Overview

VE-HEROeS

• Objectives and design
• Comparisons
• Results to date

Vietnam Veterans Mortality Study

• Objectives and Design
• Comparisons
• Development
VE-HEROeS Aims

Primary:

Measure current overall health, lifestyle characteristics, aging-related conditions among U.S. Vietnam War theater Veterans. Compare to:

Vietnam ‘era’ Veterans

Members of the U.S. population (age and gender matched)

Examine and compare overall health, lifestyle, and prevalence of key health conditions:

- blood borne virus infections
- neurologic conditions (dementia, Parkinson’s disease, stroke, TBI)

Validate some conditions by medical record review
VE-HEROeS Exploratory Aims

Determine feasibility of identifying a sample of Blue Water Navy Veterans

describe their overall health, lifestyle characteristics, and aging-related conditions

Determine whether Vietnam Veterans believe their children and grandchildren were harmed by Vietnam military service

birth defects, childhood conditions

whether they would choose to be re-contacted for additional research
VE-HEROes Study Design

A retrospective cohort/survey

Exposures: military service in Vietnam, military service elsewhere

Outcomes: health conditions known or thought to be associated with military service in Vietnam and elsewhere

Paper or telephone survey of a random, scientifically constructed sample of Vietnam Veterans and 2 comparison populations (Vietnam era, non-military)

9.9 M Vietnam War theater and Vietnam era Veterans

350,000 U.S. households

Survey asks about past and current health and illnesses, lifestyle, exposures, functioning

A sample will be verified by medical records
VE-HEROeS Study Design

Response rate goals:

Veterans 40%  U.S. Public 60%

Survey questions informed by the questions of:

Scientists with knowledge of past research on Vietnam Veterans
Recommendations of Veterans and Agent Orange series
Steering committee composed of:
  Survey research experts
  Vietnam Veterans (including Blue Water Navy)
  Clinicians who provide care for Vietnam Veterans
Study Population—Vietnam Theater Veterans

Served in North or South Vietnam, Cambodia, or Laos

February 29, 1961 - May 7, 1975
Army, Navy, Air Force, Marines

Sample Frame from VA’s USVETS

Database of all veterans, all eras
9.9M records in Vietnam era
This sample 45,067

Survey questions will identify
Who served in-county
Who served elsewhere
Comparison—Vietnam Era Veterans

Served in U.S. military

   February 28, 1961 - May 7, 1975

Served other than in-country Vietnam, Cambodia, or Laos

   Army, Navy, Air Force, Marines

Sample Frame from VA’s USVETS 9.9M

   Sample of 45,067 includes Vietnam and Era Vets

Survey questions identify locations of service
Comparison—U.S. Vietnam ‘Generation’

Never served in military

Proportionate ages and gender as Vietnam Veterans

Identified from a 2-stage sample of 350,000 U.S. households

## Survey Domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Veterans’ Questions</th>
<th>U.S. Public Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military Service</td>
<td>service, combat, exposures, re-entry to civilian life</td>
<td>confirm no service</td>
</tr>
<tr>
<td>General Health</td>
<td>physical &amp; mental</td>
<td>physical &amp; mental</td>
</tr>
<tr>
<td>Physical Health</td>
<td>conditions of concern &amp; attribution, exercise, diet</td>
<td>same, no attribution</td>
</tr>
<tr>
<td>Mental Health</td>
<td>PTSD, depression</td>
<td>same</td>
</tr>
<tr>
<td>Aging</td>
<td>memory, cognition, limitations</td>
<td>same</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>ETOH, tobacco, drug, health care access, gender identity, sexual preference, living arrangements</td>
<td>same</td>
</tr>
<tr>
<td>Health of offspring</td>
<td>9 categories of health conditions (attention disorders, learning disabilities, congenital anomalies, childhood cancers, reproductive effects, etc) with attribution</td>
<td>same, no attribution</td>
</tr>
</tbody>
</table>
Timeline

**FY 14:** Contract award; IT approvals.

**October 2014 – April 2015:** Study team named, study designed, protocol drafted, sample sizes determined, power calculations, collaborations for data, steering committee named.

**May – Sept 2015:** Protocol finalized, survey drafted, protocol and survey reviewed by steering committee, communications plans and materials drafted and reviewed by steering committee.

**October 2015 – July 2016:** Scientific Review, IRB, USVETS Data Review, VHA Data--approvals. Sample drawn and assessed for recent decedents, updated contact information, conducted qualitative questionnaire pre-testing.

**July 2016:** Stage 1 U.S. household data collection initiated.
Timeline

August – October 2016 – Questionnaire revised after pre-testing; IRB approved changes. Stage 2 U.S. household sample selected.

November 2016 – Present: Survey ‘in field’ (2nd mailing & reminders in Feb). Medical records validation study being prepared.

April – June 2017: Medical record validation study. Survey data cleaning and weighting.

### Results as of February 21, 2017

<table>
<thead>
<tr>
<th>Response Rates to date</th>
<th>42.4% Veterans</th>
<th>65.5% U.S. Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam ‘theater’ vs ‘era’:</td>
<td>34.7% theater</td>
<td>61.4% era</td>
</tr>
<tr>
<td>Blue Water Navy (BWN):</td>
<td>Study goal: n=200</td>
<td>BWN respondents to date: n=851</td>
</tr>
<tr>
<td>% Male</td>
<td>94.6% Veterans</td>
<td>91.7% U.S. Public</td>
</tr>
<tr>
<td>Mode age range</td>
<td>Age 66-70</td>
<td>Age 60-65</td>
</tr>
<tr>
<td>(39.8% of Veterans)</td>
<td>(43% of U.S. Public)</td>
<td></td>
</tr>
<tr>
<td>Medical Record Validation Conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterans (theater &amp; era)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of respondents with condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>5.1</td>
<td>3.5</td>
</tr>
<tr>
<td>Parkinson’s disease</td>
<td>0.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Dementia</td>
<td>1.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Brain injury</td>
<td>8.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>2.1</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Benefits of VE-HEROeS

• First national study of overall health of Vietnam Veterans in 40 years
• Designed with advice of Vietnam Veterans
• Comparison to Vietnam era Veterans and U.S. public
• Randomly selected sample of entire Vietnam era
• Mailed survey, with telephone interview if preferred
• Some conditions validated by medical records review
• Exploratory examination of health of Blue Water Navy Vietnam Veterans
• Exploratory examination of health of children and grandchildren
• Should help us understand Vietnam Veterans’ health at age 70
• Should provide data for care, policy, further research
Cautions

Large survey: statistical power to distinguish between Vietnam Veterans, era Veterans, U.S. civilians on key health issues

- BUT, some health issues of Vietnam Veterans may be too rare to allow comparisons or to draw conclusions
- OR, differences among our 3 comparison groups may be too small to draw conclusions about associations with the War or military service
- Our survey is comprehensive: questions on health, exposures, military experiences, lifestyle, factors that contribute to good health
- BUT, self-report…(with some validation)
- Some sampled refused to participate: sensitive questions, long survey, “too little, too late”, “how can I trust you with this information?”
<table>
<thead>
<tr>
<th>Study Role</th>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator:</td>
<td>Victoria J. Davey PhD, MPH, RN</td>
<td>VHA Office of Research and Development</td>
</tr>
<tr>
<td>Co-Investigator:</td>
<td>Aaron Schneiderman, PhD, MPH, RN</td>
<td>VHA Epidemiology Program/Post-Deployment Health Services/Office of Patient Care Services</td>
</tr>
<tr>
<td>Co-Investigator:</td>
<td>Yasmin Cypel, PhD, MS</td>
<td>&quot;</td>
</tr>
<tr>
<td>Co-Investigator:</td>
<td>Erick Ishii, PhD, MPH</td>
<td>&quot;</td>
</tr>
<tr>
<td>Co-Investigator:</td>
<td>Sybil W. Morley, MPH</td>
<td>VHA Office of Suicide Prevention</td>
</tr>
<tr>
<td>Contractor:</td>
<td>Marsha Dunn, project lead</td>
<td>Westat</td>
</tr>
<tr>
<td>Study Objective</td>
<td>Null Hypotheses</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Determine rates, causes, and patterns of mortality of Vietnam War theater Veterans from 1979 through 2014 and determine if there are differences when compared to non-theater ‘era’ Veterans.</td>
<td>1. There is no difference in the overall mortality rate of Vietnam War theater Veterans and demographically-matched non-theater Veterans.</td>
<td></td>
</tr>
<tr>
<td>2. Vietnam War theater Veterans experience similar rates of death from all causes, external causes (for example, accidents, unintentional overdoses, suicide), and diseases as demographically-matched non-theater Vietnam Veterans.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Receipt of VA benefits does not alter the mortality experience of Vietnam War theater Veterans compared to demographically matched non-theater Veterans.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Specific Aims

1. Compare overall mortality rates for theater Vietnam War Veterans and non-theater Vietnam ‘era’ Veterans and categorize rates by gender, income, age range, race, rank and branch of service.

2. Compare theater Vietnam War Veterans with demographically matched non-theater Veterans on mortality rates of death by a) underlying and b) multiple cause methodology. Compare causes by categories (external causes, neoplasms, circulatory system diseases, digestive system diseases) as well as by diseases of particular interest, for example suicide, stroke, dementia/Alzheimer’s disease.

3. Make rate and cause comparisons to U.S. public from CDC data.

4. Compare mortality rates of death by access to and receipt of VA benefits of theater Veterans and non-theater Vietnam ‘era’ Veterans.
Methods—Rates and Causes of Death

• Extract from the VA Office of Enterprise Integration’s USVETS dataset all Veterans with military service within the time period of February 28, 1961 through May 7, 1975 = all Vietnam Era Veterans – > 9M

• Compare with Defense Manpower Data Center’s 2010 update of the Vietnam File = in-theater Vietnam Veterans – 2.8M

• Veterans not present in the Vietnam File = non-theater Vietnam ‘era’ Veterans

• Determine decedents by comparing in-theater and non-theater Veterans with VHA decedent data, including Vital Status File, and Suicide Data Repository (SDR) which contains Veterans’ causes of death from the CDC’s National Center for Health Statistics/National Death Index (NDI) = decedent data set

• Make mortality rates/causes comparisons between in-theater and non-theater, adjusted for cofactors.

• Data stored, accessed and analyzed within the environment
Methods—Benefits Receipt and Effects on Mortality

The population of Vietnam era Veteran decedents in receipt of Disability Compensation, sorted by theater and non-theater, will be further disaggregated for measurement by:

1. The age of first receipt of Disability Compensation benefits – (10 year age groups and over age 85)
2. Time from date of discharge to first Disability Compensation benefit receipt
3. The total length of time in receipt of Disability Benefits Compensation

➢ Each of these 3 measures will also include in-theater/non-theater comparison by: (a) overall mortality rate, (b) income levels, (c) gender, (d) Race (e) Branch of Service
Methods – Healthcare Receipt

Similar to the Disability Compensation Analysis, to ensure equivalency in the groups being compared in the Healthcare analysis, the population of Vietnam Veteran decedents who used VHA healthcare, sorted by in-theater and non-theater, will be analyzed by:

VHA Priority Groups 1 – 3

Within each priority group

a. Overall mortality rate for the cell
b. Income levels
c. Gender
d. Race
e. Branch of Service
Timeline


March 2017-December 2017: Regulatory/Reviews (Steering Committee, Scientific Review, IRB, DoD’s DMDC, VHA’s SDR, VHA’s Data Access (DART).

January 2018 and beyond: Analyses and reporting
Benefits of Vietnam Veteran Mortality Study

• Uses entire population—no sampling error
• Comparison to non-theater Veterans of the era and to U.S. public from available CDC datasets
• Last update of mortality was 2006
• Should help us understand Vietnam Veterans’ comparative mortality at age 70
• Study team includes scientists with experience studying mortality of this era
• Relationship of VA Benefits’ receipt to mortality is unique and fills in a gap in our knowledge.
• Should provide data for care, policy, further research
Cautions

• Death certificate data has limitations (accuracy, completeness)
  no medical records validations planned

• Standardizing groups to make benefits comparisons are difficult
  multiple factors weigh in receipt of benefits
<table>
<thead>
<tr>
<th>Study Role</th>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-Principal Investigator</td>
<td>Victoria J. Davey PhD, MPH, RN</td>
<td>VHA Office of Research and Development</td>
</tr>
<tr>
<td>Co-Principal Investigator</td>
<td>George T. Fitzelle, PhD</td>
<td>VHA Office of Research and Development</td>
</tr>
<tr>
<td>Co-Principal Investigator</td>
<td>Dennis Fried, PhD, MPH, MBA</td>
<td>NJ War-Related Illness &amp; Injury Study Center/Rutgers University</td>
</tr>
<tr>
<td>Co-Investigator</td>
<td>Aaron Schneiderman, PhD, MPH, RN</td>
<td>VHA Epidemiology Program/Post-Deployment Health Services/Office of Patient Care Services</td>
</tr>
<tr>
<td>Co-Investigator</td>
<td>Tim Bullman, MS</td>
<td>“</td>
</tr>
<tr>
<td>Co-Investigator</td>
<td>Yasmin Cypel, PhD, MS</td>
<td>“</td>
</tr>
<tr>
<td>Co-Investigator</td>
<td>Sybil W. Morley, MPH</td>
<td>VHA Office of Suicide Prevention</td>
</tr>
<tr>
<td>Consultants</td>
<td>Charles Lin, PhD and Peter Ahn, PhD</td>
<td>VA Office of Enterprise Integration, National Center for Data Analysis and Statistics</td>
</tr>
</tbody>
</table>
Summary

• This study will examine rates and causes of death from 1979 through 2014 of all in-theater Vietnam War Veterans and compare them to all non-theater ‘era’ Veterans

• Uniquely, we will examine death rates by receipt of VA Benefits (does receipt of benefits relate to mortality?)

• In-theater Vietnam Veterans and their family members have great interest in findings