



# 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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# EVIDENCE REPORT

## 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>1,2</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.

## RACE AND ETHNICITY

Three VA ESP reviews have examined the topic of racial and ethnic disparities. A comprehensive review by Saha et al (2007) examined racial and ethnic disparities within the VHA, factors contributing to disparities, interventions designed to mitigate disparities, and ongoing research funded by the VA Health Services Research and Development (HSR&D).<sup>3</sup> Findings included no clear pattern of disparities by clinical area; however, disparities were more prevalent for processes requiring a higher degree of decision making, communication, or effort; process of care outcomes such as blood pressure, glucose, and cholesterol favored White Veterans; and disparities affected African American/Black and Hispanic/Latino Veterans most significantly.<sup>3</sup> In 2011, Quinones and others focused on interventions to reduce racial and ethnic disparities both inside and out of the VHA, and identified 5 studies examining Veterans of color (African American/Black, Hispanic/Latino, American Indian/Alaska Native).<sup>4</sup> Most recently, Peterson et al (2015) published a limited evidence brief updating Saha et al's review. The evidence brief included only a synthesis of morbidity and mortality outcomes, and was accompanied by supplementary data tables describing additional outcomes such as access to care, screening, and other process of care and patient outcomes.<sup>5</sup> Findings included higher morbidity/mortality rates for African American/Black Veterans (as compared to Whites) associated with a wide range of conditions (*eg*, colon cancer, chronic kidney disease [CKD], Human Immunodeficiency Virus [HIV], diabetes, posttraumatic stress disorder [PTSD], venous thromboembolism), and for Hispanic/Latino Veterans with hepatitis C.<sup>5</sup>

## WOMEN'S HEALTH

Women are currently the fastest-growing cohort within the Veteran community, and by 2040 will make up 16% of the Veteran population.<sup>6</sup> A recent study of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) Veterans receiving care through the VHA found that women were more likely than men to have back, musculoskeletal, and joint problems in the year after returning from deployment, with the odds increasing up to 7 years post-deployment.<sup>7</sup> A 2014

study examining trends in gender disparities associated with gender-neutral VHA clinical measures from 2008-2014 found that gender differences in screening for depression and PTSD were eliminated over the study period, and there were significant reductions in disparities related to hypertension and diabetes control, although disparities remained in other areas. For example, in 2012, female Veterans with a history of diabetes or ischemic heart disease had higher average low-density lipoprotein (LDL) levels and lower rates of appropriate statin prescriptions than their male counterparts (79.5% of female Veterans versus 88.9% of males), increasing their risk for future cardiovascular events.<sup>8</sup>

In 2006, an ESP review by Goldzweig et al assessed the body of VA research related to women's health. The review identified 182 studies published from 1978 to 2004, which were largely observational and descriptive in nature, with only 2 randomized controlled trials (RCTs).<sup>9</sup> An update examining research published between 2004 and 2008 was published in 2010. Findings were consistent with increasing attention to issues related to disparities in care for women Veterans, with 195 articles identified, of which 5 were RCTs.<sup>10</sup> Since 2008, the VA and VHA have made a significant effort to increase awareness of women's health and reduce disparities. In 2008, the VA launched a Women's Health improvement initiative, including a 5-year plan to reduce disparities, and in 2011 Women's Health became part of the Office of Patient Care Services (PCS), allowing for better integration of services and coordination of care.<sup>11,12</sup> In addition, women Veteran's health has increasingly become a research priority in the VA. An update to the 2010 ESP review on women's health was recently published.<sup>13,14</sup>

## MENTAL HEALTH

Veterans experience a high burden of mental health conditions. According to a recent analysis of VHA utilization by OEF, OIF, and Operation New Dawn (OND) Veterans, 57.6% of Veterans receiving care through the VHA were diagnosed with a mental health condition, with more than half diagnosed with PTSD.<sup>15</sup> In addition, individuals with mental health conditions experience a disproportionately high rate of co-occurring medical conditions, such as diabetes and pulmonary and cardiovascular disease.<sup>16</sup> A 2014 ESP review examined disparities in the receipt of preventive care, or the management of chronic conditions among Veterans and non-Veteran adults with mental health disorders.<sup>17</sup> Findings related to mammography, pap smears, and colorectal cancer screening within the VHA were inconsistent, with Veterans with a mental health condition less likely to receive a pneumococcal vaccine, and those with diabetes less likely to receive eye and foot exams. However, Veterans with a mental health condition and comorbid diabetes were more likely to receive HbA1c monitoring, and Veterans with PTSD and depressive disorders were more likely to be both screened for tobacco use and referred to smoking cessation counseling.<sup>17</sup>

## RURAL RESIDENCE AND DISTANCE

Roughly 3 million Veterans – one-third of all Veterans served by the VHA – live in rural areas.<sup>18</sup> 2 reviews have focused specifically on the health of rural Veterans. In 2008, the VA National Center for Patient Safety published a review examining the status of rural Veterans' health, associated characteristics of care, and variables related to disparities, such as access, utilization patterns, rural care delivery models, and healthcare settings used by Veterans.<sup>19</sup> More recently, an ESP review examined urban versus rural ambulatory care in VHA and non-VHA settings.<sup>20</sup> The review focused on differences in healthcare access and utilization between rural and urban



patients, as well as differences in process of care and patient outcomes. Findings indicated lower cancer screening rates (*eg*, breast, cervical) and higher suicide rates associated with differential use of antidepressants in patients living in rural areas, and that despite better continuity of care with a specific primary care provider (PCP), patients living in rural areas were more likely to have a physician extender as their PCP, and have poorer access to specialty care, including mental health providers. A second ESP review examined interventions to improve access to care, and addressed issues related to both rural residence and distance from a VA medical center. The review concluded that there was a fair amount of evidence that interventions to improve access were effective at improving outcomes such as utilization and patient satisfaction, but that more research was needed examining the quality of care and patient health.<sup>21</sup>

## LESBIAN, GAY, BISEXUAL, AND TRANSGENDER (LGBT)

Recent estimates indicate that roughly 2.2% of military personnel in the United States identify as lesbian, gay, or bisexual (LGB),<sup>22</sup> with data based on the 2000 Census estimating nearly one million LGB Veterans.<sup>23</sup> In addition, estimates based on the 2011 American Community Survey (ACS) suggest that there are more than 130,000 transgender Veterans.<sup>24</sup> Studies examining health disparities experienced by LGBT Veterans are limited, and to our knowledge, no systematic reviews have been published to date. The limited research that exists indicates that transgender Veterans are more likely to be diagnosed with nearly all psychological and physical health conditions.<sup>25</sup> In addition, across all care providers, LGB Veterans are less likely to seek medical care, are more likely to be HIV+, and are more likely to have activity limitations due to physical, mental, or emotional problems.<sup>26</sup> In addition, studies have also found that LGBT Veterans may fear mistreatment related to their LGBT identity,<sup>27</sup> that sexual orientation is often not assessed by providers at the VHA,<sup>28</sup> and that when surveyed, many VHA providers believed it was inappropriate to discuss sexual orientation in a clinical setting and/or felt uncomfortable doing so.<sup>29</sup>

## THE CURRENT REVIEW

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, 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 funded through the VA Office of Research and Development that are currently ongoing or were recently closed. To characterize the original research relevant to disparities in Veterans and the interventions designed and implemented within the VHA to address them, we provide high level evidence maps. Our findings will inform stakeholders of the areas in which disparities may be present, and will also highlight the populations for which more research is needed to better understand and address the need for equitable healthcare for all Veterans.

## METHODS

### TOPIC DEVELOPMENT

This topic was submitted to the VA ESP Coordinating Center for development by Uchenna Uchendu, MD, Director of the VHA Office of Health Equity. The research questions for this evidence map were developed after a topic refinement process that included a preliminary review of published peer-reviewed literature, and consultation with internal partners, investigators, and stakeholders. The key questions for the map are as follows:

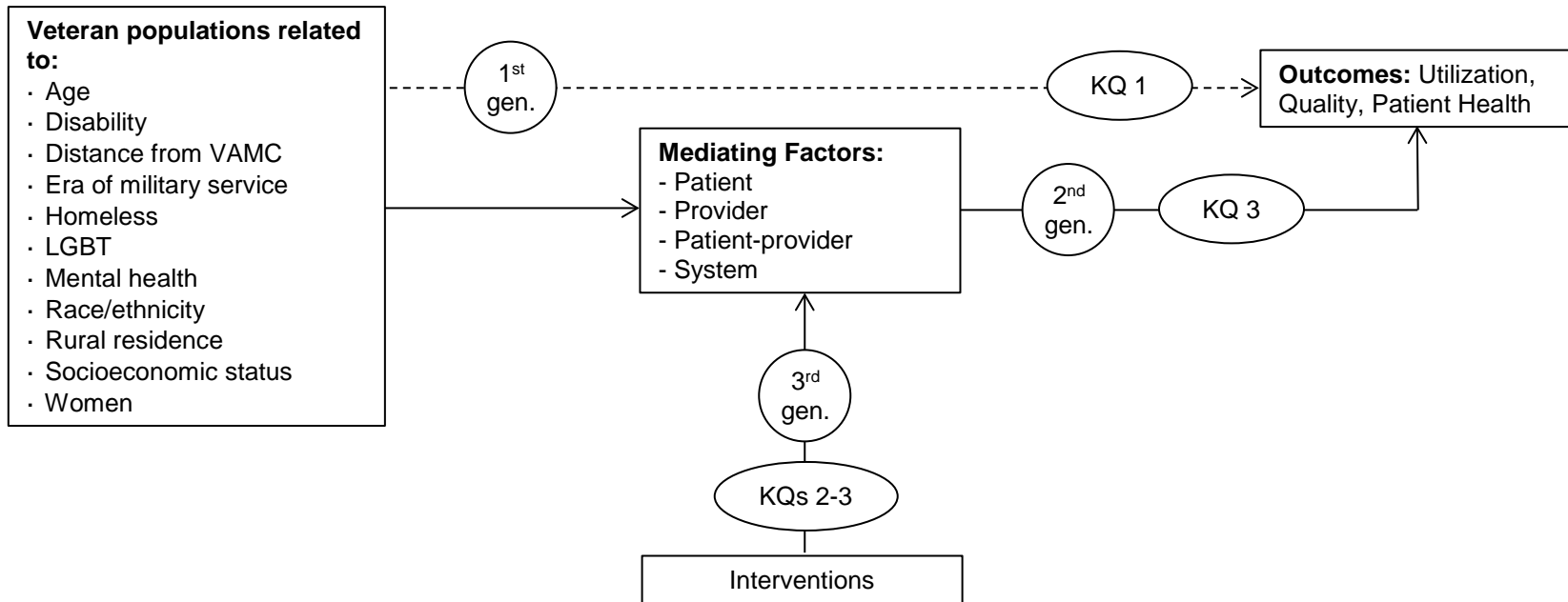
**Key Question 1.** For what Veteran groups/populations are health and healthcare disparities prevalent?

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

**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)?

Our approach was guided by an analytic framework developed for a 2007 systematic review by Saha et al, which examined racial and ethnic disparities in the VHA. We expanded the analytic framework to include additional Veteran populations for whom a disparity may exist (see Figure 1).<sup>3</sup> In the framework, first-generation studies are those that examine the prevalence of disparities in the utilization, quality of care, and health of Veterans. These studies are used to inform Key Question 1, and are included in Key Question 3. Second-generation studies examine mediating factors that may contribute to disparities for any given group/population (*eg*, perceived discrimination), and are included only in our search for currently funded research (Key Question 3). Third-generation studies examine interventions designed to reduce disparities. These studies are used to address Key Question 2, and are included in Key Question 3. Some studies may fall into more than one generational category. In these cases, only the data relevant to the key questions in this report were extracted.

**Figure 1. Analytic Framework: Prevalence of and Interventions to Reduce Disparities in Veterans**



**Abbreviations:** gen. = generation; KQ = Key Question; LGBT = lesbian, gay, bisexual, transgender; VAMC = Veteran Affairs Medical Center.

## SEARCH STRATEGY

We conducted a primary review of the literature by systematically searching, reviewing, and analyzing the scientific evidence as it pertained to the Key Questions in the report. 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 by Saha et al<sup>30</sup> 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).<sup>31,32</sup> For Key Questions 1 and 2, we searched the following databases for relevant literature published from 2006 through February 2016: MEDLINE, PubMed, PsycINFO, CINAHL, the Cochrane Library, Social Services Abstracts, Sociological Abstracts, and the VA's Health Services Research and Development (HSR&D) database (see Appendix A). To identify ongoing and recently completed VA research projects for Key Question 3, we searched the VA's HSR&D database for relevant studies completed or expected to be completed in 2015 or later.

We also evaluated the excluded studies and supplementary materials for Peterson et al's (2015) VA ESP evidence brief,<sup>5</sup> and the bibliographies of included primary studies and relevant systematic and non-systematic reviews, including Gierisch et al's (2014)<sup>17</sup> VA ESP review on disparities on the quality of care for patients with mental illness, Spont et al's (2011)<sup>20</sup> VA ESP review examining ambulatory care in rural versus urban populations, Bean-Mayberry et al's (2010)<sup>10</sup> VA ESP review examining women's health in the VA, and Kehle et al's (2011)<sup>21</sup> ESP review examining interventions to improve Veterans' access to care. To identify published and unpublished studies for all Key Questions, we searched ClinicalTrials.gov and the VA HSR&D and ESP websites, and contacted the directors of several VA research offices known to emphasize health disparity research (Appendix A).

## STUDY SELECTION

Criteria for population, interventions, comparators, outcomes, timing, and setting (PICOTS) were developed in collaboration with Dr. Uchendu and a Technical Expert Panel (TEP; listed in Appendix B), and are provided in Table 1. Using pre-specified inclusion criteria (Appendix C), 2 independent reviewers evaluated titles and abstracts for a random 10% of the search yield in order to ensure reliability between reviewers, with the remaining 90% decided by a single reviewer. We reviewed funded research for inclusion according to the same pre-specified inclusion criteria. At the full-text screening stage, 2 independent reviewers assessed all articles for inclusion, and discordant results were resolved through consensus or consultation with a third reviewer.

We included only studies of Veteran populations examining health disparities. For all Key Questions, we included studies with a comparison group within the same population or another relevant group, as well as studies providing a pre-post intervention comparison. We included studies examining outcomes related to the utilization, the quality of healthcare, or patient health outcomes. We included all study designs except for systematic or nonsystematic reviews, which were manually searched for eligible studies.

**Table 1. PICOTS by Key Question**

<b>Key Questions (KQs)</b>	<b>KQ1.</b> For what Veteran groups/populations are health and healthcare disparities prevalent?	<b>KQ2.</b> What are the effects of interventions implemented within the VHA to reduce health disparities?	<b>KQ3.</b> What are the research projects designed to identify or mitigate health disparities currently being funded by the VA Office of Research and Development (ORD)?
<b>Population</b>	Veterans only		
<b>Interventions</b>	NA	Any interventions <i>designed specifically</i> or are being specifically used to reduce disparities, or examine mediators associated with health disparities for Veterans.	
<b>Comparators</b>	<ul style="list-style-type: none"> <li>• Control group within the same group</li> <li>• Comparison to other groups relevant to the population</li> </ul>		
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>• Utilization of healthcare services</li> <li>• Quality of healthcare services               <ol style="list-style-type: none"> <li>1. Intermediate/process of care measures</li> <li>2. Patient evaluations of care</li> </ol> </li> <li>• Patient health outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• Utilization of healthcare services</li> <li>• Quality of healthcare services               <ol style="list-style-type: none"> <li>1. Intermediate/process of care measures</li> <li>2. Patient evaluations of care</li> </ol> </li> <li>• Patient health outcomes</li> <li>• Mediators               <ol style="list-style-type: none"> <li>1. System level (eg, distribution of services)</li> <li>2. Provider level (eg, racial bias)</li> <li>3. Patient level (eg, trust)</li> <li>4. Provider-patient level (eg, communication)</li> </ol> </li> </ul>	
<b>Timing</b>	No restrictions		
<b>Study design</b>	Original research, systematic review, or meta-analysis		
<b>Setting</b>	VHA or community settings		

## DATA ABSTRACTION

Data from studies meeting inclusion criteria were abstracted by one investigator and confirmed by a second. From each study, we abstracted data related to study design, setting, population, number of subjects, clinical topic, groups compared, outcomes, type of intervention (when applicable), whether a mediator was examined (and type), and a summary of findings for each outcome type.

## QUALITY ASSESSMENT

Given that the purpose of our review was to identify and classify the body of research related to health disparities affecting Veterans, we did not formally assess the quality of individual studies. For Key Question 1, we instead calculated a rough estimate of confidence for each study based on study design, whether the study controlled or adjusted for confounding variables, number of sites, and sample size. Table 2 outlines the criteria we used for scoring. For Key Question 2, we simply note the study design and sample size.

**Table 2. Description of confidence scores used for Key Question 1**

Category; Points	Description
Study Design 0 to 1	1 point for prospective studies. 0 points for all other designs.
Controlled for Confounders -1 to 0	-1 point if the study did not control for confounding variables. 0 points for all others.
Study Site(s) 0 to 1	1 point for multi-site studies and data from national samples. 0 points for single-site study.
Sample Size 0 to 2	Key Question 1: 2 points for studies with samples $\geq$ 100,000. 1 point for studies with samples $\geq$ 10,000. 0 points for studies $<$ 10,000.

## DATA SUMMARY

Our search for vulnerable populations was intentionally broad, to capture the breadth of disparities related to health or healthcare affecting Veterans. We mapped original research by abstracting relevant data for each Key Question and disparity population: 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]); socioeconomic status (SES); homelessness; era of military service; lesbian, gay, bisexual, or transgender (LGBT) identity; and disability. We purposefully separated studies examining rural populations from those examining distance from a VAMC. Although challenges related to lack of access due to distance are likely applicable to Veterans living in rural areas, we suspect that the health and healthcare of rural Veterans may also be influenced by additional cultural factors specific to living in rural areas.

We categorized studies for each population into those examining the following outcome categories:

- 1) utilization (*eg*, inpatient, outpatient, specialty care visits),
- 2) the quality of care (*eg*, processes of care [such as blood pressure screening], patient evaluations of care, intermediate outcomes [such as blood pressure control]),
- 3) patient health outcomes (*eg*, mortality)

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. If a study reported multiple outcomes within the same category (*eg*, blood pressure screening and control), we classified a study as mixed if the findings were not in agreement (*eg*, found significantly fewer screenings, but no difference in blood pressure control).

We classified a finding as a disparity if it conflicted with the clinically appropriate or expected outcome for each vulnerable population. For example, a study that found higher mortality rates in Veterans of color, compared to White Veterans, would be classified as a disparity. However, for studies examining age-related or era of military service-related disparities, we did not consider higher mortality rates in older adults and/or earlier eras of service (*eg*, WWII or Vietnam) to be a disparity in health, for we would expect higher mortality rates in older populations. For outcomes related to outpatient utilization, we classified lower utilization as a disparity for populations for which we know access is a primary issue (*eg*, distance from a VA Medical Center or rural residence). However, for studies examining other types of disparities, if the rate at which the study

population *should* be utilizing outpatient care was unclear, we classified significantly higher or lower rates of utilization as mixed or unclear, as we could not determine if those rates reflected better or poorer Veteran health, or if they represented a disparity related to access or other factors. For age-related disparities, if a study found either older or younger adults to be at a disadvantage that was not clinically normative, we classified it as a disparity.

For studies examining interventions designed to reduce disparities (Key Question 2), we categorized interventions into 1) patient-focused interventions, 2) provider-focused interventions, 3) technology interventions, and 4) system-level interventions. For each study we recorded whether the study findings were positive/no difference between the intervention and usual care (*eg*, non-inferiority studies), not positive/equivalent, or if findings were mixed or unclear. Similar to studies examining prevalence, if a study examining multiple outcomes reported both positive and negative findings, we classified the study as mixed or unclear. Also similar to Key Question 1, utilization outcomes were classified as mixed or unclear if the rate at which a population *should* be utilizing care was unclear. By default, we classified studies examining Community Based Outpatient Clinics (CBOCs) as examining distance from a VAMC, unless the article included a measure of rurality or specifically described the study population as living in a rural area.

## RATING THE BODY OF EVIDENCE

The purpose of our report was to describe the state of health disparities affecting Veterans by identifying and classifying current research. Thus, we did not formally assess the overall body of evidence. For Key Question 1, in lieu of a rating of the overall strength of evidence, for each outcome category (*ie*, utilization, the quality of care, patient health outcomes) *within* each vulnerable population, we provide a mean estimate of confidence for all studies reporting a) a disparity, b) no disparity, or c) that we determined were mixed or unclear (see Table 2 for a description of confidence scores for Key Question 1). We provide no estimates of confidence for Key Questions 2 or 3.

## PEER REVIEW

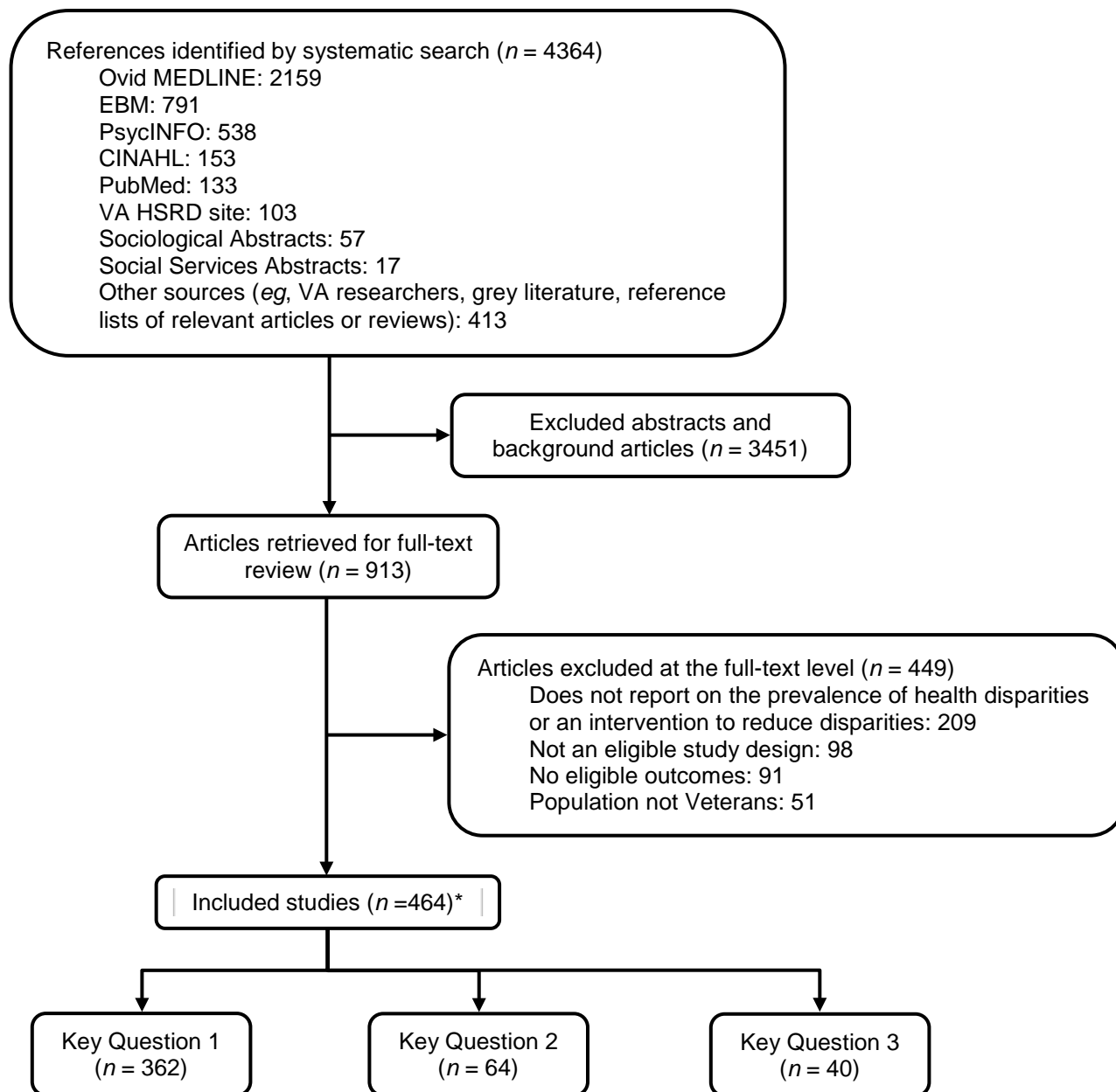
A draft version of this report was reviewed by 4 individuals with technical expertise and clinical leadership. Their comments and our responses are presented in Appendix B.

## RESULTS

### LITERATURE FLOW

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 (Figure 2).

**Figure 2. Literature Flow Chart**



\* 2 studies were included for both Key Question 1 and Key Question 2.



## KEY QUESTION 1: For what Veteran groups/populations are health and healthcare disparities prevalent?

### Summary of Findings

Across all outcomes, 193 studies reported the prevalence of racial or ethnic disparities in the utilization or quality of health or healthcare in Veterans. We identified 112 studies that examined disparities affecting women, and 74 studies examined disparities affecting Veterans with mental health conditions, most commonly major depressive disorder (MDD), posttraumatic stress disorder (PTSD), and schizophrenia. Very few studies examined disparities in the health or healthcare experienced by LGBT Veterans (9 studies), and homeless Veterans (7 studies), and only a limited number of studies examined the influence of socioeconomic status (31 studies). Table 3 provides the number of identified studies by vulnerable Veteran population, for each of the 3 outcome categories (utilization, quality of care, patient health outcomes).

**Table 3. Distribution of Total Studies and Studies Across Outcome Categories for Each Population**

Population	Total Studies	Utilization Studies N (%)	Quality of Care Studies N (%)	Patient Health Outcome Studies N (%)
Race/Ethnicity	193	24 (12.4)	117 (60.6)	111 (57.5)
African American/Black	188	24 (12.8)	110 (58.5)	82 (43.6)
Hispanic/Latino	70	9 (12.9)	40 (57.1)	26 (37.1)
American Indian/Alaska Native	21	4 (19.0)	8 (38.1)	11 (52.4)
Asian or Asian and/or Pacific Islander <sup>a</sup>	18	4 (22.2)	8 (44.4)	9 (50.0)
Native Hawaiian and/or Pacific Islander <sup>a</sup>	5	1 (20.0)	2 (40.0)	3 (60.0)
Women	112	24 (21.4)	57 (50.9)	41 (36.6)
Mental Health	74	13 (17.6)	44 (59.5)	26 (35.1)
Age	60	12 (20.0)	37 (61.7)	15 (25.0)
Rural Residence	39	17 (43.6)	15 (38.5)	15 (38.5)
Distance	15	10 (66.7)	3 (20.0)	4 (26.7)
Socioeconomic Status	31	7 (22.6)	15 (48.4)	10 (32.3)
Military Era of Service	15	7 (46.7)	5 (33.3)	6 (40.0)
Lesbian, Gay, Bisexual, Transgender	9	3 (33.3)	2 (22.2)	9 (100)
Disability	16	7 (43.8)	7 (43.8)	2 (12.5)
Homeless	7	6 (85.7)	1 (14.3)	3 (42.9)

**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.

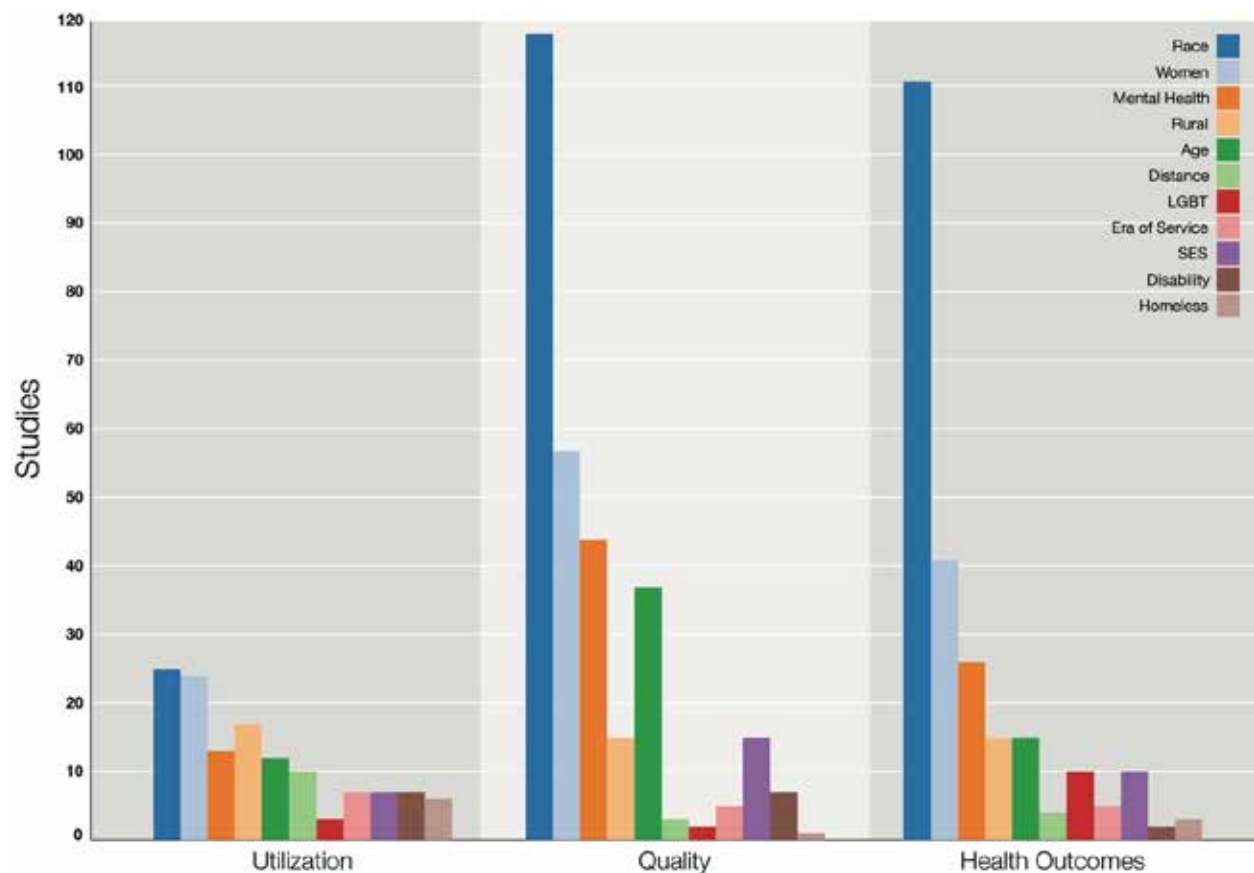
<sup>a</sup> Pacific Islanders were grouped inconsistently – sometimes being combined with Asians, and other times reported separately with Native Hawaiians.

<sup>b</sup> Quality of care studies included processes of care, intermediate outcomes, and patient evaluations of care

Across all populations, 84 studies examined outcomes related to utilization, 191 studies examined the quality of care, and 153 studies examined patient health outcomes. In general, studies examining racial/ethnic disparities focused more heavily on outcomes related to the quality of care and patient health, whereas studies examining disparities related to rural residence, distance,

homelessness, era of military service, and disability placed a greater emphasis on outcomes related to utilization (see Table 3 and Figure 3).

**Figure 3. 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.

We grouped studies into 39 distinct but broad clinical areas. Mental health was the most widely studied, followed by cardiovascular disease, cancer, and diabetes. Most of the studies in cardiovascular disease (69.2%), cancer (76.3%), and diabetes (63.3%) reported outcomes related to the quality of care (see Appendix D for the distribution of studies by clinical area and outcome category).

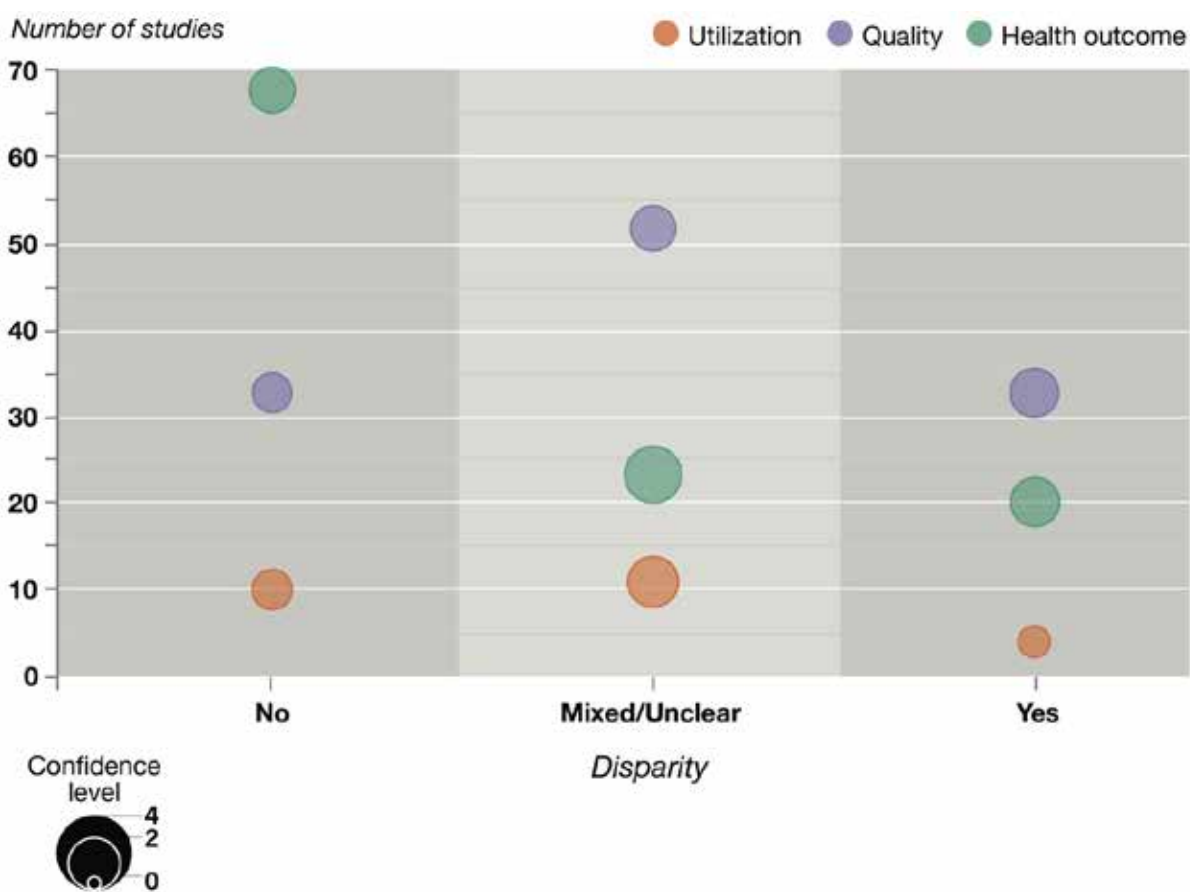
## Findings According to Population

### *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 (see Table 3). 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, particularly for African American/Black Veterans. Mean confidence estimates for African American/Black Veterans and to a certain extent Hispanic/Latino Veterans were lower than for other racial/ethnic groups. However, this is likely a function of the larger number of studies examining these populations, and regression toward the mean. Contributing to the overall mean confidence estimates were very few prospective studies, and nearly half of the studies reported fewer than 10,000 participants. All but a very few studies controlled for confounders, and most were multi-site studies or used national administrative data. Figure 4 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.

**Figure 4. Evidence Map: Health Disparities in Veterans 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.

When examining Veterans of color by racial or ethnic group, findings for both African American/Black Veterans and Hispanic/Latino Veterans were similar to the overall race/ethnicity findings. Very few studies examined utilization, and studies examining patient health reported little evidence of disparities (see Appendix E for the African American/Black evidence map and study-level data table). However, Hispanic/Latino Veterans differed from both African

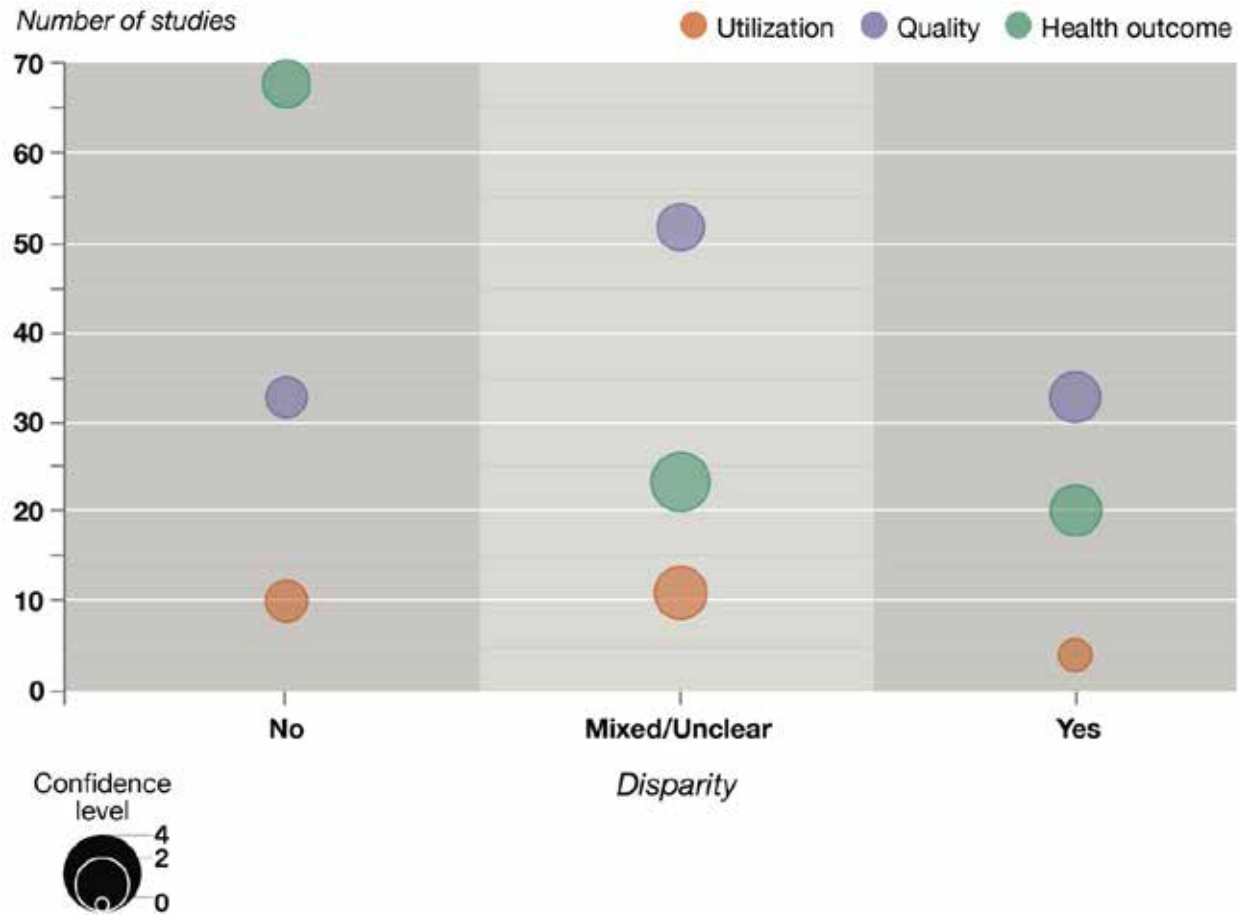
American/Black Veterans and the overall race/ethnicity findings when examining quality of care outcomes, with larger proportions of studies reporting evidence of a disparity or mixed/unclear findings and a smaller percentage of studies reporting evidence of no disparities (see Appendix F for the Hispanic/Latino evidence map and study-level data table). The distribution of findings for studies examining American Indian/Alaska Native Veterans was similar to the overall findings for race/ethnicity (see Appendix G for the American Indian/Alaska Native evidence map and study-level data table). Conversely, studies examining Asian, Native Hawaiian, and Pacific Islander Veterans found no clear evidence of disparities across all outcome categories. However, sample sizes were small, and there may not have been the power to detect differences (see Appendix H for the Asian/Pacific Islander evidence map and study-level data table and Appendix I for the Native Hawaiian/Pacific Islander evidence map and study-level data table).

### *Women*

We identified 112 studies providing data on the presence or absence of disparities in utilization, the quality of care, and the health of female Veterans. Across all outcomes, 52 studies reported evidence of no disparity, 39 studies reported mixed or unclear findings, and 25 studies identified a disparity in health or healthcare. Half of the studies reported quality of care outcomes, with outcomes related to utilization the least represented. Across all outcomes, more studies found evidence of no disparity or mixed or unclear findings. Of the 24 studies examining disparities related to utilization only one study found evidence of a disparity – that while women Veterans did not differ from men in their use of VHA outpatient health and mental health services, their non-VHA utilization was significantly higher (see Figure 5).<sup>33</sup>

Among studies examining gender-related disparities, we identified very few prospective studies, and the vast majority of studies were multi-site or examined national administrative data. In general, sample sizes were large, and most studies controlled for confounding variables (see Appendix J for study-level data table).

**Figure 5. Evidence Map: Health Disparities Among Women Veterans**



**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.

*Mental Health*

Seventy-four studies examined disparities affecting Veterans with mental health conditions. Included studies compared both Veterans with and without mental health conditions, as well as outcomes by single or comorbid mental health conditions. Across all outcomes, 15 studies found no evidence of a disparity, 32 studies reported mixed or unclear findings, and 31 studies found evidence of a disparity (see Figure 6). Studies reporting the prevalence of disparities for Veterans with mental health conditions examined outcomes related to the quality of care more than others, with a limited number of studies examining utilization. Across outcome categories, findings of a disparity or mixed or unclear findings were more common than not. There was wide variation in mean confidence estimates, due in large to the small number of studies examining disparities related to utilization or patient health outcomes (see Appendix K for the mental health study-level data table).

**Figure 6. Evidence Map: Health Disparities in Veterans with a Mental Health Condition**



**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 Populations*

We also mapped the evidence related to the presence or absence of disparities in utilization, the quality of care, and patient health experienced by Veterans according to age (see Appendix L for the age evidence map and study-level data table), rural residence and distance from a VA Medical Center (see Appendix M for the rural residence and distance evidence map and study-level data table), socioeconomic status (see Appendix N for the socioeconomic status evidence map and study-level data table), disability (see Appendix O for the disability evidence map and study-level

data table), era of military service (see Appendix P for the era of service evidence map and study-level data table), LGBT identity (see Appendix Q for the LGBT evidence map and study-level data table), and homelessness (see Appendix R for the homeless evidence map and study-level data table).

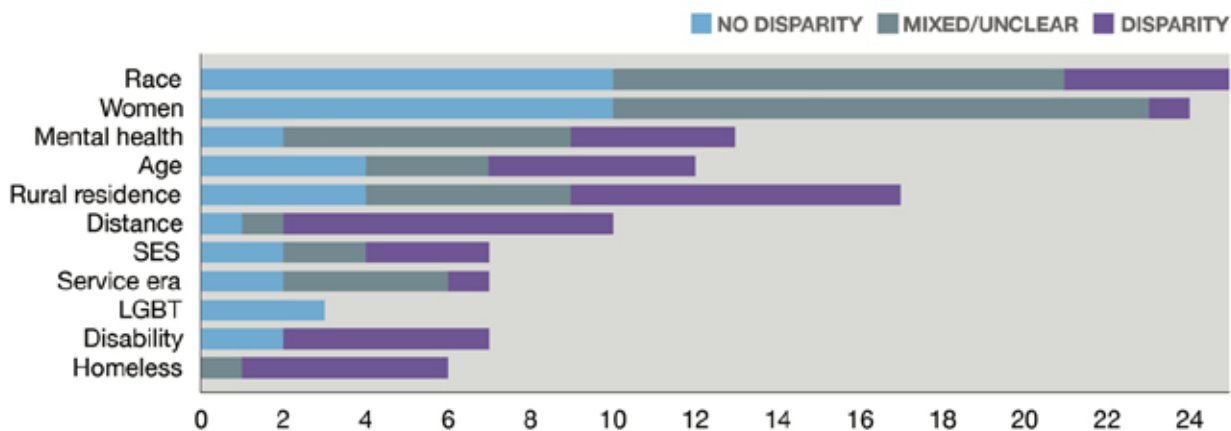
Findings varied widely by population and depended on the outcome category examined. For example, 11 of 15 of studies examining distance from a VAMC reported evidence of a disparity (8 of which examined outcomes related to utilization), as did 6 of the 7 studies examining homeless Veterans. However, only one of the 9 studies examining LGBT Veterans found evidence of a clear disparity, with 6 reporting evidence of none. Among studies examining disparities associated with socioeconomic status, few differences were reported in the quality of care. However, 6 of 10 studies examining patient health reported poorer outcomes in low SES Veterans. In studies comparing outcomes by age, a similar number of studies reported poorer outcomes associated with older or younger Veterans for both utilization and patient health outcomes. However, more studies examining the quality of care found poorer outcomes associated with older age.

### Findings by Outcome Type

#### Utilization

Across all populations, outcomes related to utilization of care were the least studied (84 studies), and utilization outcomes comprised less than a quarter of the studies examining disparities related to race/ethnicity, women, mental health conditions, age, and socioeconomic status. Conversely, a much stronger emphasis was placed on the utilization of care in studies examining disparities related to rural residence, distance from a VA medical center, era of military service, LGBT identity, disability, and homelessness. Studies examining many of the populations in which utilization outcomes were less emphasized (*ie*, race/ethnicity, women, mental health) reported evidence of no disparities, or findings were mixed or unclear, whereas a larger proportion of the studies in populations emphasizing utilization (*ie*, rural residence, distance from a VAMC, disability, homelessness) reported evidence of a disparity. Studies examining era of military service and LGBT Veterans were the exceptions, with utilization outcomes more commonly examined, but with very few disparities reported. Figure 7 highlights the number of studies reporting no disparity, mixed or unclear findings, and a disparity in utilization by population.

**Figure 7. Evidence Map: Utilization by Population**

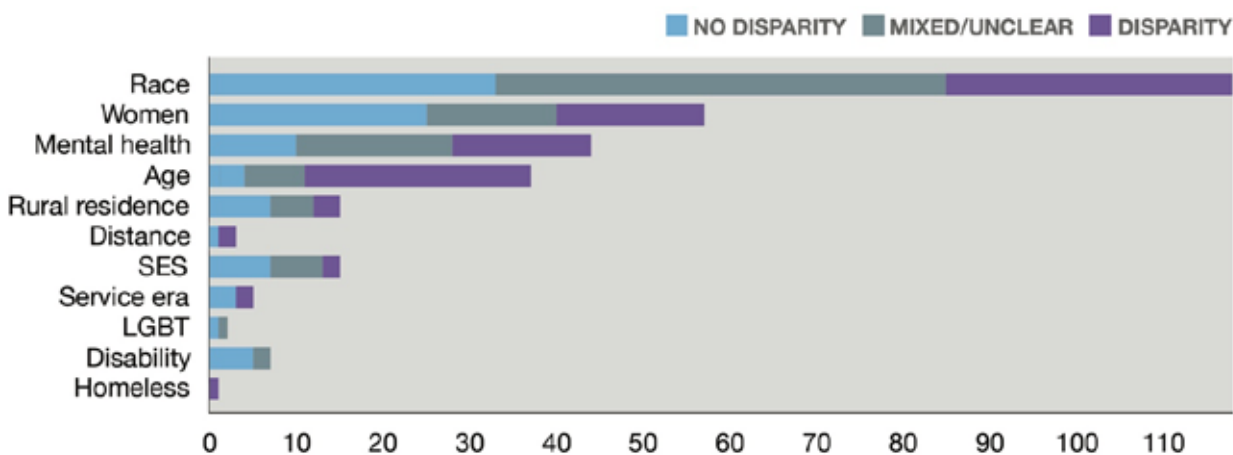


*Quality of Care*

With 191 identified studies, outcomes related to the quality of care experienced by Veterans were the most widely studied, and comprised a large proportion of the outcomes of interest in populations such as race/ethnicity, mental health, women, and age. Conversely, in studies examining populations such as homeless Veterans, LGBT Veterans, and Veterans living greater distances from a VAMC, outcomes related to the quality of care were less emphasized.

For all populations but age, the distribution of studies leaned towards those reporting mixed/unclear findings or evidence of no disparities (see Figure 8).

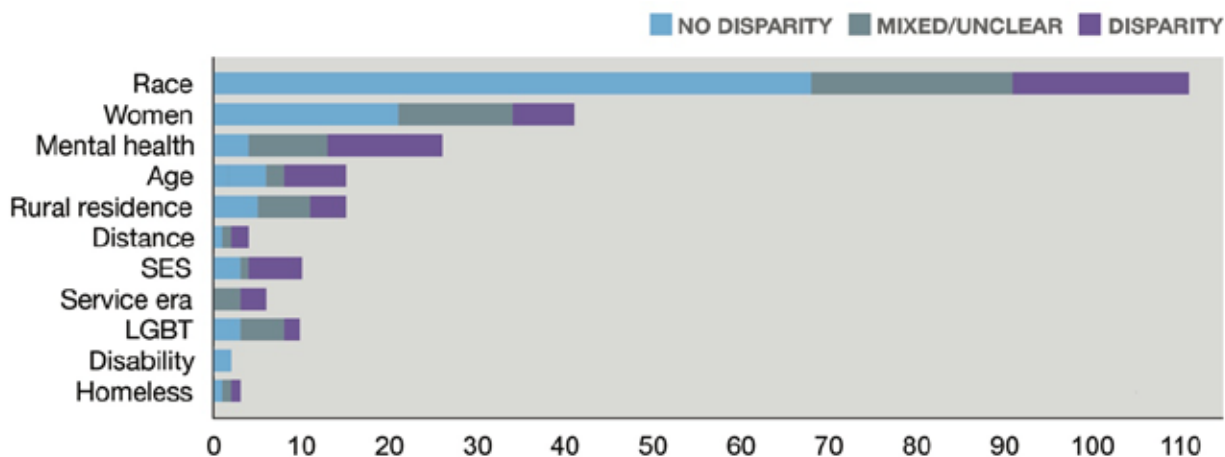
**Figure 8. Evidence Map: Quality of Care by Population**



*Health Outcomes*

Of the 153 studies examining patient health outcomes, for the majority of populations, very few studies reported evidence of a disparity. The exceptions were findings related to Veterans with mental health conditions, and Veterans of lower socioeconomic status, for whom poorer health outcomes were more commonly found (see Figure 9).

**Figure 9. Evidence Map: Health Outcomes by Population**





## KEY QUESTION 2: What are the effects of interventions implemented within the VHA to reduce health disparities?

### Summary of Findings

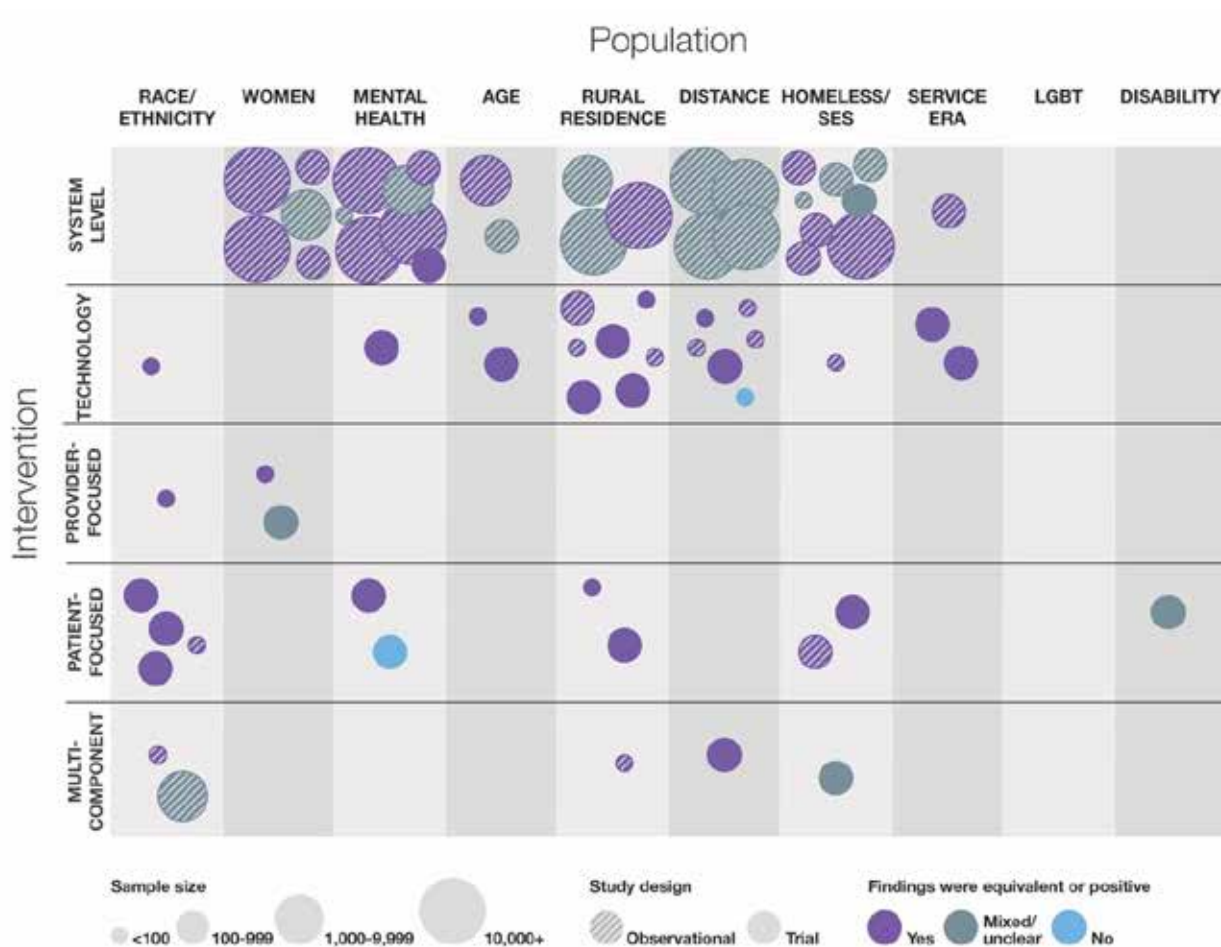
We identified 64 studies of interventions implemented within the VHA which were designed to reduce health disparities. The largest number of studies were designed to mitigate disparities experienced by Veterans living in rural areas (13 studies) and those experienced by homeless or low-income Veterans (12 studies). No studies examined interventions designed to address disparities related to LGBT identity (see Table 4).

**Table 4. Distribution of Total Studies and Studies Across Intervention Type for Each Population**

Population	Total Studies	System-level	Technology	Provider-focused	Patient-focused	Multi-component
Rural Residence	13	3 (23.1)	7 (53.8)	1 (7.7)	2 (15.4)	-
Homeless/SES	12	8 (66.7)	1 (8.3)	-	2 (16.7)	1 (8.3)
Distance from a VA Medical Center	11	4 (36.4)	6 (54.5)	-	-	1 (9.0)
Mental Health	10	7 (70.0)	1 (10.0)	-	2 (20.0)	-
Race/Ethnicity	8	-	1 (12.5)	1 (12.5)	4 (50.0)	2 (25.0)
Women	7	5 (71.4)	-	2 (28.6)	-	-
Age	4	2 (50.0)	2 (50.0)	-	-	-
Era of Military Service	3	1 (33.3)	2 (66.7)	-	-	-
Disability	1	-	-	-	-	1 (100.0)
Lesbian, Gay, Bisexual, Transgender (LGBT)	-	-	-	-	-	-
Total Key Question 2:	64	30 (46.9)	20 (31.2)	3 (4.7)	11 (17.2)	5 (7.8)

Figure 10 provides a map illustrating studies by population, type of intervention studied, and study design. Colors indicate whether the study reported that the intervention was positive or equivalent (*ie*, non-inferiority studies), and bubble size represents the number of participants. Appendix S provides study-level detail.

**Figure 10. 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.

As the bubble plot illustrates, interventions designed to mitigate health disparities in the VHA have largely been system-level and technology interventions, and with the exception of 2 studies,<sup>34,35</sup> all studies reported positive or equivalent (eg, non-inferiority studies) findings, or reported findings that were mixed or unclear. Studies were largely observational in design; however, we also identified a number of smaller randomized and non-randomized controlled trials, which primarily examined technology or patient-focused interventions.

## Findings by Type of Intervention

### *System-level Interventions*

The 30 studies examining system-level interventions were designed to reduce or eliminate disparities experienced by female Veterans, Veterans with mental health conditions, older adults, those living in rural areas or living a significant distance from a VA medical center, homeless Veterans, and OEF/OIF/OND Veterans. We identified no system level interventions designed to address disparities related to race or ethnicity, LGBT identity, or disability. Two-thirds of the studies focused on outcomes related to general health, with many examining utilization or the primary care experience, and 7 studies examined outcomes related to mental health. Most of the identified studies were observational, with nearly all studies retrospectively examining administrative data. We identified only 2 trials. The first compared the quality of life, psychotic symptom reduction, and substance use in homeless Veterans randomly assigned to the U.S. Department of Housing and Urban Development–Veterans Affairs Supported Housing (HUD-VASH), intensive case management (ICM), or usual care,<sup>36</sup> and the second compared rates of smoking cessation in Veterans with PTSD randomly assigned to smoking cessation treatment integrated with PTSD treatment, or referral to a smoking cessation clinic.<sup>37</sup> Other examples of interventions include community based outpatient clinics (CBOCs) to address distance to a VAMC, travel reimbursement, women’s health clinics, co-located or integrated mental health and primary care, and primary care clinics tailored to the needs of homeless Veterans. About half of the studies reported only positive or equivalent findings, with the remainder of studies classified as mixed or unclear, most of which examined multiple outcomes. See Appendix S for more detail.

### *Technology Interventions*

Twenty studies examined interventions utilizing technology – most commonly a form of telehealth. More than half of the studies were designed to mitigate disparities for rural Veterans (7 studies) or to improve access for Veterans living farther distances from a VA medical center (6 studies). Interventions also targeted older Veterans,<sup>38,39</sup> American Indian/Alaska Native Veterans,<sup>40</sup> homeless Veterans,<sup>41</sup> OEF/OIF/OND Veterans,<sup>42,43</sup> and Veterans with substance use disorders.<sup>44</sup> Thirteen of the studies were trials, and 11 of the 20 studies had sample sizes smaller than 100. The largest study included 667 participants.<sup>44</sup> Twelve studies examined outcomes related to mental health, with other clinical areas including cardiovascular disease,<sup>45,46</sup> HIV,<sup>47,48</sup> pain,<sup>39,49,50</sup> neurology,<sup>51</sup> and general healthcare utilization.<sup>41</sup> Nearly all studies reported positive or equivalent findings. Only one study reported a negative finding. The study compared telephone-administered cognitive behavioral therapy (T-CBT) to usual care (in person CBT) at a CBOC, and found that despite treatment compliance and therapists that were assessed as highly competent, there were no time by treatment effects associated with T-CBT.<sup>35</sup> See Appendix S for more detail.

### *Provider-focused Interventions*

Three trials examined provider-focused interventions.<sup>52-54</sup> 2 of the studies examined gender awareness/competence interventions designed to address disparities experienced by female Veterans,<sup>53,54</sup> and the third focused on improving the quality of care for African American/Black Veterans.<sup>52</sup> 2 studies reported positive findings,<sup>52,55</sup> with one study, which compared an educational program targeting deficits in the gender awareness domains of gender-role ideology, sensitivity, and knowledge to a program on managing stress in the workplace, reporting mixed results.<sup>53</sup>

### *Patient-focused Interventions*

The 11 studies examining patient-focused interventions targeted outcomes in a range of clinical areas, including general health,<sup>56-58</sup> mental health,<sup>34,59</sup> cardiovascular disease,<sup>60,61</sup> diabetes,<sup>62</sup> spinal cord injury,<sup>63</sup> orthopedics,<sup>64</sup> and osteoarthritis.<sup>65</sup> All but 2 studies<sup>64,65</sup> were trials. Four of the 11 studies examined interventions designed to mitigate racial or ethnic disparities,<sup>60,62,64,65</sup> 2 targeted homeless Veterans,<sup>56,59</sup> 2 focused on reducing disparities related to rural residence,<sup>57,58</sup> 2 were designed for Veterans with mental health conditions,<sup>34,61</sup> and one focused on Veterans with disabilities.<sup>63</sup> We identified no studies of patient-focused interventions targeting women, age, era of military service, or LGBT identity. All but 2 studies reported positive or equivalent outcomes – one study compared a male specific and a gender neutral psychoeducational mailing about military sexual trauma to neutral topic mailing, and found no differences in utilization,<sup>34</sup> and the other compared a supportive employment program for Veterans with spinal cord injuries to treatment as usual and found that the intervention had no effect on quality of life, and there was no difference between groups.<sup>63</sup>

### *Multicomponent Interventions*

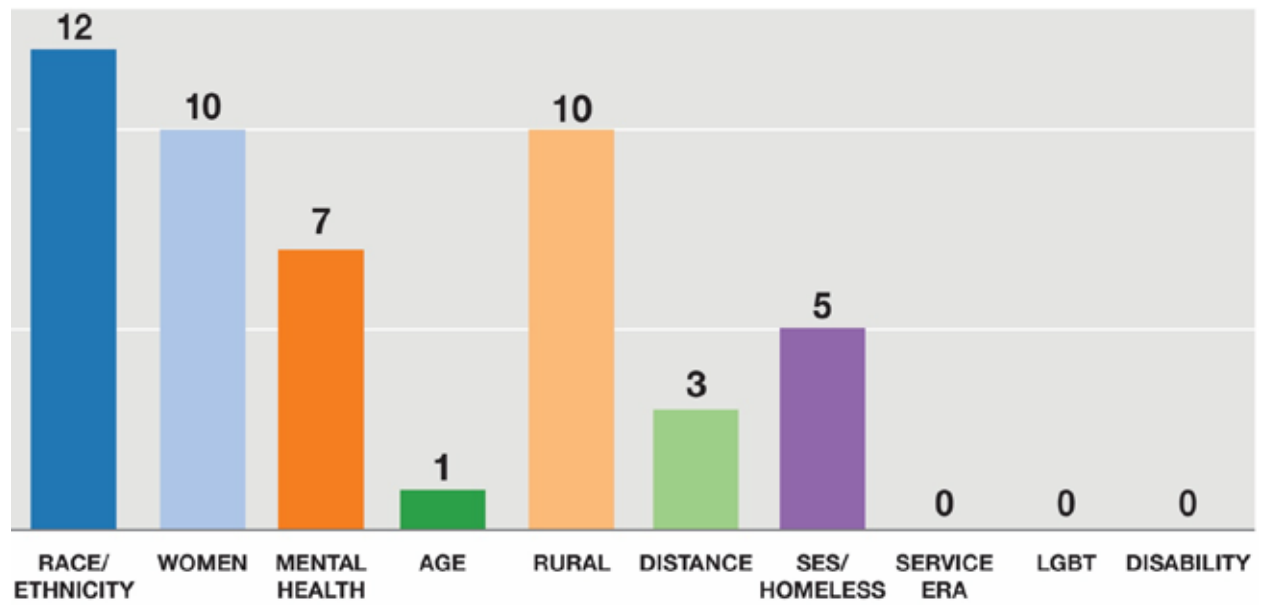
The 5 studies of multicomponent interventions were designed to reduce health disparities related to race or ethnicity,<sup>66,67</sup> homelessness,<sup>68</sup> rural residence,<sup>55</sup> and distance from a VA medical center.<sup>69</sup> Three included system level interventions,<sup>67-69</sup> and 3 involved technology.<sup>55,66,69</sup> Sample sizes ranged from 30<sup>66</sup> to 8,866,<sup>67</sup> and all studies reported positive/equivalent<sup>55,66,69</sup> or mixed or unclear findings.<sup>67,68</sup>

## **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)?**

### **Summary of Findings**

Our search for recently closed and ongoing studies (2015 to present) examining disparities in the utilization, quality of healthcare, and health of Veterans funded by the VA Office of Research and Development resulted in a total of 40 studies. Studies largely include(d) Veterans seen in VHA settings. However, a handful of abstracts did not clearly identify the setting of care, and a few others clearly examined non-VHA settings (*eg*, Choice, Indian Health Service). Across studies, 12 studies examine or were designed to address racial disparities, 10 studies target Veterans living in rural areas, 10 studies focus on women, 7 studies address disparities related to mental health conditions, 5 studies focus on homeless or low-income Veterans, 3 studies address disparities related to distance from a VAMC, and 1 study examines age-related disparities. We identified no studies examining the prevalence or interventions to mitigate disparities related to era of military service, LGBT identity, or disability. Figure 11 illustrates the number of studies across each Veteran population/group, and Table 5 provides more detail.

**Figure 11. Number of Open and Recently Closed Health Disparity Studies Funded by the VA Office of Research and Development**



**Table 5. Open and Recently Closed Studies Focusing on Health Disparities, Funded by the VA Office of Research and Development**

Project Number	Title	Principal Investigator	Funding End	Disparity Type						
				Race	Mental Health	Gender	Rural	Age	SES	Distance
<a href="#">IIR 13-085</a>	Improving VA Weight Management Outcomes: Role of the Residential Environment	Tarlov, E	9/30/2017	X		X	X			
<a href="#">CRE 12-012</a>	Musculoskeletal Diagnoses Cohort: Examining Pain and Pain Care in the VA	Goulet, J	5/31/2017	X		X				
<a href="#">IIR 10-144</a>	Racial and Ethnic Disparities in Satisfaction with VA Care	Zickmund, S	2/28/2015	X		X				
<a href="#">SDR 13-425</a>	Understanding Women's Disparities in Satisfaction with VA Health Care (DISC Women)	Zickmund, S	3/31/2016	X		X				
<a href="#">CRE 12-300</a>	Development and Validation of a Perceived Access Measure	Pyne, J	2/28/2018	X					X	
<a href="#">CRE 12-020</a>	Promoting Evidence-Based Pharmacotherapy for PTSD in CBOCs	Spoont, M	11/30/2017		X					X
<a href="#">IIR 13-315</a>	Effectiveness and Implementation of Brief Cognitive Behavioral Therapy in CBOCs	Cully, J	4/30/2019				X			X
<a href="#">IIR 13-030</a>	A Proactive Walking Trial to Reduce Pain in Black Veterans	Burgess, D	6/30/2019	X						
<a href="#">PPO 13-395</a>	Mental Health Disparities and Communication among African-American Veterans	Eliacin, J	3/31/2016	X						
<a href="#">IIR 11-328</a>	Motivating Providers to Reduce Racial Disparities in Their Own Practice	Burgess, D	5/31/2017	X						
<a href="#">IIR 14-007</a>	Opening the Black Box of Cultural Competence	Saha, S	8/31/2020	X						
<a href="#">IIR 13-080</a>	Staying Positive: An Intervention to Reduce Osteoarthritis Pain Disparities	Hausmann, L	03/31/201	X						
<a href="#">PPO 14-111</a>	SToRytelling to Improve Disease outcomes in Gout: The STRIDE-GO Study	Singh, J	7/31/2015	X						
<a href="#">IIR 10-132</a>	Using Stories to Address Disparities in Hypertension	Houston, T	1/31/2016	X						
<a href="#">RRP 12-524</a>	Access to PTSD Care among Veterans with and without Substance Use Diagnoses	Damon, A	3/31/2015		X					

<a href="#">CDP 12-255</a>	Impact of Mental Illness on Veteran's Palliative Care Access and Outcomes (CDA 11-201)	Garrido, M	9/30/2017		X					
<a href="#">RRP 14-180</a>	Implementation of Stigma Reduction Intervention for Primary Care Providers	Mittal, D	9/30/2015		X					
<a href="#">IIR 11-306</a>	Improving PTSD Service Delivery for Veterans with Severe Mental Illness	Grubaugh, A	12/31/2016		X					
<a href="#">IIR 13-319</a>	Motivationally Enhanced Mobile Delivery of MOVE! to Veterans with Mental Illness	Cohen, A	3/31/2017		X					
<a href="#">SDP 12-177</a>	PACT to Improve Health Care in People with Serious Mental Illness (SMI-PACT)	Young, A	12/31/2018		X					
<a href="#">CRE 12-008</a>	Evaluation of Quality and Coordination of Outsourced Care for Women Veterans	Bastian, L	2/28/2017			X				
<a href="#">CRE 12-038</a>	Impacts of Delivery of Comprehensive Women's Health Care in the VA	Yano, E	8/31/2016			X				
<a href="#">CRE 12-026</a>	Implementation of VA Womens Health Patient Aligned Care Teams WH-PACTs	Yano, E	2/28/2017			X				
<a href="#">CRE 12-039</a>	Web and Shared Decision Making for Reserve/National Guard Women's PTSD Care	Sadler, A	3/31/2017			X				
<a href="#">IIR 12-118</a>	Women Veterans Cohort Study 2	Haskell, S	6/30/2018			X				
<a href="#">SDR 10-012</a>	Women's Health Research Consortium/Practice-Based Research Network	Yano, E	9/30/2016			X				
<a href="#">IIR 10-135</a>	Behavioral Activation Therapy for Rural Veterans with Diabetes and Depression	Naik, A	9/30/2016				X			
<a href="#">VCA 15-245</a>	Differences in Satisfaction with Choice: Laying the Foundation for the Evaluation of the Choice Act	Zickmund, S	9/30/2015				X			
<a href="#">IIR 15-147</a>	Effectiveness of Telehealth Collaborative Care for Veterans with HIV in Rural and Outlying Settings	Ohl, M	7/31/2018				X			
<a href="#">CDP 12-253</a>	Improving Access and Outcomes for Rural Veterans with HIV (CDA 11-211)	Ohl, M	9/30/2017				X			
<a href="#">CRE 12-083</a>	Motivational Coaching to Enhance Mental Health Engagement in Rural Veterans	Seal, K	7/31/2018				X			
<a href="#">PPO 13-153</a>	Personal Health Record-Facilitated Diabetes Self-Management Among Rural Veterans	Lynch, C	6/30/2015				X			
<a href="#">IIR 11-290</a>	Tailoring Interventions for Rural Veterans: What We Need to Know	Fischer, E	3/31/2017				X			

<a href="#">IIR 12-063</a>	VHA-Indian Health Service Collaborations in Rural Health: HBPC	Kramer, B	12/31/2016				X			
<a href="#">IIR 11-285</a>	Computerized Cognitive Training to Improve Cognition in Diabetic Elderly Veterans	Silverman, J	3/31/2018					X		
<a href="#">IIR 13-317</a>	Group Motivational Interviewing (GMI) For Homeless Veterans In VA Services	Santa Ana, E	1/31/2019						X	
<a href="#">IIR 10-333</a>	Improving Outcomes for Homeless Veterans with Peer Support	Ellison, M	5/31/2017						X	
<a href="#">IIR 15-095</a>	Primary Care Quality and Homeless Service Tailoring	Kertesz, S	6/30/2020						X	
<a href="#">IIR 13-296</a>	Systems for Helping Veterans Comprehend Electronic Health Record Notes	Yu, H	11/30/2018						X	
<a href="#">CRE 12-310</a>	Adapting and Implementing the Blended Collaborative Care Model in CBOCs	Owen, R	9/30/2019							X





## DISCUSSION AND CONCLUSION

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. Due to the vast differences between racial and ethnic minorities, we did not include studies which classified all Veterans of color as non-White (see Appendix T).

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 focuses 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 those 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 and those of low socioeconomic status, 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/socioeconomic status, 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 for 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 (KQ3), we see clear gaps in research related to not only 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 of care, patient 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 was 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. 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 the disparities faced by 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 of 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.

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