QUERI

# Evidence Review: Social Determinants of Health for Veterans

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# PREFACE

The VA Evidence-based Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted healthcare topics of particular importance to clinicians, managers, and policymakers as they work to improve the health and healthcare of Veterans. QUERI provides funding for four ESP Centers, and each Center has an active University affiliation. Center Directors are recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Centers. The ESP is governed by a Steering Committee comprised of participants from VHA Policy, Program, and Operations Offices, VISN leadership, field-based investigators, and others as designated appropriate by QUERI/HSR&D.

The ESP Centers generate evidence syntheses on important clinical practice topics. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The ESP disseminates these reports throughout VA and in the published literature; some evidence syntheses have informed the clinical guidelines of large professional organizations.

The ESP Coordinating Center (ESP CC), located in Portland, Oregon, was created in 2009 to expand the capacity of QUERI/HSR&D and is charged with oversight of national ESP program operations, program development and evaluation, and dissemination efforts. The ESP CC establishes standard operating procedures for the production of evidence synthesis reports; facilitates a national topic nomination, prioritization, and selection process; manages the research portfolio of each Center; facilitates editorial review processes; ensures methodological consistency and quality of products; produces “rapid response evidence briefs” at the request of VHA senior leadership; collaborates with HSR&D Center for Information Dissemination and Education Resources (CIDER) to develop a national dissemination strategy for all ESP products; and interfaces with stakeholders to effectively engage the program.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP CC Program Manager, at Nicole.Floyd@va.gov.

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# EXECUTIVE SUMMARY

## INTRODUCTION

Social determinants of health usually refer to factors that are socially constructed and/or impact health through socio-cultural mechanisms. Social determinants are responsible for much variation in health outcomes, especially when considered together with their linked environmental exposures and health behaviors. Indeed, seminal work on social determinants of health demonstrated that they are potent factors in predicting health disparities, with the disadvantaged suffering the worst outcomes. Understanding the role of social determinants in the health of Veterans, and identifying clinical and research opportunities to impact the pathways between social determinants and health, are critical for the VHA's mission to serve and improve health outcomes for all Veterans.

Taken as a whole, social determinants substantially influence health outcomes and contribute to health disparities. The VHA Office of Patient Care Services—Population Health Services and Office of Rural Health (hereafter, VHA partners) requested an evidence review to examine social determinants of Veterans' health, particularly as to those social determinants which may be more important for Veterans' health outcomes (or for certain Veteran groups), as compared with non-Veterans. The goal for this evidence review was to guide VHA planning for health care services that may be influenced by, or should be targeted to, social determinants contributing to poorer health and greater care needs among Veterans. In collaboration with our VHA partners, we developed the scope and conceptual framework for the evidence review, with the focus being social determinants that may be differentially important for Veterans compared with non-Veterans, or between Veterans enrolled in or utilizing certain VHA services, compared with those Veterans who did not. We engaged our VHA partners in a prioritization process after developing an initial evidence map, and selected those social determinants which would undergo more detailed review and reporting of published results (*ie*, rurality, trauma history, sexual orientation and gender identity).

In accordance with a conceptual framework developed for this review we addressed the following key questions:

Key Question 1: How do ***Veterans*** compare to ***non-Veterans*** in prevalence and characteristics of social determinants of health?

Key Question 2: Does variation in social determinants of health account for differences in health services access, health-related behaviors, and health outcomes between Veterans and non-Veterans?

Key Question 3: How do ***engaged*** (*ie*, enrolled in or utilizing categories of VHA services or benefits) Veterans compare to ***non-engaged*** (*ie*, not enrolled in or utilizing VHA services or benefits) Veterans in prevalence and characteristics of social determinants of health?

Key Question 4: Does variation in social determinants of health account for differences in health services access, health-related behaviors, and health outcomes between engaged Veterans and non-engaged Veterans?

In Key Questions 3 and 4 we use the terms “engaged” and “non-engaged” to describe groups of Veterans differing by enrollment in VHA or other VA benefits and services, or utilization of categories of VHA services (*eg*, mental health or other specialty care).

# METHODS

## Development of Conceptual and Analytic Frameworks

We developed a conceptual framework that depicts the complex relationships between social determinants of health, Veteran status or experiences, and health outcomes, drawing upon work from multiple sources. We sought to be inclusive and broad in conceptualizing relevant social determinants, but also considered whether specific social determinants have available measures, and whether they were high priority for national groups and our VHA partners. Using our conceptual framework, we developed 2 analytic frameworks to help identify the populations of interest, highlight social determinants that are likely relevant, define outcomes of interest, and determine the inclusion/exclusion criteria for the evidence review.

## Data Sources and Searches

We undertook a multi-faceted approach to identifying published articles. First, we searched MEDLINE (OVID), the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, and Sociological Abstracts, from the date of inception for each database to January 2017, for English language publications. We added references suggested by experts and peer reviewers. We examined publications associated with multiple large national cohorts (*eg*, American Community Survey, Behavioral Risk Factor Surveillance System), and some VA research programs. We reviewed whether database search results included articles that used data from these cohorts. Then, we screened additional citations/abstracts and reports that were associated with these cohorts, as indicated by publication lists, bibliographies, or other available information. We thought it unlikely that randomized controlled trials or controlled clinical trials would address our key questions regarding the social determinants of health, but for completeness, we undertook an expedited review of citations/abstracts found through a repeat MEDLINE search limiting the search to “trials” instead of other study designs.

## Study Selection

Two investigators independently reviewed titles and abstracts from the literature searches. Citations/abstracts identified as potentially eligible by at least one reviewer underwent dual-review of the full-texts. Discrepancies between reviewers at the full-text review stage were resolved by discussion or a third reviewer. For the expedited review of trials, one investigator screened abstracts and 2 investigators reviewed the full texts of potentially eligible articles.

Our inclusion and exclusion criteria were as follows:

*Inclusion:*

1. Includes data on:
    a. US Veterans and non-Veterans and/or
    b. US Veterans engaged and not engaged in VHA services or benefits

2. Includes at least one social determinant of interest (*ie*, employment, education, income, family/social support, past trauma experience, rural residence, gender identity, or sexual orientation).

*Exclusion*

1. Fewer than 100 participants
2. Does not report prevalence, degree, levels, or characteristics of social determinants by population of interest (*ie*, Veteran/non-Veteran, engaged/non-engaged Veterans)
3. Not study design of interest (*eg*, narrative review, case report, editorial/viewpoint)

## Data Abstraction and Quality Assessment

For all included articles, we abstracted study characteristics (*eg*, cross-sectional or cohort design), social determinants addressed, and whether the article examined the role of social determinants in health services access or utilization, health behaviors (*eg*, substance use), or health outcomes of interest (*eg*, mental health conditions, disability). For articles which investigated one of 3 high-priority social determinants (**rurality, trauma, and sexual orientation or gender identity**), we further abstracted the data source (*eg*, NHANES), participant number and demographics, measures of social determinant(s), and the prevalence, degree, or level of social determinant(s) for the groups of interest (*ie*, either Veterans and non-Veterans or engaged and non-engaged Veterans). If articles examined the role of social determinants in health services access, health-related behaviors, and/or health outcomes, we also abstracted methods and results from these analyses. Data abstraction was completed by one reviewer with verification by a second, with discrepancies resolved by discussion.

We performed dual-reviewer quality assessment for included articles which addressed the 3 high-priority social determinants. We considered the following elements related to study quality:

1. Representativeness and coverage (*ie*, source of data [*eg*, nationally representative cohort], recruitment and selection of participants, concerns about missing data);
2. Measurement (*ie*, social determinants assessed in similar manner for groups being compared and using standardized measures; health-related behavior, health services access, and health outcomes assessed in similar manner for groups being compared and using standardized measures); and
3. Funding source.

Each reviewer independently rated the study quality based on prevalence assessment (Key Questions 1 and 3) and examining the role of social determinants in health services access, health behaviors, or health outcomes (Key Questions 2 and 4). Discrepancies were resolved by discussion.

## Data Synthesis and Analysis

We provide 2 separate evidence maps of included articles which addressed social determinants for Veterans and non-Veterans (Key Questions 1 and 2), and for Veterans engaged and not engaged in VA services and benefits (Key Questions 3 and 4). For articles examining the 3 high-priority social determinants, we undertook qualitative syntheses and assessed overall strength of evidence.

# RESULTS

## Results of Literature Search

We screened 7,242 abstracts and excluded 6,792 yielding 450 articles for full-text review. We added 6 articles from the search of clinical trials, recommendations from experts, and our review of national cohorts and VA research programs. We included 131 articles.

## Summary of Results for Key Questions

### *Key Questions 1 and 2:*

*How do **Veterans** compare to **non-Veterans** in prevalence and characteristics of social determinants of health?*

*Does variation in social determinants of health account for differences in health services access, health-related behaviors, and health outcomes between Veterans and non-Veterans?*

Evidence Map: We identified 99 articles which addressed at least one social determinant of interest for Veterans and non-Veterans. Most articles used cross-sectional data and included over 1000 participants. Education, marital status, income, and employment were addressed by the greatest number of articles, and some of these articles examined the role of these social determinants in health behaviors, health services access or utilization, and/or health outcomes. In contrast, other social determinants were addressed by far fewer articles, and several social determinants were not examined by any articles which considered health behaviors, or health services access or utilization.

Qualititative Synthesis of Results for Rurality, Trauma, and Sexual Orientation and Gender Identity: We identified 11 articles which examined rurality, 11 which addressed trauma, and 2 on sexual orientation for Veterans and non-Veterans. We found no articles comparing the prevalence or health effects of gender identity for Veterans and non-Veterans. Most articles on rurality, trauma, and/or sexual orientation used nationally representative datasets, included more than 5000 participants, and were rated low or medium quality. One-third of articles included data on only men, and 5 had only women participants. Half of the articles investigated the role of rurality, trauma, and/or sexual orientation in health behaviors, health services access or utilization, or various health outcomes.

We identified the following key messages from these articles:

1. There are no substantial differences in proportions of Veterans and non-Veterans who lived in rural settings. Most articles used nationally representative data and were consistent in their results, but rurality definitions varied widely, thus limiting interpretations. (Moderate strength evidence)

2. We found insufficient evidence on the effects of rurality on health services utilization, health behaviors, or health outcomes between Veterans and non-Veterans.

3. There is higher prevalence of trauma exposure among Veterans, compared with non-Veterans. Half of articles used nationally representative data, results were somewhat inconsistent, and trauma types and measures varied across articles. (Low strength of evidence)

4. We found insufficient evidence on whether prevalence differences exist in minority sexual orientation between Veterans and non-Veterans.

5. We found insufficient evidence that sexual minority status accounts for mortality differences between Veteran and non-Veteran women.

6. No included articles addressed gender identity in comparing Veterans and non-Veterans.

### *Key Questions 3 and 4:*

*How do **engaged** Veterans compare to **non-engaged** Veterans in prevalence and characteristics of social determinants of health?*

*Does variation in social determinants of health account for differences in health services access, health-related behaviors, and health outcomes between engaged Veterans and non-engaged Veterans?*

Evidence Map: Forty included articles examined social determinants of interest for Veterans engaged and not engaged in VHA services and/or benefits. Most articles used cross-sectional data; education, marital status, income, and employment were the most frequently included determinants. Fewer articles examined the role of social determinants in health behaviors, health services access or utilization, and/or health outcomes. Several of the social determinants were examined in fewer than 10 articles, including trauma exposure, social support, and housing status. We identified no studies examining sexual orientation or financial barriers to health care.

Rurality, Trauma, and Sexual Orientation and Gender Identity: We included 14 articles which examined rurality, 6 which addressed trauma, and none for sexual orientation or gender identity. Most articles on rurality and/or trauma used nationally representative datasets. While most articles on rurality included more than 5000 participants and included both men and women, most articles on trauma had 1000 or fewer participants and 4 included only women. Two articles investigated the role of rurality on health services access or utilization, and/or various health outcomes; no rurality articles examined health behaviors. No articles addressed the role of trauma exposure in health services utilization, health behaviors, or health outcomes of interest.

We identified the following key messages from these articles:

1. There were no substantial differences in rurality between engaged and non-engaged Veterans, but for Veterans using certain specific services (*eg*, VHA homeless services), there may be differences in proportion with rural residence. (Moderate strength evidence)

2. We found insufficient evidence on the effects of rurality on differences in health services utilization, health behaviors, or health outcomes between engaged and non-engaged Veterans.

3. Trauma exposure is higher for Veterans engaged versus not engaged in VHA care. (Low strength of evidence).

4. No articles addressed the role of trauma exposure in differences in health services access, health behaviors, or health outcomes between engaged and non-engaged Veterans.

5. No articles investigated sexual orientation or gender identity among engaged and non-engaged Veterans.

# DISCUSSION

## Key Findings

### *Evidence Maps*

Most included articles examined standard sociodemographics, such as education, marital status, income, and employment. Fewer articles addressed other social determinants, including those that were high priority for our VHA partners.

### *Rurality*

We found moderate strength evidence that there are no substantial differences in rurality between Veterans and non-Veterans or engaged and non-engaged Veterans. Included articles reported consistent results regarding lack of differences, but there was wide variation in the definition of rurality, limiting interpretations. We found insufficient evidence on the effects of rurality on differences in health services utilization, health behaviors, or health outcomes between Veterans and non-Veterans or engaged and non-engaged Veterans.

### *Trauma*

We found low strength of evidence that there is increased trauma exposure among Veterans as compared with non-Veterans, and among engaged Veterans compared with non-engaged Veterans. We found low strength evidence that trauma exposure contributes to differences in prevalence of smoking between Veterans and non-Veterans. We identified no articles that addressed the role of trauma exposure in health services access, health behaviors, or health outcomes between engaged and non-engaged Veterans. Included articles on trauma examined a wide variety of exposures, including type, timing, and measures used.

### *Sexual Orientation or Gender Identity*

We found insufficient evidence regarding differences in prevalence of sexual minority between Veterans and non-Veterans. Only 2 articles examined sexual orientation for Veterans and non-Veterans and included only women. We found no articles that addressed gender identity for our groups of interest.

## Applicability and Implications for Policy and Practice

Our evidence review directly contributes to several essential strategies for improving VHA services and enhancing Veteran health, as outlined in the Blueprint for Excellence. The evidence base for social determinants of Veterans' health mainly addresses classic socioeconomic factors, with a clear lack of evidence about more recently developed and conceptualized social determinants, such as trauma exposures, sexual orientation, and gender identity. This evidence review supports the development and implementation of consistent, accurate measures of these social determinants for Veterans. This would enable future work to understand the effects of social determinants on health behaviors, health services utilization, and health outcomes for Veterans.

In areas where we did not identify sufficient evidence for the role of social determinants in Veterans' health, our evidence review provides indirect support for policies that apply knowledge of the effects of these social determinants in the general US population. In contrast, we found evidence that trauma exposures may be different between Veterans and non-Veterans, and between engaged and non-engaged Veterans, suggesting that understanding the impacts of trauma on health care utilization and outcomes could help inform VHA policies for current and future service needs. This also highlights the importance of establishing consistent, accurate, and meaningful measures of trauma exposure in VHA data systems, in order to improve outcomes for Veterans now and in the future.

## Research Gaps/Future Research

This evidence review represents an extensive and thorough examination of available sources of evidence to address the role of a variety of social determinants. This work enables future evaluations and syntheses of the evidence supporting the role of social determinants in health, beyond the 3 high-priority determinants that were examined in detail. This evidence review also identified major gaps in the evidence, including the lack of articles that addressed certain social determinants, such as gender identity. This evidence gap is even greater with regard to the role of social determinants in health care access, health behaviors, and health outcomes. Some of the areas lacking in evidence would greatly benefit from inclusion of consistent measures of social determinants and military experience. One way to address this would be to promote the addition of assessments for certain social determinants (*eg*, sexual orientation) to existing national studies that already collect information about Veterans (*eg*, American Community Surveys). We also need data sources that provide information on social determinants and non-VHA health care access and utilization for both engaged and non-engaged Veterans.

In addition to the major gaps related to lack of existing data, our evidence review brought to light several challenges to understanding the role of social determinants. These include the fact that social determinants may represent dimensions along which there is differential selection of individuals into military experience as well as the dynamic, often bidirectional nature of relationships between social determinants, Veteran experiences, and health over the life course. Use of clear conceptual frameworks in future studies will be critical. To support such work, we need multidisciplinary teams that include content and methodologic experts in the diversity of social determinants, as well as investigators with experience in clinical, operational, and policy settings.

Summary of major research gaps and recommendations:

- Promote inclusion of consistent and accurate assessments of high-priority social determinants (*eg*, trauma exposures, sexual orientation) in existing or ongoing national datasets that also capture Veteran status.

- Develop new data sources and/or improve ability to link with existing non-VHA data sources, to address social determinants and outcomes for Veterans engaged and not engaged in VHA services or benefits.

- Apply measures of social determinants more consistently and, whenever possible, provide sufficient detail to address how social determinants may be affecting outcomes.

- Develop and utilize clear conceptual frameworks that guide analytic decisions and interpretation of results.

### Conclusions

While extensive literature addresses education, marital status, income, and/or employment, little published work exists on other social determinants of health (*eg*, trauma and sexual orientation). We found no differences in rural residence between Veterans and non-Veterans, and between engaged and non-engaged Veterans. Trauma exposure among Veterans was generally higher in engaged vs non-engaged Veterans. We found insufficient evidence to determine if there are differences in sexual orientation or gender identity between Veterans and non-Veterans or between engaged and non-engaged Veterans. Social determinant knowledge gaps could be addressed by clear conceptual frameworks and innovative analytic strategies, even with cross-sectional data. Direct standardized measurement of key community characteristics of rural settings and focused assessment of specific types of trauma may be more informative for defining pathways that could be targeted for improving the health of Veterans.

## ABBREVIATIONS TABLE

| | |
|---|---|
| 95% CI | 95% confidence interval |
| ACEs | Adverse Childhood Experiences Survey |
| BRFSS | Behavioral Risk Factor Surveillance System |
| CINAHL | Cumulative Index to Nursing and Allied Health Literature |
| HR | Hazard ratio |
| IPV | Intimate partner violence |
| MSA | Metropolitan Statistical Areas |
| NHANES | National Health and Nutrition Examination Survey |
| NHIS | National Health Interview Survey |
| OIF/OEF | Operation Iraqi Freedom/Operation Enduring Freedom |
| OR | Odds ratio |
| PICO | Population; Intervention; Comparator; Outcome |
| RCT | Randomized controlled trial |
| RUC | Rural-Urban Continuum |
| RUCA | Rural-Urban Commuting Area |
| VA | Department of Veterans Affairs |
| VHA | Veterans Health Administration |
| WHI | Women's Health Initiative |