascertained in 1991 Gulf War veterans. This includes multiple sclerosis, for which a great deal of concern has been raised by Congressional committees, and by veterans' advocates. Data on rates of medical diagnoses in this population are urgently needed, and not only for the insights this information can provide for

veterans and their healthcare providers. In a very practical sense, federal agencies and scientific review panels rely on studies of this type to establish healthcare policies and programs and to determine if veterans should receive disability compensation for diseases that may be related to their military service. Due to the lack of systematic research on diagnosed medical conditions in Gulf War veterans, data are not available to inform veterans, healthcare providers, and policymakers whether U.S. Gulf War veterans are affected by excess rates of most medical conditions of possible concern.

**The need for an information resource for 1990-1991 Gulf War veterans and a mechanism to assist investigators in recruiting Gulf War-era veterans for research studies.** Scientists conducting research on health issues associated with service in the 1990-1991 Gulf War often face serious challenges in carrying out quality research in an effective and efficient manner. This includes an unfortunate dichotomy with respect to recruitment of 1991 Gulf War era veterans for research studies. On one hand, nearly all investigators report enormous difficulty identifying adequate numbers of symptomatic and healthy Gulf War veterans for studies investigating laboratory markers, treatments, and other clinical parameters. As a result, investigators often have no choice but to enroll nearly all veterans they can identify through any means, yielding less-than-ideal study samples that may not be representative of ill veterans more generally. On the other hand, veterans and researchers commonly indicate that Gulf War veterans *want* to participate in studies. Unfortunately, though, there is no unified national veterans group or central contact point that can provide 1991 Gulf War era veterans with information related to research or other issues relevant to military service of this period. Veterans of this era, many still seeking answers about unexplained health conditions, are willing and even anxious to participate in research studies, but generally do not know that such studies are being conducted or that they are eligible to participate.

**Project Overview.** Investigators at Baylor University have designed the current project to address these prominent issues with a coordinated effort that utilizes a multipart, national sampling and state-of-the-art survey research strategy. This includes a Computer-Assisted Telephone Interview (CATI) survey of a nationally representative sample of 5,000 1991 Gulf War era veterans, under a contract arrangement with Westat. The CATI survey is designed to provide current data on symptoms and diagnosed medical conditions reported by 3,000 1991 Gulf War veterans, and 2,000 veterans of the same era who did not deploy to the Gulf War theater. In broad consultation with experts in the field, these data will be used to optimize a GWI case definition, based on veterans' current health status, and to provide important insights concerning rates of diagnosed medical conditions in Gulf War era veterans.

The project is also obtaining health data from a second, larger sample, referred to as the network sample. This involves contacting 45,000 Gulf War era veterans to invite them to complete health questionnaires by mail or online. These data will be used to further evaluate patterns observed in the CATI sample, including associations between health outcomes and deployment experiences. In addition, veterans in both the CATI and network samples are invited to participate in the 1991 Veterans Research and Information Network (91VetNet). Participating veterans will receive current information on health issues relevant to military service during 1990-1991 and will be notified about studies for which they may be eligible. The network will also serve as a resource

for scientists conducting research on the health of 1991-era veterans that can assist them in recruiting veterans who may be interested in participating in studies.

Overall, the project is designed to provide current, nationally representative data to identify the prevalence and characteristics of GWI, as well as rates of diagnosed diseases reported by 1991-era veterans. These data will be used to inform veterans, providers, and policymakers, and will also be used to optimize an evidence-based case definition of GWI. In addition, the project will provide a current information resource for 1991-era veterans and a recruitment resource for investigators conducting studies in this population. This is expected to have a positive impact on the broader Gulf War research effort, improving studies to advance GWI treatments and diagnostic tests, and provide insights into its pathobiology.

## **Body**

### **Task 1. Prepare and Submit Documents to Obtain Regulatory Approvals**

This project requires review and approval by the Baylor Institutional Review Board (IRB) and by the USAMRMC's Office of Human Research Protections (HRPO). We also initially understood, based on information provided by DOD officials, that the project would require review and approval by the federal Office of Management and Budget (OMB), under the federal Paperwork Reduction Act (PRA). We were informed that the OMB approval process typically requires a minimum of eight months. We therefore designed the project timeline to allow ten months for obtaining regulatory approvals, as indicated in the Statement of Work.

Our initial strategy was to begin the process and document submissions required for OMB review and approval prior to HRPO and IRB submissions. This was because we understood that OMB approval would be needed to obtain our initial sampling data from the Defense Manpower Data Center (DMDC), and because the OMB approval process typically takes longer than the IRB process. However, in a concurrent study, we were experiencing extended delays and considerable difficulties in connection with the DOD offices responsible for reviewing and forwarding PRA documentation to OMB. Ultimately, after multiple requests and discussions, the DOD Information Management Office determined that the study was *not* subject to the federal PRA and that no OMB approvals should be sought. However, since the present study includes a nationwide survey data collection, it was not clear whether it might fall under the PRA. We therefore petitioned DOD's Information Management Office to obtain a firm decision as to whether the project would be subject to OMB review and approval before undertaking the lengthy OMB review process. After multiple submissions and requests over many months, we obtained a ruling in June 2013 from officials at both the DOD Information Management Office and OMB indicating that the project did not fall under the PRA because the data collection had been grant-funded in response to a Baylor proposal, and was neither conducted by nor contracted out by the federal government. The project was therefore not subject to OMB review and approval.

The project includes two parallel data collection efforts. Data collection for the national computer-assisted telephone interview (CATI) survey is to be conducted by our contractor, Westat. We initially understood that Westat would submit the telephone survey to its Institutional Review Board (IRB) for review and approval and therefore prepared human subjects' documentation for the telephone survey, as a separate project submission, to Baylor's IRB for approval. Baylor IRB approval for the telephone survey was obtained September 3, 2013. After extended discussions and delays related to Westat's IRB process, we determined that Baylor IRB, as the lead institution, would provide all human subjects' oversight for the project. Baylor and Westat therefore worked out an IRB Authorization Agreement (IAA), under which Westat would defer IRB review for the project to Baylor IRB.

Because Baylor IRB would have sole oversight over the project, the Baylor Compliance Office asked that our submissions for all project data collections, including the mail and online surveys,

be reviewed in conjunction with the CATI survey. Human subjects' documentation for the remaining portions of the project were submitted to Baylor IRB as an amendment and approved on May 13, 2014. Human subjects' documentation was initially submitted to the Army Office of Human Research Protections (HRPO) on June 16, 2016. The fully executed IAA was subsequently forwarded to HRPO on August 22, 2014. Final human subjects approval for the full project was provided by HRPO on August 27, 2014 (HRPO project # A-17630).

Our original timeline anticipated that regulatory approvals could be obtained 10 months into the initial project year. The delays described have resulted in our being considerably behind schedule for this task (approximately 22 months).

## **Task 2. Obtain current data on the health status of 5,000 1991 Gulf War era veterans from a national, representative sample using a Computer Assisted Telephone Interview (CATI) Survey**

Working with our contractors at Westat, we have finalized all aspects of survey design and programming for the national CATI survey. However, we have not yet submitted our DMDC data request for information on 1990-1991 Gulf War era veterans for use in developing the national sample. This is due to a major setback encountered in a separate study that also requires that we obtain data from DMDC, including names and contact information for Gulf War era veterans in our target sample. The delay involves requirements raised by the DMDC Privacy Office in late March, 2014. DMDC Privacy Office officials informed Baylor that DMDC data can now only be approved for release to a federal entity and that the receiving IT system must be certified according to federal (e.g. FISMA, DIACAP) guidelines, or a corporate equivalent. We have investigated multiple possible options for addressing these requirements, which had not been in place when we initially developed the project, nor after the project was funded by CDMRP. Possible solutions have included working with collaborating institutions or corporate partners to download and manage the DMDC data on a certified IT system. However, the ability of Baylor to work with those data in house remains in question, until current efforts to address the new DMDC Privacy Office IT security requirements can be worked out.

As a result, the status and timeline for our DMDC data request for the present project are uncertain at this time. However, we anticipate that these challenges can be addressed, since our contractor, Westat, routinely works with DMDC data utilizing its secure, DIACAP-certified data enclave. However, issues will still have to be worked out to allow Westat to turn over DMDC information to Baylor in order to develop the samples to be contacted for the mail and online surveys, and for data management and analyses.

Note that no subject recruitment or data collection activities have been initiated and no research results are yet available.

### **Task 3.**

In anticipation of receiving sampling information from DMDC, we have finalized aspects of study and instrument design for the mail and online surveys, which will be conducted in-house by Baylor. We also continue to work on practical aspects of implementation of the mail and online surveys, focusing on IT and execution details associated with launching the web survey and printing/ mailing/ scanning the mail survey

However, no subject recruitment or data collection activities have been initiated and no research results are yet available.

### **Tasks 4 – 5.**

No activities completed or underway at this time. No data has been collected or analyzed, and no research results are yet available.

## **Key Research Accomplishments**

Only regulatory submissions and work on finalizing study design and instruments has been accomplished to date. Data collection has not yet been initiated.

## **Reportable Outcomes**

There are no manuscripts or other reportable outcomes at this time.

## **Conclusion**

No research results are yet available; no conclusions can be drawn at this time.

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