# The National Health Study for a New Generation of United States Veterans: Methods for a Large-Scale Study on the Health of Recent Veterans

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**ABSTRACT** This article describes the methodology used in the "National Health Study for a New Generation of U.S. Veterans," a large-scale longitudinal study of the health of 30,000 Operation Enduring Freedom (Afghanistan) and Operation Iraqi Freedom (Iraq) veterans, and 30,000 veterans who were not deployed to these conflicts. Veterans could participate by mail, online, or through a computer-assisted telephone interview. A medical records review was also conducted to validate responses to the survey. The response rate was 34.3%, with 20,563 surveys accepted. This study underscores the complexity of sampling and studying this population of recent veterans.



## INTRODUCTION

The "National Health Study for a New Generation of U.S. Veterans" (NewGen) is a large-scale longitudinal study designed to determine if the health status of veterans who were deployed to Operation Enduring Freedom (OEF) (Afghanistan) or Operation Iraqi Freedom (OIF) (Iraq) is better, worse, or the same as military service members who were not deployed to OEF or OIF but who served during the same era. This study began with a panel of 60,000 recent veterans to be surveyed periodically over 10 years. In 2008, when this sample was developed, 30,000 of the selected veterans had deployed to OEF/OIF and 30,000 of the selected veterans served during the same time period but were not deployed to those conflicts.

Studies similar to the NewGen study have been conducted previously by the Department of Defense (DoD) and Department of Veterans Affairs (VA). The Millennium Cohort Study launched by DoD in 2001 currently involves 150,000 participants, including both veterans and active duty military personnel, and was developed to involve longitudinal follow-up for 21 years.[1,2] Unlike the Millennium Cohort Study, NewGen only includes veterans. DoD also conducts Post-Deployment Health Reassessments with recently deployed service members 90 to 180 days following return from deployment to capture information on their health concerns.[3] The Department of Defense Survey of Health Related Behavior among Active Duty Military Personnel has been sent to a random sample of military personnel every 3 to 4 years since 1980, and focuses on health issues such as post-traumatic stress disorder, suicidal ideation, weight management, alcohol consumption, and tobacco use among military personnel.[4] VA is now conducting a second follow-up of a population-based sample of 30,000 veterans of the 1991 Gulf War era to assess health conditions and exposure concerns. This population was first studied in 1995,[5] and followed up in 2005.[6,7] In addition, DoD and VA have health-related clinical records, but these records represent only the portion of the population that use DoD and VA health systems. Therefore, they may not accurately represent the overall population of recent veterans.

The NewGen study is designed to track the changes in health status over time of a representative population of recent veterans and also to provide a broad range of information on the effects of combat deployment on health. The findings from this study will help VA to understand better the health care needs of recent veterans and support effective allocation of resources and delivery of quality care to veterans. VA's Postdeployment Health Epidemiology Program, Office of Public Health, planned and executed this study, with collaboration from the VA Medical Center in Washington, DC. The institutional review board of the VA Medical Center in Washington, DC reviewed and approved this project. This article describes the methodology used in the NewGen study.

## METHODS

### *Study Population*

This study established a permanent panel of 30,000 OEF/OIF veterans (the deployed group) and 30,000 non-OEF/OIF veterans who served in the military between October 2001 and June 2008 (the nondeployed group), including veterans in the reserves or National Guard who had not separated from these military components. The sample population of deployed veterans was selected from data files provided to VA by the DoD Defense Manpower Data Center and the VA/DoD Identification Repository (VADIR) database. Members of the nondeployed group were selected from VADIR. The sample was stratified by branch of service (Air Force, Army, Marines, and Navy), unit component (active duty, reserve, or National Guard), and gender. Sampling procedures included

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a 20% oversample for women to achieve adequate representation in the permanent panel.

### Survey Design

The 16-page, 72-item survey was developed based on lessons learned from previous studies of Gulf War–era veterans[5] and input on interests from content experts. Survey questions addressed a broad array of topics on health status, conditions, and risk behaviors; use of health care services; and deployment-related exposures. Many questions came from previously fielded surveys, such as the National Health Interview Survey,[8] Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System, and the Postdeployment Health Assessment.[9] Mental health items include the post-traumatic stress disorder checklist (PCL-17)[10] and the Patient Health Questionnaire 9 (PHQ-9), a scale used to identify symptoms and functional impairment associated with depression.[11] The Medical Outcomes Study Short Form 12 was included to assess physical and emotional components of functional health status.[12] The survey was anticipated to take 30 to 45 minutes to complete. The instrument was field tested on a sample of 3,000.[13]

### Mailing Process

The source of the addresses used to locate participants, and the order in which they were searched, were: the National Change of Address; a credit bureau search of address listings (first entry); Internal Revenue Service; a credit bureau search of address listings (second and third entry); and VA. The study team also used U.S. Postal Service forwarding labels.

Data for the study were collected following a sequential mailing protocol modeled on a modified tailored design.[14] All veterans were sent an advance letter signed by the Secretary of Veterans Affairs that described the study, requested their participation, and detailed the options for completing the survey: respond to the paper version to be sent in a subsequent mailing or complete the Web-based version using a personal identification number. After 2 to 3 weeks, a reminder letter was sent to everyone in the sample except those who had completed the survey online, reiterating the options for completing the survey and again providing the personal identification number. Those who completed the Web-based survey at this point were mailed a $10 incentive check. Veterans who did not complete the survey online within 6 weeks of the start of the reminder letter mailing received a survey packet (Wave 1). The packet contained a $10 incentive check, the survey, two consent forms (one to sign and return with the questionnaire and one to keep for the participant's records), an information sheet that included study contact information and other VA contact information such as the VA benefits number and VA Crisis Line telephone number, and a prepaid business reply envelope for returning the questionnaire and consent form. After the survey packet mailing, we sent reminder/thank you post cards. We sent a survey packet followed by a postcard two more times if we did not receive a response (Waves 2 and 3) (Fig. 1).

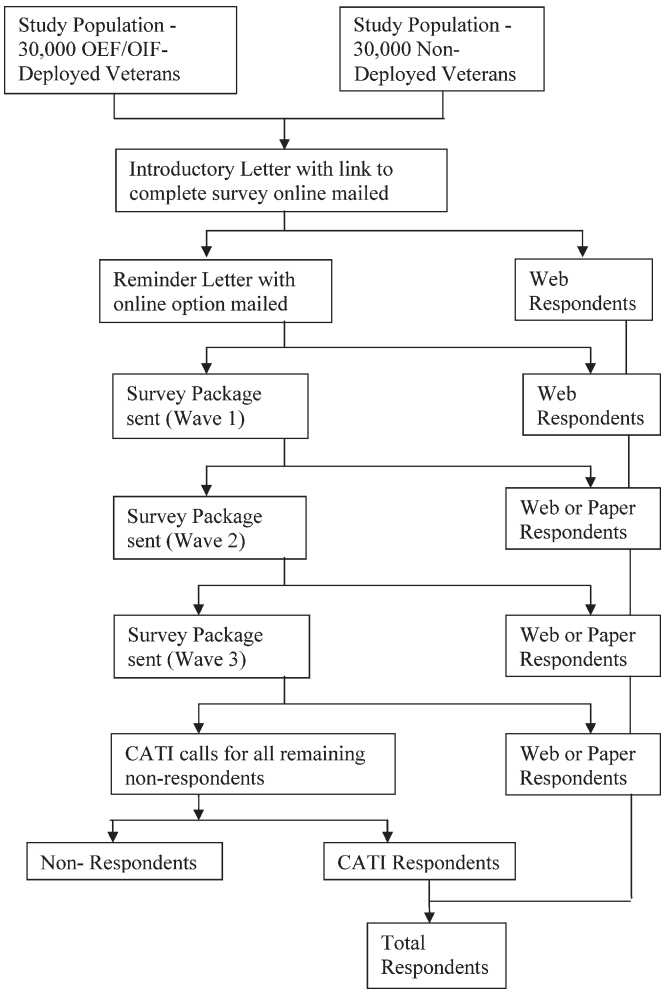


**FIGURE 1.** Flow chart of the process of the NewGen study.

### Computer-Assisted Telephone Interviews

Between March and May 2010, the study team attempted to conduct a computer-assisted telephone interview (CATI) with each nonrespondent to the paper or Web survey who was presumed eligible (mailed a survey package but did not respond, cashed an incentive check but did not return a survey, or for whom we were unable to find a mailing address). Calling potential participants after several requests in another mode is likely to increase response rates.[14] Anyone who completed the CATI received a $10 incentive.

CATI calls included an adverse event protocol to assist veterans who expressed emotional distress or homicidal/suicidal ideation during the call. If a participant gave a concerning response to a question about self-harm, skipped the question, or made a troubling comment any time during the interview, the CATI safety protocol was implemented. The interviewer immediately provided the veteran with the toll free number to the Veterans Crisis Line. Following the call, a clinician placed a follow-up call to check on the veteran's welfare. The clinician made two attempts to reach these veterans, and left messages if unable to talk with them.

### Medical Records Review

A review of medical records was conducted to validate responses to two questions from the survey: reason for a physician visit in the past year and reason for overnight hospital visit in the past year. We selected 337 respondents who had been VA patients and verified reasons for medical visits using VA electronic health records. We then selected a sample of 2,000 respondents not found in the electronic health records and sent them a packet requesting consent to contact their physician or hospital to confirm their visit. Veterans who did not respond by mail were called. Upon receipt of respondents' consent, medical facilities were contacted and the applicable records were requested. Medical diagnosis and time frame in the records were compared to the diagnosis and time frame provided by the respondent.

## RESULTS

Data collection began in August 2009 and lasted through January 2011. We accepted 20,563 surveys across all modes (Web, paper, and CATI), a response rate of 34.3%. Deployed veterans made up 55.13% of respondents (11,337 veterans) and nondeployed veterans made up 44.87% of respondents (9,226 veterans) (Table I). Females were adequately represented, making up 21.14% of the respondents (4,346 veterans). Respondents ages 40 to 59 comprised a larger proportion of the overall study respondents (41.7%, $n = 8,567$) compared to the proportion in the sample frame (30.0%). Conversely, respondents ages 24 to 29 made up 33.1% of the sample but only 22.7% ($n = 4,673$) of respondents.

**TABLE I.** Comparison of Sampling Frame Characteristics Between Respondents and Nonrespondents to the NewGen Study, 2009–2011

| Characteristic | Respondents ($N = 20,563$) | Nonrespondents ($N = 39,437$) |
|---|---|---|
| Deployment Status | | |
| Deployed | 11,337 (55.13) | 18,633 (47.32) |
| Nondeployed | 9,226 (44.87) | 20,774 (52.68) |
| Branch of Service | | |
| Air Force | 4,339 (21.10) | 7,309 (18.53) |
| Army | 11,165 (54.30) | 21,589 (54.74) |
| Marine | 1,969 (9.58) | 4,825 (12.23) |
| Navy | 3,090 (15.03) | 5,714 (14.49) |
| Unit Component | | |
| Active | 7,860 (38.22) | 16,410 (40.93) |
| Guard | 5,614 (27.31) | 10,386 (26.34) |
| Reserve | 7,089 (34.47) | 12,911 (32.74) |
| Sex | | |
| Males | 16,217 (78.86) | 31,783 (80.59) |
| Females | 4,346 (21.14) | 7,654 (19.41) |
| Age | | |
| 24–29[a] | 4,673 (22.73) | 15,168 (38.46) |
| 30–39 | 6,647 (32.33) | 14,474 (36.70) |
| 40–49 | 5,691 (27.68) | 6,995 (17.74) |
| 50–59 | 2,876 (13.99) | 2,462 (6.25) |
| 60+ | 676 (3.29) | 338 (0.85) |

[a]Age was restricted to 24 and older so that the age distribution of active duty service members would be similar to the ages of reserve and National Guard service members.

Of those who responded to the survey, 49% responded on the Web, 45% on the paper questionnaire, and 6% on the CATI. The high percentage of Web respondents indicates that this population was willing and interested in adopting Web-based survey methods. The overall rate for hard refusal was 6.5% ($n = 3,926$), which included verbal refusal on the CATI (871 refusals) and refusal on the consent form for the Web and paper survey. A majority of participants finished the CATI interview in less than 40 minutes (73.6%), and 91.8% completed the interview in less than 50 minutes.

Of the 1,360 completed CATI calls, 96 participants (7.1%) required a follow-up call from a clinician. A clinician spoke to 52 participants out of 92 (56.5%) and left at least one voice mail message with 36 participants out of 92 (39.1%). Of the remaining four participants (4.3%), the clinician could not leave a message for the following reasons: two because of a busy signal; one because the clinician was told that he reached a wrong number, possibly by the study participant; and one because of a language barrier with the person answering the phone.

For the medical record abstraction, we verified 337 conditions through VA records. Of the sample of 2,000 who were not verified through VA records, 458 records were received from civilian providers and reviewed. Of the 458 reviewed records, 409 had a confirmed condition and 49 were not confirmed. Overall, based on reported condition irrespective of timing, 89.3% were confirmed. Of this group, 75% of conditions were confirmed as occurring within the past 12 months.

## DISCUSSION

A significant challenge of this study was achieving our desired 60% response rate for mail or Web surveys, and 80% for telephone surveys. This goal was based on response rates by similar longitudinal studies conducted by this office. A 1995 mail and telephone survey of 30,000 Gulf War veterans yielded an overall response rate of 70%.[5] A telephone survey of approximately 4,000 U.S. Army Chemical Corps Vietnam Veterans yielded a response rate of 71%.[15] Also, the U.S. Office of Management and Budget requests a nonresponse bias analysis if the response rate for a study is below 80%.[16] In the NewGen study, we could not locate nearly 30% of potential participants.

Our response rate of 34.3% is similar to other recent large cohort studies of military populations. The Millennium Cohort Study reported a response rate of 34% for the baseline survey, which includes participants from three panel waves between 2001 and 2008.[2] Half of the participants in the Millennium Cohort Study served in support of the wars in Iraq and Afghanistan, which is the population of interest for the NewGen study. A follow-up study of Gulf War and Gulf War–era veterans yielded a response rate of 34% (9,970 total veterans).[6]

This study reported a larger proportion of respondents ages 40 to 59 compared to the proportion in the sample frame, and a smaller proportion of respondents ages 24 to 29

compared to the sample. This may reflect the challenge of locating younger veterans by traditional survey research methods that rely on residential stability and an established credit history. Younger people are more likely to move more frequently compared to older people.[17] Also, in the initial mail and telephone survey of 30,000 Gulf War–era veterans[5] and the follow-up survey,[6] the nonrespondents were more likely to be younger. Recent separation from the military and economic conditions may have an impact on veterans' ability to establish credit or a permanent domicile. The survey length and personal nature of some of the questions may also have influenced the response rate. Other factors that may have contributed to nonresponse include survey fatigue, negative feelings toward VA or the government, concern regarding the legitimacy of the study, and concern about how the information might be used. Among those contacted via CATI but not willing to participate, nearly half indicated lack of interest as a reason for nonparticipation. Nonrespondents also mentioned lack of time and general disenfranchisement with the VA and/or the government. Also, 34 potential participants (0.00057%) in our initial sample were later deemed ineligible for the study for reasons such as incarceration, not being a veteran, or because they were medically discharged from boot camp.

To our knowledge, this is the first large-scale, population-based longitudinal study of separated OEF/OIF veterans. Our experience underscores the complexity of sampling and studying a large, mobile, and relatively young veteran population. Careful consideration of sampling, locating, and incentivizing veterans must be observed. Although these types of studies are labor and cost intensive, the end result of population-based, generalizable data on deployment health concerns, acute and chronic health outcomes, and health risk behaviors is invaluable for policy and clinical decision making.

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