



# Prevalence of and Interventions to Reduce Health Disparities in Vulnerable Veteran Populations: A Map of the Evidence

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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 4 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](mailto:Nicole.Floyd@va.gov).

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## EXECUTIVE SUMMARY

### INTRODUCTION

Today's Veteran population is racially and ethnically diverse, and includes more women and individuals from vulnerable populations, such as those identifying as lesbian, gay, bisexual, and transgender (LGBT), than at any other time in history. While the equal access nature of the Veterans Health Administration (VHA) may succeed in mitigating some of the disparities related to socioeconomic status (SES), it does not directly address the potential for disparities related to sociodemographic factors (*eg*, race/ethnicity, gender, LGBT identity, age), geographic location, and mental health status. An understanding of whether disparities in utilization, health, or healthcare exists for Veterans belonging to vulnerable populations is vital. Both the Veterans Administration (VA) and the VHA have emphasized the mitigation and elimination of health disparities in their strategic plans, and have outlined specific goals in the VHA Health Equity Plan and the Blueprint for Excellence.<sup>1</sup> Over the last decade, the VA Evidence-based Synthesis Program (ESP) and other organizations have published systematic reviews examining the quality of the health and healthcare experienced by a variety of vulnerable Veteran populations.

Despite the VHA's commitment to reducing disparities, the rate at which health and healthcare disparities affect Veterans remains unclear. In order to guide future research and policy decisions for the VA, the VA Office of Health Equity (OHE) partnered with the VA ESP to examine the state of research on health disparities affecting vulnerable Veterans. Previous VA ESP and other VA-funded programs have examined disparities related to race/ethnicity, rural residence, distance, mental health, and women. However, disparities, or the potential for disparities in utilization, health, or healthcare may also affect other Veteran populations, such as older or younger Veterans, lesbian, gay, bisexual, and transgender (LGBT) Veterans, and Veterans of low SES, as well as those with a physical or cognitive disability, or other characteristics. The purpose of this report was to identify studies, 1) examining the prevalence of disparities in the utilization, the quality of healthcare, or the health of Veterans, 2) evaluating the interventions designed to mitigate disparities within the VHA, and 3) examining health disparities and funded through the VA Office of Research and Development that are currently ongoing or were recently closed.

### METHODS

#### Data Sources and Searches

In order to capture the breadth of disparities related to the utilization or quality of Veteran health or healthcare, we expanded the search strategy developed for a 2007 systematic review on racial and ethnic disparities to include additional vulnerable Veteran populations. The search strategy was peer reviewed by a second research librarian using the instrument for Peer Review of Search Strategies (PRESS). To identify relevant articles, we searched MEDLINE, PubMed, PsycINFO, CINAHL, the Cochrane Library, Social Services Abstracts, Sociological Abstracts, and the VA's Health Services Research and Development (HSR&D) website from 2006 to February 2016. To identify additional studies, we contacted the directors of the several VA research offices and evaluated the bibliographies and supplementary materials of relevant VA reviews.

## Study Selection

Using pre-specified inclusion criteria, 2 independent reviewers evaluated titles and abstracts for a random 10% of the search yield in order to ensure reliability between reviewers. The remaining 90% was decided by a single reviewer. At the full-text screening stage, 2 independent reviewers assessed all articles for inclusion, and discordant results were resolved through consensus. We included studies of Veteran populations that had a comparison group and examined disparities in outcomes related to utilization, the quality of healthcare, or patient health. We included all study designs except for systematic or nonsystematic reviews, which were manually searched for eligible studies.

## Data Abstraction and Quality Assessment

Data from included studies were abstracted by one investigator and confirmed by a second. From each study, we abstracted data related to study design, setting, population, clinical area, number of participants, groups compared, outcomes, mediators, and whether a disparity was present for each outcome type. For intervention studies, we also abstracted a description of the intervention and whether the study reported positive or equivalent findings.

Given that the purpose of our review was to identify and classify the broad body of research related to health disparities affecting Veterans, we did not formally assess the quality of individual studies. Instead, we calculated a rough estimate of confidence for each study based on the study design, whether the study controlled or adjusted for confounding variables, number of sites, and sample size.

## Data Synthesis and Analysis

We mapped original research by each of our target populations: race or ethnicity; women; mental health; age; rural residence; distance from a Veterans Affairs Medical Center (VAMC) or treatment facility (including studies examining Community Based Outpatient Clinics [CBOCs]); SES; homelessness; era of military service; LGBT identity; and disability.

We categorized prevalence studies for each population into those examining the following outcome categories: 1) utilization, 2) the quality of care (*ie*, processes of care, patient evaluations of care, intermediate outcomes), or 3) patient health outcomes. For each category, we recorded whether a study found a disparity, no disparity, or whether the findings within an outcome category were mixed or unclear. For intervention studies, we classified interventions as: 1) system-level, 2) technology, 3) provider-focused, 4) patient-focused, or 5) multi-component. We also categorized studies for each population as examining: 1) utilization, 2) the quality of care, 3) intermediate or patient health outcomes, 4) patient evaluation of care, or 5) patient factors. If a study reported multiple outcomes within the same category (*eg*, blood pressure screening and control), we classified a study as mixed/unclear if the findings were not in agreement.

# RESULTS

## Results of Literature Search

Our search of electronic databases, bibliographies, and other sources resulted in a total of 4,364 studies. After title and abstract review, 913 met inclusion criteria. Upon full-text review, we included a total of 464 studies, with 362 studies for Key Question 1 (of which 135 reported

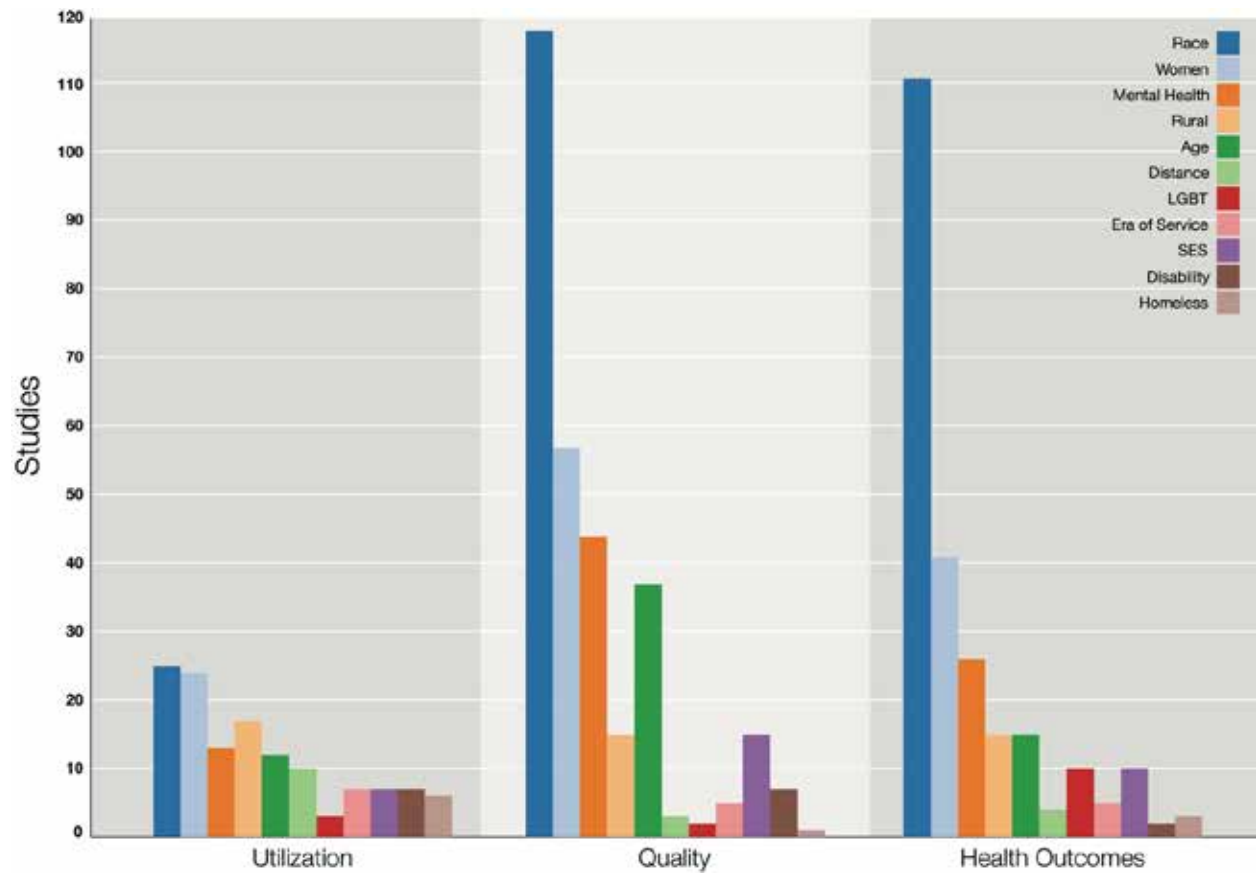
outcomes for more than one disparity population), 64 studies for Key Question 2, and 40 for Key Question 3.

### Summary of Results for Key Questions

**Key Question 1.** For what Veteran groups/populations are health and healthcare disparities prevalent?

Studies examining the prevalence of disparities in Veterans of color were the most highly represented, followed by studies examining disparities in women, and in Veterans with a mental health condition. Very few studies examined disparities related to LGBT identity or homelessness, and only a limited number of studies examined the impact of socioeconomic status (SES) on utilization, health, or quality of care. Disparities findings varied widely by population and outcome.

**Figure. Evidence Map: All Studies by Outcome**



**Note:** Studies may be represented more than once. 135 studies examined more than one population, and studies often reported multiple outcomes that were included in more than one category; thus, the combined sum of studies across columns may exceed the total number of unique studies for a population. Quality of care studies included processes of care, intermediate outcomes, and patient evaluations of care.

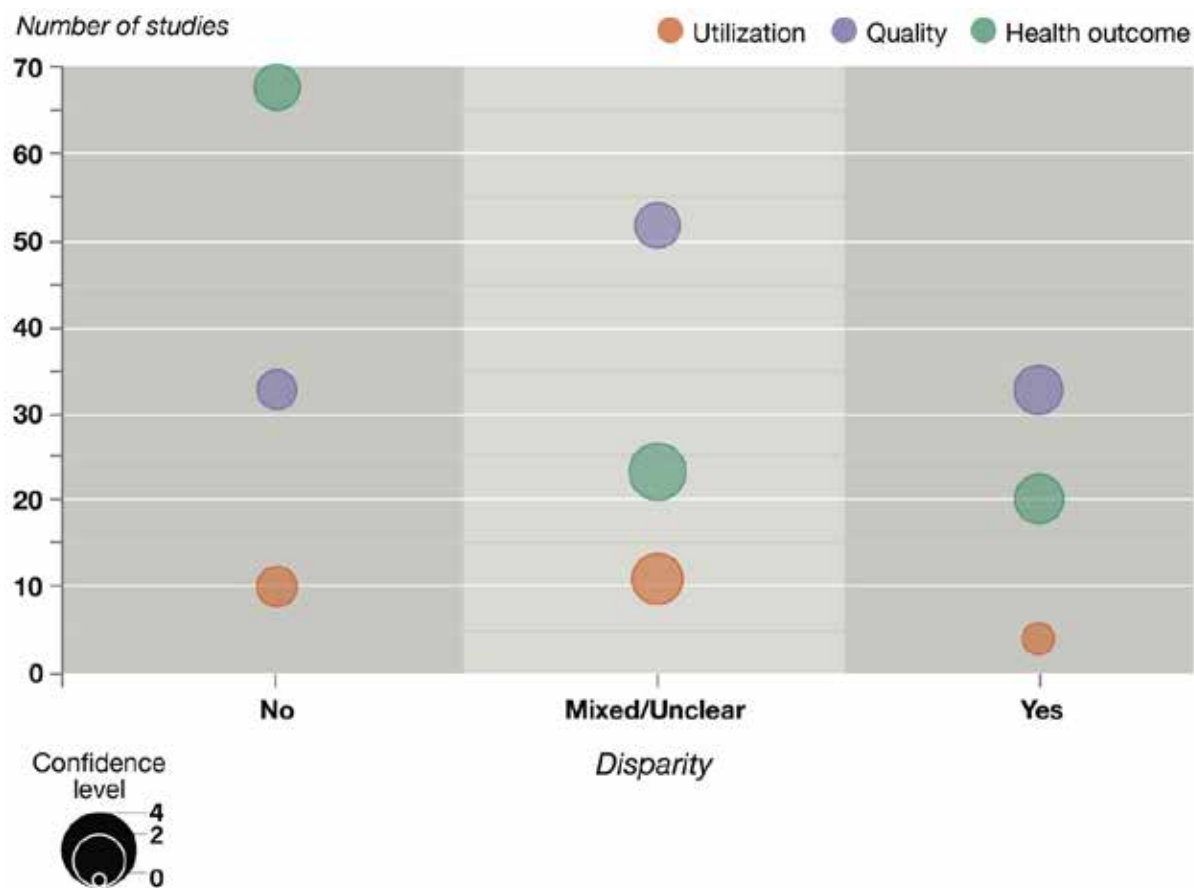
## *Findings by Population*

### *Race and Ethnicity*

The 193 studies reporting data on the prevalence of healthcare or health disparities in Veterans by race or ethnicity largely compared the experiences of African American/Blacks to Whites (188 studies). Studies examining the prevalence of disparities affecting Hispanic/Latino Veterans (70 studies) were limited in comparison, and very few studies focused on American Indian/Alaska Natives, Asians, or Pacific Islanders. Across all racial and ethnic groups, patient health and quality of care-related outcomes were more frequently reported, while utilization was the focus of relatively few studies. The majority of studies found no or mixed/unclear evidence of racial or ethnic disparities, although this varied some with the outcome evaluated. The preponderance of studies examining health outcomes found no evidence of disparities. Findings amongst studies examining quality of care outcomes varied substantially with roughly equal proportions finding evidence for and against disparities. Contributing to the overall mean confidence estimates were very few prospective studies, and nearly half of the studies reported less than 10,000 participants. All but a very few studies controlled for confounders, and most were multi-site studies or used national administrative data. The figure below provides a bubble plot illustrating the number of studies providing evidence of no racial and ethnic disparities, mixed or unclear findings, or the presence of racial and ethnic disparities in Veterans for each outcome category.

Maps of the evidence examining the presence of absence of health disparities for other racial and ethnic groups (*ie*, Hispanic/Latino, Asian/Pacific Islander, American Indian/Alaska Native, Native Hawaiian/Pacific Islander) are included in the full report and associated appendices.

**Figure. Evidence Map: Health Disparities by Race and Ethnicity**



**Legend:** The bubble plot shows the number of studies identified (y-axis) that provided evidence of no disparity, mixed or unclear findings, or a disparity (x-axis) for each outcome category (utilization, quality, patient health outcomes). Quality of care studies included processes of care, intermediate outcomes, and patient evaluations of care. Bubble size represents the mean confidence score, with a range of -1 to 4.

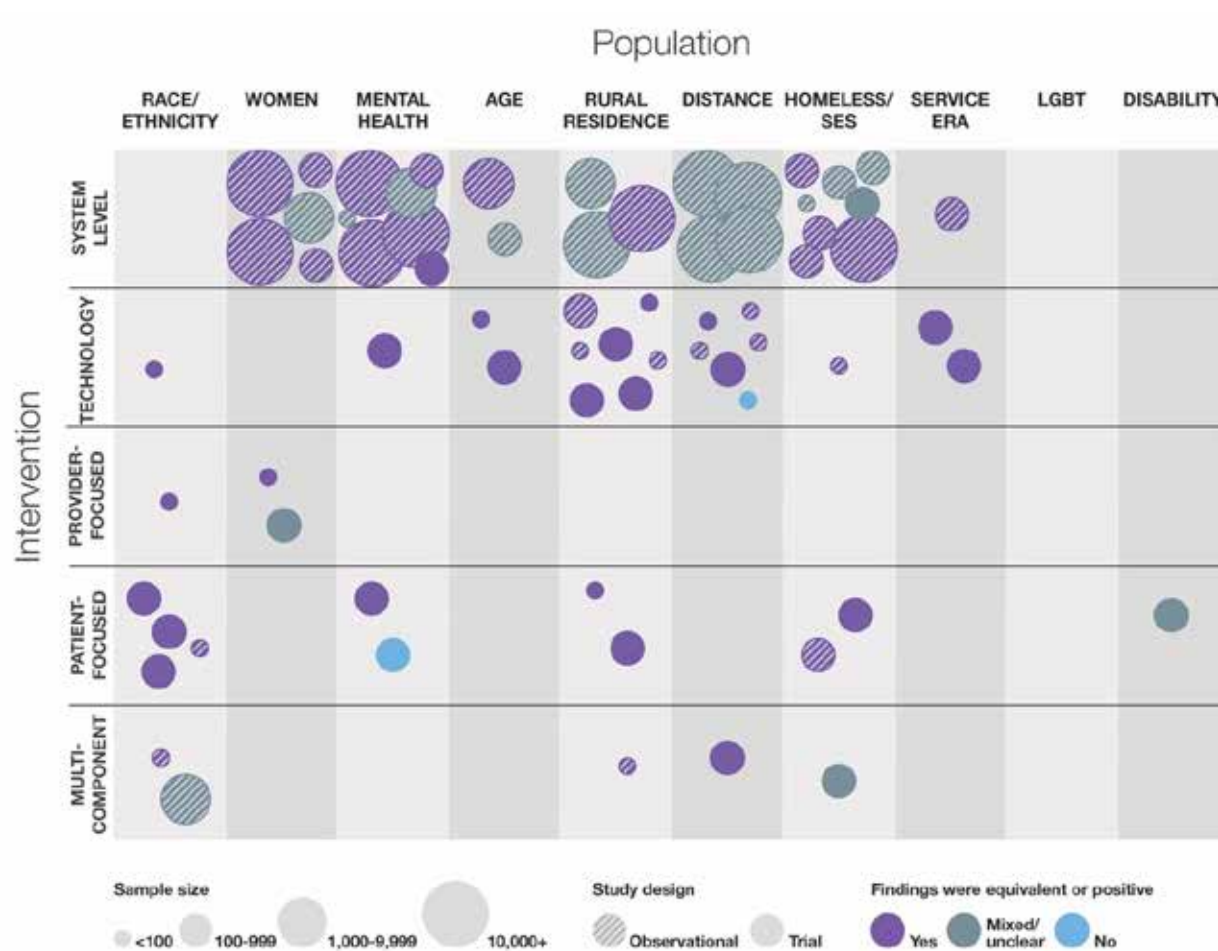
*Other Vulnerable Populations*

Maps of the evidence examining the presence or absence of health disparities by sex, mental health status, age, rurality, distance from a VA medical center, socioeconomic status, disability, era of military service, LGBT identity, and homelessness are provided in main report and associated appendices.

**Key Question 2.** What are the effects of interventions implemented within the VHA to reduce health disparities?

The largest number of intervention studies performed in the VHA were designed to mitigate disparities experienced by Veterans living in rural areas (13 studies) and those experienced by homeless or low-income Veterans (12 studies). No studies examined interventions designed to address disparities related to LGBT identity.

**Figure. Evidence Map: Studies Examining Interventions Designed to Reduce Health Disparities in the VHA by Population and Intervention Type**



**Legend:** The bubble plot shows each study by population (x-axis) by intervention category (y-axis). Bubble size represents sample size, shading or no shading represents study design, and color represents intervention effectiveness.

**Key Question 3.** What are the research projects designed to identify or mitigate health disparities currently being funded by the VA Office of Research and Development (ORD)?

Studies examining racial and ethnic disparities were the most common, followed by studies targeting Veterans living in rural areas, and studies examining women. We identified no open or recently closed studies funded by the VA Office of Research and Development examining the prevalence of, or interventions designed to mitigate, disparities related to era of military service, LGBT identity, or disability.

## DISCUSSION

Our review of the evidence examining health disparities experienced by Veterans yielded 464 studies, with 135 studies examining multiple populations, and many reporting multiple outcomes. For Key Question 1, of the 362 identified, studies examining the prevalence of



disparities related to race and ethnicity were the most common, with the vast majority examining African American/Blacks, and Hispanic/Latinos a very distant second.

Many of the studies examining racial and ethnic minorities found no clear evidence of disparities. However, there were stark differences by racial/ethnic group and type of outcome. The bulk of studies examining racial/ethnic groups that comprise smaller percentages of the overall Veteran population (*eg*, Native Hawaiian, Pacific Islander, Asian) reported no disparities. It is important to note that the lack of significant findings in these smaller racial and ethnic groups may stem from a lack of statistical power due to their relatively small numbers, rather than an absence of disparities. Given that such a large proportion of the evidence base examining racial/ethnic disparities focus on African American/Black Veterans, future research is needed to better understand the rapidly growing Hispanic/Latino and Asian populations, and targeted research is needed to capture the unique characteristics of American Indians/Alaska Natives, Native Hawaiians, and Pacific Islanders.

Also highly represented in the body of research were studies examining the prevalence of disparities by gender, mental health status, and age. Our evidence maps very clearly illustrate the difference in emphasis placed on certain Veteran populations, and highlight the gaps in research – in particular the limited number of studies examining disparities by socioeconomic status, and the lack of studies examining LGBT Veterans. The lack of published research examining the prevalence of disparities in LGBT Veterans was not surprising, given that compared to other vulnerable groups, the LGBT Veteran population is relatively small. In addition, our search spanned 2006 to 2016, and the Don't Ask Don't Tell Repeal Act did not take effect until late 2011.

Maps examining utilization clearly illustrate that for some populations (*ie*, race/ethnicity, mental health, women) utilization of care may not be an area of concern; however, it is extremely salient for other Veteran groups – in particular those living farther from VA medical centers, those living in rural areas, and homeless Veterans. In addition, studies provide some evidence that disparities in the quality of care may exist, particularly related to age, but also in women, Veterans of color, and Veterans with mental health conditions. Finally, maps of studies examining disparities in patient health highlight a distribution of findings that lean towards no disparity or mixed/unclear findings, with the exception of those examining Veterans with mental health conditions or low SES, for whom poorer health outcomes were more commonly found.

For Key Question 2, interventions most often addressed disparities related to rural residence or distance from a VA medical center, homelessness/SES, and mental health. System-level and technology interventions were the most common, and there were just a handful of interventions aimed at providers. Missing completely were studies designed to address disparities related to LGBT identity, and studies were sparse in other areas, such as interventions to address racial and ethnic, sex, and disability-associated disparities. Our intervention map clearly illustrates that studies have reported findings that were either positive or equivalent, or mixed or unclear. However, the many blank or near-empty cells illustrate that the opportunities to further work in this area are many. When examined alongside the 40 identified current or recent VA Office of Research and Development-funded health disparity studies (Key Question 3), we see clear gaps in research related to not only to LGBT identity, but also cognitive and physical disabilities, era of military service, and age.

The task of finding and classifying the body of research related to health disparities affecting Veterans was a challenge, due not only to the breadth of the body of literature, but also the complexity of the topic. Despite casting a wide net for published studies and searching multiple sources for unpublished studies, we are certain that our maps do not contain every published and unpublished study examining disparities in Veterans conducted in the last 10 years. Furthermore, it is important to note that the reported findings our maps illustrate may be skewed as a result of publication bias.

To enable the capture of the presence or absence of disparities experienced by Veterans receiving care outside of the VHA (*eg*, Patient Centered Community Care, Veterans Choice Program, Medicare or Medicaid eligibility), we included all studies examining health disparities affecting Veterans and meeting other inclusion criteria, regardless of site of care. We did not stratify or analyze studies by site of care; thus, our report does not address the question of whether disparities in health and healthcare differ in vulnerable populations of Veterans receiving care within the VHA, in the private sector, or a combination. Given that large numbers of Veterans receive care in the community, instead of, or in addition to VHA care, research is needed to better understand the role of site of care in the prevalence of health disparities experienced by vulnerable Veteran populations.

While a handful of studies reported outcome data related to intersecting identities (*ie*, belonging to multiple vulnerable populations, for example LGBT Veterans of color) the vast majority of studies did not. Although relevant data were mapped for each of the vulnerable populations of interest reported in included studies, our maps do not fully capture those Veterans who may be at increased risk as a result of belonging to multiple vulnerable populations. Future systematic reviews targeting specific populations should include a thorough subgroup examination.

We classified studies broadly by clinical area to provide an overview of the distribution by outcomes examined (*ie*, utilization, quality, health outcomes) in Veteran disparity research. Due to time limitations, we were not able to examine the distribution of clinical areas by population, nor did we conduct any analysis further parsing these categories by specific condition (*eg*, specific types of cancer). In addition to examining vulnerable subgroups, future population specific systematic reviews should also include an analysis of the prevalence of disparities by clinical area or condition.

The vast number of studies and comparisons we examined precluded a formal evaluation of study quality and depth of knowledge. The rough confidence estimates were not intended to replace evaluations of study quality, nor was the intent to provide a standard metric with which to compare study quality between populations. Instead, the purpose of these scores were to allow us to visually represent the relative differences for each population. Furthermore, given that we did not evaluate many important study-level factors that may influence conclusions related to the presence or absence of a disparity across studies (*eg*, appropriateness of confounders, adjustments, and outcomes, sampling bias), the maps presented in this report should not serve as evidence upon which policy decisions affecting the health or healthcare of Veterans are formed, but instead, they should serve as a starting point – and provide the “lay of the land.” The maps in this report inform areas in which more primary research is needed – for example, the limited number of prevalence studies examining disparities by SES highlight a need for additional research to determine whether the health disparities associated with low SES in the general US population are also experienced by Veterans receiving care in VHA settings. In addition,

prevalence studies are needed to better understand our American Indian/Alaska Native, Asian, Pacific Islander, Native Hawaiian, and LGBT Veterans, followed by intervention studies to address the findings. The maps also serve to inform us of the areas and populations for which the research is rich, and for which a traditional systematic review would enable a deeper understanding not only what disparities exist, but also the context and mechanisms through which they occur. Finally, they allow us to see the VHA's strengths and achievements, which in turn may serve to provide motivation to continue to work towards the goal of health equity for all Veterans.

## ABBREVIATIONS

ACSC	Ambulatory care-sensitive condition
ADL	Activities of daily living
AIDS	Acquired immune deficiency syndrome
APM	Antipsychotic medication
ARNP	Advanced Registered Nurse Practitioner
BASIS-24®	Behavior and Symptom Identification Scale
BMI	Body mass index
CABG	Coronary artery bypass graft
CBOC	Community Based Outpatient Clinics
CINAHL	Current Index to Nursing and Allied Health Literature (nursing information database; Cinahl Information Systems, Inc.)
CKD	Chronic kidney disease
CV	Cardiovascular
DM	Diabetes mellitus
EBM	Ovid Evidence-based Medicine Reviews
ECG	Electrocardiogram
ED	Emergency department
EEG	Electroencephalogram
ESP	Evidence-based Synthesis Program
GAF	Global Assessment of Functioning
HCV	Hepatitis C virus
HEDIS	Healthcare Effectiveness Data and Information Set
HF	Heart failure
HIV	Human immunodeficiency virus
HRME	High risk medications for the elderly
HSR&D	Health Services Research and Development
HUD-VASH	U.S. Department of Housing and Urban Development–Veterans Affairs Supported Housing
ICM	Intensive case management
KQ	Key question
LDL	Low-density lipoprotein
LGB	Lesbian, gay, or bisexual
LGBT	Lesbian, gay, bisexual, or transgender
LOS	Length of stay
MDD	Major depressive disorder
MPR	Medication possession ratio
MRI	Magnetic resonance imaging
N	Number
NR	Not reported
OEF	Operation Enduring Freedom
OHE	Office of Health Equity
OIF	Operation Iraqi Freedom
OND	Operation New Dawn
ORD	VA Office of Research and Development
PCP	Primary care provider

PCS	Office of Patient Care Services
PICOTS	Population, interventions, comparators, outcomes, timing, and setting
PRESS	Peer Review of Search Strategies
PTSD	Posttraumatic stress disorder
QOL	Quality of life
RCT	Randomized controlled trials
SES	Socioeconomic status
TB	Tuberculosis
T-CBT	Telephone-administered cognitive behavioral therapy
TEP	Technical Expert Panel
VA	Veterans Affairs
VAMC	Veterans Affairs Medical Center
VHA	Veterans Health Administration
WWII	World War II