Evidence Synthesis Program

VA versus Non-VA Quality of Care: A Systematic Review

Updated April 2023

U.S. Department of Veterans Affairs
Veterans Health Administration
Health Services Research & Development Service

Recommended citation: Shekelle P, Maggard-Gibbons M, Blegen M, et al. VA versus Non-VA Quality of Care: A Systematic Review. Washington, DC: Evidence Synthesis Program, Health Services Research and Development Service, Office of Research and Development, Department of Veterans Affairs. VA ESP Project #05-226; 2023.

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This report was prepared by the Evidence Synthesis Program Center located at the **VA Greater Los Angeles Healthcare System,** directed by Isomi Miake-Lye, PhD and Paul Shekelle, MD, PhD and funded by the Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development.

PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted health care topics of importance to clinicians, managers, and policymakers as they work to improve the health and health care of Veterans. 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 program comprises four ESP Centers across the US and a Coordinating Center located in Portland, Oregon. Center Directors are VA clinicians and recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Center Program. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, interface with stakeholders, and address urgent evidence needs. To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee composed of health system leadership and researchers. The program solicits nominations for review topics several times a year via the program website.

The present report was developed in response to a request from the Office of the Assistant Under Secretary for Health for Quality and Patient Safety. The scope was further developed with input from Operational Partners (below), the ESP Coordinating Center, the review team, and the technical expert panel (TEP). The ESP consulted several technical and content experts in designing the research questions and review methodology. In seeking broad expertise and perspectives, divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Ultimately, however, research questions, design, methodologic approaches, and/or conclusions of the review may not necessarily represent the views of individual technical and content experts.

ACKNOWLEDGMENTS

The authors are grateful to the following individuals for their contributions to this project:

Operational Partners

Operational partners are system-level stakeholders who help ensure relevance of the review topic to the VA, contribute to the development of and approve final project scope and timeframe for completion, provide feedback on the draft report, and provide consultation on strategies for dissemination of the report to the field and relevant groups.

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Peer Reviewers

The Coordinating Center sought input from external peer reviewers to review the draft report and provide feedback on the objectives, scope, methods used, perception of bias, and omitted evidence (see Appendix J for disposition of comments). Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The Coordinating Center works to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

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FIGURES AND TABLES

ABBREVIATIONS TABLE

AHRQ	Agency for Healthcare Research and Quality
AMI	Acute myocardial infarction
BEST	Beta-blocker Evaluation of Survival Trial
CABG	Coronary artery bypass graft
CAUTI	Catheter-associated urinary tract infection
CC	Community care
CDW	Corporate data warehouse
CKD	Chronic kidney disease
CLC	Community living center
CMS	Centers for Medicare & Medicaid Services
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular disease
ED	Emergency department
ER	Emergency room
ESRD	End-stage renal disease
FY	Fiscal year
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems
HF	Heart failure
MISSION	Maintaining Internal Systems and Strengthening Integrated Outside Networks
NCDB	National Cancer Database
NH	Nursing home
NSCLC	Non-small cell lung cancer
NSQIP	National Surgical Quality Improvement Program
PCI	Percutaneous coronary intervention
PCP	Primary care provider
PE	Pulmonary embolism
SEER	
SHEP	Survey of Healthcare Experience of Patients
THA	Total hip arthroplasty
TKA	Total knee arthroplasty
VA	United States Department of Veterans Affairs
VCP	Veterans Choice Program
VISN	Veterans Integrated Service Network
VTE	Venous thromboembolism

EXECUTIVE SUMMARY

Key Findings

- This review identified 53 relevant studies published between 2015 and 2023 that assessed the quality of VA care with the quality of non-VA care; 19 studies of surgical care and 38 studies of non-surgical care. Four studies contributed data to both.
- In the domain of quality and safety, the great majority of studies found that VA care is as good as, or better than, care in the community.
- For the domains of access, patient experience, and efficiency/cost, comparative studies were fewer in number and more mixed in results, but tended to favor VA care.

INTRODUCTION

The Department of Veterans Affairs (VA) Veterans Health Administration (VHA) is the nation's largest integrated healthcare system. Comparing the quality of VA-delivered healthcare to care delivered in non-VA settings is one way of ensuring VA maintains its commitment to providing high-quality care to Veterans. To support this aim, the VA's Evidence Synthesis Program (ESP) systematically reviews studies comparing the quality of VA and non-VA healthcare. This systematic review is frequently updated with the most recently available evidence; the current report was previously updated in February 2023.

METHODS

Data Sources and Searches

We conducted broad searches using terms relating to *Veterans health* and *community health services* or *private sector*. To identify articles relevant to the key questions, a research librarian searched PubMed, APA PsycINFO, and Web of Science (1/1/2015–3/15/2023).

Study Selection

Studies were included at either the abstract or the full-text level if they were original research studies of any design and made comparisons about the quality of care provided in VA Medical Centers and outpatient clinics compared with care provided in other health systems, *ie*, the general population. We included as quality any outcomes within the Institute of Medicine 6 domains of health care: quality, safety, access, patient experience, efficiency (cost), and equity.

Data Abstraction and Assessment

Data were collected by 2 reviewers working independently with consensus resolution of disagreements.

Synthesis

The synthesis is narrative.

RESULTS

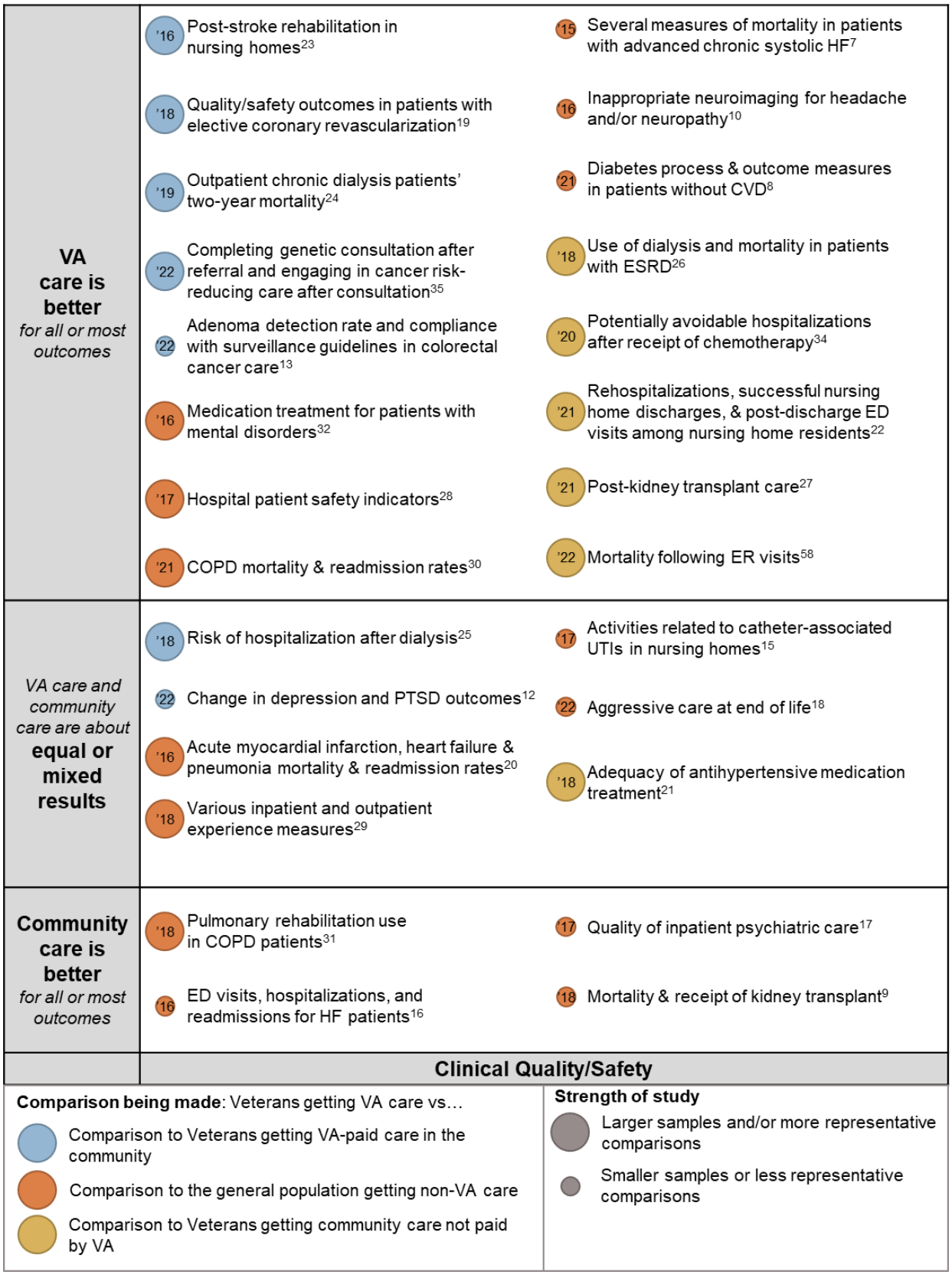
Results of Literature Search

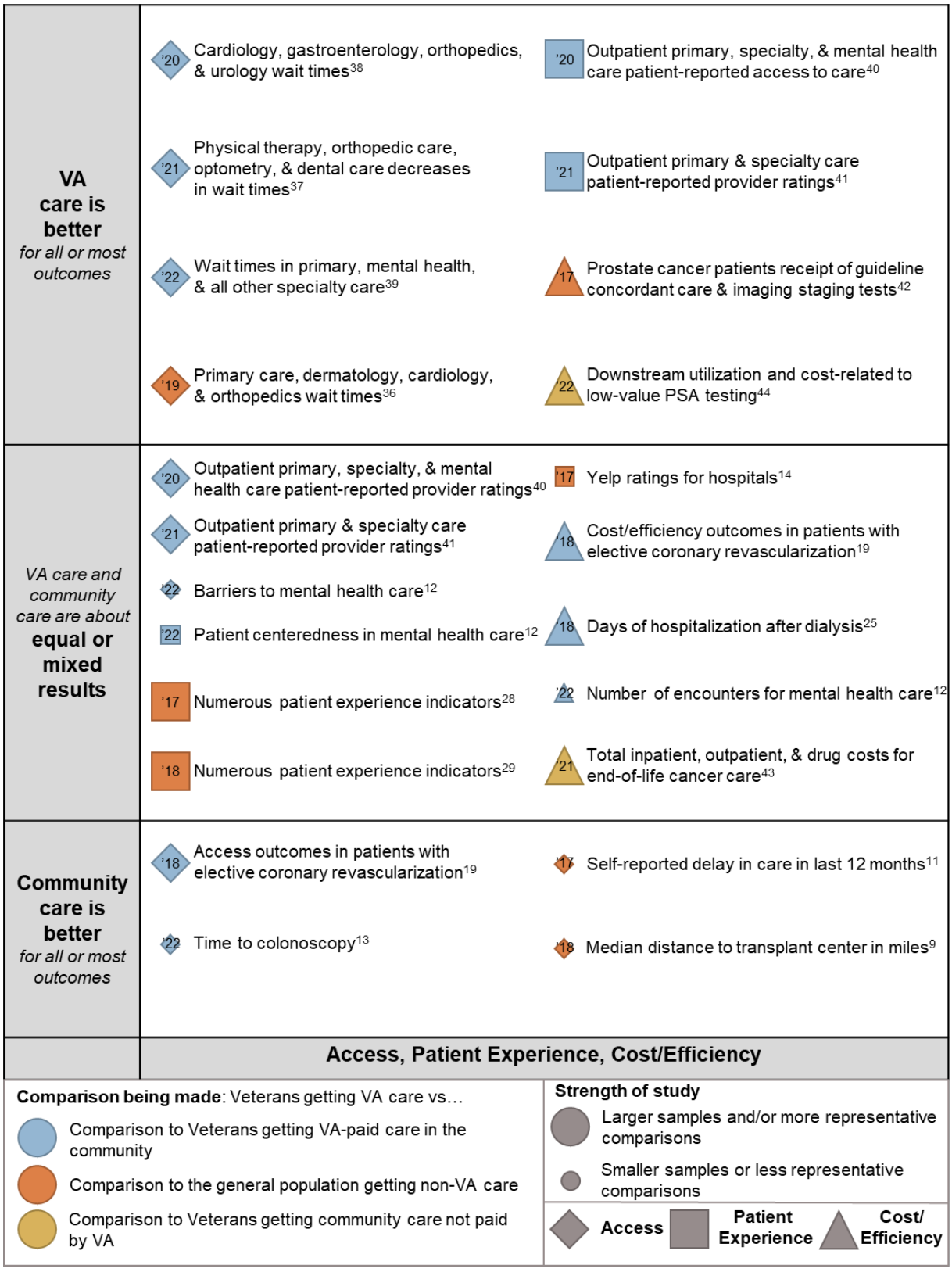
From 2,415 titles, we identified 38 studies of non-surgical care meeting inclusion criteria. From 2,408 titles, we identified 19 studies of surgical care meeting inclusion criteria. Four studies contributed data to both.

Summary of Results for Key Questions

The results of our assessment are presented in the bubble plots below, 1 for nonsurgical care and 1 for surgical care. Both plots are organized the same way: the domains of care are listed on the horizontal axis (quality/safety, access, patient experience, cost/efficiency), the results of the study are listed on the vertical axis (VA care is better than community care, VA care and community care are about equal, or results are mixed, and community care is better than VA care), and then each study is entered as a shape, with larger shapes being studies of better quality and representativeness than studies depicted by smaller shapes. The color of the shape indicates the type of comparison: blue for studies comparing Veterans getting care from VA to Veterans getting VA-paid care in the community; orange for studies comparing Veterans getting care from VA and non-Veterans, or a general population, getting care in the community; and yellow for studies comparing Veterans getting care from VA to Veterans getting community care not paid by VA. Next to each shape is a brief thumbnail of what the study was about, and inside the shape is the year of publication (’18 = 2018, ’19 = 2019, *etc*).

ES Figure 1. Non-surgical Map




VA care is better for all or most outcomes
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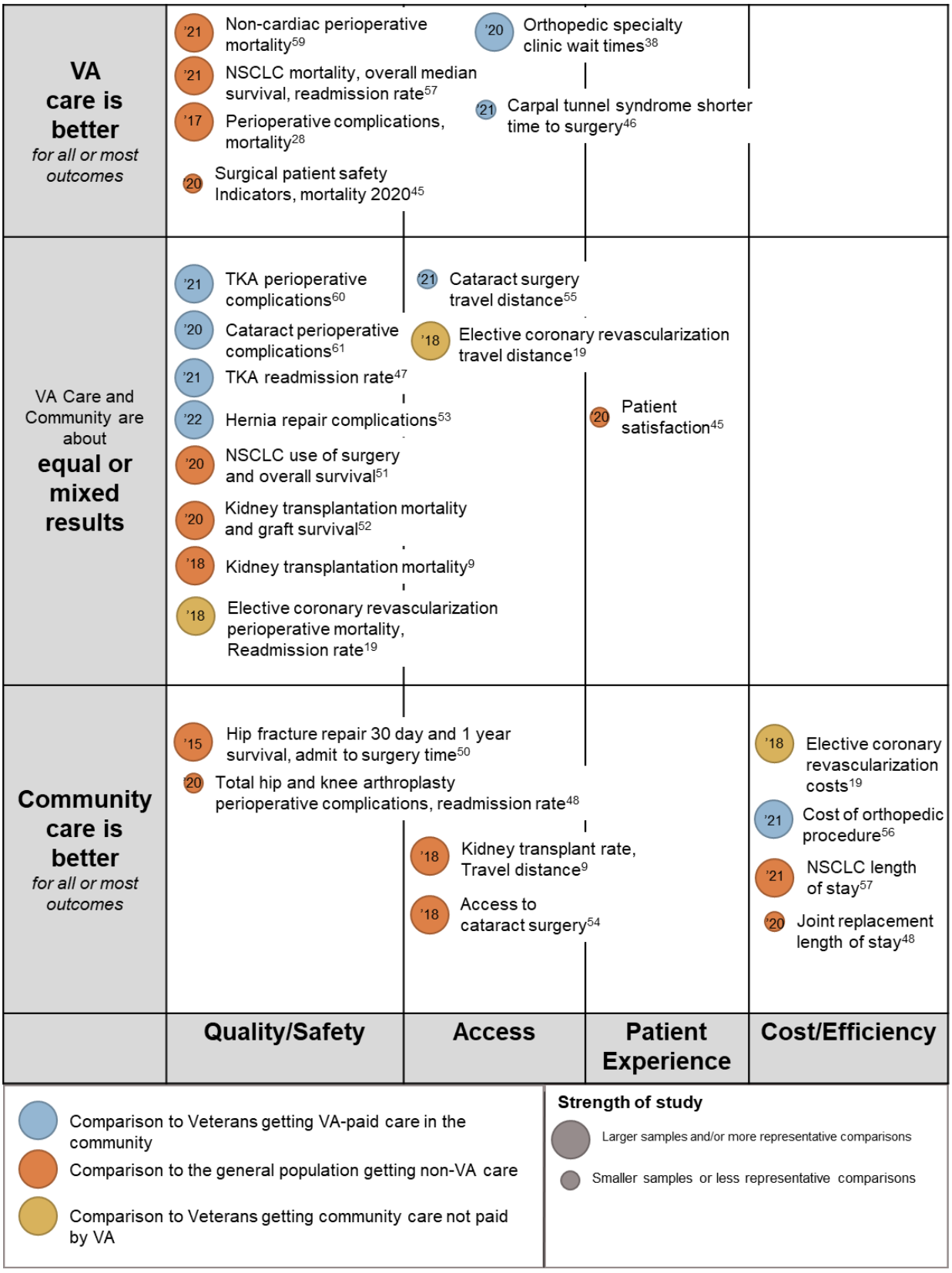
Access, Patient Experience, Cost/Efficiency
Comparison being made: Veterans getting VA care vs…
Comparison to Veterans getting VA-paid care in the community
Comparison to the general population getting non-VA care
Comparison to Veterans getting community care not paid by VA
Strength of study
Larger samples and/or more representative comparisons
Smaller samples or less representative comparisons
Access
Patient Experience
Cost/ Efficiency

ES Figure 2. Surgical Map



DISCUSSION

Key Findings

Our systematic review identified 38 studies on non-surgical care and 19 studies of surgical care comparing quality, safety, access, patient experience, or efficiency/cost between VA-delivered care and non-VA-delivered care. The large majority of studies assessed quality and safety, followed by comparisons of access to care. Few studies—only 7 and 10, respectively—assessed patient experience or cost/efficiency. We found no studies comparing VA to non-VA care on equity.

In the domain of quality and safety, the great majority of studies found that VA care is as good as, or better than, care in the community. This was the case for both surgical care and non-surgical care, and for community care of Veterans and community care of non-Veterans. For the domains of access and of cost/efficiency, the studies were more evenly distributed between the categories of VA care is better, VA and community care are about the same, and community care is better. The few studies of patient experience found that VA care and community care were about the same, or VA care was better. We did not identify any study the found that patient experience was better in community care. With only 1 exception in both the surgical and the non-surgical studies, VA-delivered care was as good as or better than Veterans received from VA-paid community care.

Future Research

We did not identify any studies comparing care for some conditions for which the MISSION act has resulted in increased community care, such as Physical Medicine and Rehabilitation.

Conclusions

In general, most published studies of comparisons of quality of care show that Veterans getting care from VA get the same or better quality care than Veterans getting community care or the general public getting non-VA care.

EVIDENCE REPORT

INTRODUCTION

PURPOSE

The Evidence Synthesis Program (ESP) is responding to a request from the Office of the Assistant Under Secretary for Health for Quality and Patient Safety. Findings from this review will be used to inform internal and external stakeholders (VSOs, media, Congress, *etc*) about the quality of VA health care services via briefings, public presentations, written communication materials, and publications.

BACKGROUND

The Department of Veterans Affairs (VA) is the nation's largest integrated healthcare system, providing care for millions of US military Veterans. Providing high quality care is a commitment VA makes to Veterans. Comparisons of VA-delivered care to care delivered in non-VA settings are central to assessing the quality of VA care. Prior reviews comparing outcomes between VA and non-VA care included data through 2014, and found that VA care performed similarly to or better than non-VA care in most, but not all, aspects of quality.[1-3] Since that time, concerns about access to care led to the Veteran Access, Choice, and Accountability ("Choice") Act of 2014, which allowed Veterans to seek medical care in the community if the VA was unable to schedule a visit within 30 days or if the Veteran lived greater than 40 miles from their closest VA. This program also required independent performance assessments of VA's healthcare services related to access and available expertise.[4] Choice Act funding ended in 2017 and was followed by the VA Maintaining Internal Systems and Strengthening Integrated Outside Networks (MISSION) Act of 2018 that further addressed concerns regarding Veteran access to care by expanding eligibility for VA-reimbursed community care (CC) options.[5] These acts greatly expanded the potential for care delivered to Veterans and paid for by VA to be from community providers, raising additional questions about comparisons of quality of care. To address these gaps and update the understanding outcomes of Veteran care, we conducted a systematic review to compare quality and safety, access, patient experience, and cost between VA and non-VA care.

METHODS

KEY QUESTIONS

The following key questions (KQs) were the focus of this review:

KQ1: Compare and contrast studies that assess VA and non-VA quality of care for non-surgical medical conditions.

KQ2: Compare and contrast studies that assess VA and non-VA quality of care for surgical conditions.

We were tasked with categorizing included studies into 2 groups:

1. Veterans receiving care at VA compared with Veterans receiving care in the community, whether through CHOICE or the MISSION Act or on their own initiative
2. Veterans receiving care at VA compared with the general population/non-Veterans receiving care from non-VA providers.

PROTOCOL

A preregistered protocol for this review can be found on the PROSPERO international prospective register of systematic reviews (http://www.crd.york.ac.uk/PROSPERO/; registration number CRD42022314154).

DATA SOURCES AND SEARCHES

We conducted broad searches using terms relating to *Veterans health* and *community health services* or *private sector*. To identify articles relevant to the key questions, a research librarian searched PubMed, APA PsycINFO, and Web of Science (1/1/2015–3/15/2023). The start date was chosen to match the end date of the most recent review by O'Hanlon.[2] Additional citations were identified from hand-searching reference lists and consultation with content experts. We limited the search to published and indexed articles involving human subjects available in the English language. Study selection was based on the eligibility criteria described above. See Appendix A for complete search strategy.

STUDY SELECTION

Two sets of team members (1 team specializing in surgical titles and the other specializing in non-surgical titles) working independently screened the titles of retrieved citations. For titles deemed relevant by at least 1 person, abstracts were then screened independently in duplicate by team members. All disagreements were reconciled through group discussion. Full-text review was conducted in duplicate by independent team members with any disagreements resolved through discussion. Studies were included at either the abstract or the full-text level if they were original research studies of any design and made comparisons about the quality of care provided in VA Medical Centers and outpatient clinics compared with care provided in other health systems, *ie*, the general population. We included as quality any outcomes within the Institute of Medicine 6 domains of health care: quality, safety, access, patient experience, efficiency (cost), and equity.[6]

Eligibility Criteria

This review included studies that met the following criteria:

***P**opulation:*	Patients receiving care from VA or non-VA providers, in the following categories: Veterans receiving care in VA compared to Veterans receiving care in the community, either VA-paid or not VA-paid; Veterans receiving care in VA compared to general population patients receiving care in the community
***I**ntervention:*	N/A
***C**omparator:*	Community care
***O**utcomes:*	Quality in any of the Institute of Medicine domains: clinical quality, safety, efficiency, access, patient experience, equity
***T**iming:*	2015 present
***S**etting:*	Veteran and non-VA US health care providers
***S**tudy Design:*	Original research studies of any design, no randomized comparisons are expected, studies are expected to be cohort studies with or without matching

DATA ABSTRACTION AND ASSESSMENT

The eligibility criteria are as follows. The population was patients receiving care from VA or non-VA providers; this included 2 possible comparisons, (1) Veterans receiving VA care versus Veterans receiving non-VA care (community care [CC]) or (2) Veterans receiving VA care versus the general population of non-Veteran patients receiving non-VA care in the community (non-VA). Outcomes included any of the Institute of Medicine aims of health care. We classified costs and length of stay as efficiency outcomes.

At the abstract stage, information on the medical or surgical condition, type of outcome reported, populations under comparison, and years of data were collected. Articles meeting inclusion criteria underwent a second screening and additional information was abstracted: whether study years were contemporaneous, sampling approach, geographic representativeness, similarity of outcomes between the comparison groups, sample size, years of data collected, control variables, outcomes, findings, and statistical methods. All data abstraction and internal validity ratings were first completed by 1 reviewer and then checked by another; disagreements were resolved by consensus or discussion with an additional reviewer.

RISK OF BIAS/QUALITY ASSESSMENT

The risk of bias for studies of this type centers around the representativeness of the samples being assessed and whether the measures of performance are valid and applied equally across both groups. For this review we adapted the 6 items originally used in the 2010 review to the following:

1) whether the time frames for the measurement are contemporaneous for both groups;
2) whether the samples are national or representative for both groups;

3) whether the quality measures used to assess care in both groups are identical or nearly identical;

4) whether the analysis had enough sample size and appropriate statistical methods to test the hypothesis.

Studies could fully meet a criterion, partially meet a criterion, or fail a criterion. Studies fully meeting all of these criteria were considered to be "good" quality and given greater weight than studies not meeting all of the criteria, which were considered to be "fair" quality. Studies failing 1 or more criteria were not included in the analysis.

SYNTHESIS

Because of the heterogeneity in the comparison groups, outcome domains and procedure types/health conditions, pooling the data for a meta-analysis was not possible and a narrative synthesis was performed. Studies were first classified by 1 of 4 domains: quality and safety, access, patient experience, and cost. One study may report more than 1 domain. Within domains, studies were grouped by surgical discipline or by clinical condition (cardiovascular, mental health, *etc*). If multiple cost outcomes were reported, total cost was abstracted. Studies were grouped into 2 categories based on their quality assessment: those that had no obvious flaws limiting their internal or external validity, and those that had some flaws limiting internal or external validity. Studies with serious internal validity flaws were not included in the synthesis (see Appendix B).

RESULTS

LITERATURE FLOW

The literature flow diagrams (Figure 1) summarize the results of the study selection process (full list of excluded studies available in Appendix C). As the surgical literature was considered separate from the non-surgical literature, we have 2 flowcharts.

Figure 1A. Literature Flowchart: Non-surgical Quality of Care

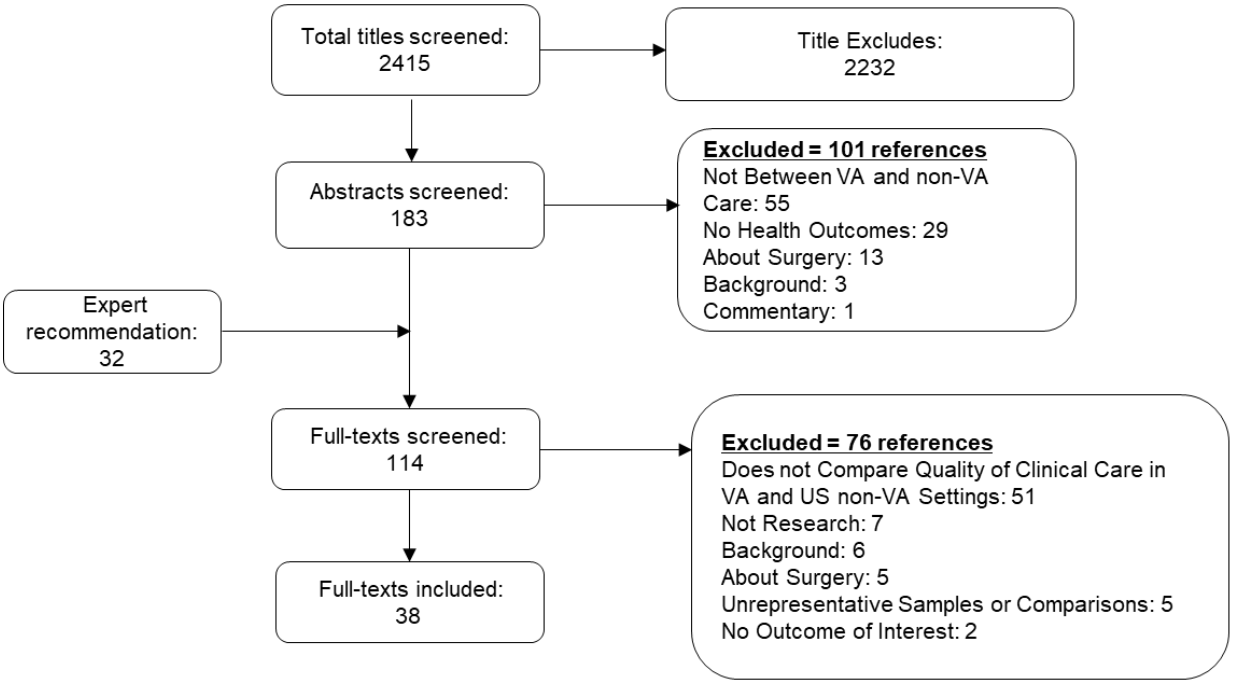
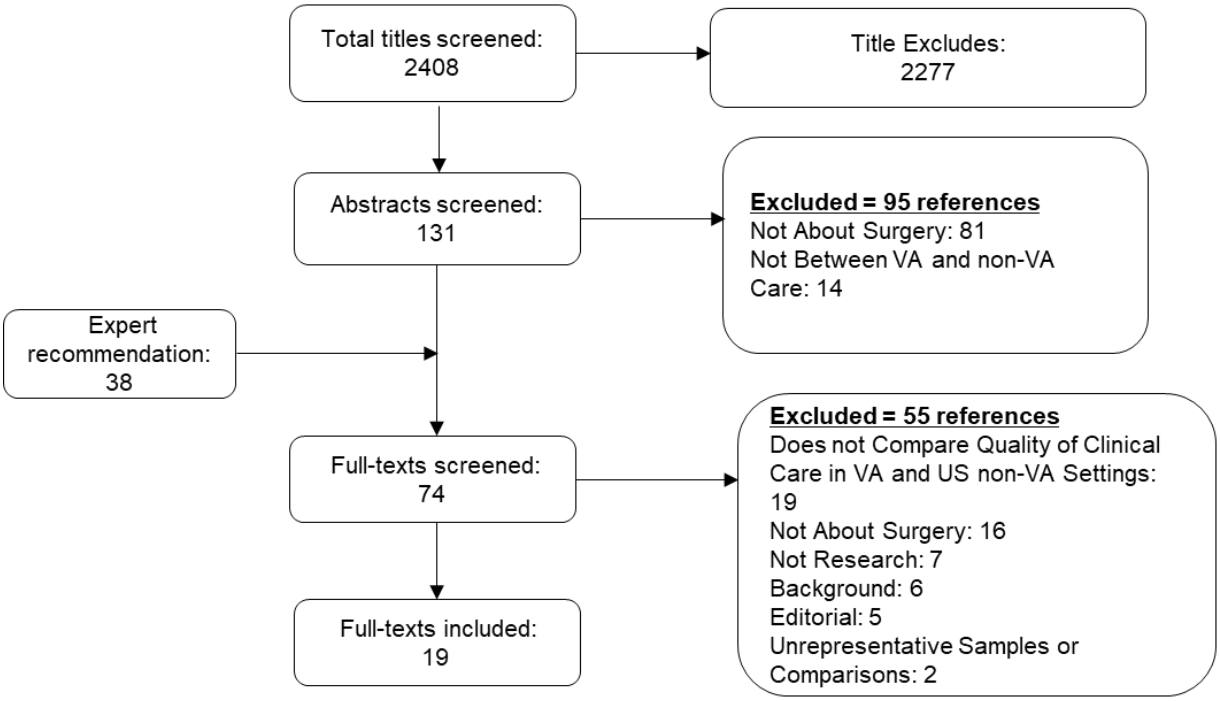


Figure 1B. Literature Flowchart: Surgical Quality of Care



LITERATURE OVERVIEW

The non-surgical literature search identified 2,415 potentially relevant citations after deduplication, 183 of which were included at the abstract screening level. From these, a total of 101 abstracts were excluded for the following reasons: not between VA and non-VA care (*N* = 55), no health outcomes (*N* = 29), about surgery (*N* = 13), background (*N* = 3), and commentary (*N* = *1*). With an additional 32 recommended by operational partners, this left 114 publications for full-text review, of which 76 publications were excluded for the following reasons: does not compare quality of clinical data in VA and US non-VA settings (*N* = 51), not research (*N* = 7), background (*N* = 6), about surgery (*N* = 5), unrepresentative samples or comparisons (*N* = 5), and no outcome of interest (*N* = *2*). A full list of excluded studies from the full-text review is given in Appendix C. A total of 38 publications were identified at full-text review as meeting initial inclusion criteria. Details of included publications are available in the Evidence Table (see Appendix D).

The surgical literature search identified 2,408 potentially relevant citations after deduplication, 131 of which were included at the abstract screening level. From these, a total of 95 abstracts were excluded for the following reasons: not about surgery (*N* = 81) and not between VA and non-VA care (*N* = 14). With an additional 38 recommended by operational partners, this left 74 publications for full-text review, of which 55 publications were excluded for the following reasons: does not compare quality of clinical data in VA and US non-VA settings (*N* = 19), not about surgery (*N* = 16), not research (*N* = 7), background (*N* = 6), editorial (*N* = 5), and unrepresentative samples or comparisons (*N* = 2). A full list of excluded studies from the full-text review is in Appendix C. A total of 19 publications were identified at full-text review as

meeting initial inclusion criteria. Details of included publications are available in the Evidence Table (see Appendix E).

KEY QUESTION 1: COMPARE AND CONTRAST STUDIES THAT ASSESS VA AND NON-VA QUALITY OF CARE FOR NON-SURGICAL MEDICAL CONDITIONS

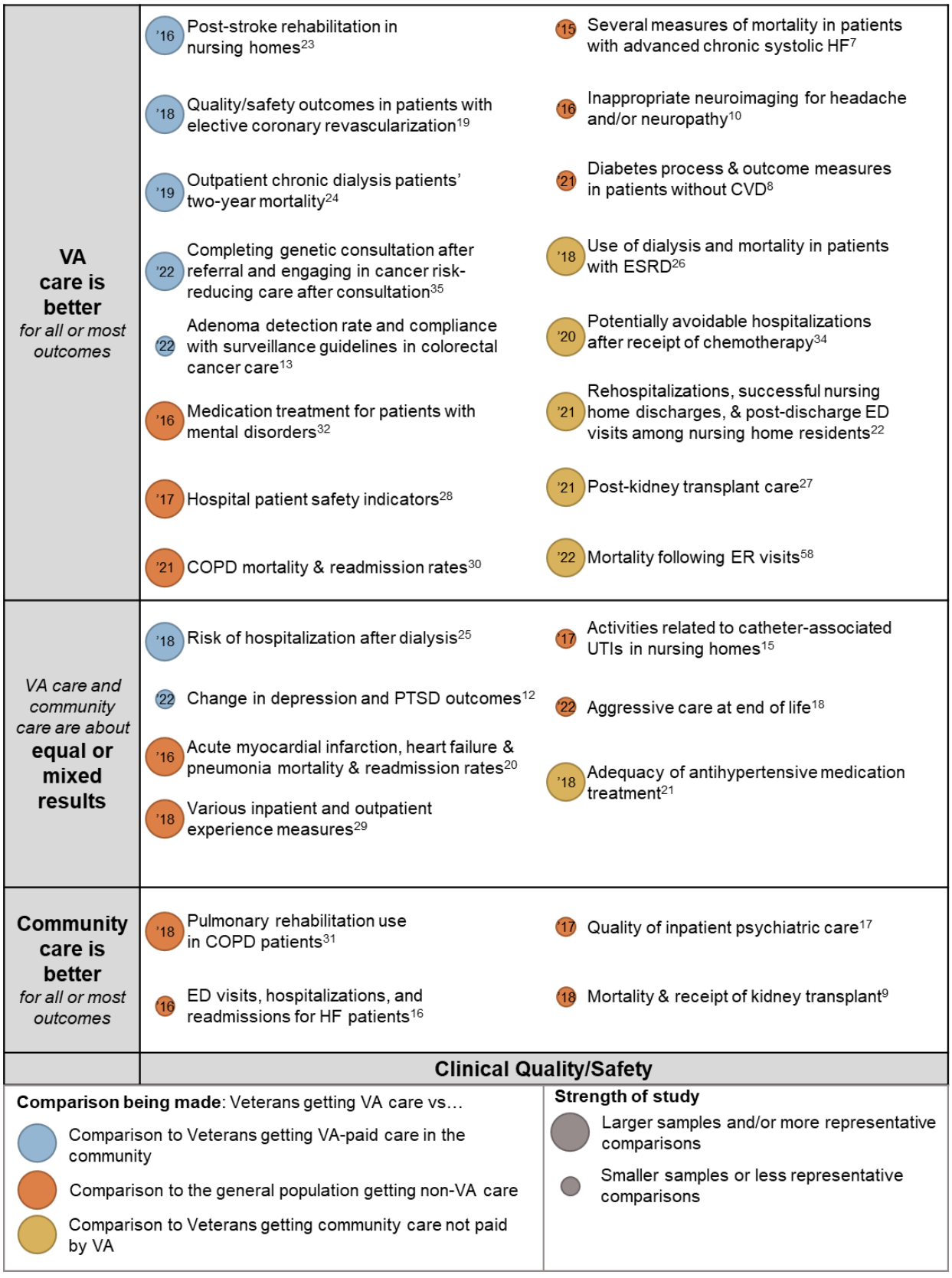
After dual review of identified publications, 38 publications met inclusion criteria (see Figure 1). Key findings from each study were organized into 4 quality domains and are presented in the following order: (1) quality and safety, (2) access, (3) patient experience, and (4) cost and efficiency. Most studies reported outcomes in only 1 quality domain; studies that reported findings in multiple domains will appear in multiple sections below. Within domain, studies are organized by their clinical condition.

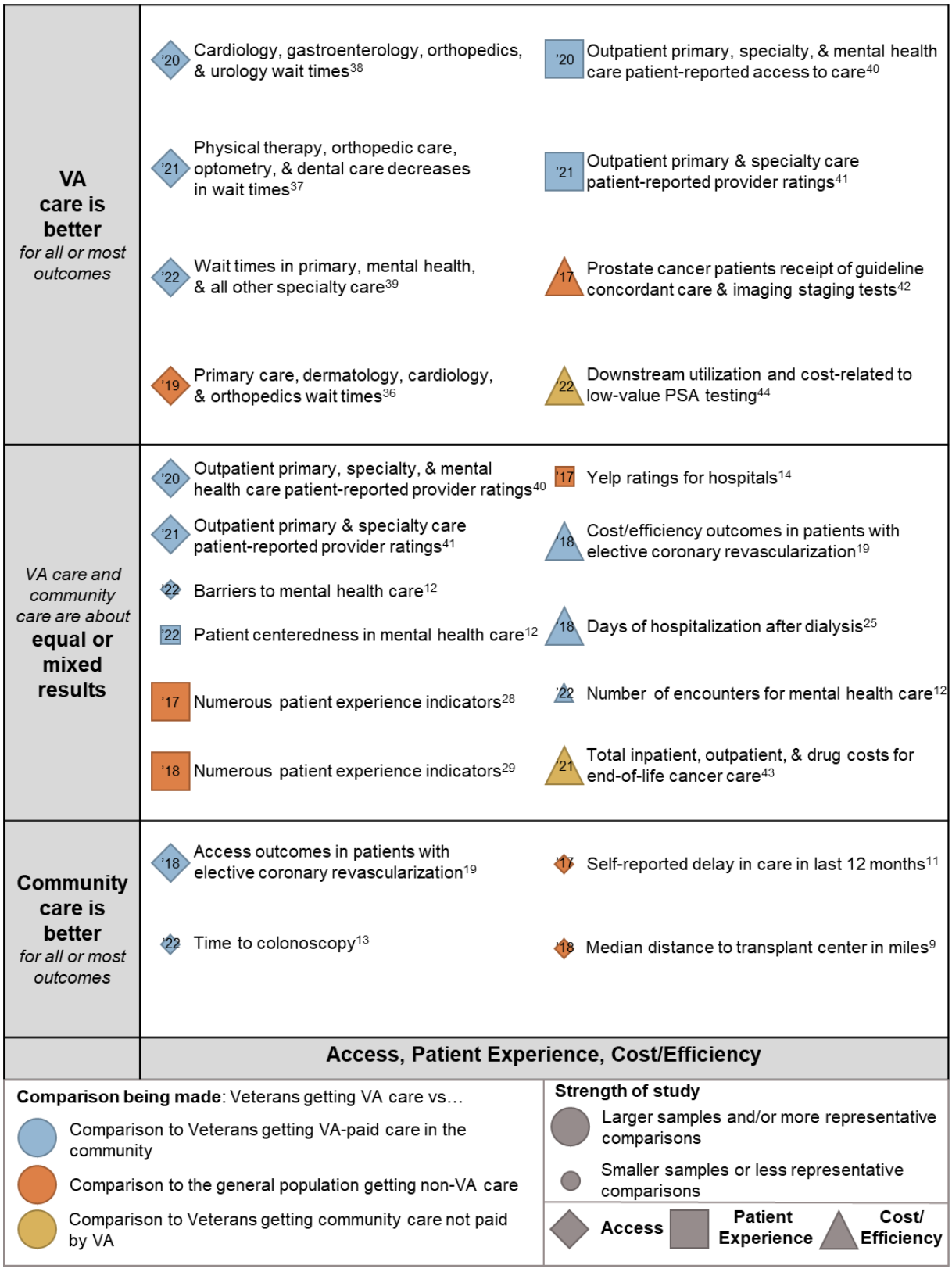
Risk of Bias/Quality

Twenty-six of the included studies met all our risk of bias criteria. These studies were given more weight in our narrative synthesis than studies that did not meet 1 or more criterion. Twelve studies did not meet all of our criteria. Two of these studies analyzed preexisting samples from clinical trials.[7,8] Three studies had very unbalanced samples; either VA or non-VA groups were much smaller than the others.[9-11] Two studies had balanced but small samples, and the latter study additional only analyzed data from 1 site and did not adjust for patient characteristics in their models.[12,13] Heidenreich and colleagues only analyzed the Yelp ratings of 39 VA hospitals (out of a possible 131) and their university affiliates due to the lack of reviews of the remaining facilities.[14] Mody et al only had data on VA and non-VA nursing homes from approximately half of all states.[15] Another study only analyzed VA and non-VA facilities in the state of South Carolina.[16] Shields and colleagues were not able to adjust for patient characteristics in their analysis of quality of inpatient psychiatric care, so different patient populations between VA and non-VA facilities may have biased their results.[17] Presley and colleagues also did not adjust for patient characteristics in their analysis of aggressive end-of-life care for non-small cell lung cancer, and the composition of their multi-component outcome was unclear.[18] We included all of these studies but gave them less weight when reaching our conclusions. See Appendix F for the nonsurgical risk of bias table.

Our overall results for nonsurgical care are presented in the bubble plot/evidence map in Figure 2. Studies are listed by domains of care of the outcomes they report by shape: circles for clinical quality/safety, diamonds for access, squares for patient experience, and triangles for cost/efficiency. Studies are also listed on the vertical axis by their qualitative results (VA care is better than community care, VA care and community care are about equal or results are mixed, and community care is better than VA care), and then each study is entered as a shape, with larger shapes being studies of better quality and representativeness than studies depicted by smaller shapes. The color of the shape indicates the type of comparison: blue for studies comparing Veterans getting care from VA to Veterans getting VA-paid care in the community; orange for studies comparing Veterans getting care from VA and non-Veterans, or a general population, getting care in the community; and yellow for studies comparing Veterans getting care from VA to Veterans getting community care not paid by VA. Next to each shape is a brief thumbnail of what the study was about, and inside the shape is the year of publication (’18 = 2018, ’19 = 2019, *etc*).

Figure 2. Evidence Map of Published Studies Comparing Non-surgical Care

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Access, Patient Experience, Cost/Efficiency
Comparison being made: Veterans getting VA care vs…
Comparison to Veterans getting VA-paid care in the community
Comparison to the general population getting non-VA care
Comparison to Veterans getting community care not paid by VA
Strength of study
Larger samples and/or more representative comparisons
Smaller samples or less representative comparisons
Access
Patient Experience
Cost/ Efficiency

Quality and Safety

Cardiovascular Disease Outcomes

We identified 5 studies that compared cardiovascular outcomes. The first study[19] compared the quality of cardiovascular revascularization procedures between VA and VA-paid community care (CC) hospitals between 2008–2011. Adjusted 30-day mortality after percutaneous coronary intervention (PCI) was lower in VA (0.65%) compared to community care (1.54%, $p < 0.001$). There was no difference in 30-day adjusted readmission rates.

In the second study,[20] the authors compared patient outcomes between 2010–2013 for admissions to VA hospitals versus non-VA hospitals for acute myocardial infarction (AMI), heart failure (HF), and pneumonia. In a national sample, 30-day risk adjusted mortality was lower in VA for Veterans with AMI (13.5%) compared to patients in the community (13.7%, $p < 0.02$). This was also true for HF outcomes (11.4% vs 11.9%, $p = 0.008$). Mortality rates were higher in the VA for pneumonia (12.6% vs 12.2%, $p = 0.045$). VA had slightly higher readmission rates for all 3 conditions. When VA hospitals were compared to community hospitals in their same metropolitan statistical area, VA hospitals had again lower 30-day mortality rates for AMI and HF; mortality rates for pneumonia were not significantly different. Overall, the differences between the VA hospitals and non-VA hospitals were small.

In the third study,[21] the authors examined a national cohort of Veterans with dementia to determine the effect of dual use of VA and Medicare on their supply of antihypertensive medication. When compared to dual users, VA-only users had lower adjusted odds ratios for undersupply, oversupply, and oversupply and undersupply for at least 1 class. When compared to VA-only patients, Medicare-only patients had a higher adjusted odds ratio for undersupply (1.13, 95% CI [1.03, 1.25]), but lower adjusted odds ratio for oversupply (0.39, 95% CI [0.32, 0.47]) or oversupply and undersupply of 1 class (0.48, 95% CI [0.40, 0.57]).

In the fourth study,[7] the authors from the Insights from the Beta-blocker Evaluation of Survival Trial (BEST) evaluated outcomes of patients with heart failure and reduced ejection fraction receiving care at VA versus non-VA hospitals. The BEST trial took place from 1995–1999. The authors concluded that patients with heart failure and reduced ejection fraction receiving care in the VA were older and sicker, yet their risk of mortality and hospitalization was similar to the younger and healthier patients receiving care at non-VA hospitals.

In the fifth study,[16] the authors examined the use of dual systems of care from 2007–2011 on rates of hospitalization and readmission in Veterans with HF. They found that dual use was associated with higher rates of emergency department (ED) visits, hospitalizations, and 30-day readmissions for patients with HF diagnosis at admission when compared to VA-only users and non-VA-only users. This persisted for patients with HF admitted for any diagnosis. When compared to VA-only users, non-VA-only patients had lower rates of ED visits (0.62, 95% CI [0.60, 0.64]), hospitalizations (0.98, 95% CI [0.95, 1.02]), and 30-day hospital readmissions (0.87, 95% CI [0.83, 0.90]). While this study was able to adjust for the presence or absence of more than a dozen comorbidities and service-connected status, it was not able to adjust for severity of heart failure.

Nursing Home Care Outcomes

We identified three studies that compared a national sample of quality and safety outcomes in VA Community Living Centers (CLC) versus nursing homes (NH) in the private sector from 2015–2016. In the first study,[22] the authors compared risk-adjusted claims-based measures including unplanned rehospitalization and emergency department visits within 30 days of admission and successful discharge within 100 days of nursing home admission. Risk-adjusted emergency department visits and successful discharges were statistically significantly better in VA than the private sector (8.27 vs 11.85, $p < 0.001$), and (67.74 vs 57.04, $p < 0.001$). Adjusted rehospitalizations were slightly worse in the VA versus the private sector (22.5% vs 21.1%, $p < 0.001$). When aggregated, the authors noted that combined rehospitalization rates and emergency room visits were lower in the VA CLC group (30.8%) compared to the community (33.0%).

In the second study,[23] the authors compared post-stroke rehabilitation therapy and restorative nursing among Veterans residing in a VA Community Living Centers (CLC) versus those Veterans in VA-paid community nursing homes from 2006–2009. In a national sample, Veterans at CLCs were significantly more likely to receive rehabilitation therapy and restorative nursing care. This study adjusted for sociodemographic characteristics, baseline depression, activities of daily living, cognition, and comorbidities. In the third study,[15] the authors compared programs to prevent catheter-associated urinary tract infection (CAUTI) in VA versus non-VA nursing homes. In a national representative sample of nursing homes participating in an AHRQ-funded safety program, the VA reported more hours/week devoted to infection prevention-related activities (31 vs 12 hours, $p < 0.001$), and a higher percentage of tracking CAUTI rates (94% vs 66%, $p = 0.014$). In contrast, fewer VA nursing homes reported having polices for appropriate catheter use (64% vs 81%, $p = 0.04$) and catheter insertion (83% vs 94%, $p = 0.004$).

Dialysis and End-stage Renal Disease Outcomes

We identified 5 studies that compared mortality outcomes for Veterans receiving care for end-stage renal disease (ESRD) or for dialysis through the VA versus outside the VA. In the first study,[24] the authors examined 2-year mortality among 27,241 Veterans who initiated chronic dialysis in 2008–2011 at the VA, at a dialysis center being paid by the VA, at a private sector clinic under Medicare, or in dual settings. Adjusted 2-year mortality was lowest (28.9%) in dual care and in the VA (32.4%) versus Medicare (36.7%) or VA-purchased care (36.0%). This study adjusted for sociodemographic characteristics, as well as pre-dialysis clinical status and care, type of vascular access, cause of ESRD, comorbidities, and prior utilization.

A similar cohort of 27,301 Veterans in the second study[25] compared rates of utilization of dialysis in VA settings and VA-paid purchased care settings. The authors noted that sites of utilization were similar to the above study. Furthermore, they noted in their main outcome that risk of hospitalization was similar across all settings ($p < 0.0001$, but authors noted that the differences found were so small as to not be clinically meaningful).

The third study[26] evaluated pre-ESRD care from 2008–2011 in Veterans receiving care in the VA or through Medicare. Two-year mortality was lower for Veterans who received pre-ESRD care in the VA (44%) than in those who received their care using Medicare (53%). Likewise, patients who received that pre-ESRD nephrology care with the VA (53%) were less likely to transition to dialysis than if they had their care under Medicare (82%).

Furthermore, we found 1 study[9] that studied rates of kidney transplantation among Veterans with VA as the primary insurance versus patients with Medicare or other private insurance. Although the VA was the payor in only 1.2% of the 302,457 patients analyzed who underwent kidney transplant, the authors noted that the VA had a lower hazard ratio for transplant (lower rate of transplant) when compared to privately insured (0.72, 95% CI [0.68, 0.76]) or Medicare-insured patients (0.85, 95% CI [0.81, 0.90]). There was no difference found between VA and Medicaid patients.

In a related study,[27] authors examined mortality among Veterans who received VA-paid and Medicare-paid post-kidney transplant care. After 5 years, mortality was 11% among the 792 Veterans who received post-transplant care in VA, but 20% among the 2092 Veterans who received care paid by Medicare. After adjusting for covariates, the hazard ratio of 5-year mortality was over twice as high among Veterans receiving post-transplant care paid by Medicare compared to those receiving care in VA (2.2, 95% CI [1.5, 3.1]).

Hospital Patient Safety Indicators and Outpatient Quality of Care

We identified 2 studies that compared a number of quality indicators between Veterans getting VA care and non-Veterans getting non-VA care.[28,29] Both studies assessed national samples for both VA and non-VA care, including more than 100 VA facilities and hundreds or thousands of non-VA facilities. Both studies compared hospital patient safety indicators, such as 30-day risk-standardized mortality rate for 2 conditions, iatrogenic pneumothorax and post-operative wound dehiscence. One study also assessed outpatient quality using measures from the Healthcare Effectiveness Data and Information Set, such as process and intermediate outcome measures for patients with diabetes, screening and prevention, and control of blood pressure and lipids.[29] Both studies were in general agreement: quality of care in VA was better than non-VA care for most measures. In one study, however, VA had higher 30-day risk-standardized readmission rates than non-VA care.[29]

Chronic Obstructive Pulmonary Disease (COPD) Outcomes

We identified 2 studies that compared outcomes for patients with COPD using a national sample of VA hospitals versus non-VA hospitals. In 1 study[30] that evaluated readmission rates and mortality post hospitalization after a COPD exacerbation from 2015 to 2018, 30-day readmissions rates were significantly lower in VA (15.3 days) versus non-VA hospitals (19.5 days, $p < 0.001$). Thirty-day mortality rates were also significantly lower in VA (6%) versus non-VA hospitals (8.5%, $p < 0.02$). These differences persisted no matter the type of non-VA hospital including teaching hospitals, non-teaching hospitals, and safety net hospitals. The study itself was not limited to Veteran patients, as it compared Veteran patients in VA to CMS-derived risk adjustment models in non-VA hospitals.

In the second study,[31] the authors compared the rates of participation in pulmonary rehabilitation by Veterans and Medicare beneficiaries after they were hospitalized for COPD. Pulmonary rehabilitation can improve symptom burden and morbidity associated with COPD. In the study, utilization by Medicare beneficiaries was low, approximately 2% of discharges. In the VA it was slightly lower, at 1.5% of hospital discharges.

Mental Health Conditions

We identified 3 studies that assessed quality and safety outcomes for persons with mental health conditions[17,32]. Both studies compared Veterans getting care within VA to non-Veterans getting care in non-VA settings. Both were national studies. One study[32] assessed the quality of medication treatment, which was probably mostly outpatient care, using 7 measures such as "proportion of schizophrenia patients who filled prescriptions for a 12-week supply of an antipsychotic medication in the 12 weeks following the start of a new treatment episode." This study stratified patients by their mental health condition, namely bipolar disorder, major depressive disorder, posttraumatic stress disorder, schizophrenia, and substance use disorder. This study found much better quality in VA-treated patients than in non-VA-treated patients. The second study assessed only inpatient psychiatric care, using 7 of the Joint Commission's Hospital-based Inpatient Psychiatric Services measures, which are used both for accreditation and in a pay-for-reporting initiative.[17] Included measures were "Admission screening for violence risk, substance use, psychological trauma and patient strengths completed" and "hours of physical restraint used," *etc*. This study found worse quality in VA hospitals as compared to non-VA hospitals. This study was not able to stratify or adjust for potential differences in case mix between different hospitals; for example, the potential use of physical restraints might differ between patients admitted for major depressive disorder as compared to patients admitted for schizophrenia. The last study found lower depression symptoms and equivalent posttraumatic stress disorder symptoms among Veterans receiving in-person, VA-paid community care compared to those who received VA tele-mental healthcare.[12]

Cancer Outcomes

Two studies[13,18] of cancer care also met our inclusion criteria. In the first study[13] of colorectal cancer care, the adenoma detection rate (OR = 0.39, 95% CI [0.25, 0.63]) and compliance with surveillance guidelines (OR = 0.21, 95% CI [0.09. 0.45]) was worse in non-VA compared to VA. In the second study[18] of non-small cell lung cancer, aggressive care at end of life in some measures declined more significantly in VA ($p < 0.001$) compared to non-VA from 2006 to 2012. For other measures, there was no difference between systems.

Miscellaneous Conditions

We identified 5 studies that reported quality and safety outcomes in miscellaneous conditions. Three studies compared care of Veterans getting VA care with Veterans getting non-VA (community) care,[33-35] and the other 2 studies compared Veterans getting VA care with non-Veterans getting non-VA care.[8,10] The first 3 studies were national in scope, whereas the latter 2 studies were narrower, in 1 case comparing Veterans and non-Veterans with diabetes who enrolled in a large comparative effectiveness trial, and in the other comparing a large number of VA cases with a very much smaller number of Medicare cases.

In the first study, more than 500,000 Veterans making more than 1 million ED visits between 2001 and 2018 and being transported by ambulance were classified as to whether they got ED care at a VA facility ($N = 231,611$) or a non-VA facility ($N = 1,238,546$). After adjusting for a number of patient, clinical, and ED transport characteristics, the 30-day mortality rate was less for patients seen in VA hospitals than for patients seen at non-VA hospitals (9.15 vs 11.67 deaths per 100 patients). For patients who had received prior care at the index hospital, the mortality advantage for ED care at a VA hospital was even greater.

In the second study, investigators used Centers for Medicare and Medicaid Services measures for avoidable hospitalizations following chemotherapy to assess the care of 27,443 Veterans dually enrolled in Medicare and VA, of whom 9,522 received their chemotherapy in VA. Veterans receiving care through Medicare were more likely than Veterans receiving chemotherapy through VA to have an avoidable hospitalization, with an odds ratio of 1.58 (95% CI [1.41, 1.78]). The most common reasons for hospitalization were pneumonia, sepsis, and anemia.

In the third study, Veterans completed genetic consultations they were referred for less often in VA-paid community care (OR = 0.43, 95% CI 0.28 to 0.65), compared to VA care)[35]. Patients who had VA-paid community care genetic consultations were also less likely to receive follow up cancer surveillance and risk-reducing procedures (OR = 0.64, 95% CI 0.52 to 0.78) than patients in VA care.

The last 2 studies looked at, respectively, measures of control of diabetes among enrollees in a large national comparative effectiveness study, and linked data from VA, the Health and Retirement Survey, and Medicare to assess possibly inappropriate neuroimaging studies in patients presenting with headache or neuropathy. Both studies reported better care quality in VA care than in non-VA care.

Access

Ten studies reported outcomes related to access. Five of these studies described wait times, 3 listed different patient-reported access outcomes, 1 reported median distance to a transplant center, and 1 noted self-reported delays in care. Seven of these studies were of good quality that met all 4 risk of bias criteria, while 3 were of fair quality and did not meet 1 or more criteria to a minor degree.

Wait Times

Five studies evaluated wait times in various primary and specialty care settings. Wait times were shorter in VA care in the 4 good quality studies and longer in VA care in the sole fair quality study.[13]

The first study evaluated differences in wait times to the next appointment for outpatient primary care, dermatology, cardiology, and orthopedics visits at VA medical centers and in the private sector in 15 major metropolitan areas from 2014–2017.[36] VA data were pulled from VA medical center scheduling systems, and private sector data were obtained via the secret shopper method. Consultant Merritt Hawkins had their research associates call 10–20 randomly selected physician offices in each metropolitan area in each of the above specialties and schedule new appointments. VA wait times decreased from a mean of 22.5 days (SD 7.3 days) in 2014 to 17.6 days (SD 4.9 days; $p = 0.046$) in 2017. Private sector wait times did not significantly change over the same time period. By specialty, wait times did not change in VA or the private sector for primary care, dermatology, or cardiology. In orthopedics, VA wait times declined from 23.9 to 18.5 days ($p = 0.05$). Private sector orthopedic wait times did not change.

In the second study, Gurewich and colleagues examined differences in wait times in rural and urban Veterans for outpatient physical therapy, cardiology, optometry, orthopedics, and dental care between VA and VA-paid community care (CC) between fiscal year (FY) 2015 and 2018.[37] Using data from the VA Corporate Data Warehouse, these authors found that both rural and

urban Veterans saw declines in wait times for VA and VA-paid CC care across all 5 services during this time period, with some small exceptions. Wait times did not change for urban Veterans seeking VA-paid CC physical therapy, rural and urban Veterans seeking VA-paid CC cardiology care, and rural and urban Veterans seeking VA-paid CC dental care. VA wait times declined more significantly for all services ($p < 0.001$) other than cardiology. In FY18, VA-paid CC wait times were 2–3 days longer than VA wait times, for all services except for orthopedics, where they were 4–5 days longer.

In the third study, authors used VA administrative data to examine differences in VA and Veterans Choice Program (VCP; a version of VA-paid community care) wait times in outpatient cardiology, gastroenterology, orthopedics, and urology between 2018 and 2019.[38] Average VA wait times were lower than VA-paid VCP wait times for cardiology (33.0 [SD 8.7] days vs 38.0 [SD 9.2] days), gastroenterology (53.9 [SD 15.9] vs 60.3 ([SD 16.0] days), orthopedics (36.2 [SD 9.3] vs 43.6 [SD 12.9] days), urology (36.1 [SD 9.5] vs 50.5 [SD 14.5] days), and overall (41.1 [SD 15.9] vs 49.0 [SD 15.5] days).

In the fourth study,[39] Feyman and colleagues examined VA Corporate Data Warehouse data to analyze differences in VA and VA-paid community care wait times in primary, mental health, and all other specialty care. They found that mean wait times were lower for VA versus VA-paid community care in unadjusted analyses for primary care (29 [SD 5.5] days vs 38.9 [SD 8.2] days), mental health care (33.6 [SD 4.6] days vs 43.9 [SD 9.0] days), and all other specialty care (35.4 [SD 2.7] days vs 41.9 [SD 5.9] days). In Veterans Integrated Service Network (VISN)-level adjusted analyses, VA wait times were shorter in 15 of 18 VISNs for primary care, in 16 of 18 VISNs for mental health care, and in 17 of 18 VISNs for all other specialty care.

In the last study,[13] time to colonoscopy was significantly longer in VA (83.8 days, 95% CI [45.2, 122.4]) compared to VA-paid community care (58.4 days, 95% CI [24.7, 92.1]; $p < 0.0001$).

Patient-reported Access Outcomes

Patient-reported access to care was mixed in 3 studies. Two studies were of good quality, and 1 was of fair quality.[12]

Vanneman and co-authors used VA's 2016-17 Survey of Healthcare Experience of Patients (SHEP) to analyze differences in patient-reported access outcomes between VA and VA-paid CC patients receiving outpatient primary, specialty, and mental health care.[40] In the second quarter of 2016, patients rated access to care as better in VA-paid CC, as evaluated by multivariate models adjusting for patient and facility characteristics. These evaluations of access in that quarter did not differ between VA and VA-paid CC for primary or mental health care. Access scores for specialty care increased by about 2% for both VA and VA-paid CC by the end of the study period in the fourth quarter of 2017. Scores for primary and mental health care did not change.

In another analysis of SHEP data, Davila and colleagues analyzed differences in patient-reported access among urban and rural Veterans receiving VA and VA-paid CC primary and specialty care from FY16–FY19.[41] Compared with VA-paid CC primary care, rural Veterans reported greater satisfaction with access to VA primary care in FY16 (adjusted standardized mean difference [aSMD] = 0.17) and FY19 (aSMD = 0.21). Rural Veterans reported similar satisfaction with access to VA and VA-paid-CC specialty care. The study did not provide adjusted effect sizes for urban Veteran comparisons, but average access satisfaction scores were

higher in both years for urban VA primary care compared with VA-paid CC primary care (FY16: 3.18 vs 2.91; FY19: 3.27 vs 3.12). Average scores were lower in both years for access to urban VA compared with VA-paid CC specialty care (FY16: 3.09 vs 3.17; FY19: 3.17 vs 3.28). Despite these differences, all average scores correspond to satisfaction scale ratings of "usually" to "always."

In the last analysis, VA patients reported more access-related barriers to mental health care compared to patients receiving VA-paid community care ($p < 0.001$).[12]

Other Access Outcomes

A good quality study using VA health care record and cost data, VA-paid CC claims, and mapping software analyzed Veteran patient travel distance to and cost of percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG).[19] Authors found that VA patients traveled farther than VA-paid CC patients for both PCI (90.8 miles vs 60.1 miles; $p < 0.001$) and CABG (123.2 miles vs 81.5 miles; $p = 0.02$). Patients also incurred higher travel costs in VA versus VA-paid CC for both PCI ($238 vs $198; $p = 0.004$) and CABG ($958 vs $630; $p < 0.001$).

In 2 final fair quality studies, VA patients lived farther away from kidney transplant centers than patients using Medicare or private insurance,[9] and were more likely to report delays in seeking care than patients using Medicare, Medicaid, or commercial insurance.[11]

Patient Experience

Six studies reported patient experience outcomes. Two studies described ratings of providers, 2 studies reported various patient experience measures, 1 compared VA's SHEP ratings with similar patient experience ratings from non-VA hospitals, and another reported Yelp ratings of hospitals. VA care was better in 2 studies and equal or mixed compared to non-VA care in 4 studies. Four of these studies were good quality and 2 were fair quality.

Provider Ratings

The Vanneman study described above also used 2016-17 SHEP data to report differences in provider ratings between patients receiving VA and VA-paid CC.[40] Provider ratings were higher in VA in the second quarter of 2016 for primary, specialty, and mental health care. VA and VA-paid CC ratings did not significantly change by the fourth quarter of 2017.

In the previously described Davila study, authors examined SHEP data to distinguish differences in provider ratings between rural Veterans receiving primary and specialty VA and VA-paid CC care during FY16 and FY19.[41] Ratings for providers were higher for rural Veterans receiving primary and specialty care in VA compared to VA-paid CC in FY16 and FY19. Rural Veterans reported higher provider ratings for primary care (FY16 aSMD = 0.35; FY19 aSMD = 0.19) and specialty care (FY16 aSMD = 0.16; FY19 aSMD = 0.12) in VA compared to CC. Authors also provided data on provider ratings for urban Veterans but did not report adjusted effect sizes for VA and VA-paid CC comparisons. Average provider ratings (0-10, with 10 being the best) were higher for urban Veterans receiving VA care compared to those receiving VA-paid CC care for both primary (FY16: 8.83 vs 7.28; FY19: 8.92 vs 8.30) and specialty (FY16: 8.69 vs 8.46; FY19: 8.88 vs 8.70) care.

SHEP Outcomes

In a third study, authors analyzed 2014 VA SHEP and private sector Hospital Consumer Assessment of Healthcare Providers and Systems Hospital Survey (HCAHPS) data to examine differences in patient experience between VA and non-VA inpatient care.[29] Each VA hospital was matched to 3 private sector non-VA hospitals using propensity score matching by bed size, geography, teaching hospital status, and urbanicity. Non-VA hospitals had higher ratings overall for hospital quietness, pain management, responsiveness of hospital staff, and communication with doctors or nurses. VA hospitals had higher ratings for communication about medicine, hospital cleanliness, and care transitions. Scores were very close for discharge information.

Patient Experience Outcomes

The fourth study,[28] previously described in the Quality and Safety section above, assessed national samples from VA and non-VA hospitals for patient-reported patient experience outcomes. About half of the 10 domains of patient experience had small but statistically significant better ratings for non-VA care, whereas there was no statistical difference in ratings for the other half of the domains.

In the fifth study, patient centeredness was not different ($p = 0.243$) between VA tele-mental healthcare and VA-paid, in-person mental healthcare in the community.[12]

Hospital Ratings

In a sixth study, authors analyzed differences in Yelp ratings between VA hospitals and their local university affiliates.[14] After adjusting for bed size, teaching hospital and graduate medical education status, and The Joint Commission certification, VA and non-VA Yelp ratings did not differ.

Cost/Efficiency

We identified 6 studies reporting on efficiency or cost outcomes: 1 study was about patients with cardiac disease,[19] 1 study was about imaging in patients with prostate cancer,[42] 1 study was about end-of-life care,[43] 1 study was about hospitalization after dialysis,[25] 1 study was about low-value PSA testing,[44] and 1 study was about tele-mental healthcare.[12] Five studies were good quality studies, and the sixth was fair quality.[12].

Cardiac Disease

One study assessed many outcomes among nearly 20,000 Veterans less than age 65 who had elective coronary revascularization, either bypass surgery ($N = 5,818$) or a percutaneous coronary intervention ($N = 13,273$) at either a VA hospital or a community hospital with care paid for by VA.[19] About 80% of patients received care at VA. Quality and access outcomes from this study are already reported in the appropriate sections of this report. Costs for VA care came from the VA Managerial Cost Accounting System, while costs for community care are what VA paid for the care. Costs were lower in VA than what VA paid for community care for patients receiving percutaneous coronary interventions ($15,683 vs $22,025) but higher in VA than what VA paid for community care for patients receiving bypass surgery ($63,144 vs $55,526).

Prostate Cancer Imaging

One study assessed agreement between guideline-suggested imaging in patients with prostate cancer among nearly 100,000 Veterans with prostate cancer.[42] Patients were classified as receiving VA-only care (28% of the total), Medicare-only care (57%) or as dual users (14%). The comparison made was the rate of prostate cancer imaging in low-risk and high-risk patients, by the system of care. Comparing just the Medicare-only to the VA-only patients, low-risk prostate cancer patients in VA were less likely to receive guideline-discordant imaging (relative risk = 0.79, 95% CI [0.67, 0.92]), whereas VA patients with high-risk prostate cancer were no less likely to have imaging in VA compared to Medicare-only patients.

End-of-life Care

One study assessed costs of care for 36,401 patients dying of cancer between 2010 and 2014 who were dually enrolled in Medicare and VA.[43] In adjusted models, total costs of care were similar between patients who were Medicare reliant and those who were VA reliant.

Dialysis

In the fourth study, days of hospitalization after dialysis were similar in VA and non-VA settings.[25]

PSA Testing

In the fifth study, low-value PSA testing was associated with 9.9 fewer downstream services per 100 Veterans (95% CI [9.7, 10.1]) and $11.9 less spending per Veteran (95% CI [$7.6, $16.2]) in VA compared to non-VA care.[44]

Tele-mental Healthcare

In the last study, the numbers of encounters did not significantly differ ($p = 0.276$) between patients receiving VA tele-mental healthcare or VA-paid, in-person mental healthcare in the community.[12]

KEY QUESTION 2: COMPARE AND CONTRAST STUDIES THAT ASSESS VA AND NON-VA QUALITY OF CARE FOR SURGICAL CONDITIONS

After dual review of identified publications, 19 met inclusion criteria (see Figure 1), using national data with heterogenous designs and statistical methods to adjust for group differences with varying rigor (see Appendix E). The majority of studies analyzed surgery- or patient-level outcomes on specific conditions or operations (17 of 19), while 2 studies reported hospital-level outcomes. The evidence reported orthopedic procedures (6 articles), cataract surgery (3 articles), pulmonary resections (2 articles), kidney transplant (2 articles), and CABG (1 article). In addition, 1 study analyzed all noncardiac surgeries, 1 study assessed hernia repair, and another study evaluated access in urologic and orthopedic outpatient clinics.

Source data in all studies ranged from 1999–2019. There were 2 main comparisons to Veterans receiving VA care among the literature: (1) VA-paid community care versus (7 articles), (2)

community care not paid by the VA (1 article), and (3) non-Veterans getting non-VA care (12 articles).

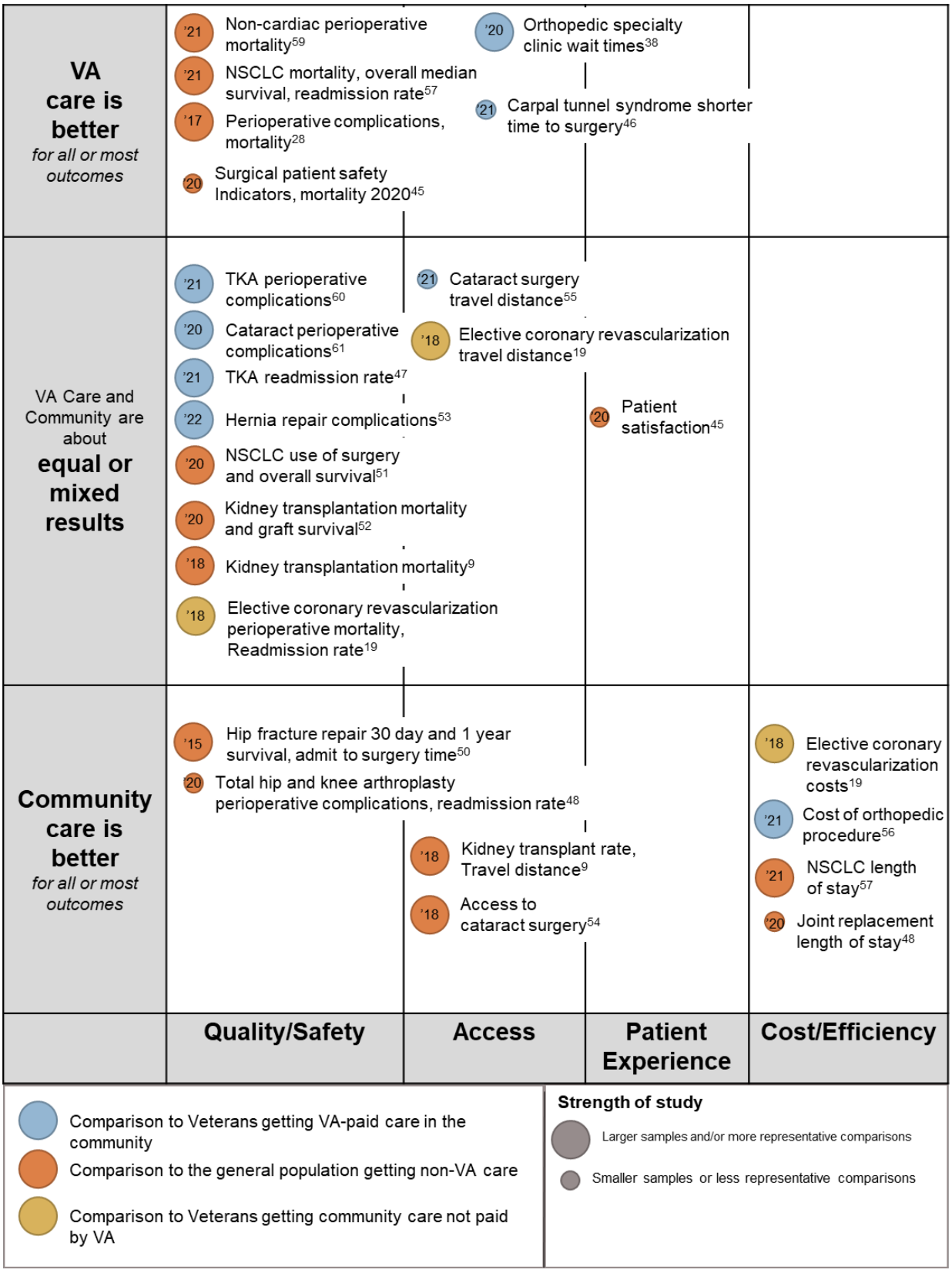
Key findings from each study were organized into 4 quality domains and are presented in the following order: (1) quality and safety, (2) access, (3) patient experience, and (4) cost and efficiency. Most studies (13 of 19) reported outcomes in only 1 quality domain, while 4 studies covered 2 domains and 1 study reported 3 domains. The 5 studies that reported findings in multiple domains will appear in multiple sections below.

Risk of Bias/Quality

Among the 17 included studies meeting all our risk of bias criteria, 3 were deemed fair quality studies, marginally meeting the criteria. Two studies reported quality and safety outcomes using hospital-level patient safety indicators. Eid et al was a similar study to Blay et al describing hospital-level surgical outcomes, but since it included fewer regions over fewer years, it was determined to be a lesser strength, fair study.[28,45] The second study was deemed fair because it was less robust in meeting criteria for representativeness, as its comparison group of "mixed" VA and non-VA care for time to carpal tunnel surgery exhibited a higher risk of bias.[46] See Appendix G for the surgery risk of bias table.

Our overall results for surgical care are presented in the bubble plot/evidence map in Figure 3. The plot is organized in the same fashion as the non-surgical plot as follows: the domains of care are listed on the horizontal axis (quality/safety, access, patient experience, cost/efficiency), the results of the study are listed on the vertical axis (VA care is better than community care, VA care and community care are about equal, or results are mixed, and community care is better than VA care), and then each study is entered as a shape, with larger shapes being studies of better quality and representativeness than studies depicted by smaller shapes. The color of the shape indicates the type of comparison: blue for studies comparing Veterans getting care from VA to Veterans getting VA-paid care in the community; orange for studies comparing Veterans getting care from VA and non-Veterans, or a general population, getting care in the community; and yellow for studies comparing Veterans getting care from VA to Veterans getting community care not paid by VA. Next to each shape is a brief thumbnail of what the study was about, and inside the shape is the year of publication ('18 = 2018, '19 = 2019, *etc*).

Figure 3. Evidence Map of Published Studies Comparing Surgical Care



Quality and Safety

Thirteen studies reported quality and safety outcomes covering a broad range of procedures and will be discussed individually by surgical specialties including orthopedic (4 studies), lung resection (2), kidney transplant (2), CABG (1), hernia repair (1), cataract surgery (1), and non-cardiac surgeries (1); 2 additional studies reported hospital-level patient safety indicators.

Orthopedic

Three studies reported outcomes for Veterans undergoing elective joint replacement (hip (THA) and knee (TKA)) and 1 for hip fracture repair, all meeting risk of bias criteria. While non-VA care was superior after hip fracture repair, outcomes for joint replacements were either equivalent between sites of care or reported some outcomes where VA care was better and others where CC/non-VA care was better (*ie*, mixed).

Harris et al reported that 24,407 VA corporate data warehouse (CDW) patients had about half of the odds of developing any complication (such as joint or wound infection, myocardial infarction, and pulmonary embolism) compared to 18,964 Veterans who underwent TKAs in VA-paid CC identified through Medicare claims over 2017–2019 (adjusted OR of any complication = 0.45, 95% CI [0.38, 0.54]). However, in their local facility-level comparison, the adjusted odds of complications were higher in 5 of 130 VA facilities compared to their CC site (approximate ORs = 1.8–2.6, 95% CIs [1.1, 4.6]).

The second study of joint replacement outcomes from 2016–2019 by Rosen et al reported considerably lower readmissions nationally among 25,384 Veterans compared to 19,990 Veterans in VA-paid CC using combined VA CDW and Medicare (adjusted OR for all-cause readmissions = 0.35, 95% CI [0.30, 0.40]).[47] This trend varied at 3 individual CC sites that had lower readmissions compared to their corresponding VA (approximate ORs = 2.3–3.1, 95% CIs [1.0, 7.9]).

The third study of joint replacements found that VA care (N = 10,460) had substantially higher adjusted odds of complications (2.58, 95% CI [2.31, 2.89]) and readmissions (4.94, 95% CI [4.51, 5.41]) after elective primary TKA and THA at 30 days compared to 58,820 National Surgical Quality Improvement Program (NSQIP) database patients in 2014.[48] While the study by Harris and colleagues compared VA care to care delivered in the community via CHOICE, this study compared VA care to care in hospitals participating in NSQIP, which is a voluntary program consisting mostly of academic medical center hospitals, which differ from other hospitals on a number of characteristics.[49] Also, the methods for controlling for differences in patient characteristics and hospital setting were different between the 2 studies.

A study of timeliness of surgery and survival found that after hip fracture in patients 65 and older, the VA-NSQIP patients (N = 947) waited an average of 4 days more for surgery (mean admission date to date of surgery in VA: 5.64 [SD 43.25] and Medicare: 1.78 [SD 2.35]) compared to a propensity matched cohort of Medicare patients (N = 947) between 2003–2005. The Medicare cohort also had 70% higher odds of 30-day survival on average.[50]

Lung Resection

Two studies discussed quality and safety outcomes for Veterans undergoing pulmonary resection and/or non-small cell lung cancer (NSCLC) treatment. Both reported a measure of overall survival with VA based care experiencing superior or equal outcomes.

Heiden and colleagues found that Veterans in the VA CDW database had a small but significantly lower 30-day mortality rate (VA: 1.9% vs NCDB: 2.8%, $p < 0.001$) that persisted at 90 days compared to a matched non-Veteran population in the National Cancer Database (NCDB) between 2006–2016. Veterans in the VA also had longer adjusted median overall survival by about 6 months (71.4 vs 65.2 months, $p < 0.001$); they found no difference in unadjusted readmissions.

In a second study designed to assess racial disparities in management and outcomes of stage I NSCLC between Black and White patients, Williams et al compared 7,895 Veterans in VA CDW data with 8,744 non-Veterans in the SEER-Medicare database from 2001–2009.[51] They found that Black patients were 27% and 43% less likely to receive surgery in VA and non-VA cohorts, respectively. When they adjusted for treatment received and other patient-level covariates, there was no disparity in 5-year overall survival between Black and White patients in either setting.

Kidney Transplant

Two studies of kidney transplant quality and safety outcomes used data from the Scientific Registry of Transplant Recipients database; both studies met all our risk of bias criteria.

Augustine et al analyzed transplant rates, mortality, and delisting in 2,905 VA patients across 4 VA transplant centers with 3751 privately insured and 3109 Medicare patients from 2004 to 2016.[9] Compared to privately insured patients, VA patients had a lower adjusted hazard ratio (aHR) for deceased and living donor transplants combined (aHR = 0.72, 95% CI [0.65, 0.79]), slightly higher hazard ratio for delisting (aHR = 1.23, 95% CI [1.003, 1.50]), but no difference in adjusted mortality rates. Compared to Medicare patients, VA patients had a lower hazard ratio for mortality (aHR = 0.81, 95% CI [0.68, 0.96]) and were less likely to be removed from the waitlist (aHR = 0.82, 95% CI [0.68, 0.99]).

Kesseli et al found significantly lower observed versus expected (O:E) 30-day kidney transplant mortality rate in the 7 VA centers ($N = 1,508$) versus 286 non-VA centers ($N = 117,680$) (O:E VA = 0.27, 95% CI [0.05, 0.65]; O:E VA vs non-VA = 1.00, 95% CI [0.95, 1.06], $p = 0.03$).[52] Three-year mortality and graft survival, however, were not different between the VA and matched non-VA centers.

CABG

Barnett et al studied elective coronary revascularization in Veterans under 65 years old for 4,866 patients in VA hospitals and 952 Veterans in VA-paid CC sites using VA claims data.[19] Mortality and readmissions at 30 days after CABG were not different between VA care and CC.

Hernia Repair

Mull et al assessed nationwide the outcome of postoperative complications for patients getting hernia repair in VA and Veterans getting hernia repair in the community in 2018–2019.[53] Among 7991 procedures nationwide, just under 10% were done in the community (772). Unadjusted comparisons showed postoperative complications were higher for community care patients than patients operated on at VA (6.6% vs 4.0%), but this difference was no longer present after adjusting for patient comorbidities, complexity of the hernia repair, and the historical pattern of community care referrals.

Cataract Surgery

One study reported similar adjusted 90-day complications for Veterans undergoing cataract surgery in the VA ($N = 44,546$) compared to Veterans obtaining VA-paid community care ($N = 17,203$) in Fiscal Year 2015 following complex and routine cataract surgeries (OR = 0.92, 95% CI [0.77, 1.10]).

Patient Safety Indicators

Two studies used Hospital Compare data to evaluate VA hospital patient safety indicators (PSIs) with those reported by non-VA hospitals. Only Blay et al met all our criteria for risk of bias given its larger sample size.[28] They found lower postoperative inpatient deaths from a treatable complication in the 129 VA hospitals compared to 4010 non-VA hospitals between 2012–2015 (VA: 105.8 deaths per 1000 discharges, 95% CI [96.7, 114.92]; non-VA: 136.34 deaths per 1000 discharges, 95% CI [135.42, 137.26]) and found a slightly lower postoperative VTE rate by about 1 per 1000 discharges, but no difference in wound dehiscence rates.

The second study by Eid et al[41] reported lower postoperative inpatient deaths from treatable complications in the VA hospitals ($N = 34$) compared to non-VA hospitals ($N = 319$), similar to Blay et al. There was no difference in VTE rates but lower wound dehiscence rates among VA hospitals.

Access

We identified 6 articles reporting health care access. Three studies describe time to care (2 on time to surgery, 1 wait time to specialty appointment) and 3 studies measured geographic access in terms of distance to the provider; all met risk of bias criteria.

Time to Care

Wu and colleagues measured the proportion of 1,917,254 Veterans and 1,156,211 Medicare patients with documented cataract diagnoses who received cataract surgery within 1 and 5 years after diagnosis from 2002–2012.[54] About one-third fewer Veterans underwent surgery for cataracts within 1 year (VA: 6.3% vs non-VA: 18.5%; adjusted OR for receiving surgery = 3.39, 95% CI [3.36, 3.41]) and 5 years (VA: 12.6%, non-VA: 35.9%; adjusted OR = 3.89, 95% CI [3.87, 3.91]) compared to Medicare patients. This study did not assess the reasons why patients did not undergo cataract surgery.

Griffith et al compared wait times to specialty appointments among Veterans at VA versus Veterans in VA-paid CC using VA administrative data from 2013–2019 (orthopedic patients, VA: 506,945 and non-VA: 139,827; urology patients, VA: 353,019 and non-VA: 37,089).[38]

Mean wait times declined over the study period, and on average were 6 days shorter in VA sites for orthopedics (VA: 36.2 days [SD 9.3] vs CC: 43.6 days [SD 12.9]) and 14 days shorter in VA sites for urology (VA: 36.1days [SD 9.5] vs CC: 50.5 days [SD 14.5]).

The third study evaluated time from carpal tunnel referral to time of surgery. Due to a heterogenous comparison group that may overlap with the VA group, this study was deemed fair quality.[46] Veterans treated only within the VA had shorter median time from primary care provider (PCP) referral to carpal tunnel release by about 200 days compared to the group with mixed VA plus VA-paid community care.

Geographic Access

Three national studies found travel distance to be longer for VA care; all of these studies met the risk of bias criteria.

Augustine et al (discussed above in Quality and Safety) reported median distance to the 4 matched kidney transplant centers from Veteran residences.[9] Transplants at a VA required nearly 8-fold greater travel distance at 347.0 miles (interquartile range [IQR] = 196.9–701.8) versus 42.5 miles (IQR = 12.9–101.1) for privately insured patients and 55.6 miles (IQR = 16.4–102.6) for Medicare patients. Similarly, Barnett et al's study of elective CABG operations (see above) found that net travel distance was 73.3 miles less for VA-paid CC Veterans compared to Veterans undergoing surgery at the VA hospital.[19]

In a study using 2015 CDW data, Pettey and colleagues calculated median travel distances nationally for Veterans undergoing cataract surgery to be 31.2 miles for VA versus 19.7 miles for VA-paid CC.[55]

Patient Experience

One study describing patient experience was fair quality. Eid et al used Hospital Consumer Assessment of Healthcare Providers patient satisfaction scores in 2018 in 3 regions and found no differences in overall hospital rating, but the VA performed slightly worse when patients were asked if they would recommend the hospital compared to non-Veteran patients at non-VA hospitals.[45]

Cost/Efficiency

Two studies reported cost outcomes for knee replacements (TKA), cataract surgery, and elective CABG. Two studies reported efficiency measures as length of stay. All study designs were previously described in results about other outcomes above.

Costs

A study by Wagner et al compared VA hospital versus CC TKAs and cataract surgeries using VA CDW data from 2017–2018.[56] The mean total unadjusted inpatient cost of TKAs was substantially higher in VA care (6,179 VA patients: $28,969 [SD $10778] vs 6,337 VA-paid CC patients: $13,339 [SD $23,698]), and the pattern persisted after controlling for location of service and patient factors. Findings were the same for outpatient cataract surgeries, with the adjusted model demonstrating that, compared to VA-paid CC, VA hospital cataract procedures cost $2,680 more (standard error 15.8).

Barnett and colleagues (described above) found a lower mean adjusted total cost of elective CABG in Veterans receiving VA-paid CC by $8,525, which included index procedure, readmission, and extra travel costs compared to VA care (VA: $65,264 [SD $47,978] for VA vs CC: $56,749 [SD $77,283] for CC, $p < 0.01$).[19]

Length of Stay

Veterans at VA hospitals experienced longer lengths of stays compared to non-Veterans in 3 studies. For example, mean length of stay after lung resection was about 1 day shorter among non-Veterans (VA: 8.12 days [SD 6.59]; non-VA: 7.08 days [SD 7.54], $p > 0.001$).[57] Following elective THA, a higher proportion of patients had a length of stay 4 days or greater in the VA sample (47% vs 17%, $p < 0.001$).[48]

DISCUSSION

Our systematic review identified 38 studies of non-surgical care and 198 studies of surgical care comparing quality, safety, access, patient experience, or efficiency/cost between VA-delivered care and non-VA-delivered care. The large majority of studies assessed quality and safety, followed by comparisons of access to care. Few studies—only 7 and 10, respectively—assessed patient experience or cost/efficiency. We found no studies comparing VA to non-VA care on equity.

In the domain of quality and safety, the great majority of studies found that VA care is as good as, or better than, care in the community. This was the case for both surgical care and non-surgical care, and for community care of Veterans and community care of non-Veterans. For the domains of access and of cost/efficiency, the studies were more evenly distributed between the categories of VA care is better, VA and community care are about the same, and community care is better. The few studies of patient experience found that VA care and community care were about the same or VA care was better. We did not identify any study the found that patient experience was better in community care.

The studies best able to address implications of the CHOICE and MISSION acts were designed to capture data of Veterans receiving VA-paid community care. In these comparisons, quality and safety was generally better in VA-delivered care for studies of nonsurgical care and of about equal or mixed results for studies of surgical care. Differences between sites of care were more mixed for the other domains: access, patient experience, and cost.

Key among the quality and safety outcomes is mortality. Among studies of surgical care, the overall trend of the broader domain held. One study of Veterans in community care had equivalent mortality after CABG, and 5 other studies comparing mortality to non-Veterans were distributed between lower mortality in the VA (after lung resection, non-cardiac surgery, and surgical inpatient deaths) or a mixture of VA better and no difference (2 studies of kidney transplant); there were no cases of lower mortality in community care among the high-quality studies.

The few exceptions to these general findings deserve noting. For surgical care, there was a consistent finding that VA length of stay was longer than in non-VA care. In 2 studies of procedures, the investigators found that in some cases VA-purchased care was less expensive than the estimate of costs for VA to deliver the procedure. In several studies of both non-surgical care and surgical care, there was a greater travel distance to receive care from VA than from the community, although the importance of these differences may vary for different Veteran stakeholders. Lastly, even in studies that found, on average, that VA care was better than community care, there was some regional variation such that in a few geographic areas VA care had worse outcomes than community care or that a few measures of quality were better in the community than at VA.

These results notwithstanding, the overarching conclusion from the published studies since 2015 reinforces the conclusions of the 2 prior reviews of studies comparing VA care to non-VA care: on average, VA care performs better than or similar to non-VA care in the domain of quality and safety. While this relationship persists nationally, studies comparing local VA facilities to their community counterpart may reveal areas of local deviance from national trends. Identifying

where there are such differences in care will be critical to ongoing comparisons in the future. In addition, these findings highlight focused areas for potential VA performance improvement, such as hip fracture repair.

This review expands those earlier conclusions to include the outcome domains of access, patient experience, and efficiency/cost. For these domains, we found more studies in this review (studies published since 2015) than in the prior review that covered 2005–2015 (29 studies vs 19 studies). Thus, we believe we can draw some early conclusions about comparisons between VA and non-VA care: while not as striking as in the quality/safety domain, studies tended to find that VA care was about the same or better than non-VA care, with the exceptions of travel distance and length of stay.

How might these data be used? First, comparisons are useful in identifying possible quality issues where VA performance should be improved. Looking at specific outcomes is important. Second, comparisons of VA versus community care paid for by VA are critical to shaping decisions about the expansion of the program and determining whether sending Veterans out for care in an effort to improve timeliness or convenience comes at a cost in terms of clinical outcomes. Third, some comparisons are useful for judging the potential advantages of the VA's national system of integrated care versus care delivery in less organized settings, such as delivery of preventive care and control of chronic disease.

LIMITATIONS

In addition to the usual limitation of any systematic review, namely the quantity and quality of the original studies, we add the possibility of publication bias or subconscious investigator bias, in that most of the published studies are by VA authors. We scrutinized each study for objective evidence of bias and diminished the degree to which studies with such bias contributed to our overall conclusions. Nevertheless, we cannot assess the degree to which unmeasurable bias or the decision to undertake a comparative study and what topics to focus on are influenced by VA investigators. This may be something that can only be resolved with difficulty and waiting until other health systems adopt the same kind of learning health system culture that VA has, which results in self-inspection of quality of care compared to other health care systems.

Beyond this, the most important limitation to any of these comparisons is the possibility of confounding by choice of care delivery site—in other words, the comparability of the patients getting VA care to the patients getting care outside VA, whether they be Veterans getting community care or non-Veterans getting community care. Studies attempted to control for this by using multivariable methods to adjust for baseline differences between groups, but these methods are limited by the availability of baseline variables and the degree to which those variables are captured. Thus, 1 study of outcomes of heart failure care was able to adjust for the presence or absence of a large number of comorbidities, but not able to adjust for baseline differences in the severity of heart failure. Providers in fee-for-service health care have a financial incentive to code for comorbidities that VA providers do not have; thus, there may be differential capture of this between patients in VA and outside VA care. Likewise, most studies were not able to adjust for differences in the social determinants of health, which may affect everything from length of stay to readmission to outcomes of chronic illness. VA patients are known to bear a heavier burden of social determinants of health than patients outside VA care. To the extent these burdens are uncaptured and unadjusted for, this discrepancy places VA care

at a disadvantage compared to patients outside VA care for such outcomes. The bias introduced by this heavier burden makes the findings that VA care was equivalent to or better than non-VA care even more exceptional.

An additional limitation in drawing overall conclusions is the relative value placed on different outcomes. For example, the small but statistically significant benefit of VA care in terms of mortality seen in several studies would seem to be more "important" than the small but statistically significant benefit seen for community care in post-discharge receipt of pulmonary rehabilitation for patients with COPD—in other words, one study doesn't balance out the other. Similarly, the degree to which travel distance is an outcome of importance to Veterans is unknown; it was included as an outcome in this review since travel distance was a criterion of eligibility for care under the CHOICE act. But we did not attempt to classify the outcomes as "important" or "less important," since at the edges this would invariably require subjective decisions by the research team—for example, which is more important, a shorter wait time for a urology appointment or a longer length of stay after joint replacement surgery?—and the value of these outcomes maybe different to different stakeholders. Thus, we presented the outcomes without attempting to classify them by degree of importance.

An additional limitation in arriving at overarching conclusions is that the conditions and procedures for which such comparisons have been published are only a small fraction of the care Veterans receive; their results cannot be generalized to all kinds of care.

FUTURE RESEARCH

Despite several dozen publications comparing VA care with non-VA care, there are a number of clinical areas where there are large amounts of care delivered in the community through the MISSION act, such as physical medicine and rehabilitation, yet no studies comparing quality of care. In addition, studies that report lower cost for purchased community care for some procedures (joint replacement, CABG) than the estimates of cost for VA to deliver that care need to have more sophisticated analyses that model what would happen if VA increases the purchase of community care. It would greatly facilitate comparisons of VA care to non-VA care if non-VA care had the same degree of comprehensive performance data that are publicly available. Lastly, we expect that comparing VA care with non-VA care is a moving target, unlike, for example, the value of beta blockers after myocardial infarction, and thus this topic needs regular updating of published studies to keep this review up to date.

CONCLUSIONS

In general, most published studies of comparisons of quality of care show that Veterans getting care from VA get the same or better quality care than Veterans getting community care or the general public getting non-VA care.

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50. Hutt E, Radcliff TA, Henderson W, Maciejewski M, Cowper-Ripley D, Whitfield E. Comparing Survival Following Hip Fracture Repair in VHA and Non-VHA Facilities. *Geriatr Orthop Surg Rehabil*. Mar 2015;6(1):22-7. doi:10.1177/2151458514561787
51. Williams CD, Alpert N, Redding TSt, et al. Racial Differences in Treatment and Survival among Veterans and Non-Veterans with Stage I NSCLC: An Evaluation of Veterans Affairs and SEER-Medicare Populations. *Cancer Epidemiol Biomarkers Prev*. Jan 2020;29(1):112-118. doi:10.1158/1055-9965.Epi-19-0245
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53. Mull HJ, Kabdiyeva A, Ndugga N, Gordon SH, Garrido MM, Pizer SD. What is the role of selection bias in quality comparisons between the Veterans Health Administration and community care? Example of elective hernia surgery. *Health Serv Res*. Dec 7 2022;doi:10.1111/1475-6773.14113
54. Wu AM, Wu CM, Tseng VL, et al. Characteristics Associated With Receiving Cataract Surgery in the US Medicare and Veterans Health Administration Populations. *JAMA Ophthalmol*. Jul 1 2018;136(7):738-745. doi:10.1001/jamaophthalmol.2018.1361
55. Pettey WBP, Wagner TH, Rosen AK, Beilstein-Wedel E, Shwartz M, Vanneman ME. Comparing Driving Miles for Department of Veterans Affairs-delivered Versus Department of Veterans Affairs-purchased Cataract Surgery. *Med Care*. Jun 1 2021;59(Suppl 3):S307-S313. doi:10.1097/MLR.0000000000001491
56. Wagner TH, Lo J, Beilstein-Wedel E, Vanneman ME, Shwartz M, Rosen AK. Estimating the Cost of Surgical Care Purchased in the Community by the Veterans Health

Administration. *MDM Policy Pract*. Jul-Dec 2021;6(2):23814683211057902. doi:10.1177/23814683211057902
57. Heiden BT, Eaton DB, Jr., Chang SH, et al. Comparison between Veteran and Non-Veteran Populations with Clinical Stage I Non-Small Cell Lung Cancer Undergoing Surgery. *Ann Surg*. May 11 2021;doi:10.1097/sla.0000000000004928
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59. George EL, Massarweh NN, Youk A, et al. Comparing Veterans Affairs and Private Sector Perioperative Outcomes After Noncardiac Surgery. *JAMA Surg*. Dec 29 2021;doi:10.1001/jamasurg.2021.6488
60. Harris AHS, Beilstein-Wedel EE, Rosen AK, et al. Comparing Complication Rates After Elective Total Knee Arthroplasty Delivered Or Purchased By The VA. *Health Aff (Millwood)*. Aug 2021;40(8):1312-1320. doi:10.1377/hlthaff.2020.01679
61. Rosen AK, Vanneman ME, O'Brien WJ, et al. Comparing cataract surgery complication rates in veterans receiving VA and community care. *Health Serv Res*. Oct 2020;55(5):690-700. doi:10.1111/1475-6773.13320

APPENDIX A. SEARCH STRATEGIES

PubMed

English; 2015 to Present

Search run: 9 March 2023

"United States Department of Veterans Affairs"[mh] OR "Veterans Health"[mh] OR "veterans health services"[mh] OR "Hospitals, Veterans"[mh] OR "veterans affairs"[tiab] OR "veterans health"[tiab] OR "veterans choice"[tiab]

AND

Compar*[ti] OR "vs"[ti] OR versus[ti] OR difference[ti] OR "dually enrolled"[tiab] OR "dual system*"[tiab] OR "dual enrollment"[tiab] OR "overlapping use"[tiab] OR (examine*[tiab] AND (access*[tiab] OR availab*[tiab])) OR (("community care*"[tiab] OR "Community Health Services"[Majr]) AND impact*[tiab]) OR ((other[tiab] OR "private sector"[tiab] OR "non-VA"[tiab] OR medicare[tiab] OR "commercially managed"[tiab] OR "non veteran*"[tiab] OR "non VAMC"[tiab] OR "non va"[tiab] OR "non federal hospital*"[tiab] OR "university hospital*"[tiab] OR nonveteran*[tiab] OR "nonfederal hospital*"[tiab]) AND (compar*[tiab] OR comparative study[pt]))

Results: 1826

PubMed Update

English; December 2021 to Present

Search run: 9 March 2023

"United States Department of Veterans Affairs"[mh] OR "Veterans Health"[mh] OR "veterans health services"[mh] OR "Hospitals, Veterans"[mh] OR "veterans affairs"[tiab] OR "veterans health"[tiab] OR "veterans choice"[tiab]

AND

Compar*[ti] OR "vs"[ti] OR versus[ti] OR difference[ti] OR "dually enrolled"[tiab] OR "dual system*"[tiab] OR "dual enrollment"[tiab] OR "overlapping use"[tiab] OR (examine*[tiab] AND (access*[tiab] OR availab*[tiab])) OR (("community care*"[tiab] OR "Community Health Services"[Majr]) AND impact*[tiab]) OR ((other[tiab] OR "private sector"[tiab] OR "non-VA"[tiab] OR medicare[tiab] OR "commercially managed"[tiab] OR "non veteran*"[tiab] OR "non VAMC"[tiab] OR "non va"[tiab] OR "non federal hospital*"[tiab] OR "university hospital*"[tiab] OR nonveteran*[tiab] OR "nonfederal hospital*"[tiab]) AND (compar*[tiab] OR comparative study[pt]))
Results: 374

APA PsycINFO

English; 2015 to Present

Publication Limiter: Journal Articles

Search run: 10 March 2023

TI("Veterans Health" OR "veterans affairs" OR "veterans health" OR "veterans choice") OR AB("Veterans Health" OR "veterans affairs" OR "veterans health" OR "veterans choice")

AND

TI(Compar* OR "vs" OR versus OR difference) OR (TI("dually enrolled" OR "dual system*" OR "dual enrollment" OR "overlapping use") OR AB("dually enrolled" OR "dual system*" OR "dual enrollment" OR "overlapping use")) OR (TI(examine*) AND TI(access* OR availab*)) OR (TI(examine*) AND AB(access* OR availab*)) OR (AB(examine*) AND TI(access* OR availab*)) OR (AB(examine*) AND AB(access* OR availab*)) OR ((TI("community care*") OR AB("community care*") OR MM("Community Mental Health Services")) AND (TI(impact* OR AB(impact*))) OR (TI(other OR "private sector" OR "non-VA" OR medicare OR "commercially managed" OR "non veteran*" OR "non VAMC" OR "non va" OR "non federal hospital*" OR "university hospital*" OR nonveteran* OR "nonfederal hospital*") OR AB(other OR "private sector" OR "non-VA" OR medicare OR "commercially managed" OR "non veteran*" OR "non VAMC" OR "non va" OR "non federal hospital*" OR "university hospital*" OR nonveteran* OR "nonfederal hospital*")) AND (TI(compar*) OR AB(compar*) OR TI("comparative study")))

Results: 112

Web of Science

English; 2015 to Present

Search run: 15 March 2023

TI=("veterans affairs" OR "veterans health" OR "veterans choice" OR "veterans hospital") OR AB=("veterans affairs" OR "veterans health" OR "veterans choice" OR "veterans hospital")

AND

TI=(compar* OR "vs" OR versus OR difference) OR TI=("dually enrolled" OR "dual system*" OR "dual enrollment" OR "overlapping use") OR AB=("dually enrolled" OR "dual system*" OR "dual enrollment" OR "overlapping use") OR ((TI=(examine*) OR AB=(examine*)) AND (TI=(access* OR availab*) OR AB=(access* OR availab*))) OR ((TI=("community care*") OR AB=("community care*")) AND (TI=(impact*) OR AB=(impact*))) OR (TI=(other OR "private sector" OR "non-VA" OR medicare OR "commercially managed" OR "non veteran*" OR "non VAMC" OR "non va" OR "non federal hospital*" OR "university hospital*" OR nonveteran* OR "nonfederal hospital*") OR AB=(other OR "private sector" OR "non-VA" OR medicare OR "commercially managed" OR "non veteran*" OR "non VAMC" OR "non va" OR "non federal

hospital*" OR "university hospital*" OR nonveteran* OR "nonfederal hospital*")) AND (TI=(compar*) OR AB=(compar*))

Results: 136

Total: 2448

Total after deduplication: 2415

APPENDIX B. LIST OF STUDIES WITH UNREPRESENTATIVE SAMPLES OR COMPARISONS

1. Bartel, M. J., D. J. Robertson and H. Pohl (2016). "Colonoscopy practice for veterans within and outside the Veterans Affairs setting: a matched cohort study." Gastrointest Endosc 84(2): 272-278.
2. Chao, D., H. Buddha, C. Damodaran, L. Tran, R. Strong and C. S. Jackson (2020). "Outcomes Comparison of the Veterans' Choice Program With the Veterans Affairs Health Care System for Hepatitis C Treatment." Fed Pract 37(Suppl 3): S18-s24.
3. Cullen, S. W., M. Xie, J. M. Vermeulen and S. C. Marcus (2019). "Comparing Rates of Adverse Events and Medical Errors on Inpatient Psychiatric Units at Veterans Health Administration and Community-based General Hospitals." Med Care 57(11): 913-920.
4. Dizon, M.P., et al., Comparing the Quality of Ambulatory Surgical Care for Skin Cancer in a Veterans Affairs Clinic and a Fee-For-Service Practice Using Clinical and Patient-Reported Measures. PLoS One, 2017. 12(1): p. e0171253.
5. Dueker, J. M. and A. Khalid (2020). "Performance of the Veterans Choice Program for Improving Access to Colonoscopy at a Tertiary VA Facility." Fed Pract 37(5): 224-228.
6. Geraci, T., et al., Lobectomy for Lung Cancer at Veterans Administration Medical Center Versus Academic Medical Center. Ann Thorac Surg, 2017. 103(6): p. 1715-1722.
7. Grubbs, K. M., J. C. Fortney, J. Pyne, D. Mittal, J. Ray and T. J. Hudson (2018). "A Comparison of Collaborative Care Outcomes in Two Health Care Systems: VA Clinics and Federally Qualified Health Centers." Psychiatr Serv 69(4): 431-437.

APPENDIX C. EXCLUDED STUDIES

NON-SURGICAL EXCLUDES

Does Not Compare Quality of Clinical Data in VA and US Non-VA Settings, *N* = 51

1. Augustine, M.R., et al., Reasons Older Veterans Use the Veterans Health Administration and Non-VHA Care in an Urban Environment. J Am Board Fam Med, 2021. 34(2): p. 291-300.
2. Benzer, J.K., et al., Survey of Patient-Centered Coordination of Care for Diabetes with Cardiovascular and Mental Health Comorbidities in the Department of Veterans Affairs. Journal of General Internal Medicine, 2019. 34(1): p. 43-49.
3. Bouldin, E.D., et al., Medicare-VHA dual use is associated with poorer chronic wound healing. Wound Repair Regen, 2016. 24(5): p. 913-922.
4. Burke, J.F. and B.C. Callaghan, Author response: Neuroimaging overuse is more common in Medicare compared with the VA. Neurology, 2017. 88(6): p. 608.
5. Dayoub, E.J., et al., Federal Payments for Coronary Revascularization Procedures Among Dual Enrollees in Medicare Advantage and the Veterans Affairs Health Care System. JAMA Netw Open, 2020. 3(4): p. e201451.
6. Desmarais, J. and C.Q. Chu, Utility of Anakinra in Acute Crystalline Diseases: A Retrospective Study Comparing a University Hospital with a Veterans Affairs Medical Center. J Rheumatol, 2019. 46(7): p. 748-750.
7. Feyman, Y., A. Legler, and K.N. Griffith, Appointment wait time data for primary & specialty care in veterans health administration facilities vs. community medical centers. Data Brief, 2021. 36: p. 107134.
8. Gidwani-Marszowski, R., et al., Quality Of End-Of-Life Care Is Higher In The VA Compared To Care Paid For By Traditional Medicare. Health Aff (Millwood), 2018. 37(1): p. 95-103.
9. Griebling, T.L., Re: Comparing Catheter-Associated Urinary Tract Infection Prevention Programs between Veterans Affairs Nursing Homes and Non-Veterans Affairs Nursing Homes. J Urol, 2018. 200(6): p. 1142.
10. Hebert, P.L., et al., Reliance on Medicare Providers by Veterans after Becoming Age-Eligible for Medicare is Associated with the Use of More Outpatient Services. Health Serv Res, 2018. 53 Suppl 3(Suppl Suppl 3): p. 5159-5180.
11. Johnston, J.C. and T.P. Sartwelle, Letter re: Neuroimaging overuse is more common in Medicare compared with the VA. Neurology, 2017. 88(6): p. 608.
12. Jones, A.L., et al., National Media Coverage of the Veterans Affairs Waitlist Scandal: Effects on Veterans' Distrust of the VA Health Care System. Med Care, 2021. 59(Suppl 3): p. S322-S326.
13. Leonard, C., et al., Operationalizing an Implementation Framework to Disseminate a Care Coordination Program for Rural Veterans. Journal of General Internal Medicine, 2019. 34(1): p. 58-66.
14. Lewinski, A.A., et al., Applied Rapid Qualitative Analysis to Develop a Contextually Appropriate Intervention and Increase the Likelihood of Uptake. Med Care, 2021. 59(Suppl 3): p. S242-S251.
15. Loganathan, S.K., et al., Racial and Ethnic Differences in Satisfaction with Care Coordination Among VA and non-VA Medicare Beneficiaries. Health Equity, 2017. 1(1): p. 50-60.

16. Machlin, S.R. and P. Muhuri, Characteristics and Health Care Expenditures of VA Health System Users versus Other Veterans, 2014-2015 (Combined), in Statistical Brief (Medical Expenditure Panel Survey (US)). 2001, Agency for Healthcare Research and Quality (US): Rockville (MD).
17. Malhotra, A., M. Vaughan-Sarrazin, and G.E. Rosenthal, Elderly veterans with dual eligibility for VA and Medicare services: where do they obtain a colonoscopy? Am J Manag Care, 2015. 21(4): p. e264-70.
18. Mattocks, K.M., et al., Understanding Maternity Care Coordination for Women Veterans Using an Integrated Care Model Approach. Journal of General Internal Medicine, 2019. 34(1): p. 50-57.
19. McCreight, M.S., et al., Practical Use of Process Mapping to Guide Implementation of a Care Coordination Program for Rural Veterans. Journal of General Internal Medicine, 2019. 34(1): p. 67-74.
20. Mohr, D.C., et al., Organizational Coordination and Patient Experiences of Specialty Care Integration. Journal of General Internal Medicine, 2019. 34(1): p. 30-36.
21. Mudumbai, S.C., et al., Perioperative Opioid Prescribing Patterns and Readmissions After Total Knee Arthroplasty in a National Cohort of Veterans Health Administration Patients. Pain Med, 2020. 21(3): p. 595-603.
22. Nadpara, P.A., et al., Risk Factors for Serious Prescription Opioid-Induced Respiratory Depression or Overdose: Comparison of Commercially Insured and Veterans Health Affairs Populations. Pain Med, 2018. 19(1): p. 79-96.
23. Nelson, R.E., et al., The Impact of a Change in the Price of VA Health Care on Utilization of VA and Medicare Services. Med Care, 2018. 56(7): p. 569-576.
24. Nelson, R.E., et al., Costs Associated with Health Care Services Accessed through VA and in the Community through Medicare for Veterans Experiencing Homelessness. Health Serv Res, 2018. 53 Suppl 3(Suppl Suppl 3): p. 5352-5374.
25. Noël, P.H., et al., Patient experience of health care system hassles: Dual-system vs single-system users. Health Serv Res, 2020. 55(4): p. 548-555.
26. Nuti, S.V., L. Qin, and H.M. Krumholz, Outcome After Admission at Veterans Affairs vs Non-Veterans Affairs Hospitals--Reply. Jama, 2016. 316(3): p. 346.
27. O'Hanlon, C.E., C. Farmer, and C. Gidengil, Comparing VA to Non-VA Care. J Gen Intern Med, 2017. 32(2): p. 152.
28. Olmos-Ochoa, T.T., et al., Staff Perspectives on Primary Care Teams as De Facto “Hubs” for Care Coordination in VA: a Qualitative Study. Journal of General Internal Medicine, 2019. 34(1): p. 82-89.
29. Pershing, S., et al., Treating age-related macular degeneration: comparing the use of two drugs among medicare and veterans affairs populations. Health Aff (Millwood), 2015. 34(2): p. 229-38.
30. Peterson, K., et al., Health Care Coordination Theoretical Frameworks: a Systematic Scoping Review to Increase Their Understanding and Use in Practice. Journal of General Internal Medicine, 2019. 34(1): p. 90-98.
31. Radomski, T.R., M.J. Fine, and W.F. Gellad, Outcome After Admission at Veterans Affairs vs Non-Veterans Affairs Hospitals. Jama, 2016. 316(3): p. 345-6.
32. Radomski, T.R., et al., The Impact of Medication-Based Risk Adjustment on the Association Between Veteran Health Outcomes and Dual Health System Use. J Gen Intern Med, 2017. 32(9): p. 967-973.

33. Ramkumar, M. and S.T. Crowley, Kidney Transplantation Rates of Veterans Administration-Listed Patients Compared with Rates of Patients on Nonveteran Lists. J Am Soc Nephrol, 2018. 29(10): p. 2449-2450.
34. Rinne, S.T., et al., VA Provider Perspectives on Coordinating COPD Care Across Health Systems. Journal of General Internal Medicine, 2019. 34(1): p. 37-42.
35. Rose, D.E., et al., Variations in VA and Medicare Use Among Veterans With Diabetes: Impacts on Ambulatory Care Sensitive Conditions Hospitalizations for 2008, 2009, and 2010. Med Care, 2019. 57(6): p. 425-436.
36. Rose, L., et al., Association of Expanded Health Care Networks With Utilization Among Veterans Affairs Enrollees. JAMA Netw Open, 2021. 4(10): p. e2131141.
37. Rosenberg, K., End-Of-Life Cancer Care For Veterans Through The VA Vs. Medicare. Am J Nurs, 2018. 118(5): p. 70.
38. Trivedi, A.N., et al., Dual Use and Hospital Admissions among Veterans Enrolled in the VA's Homeless Patient Aligned Care Team. Health Serv Res, 2018. 53 Suppl 3(Suppl Suppl 3): p. 5219-5237.
39. Trivedi, A.N., et al., Agreement Between HEDIS Performance Assessments in the VA and Medicare Advantage: Is Quality in the Eye of the Beholder? Inquiry, 2016. 53.
40. Tummalapalli, S.L. and S. Keyhani, Trends in Preventative Health Services for Veterans with Military Coverage Compared to Non-Military Coverage. J Gen Intern Med, 2020. 35(4): p. 1330-1333.
41. Valle, J.A., et al., Dual antiplatelet therapy in non-ST elevation acute coronary syndromes at Veterans Affairs Hospitals. Heart, 2019. 105(20): p. 1575-1582.
42. Veet, C.A., et al., Impact of Healthcare Delivery System Type on Clinical, Utilization, and Cost Outcomes of Patient-Centered Medical Homes: a Systematic Review. J Gen Intern Med, 2020. 35(4): p. 1276-1284.
43. Ward, R., et al., An Evaluation of Statin Use Among Patients with Type 2 Diabetes at High Risk of Cardiovascular Events Across Multiple Health Care Systems. J Manag Care Spec Pharm, 2020. 26(9): p. 1090-1098.
44. Weeks, W.B., Comparing VA to Non-VA Care. J Gen Intern Med, 2017. 32(2): p. 150-151.
45. Wong, E.S., et al., Impact of VHA's primary care intensive management program on dual system use. Healthc (Amst), 2020. 8(3): p. 100450.
46. Wray, C.M., M. Khare, and S. Keyhani, Access to Care, Cost of Care, and Satisfaction With Care Among Adults With Private and Public Health Insurance in the US. JAMA Netw Open, 2021. 4(6): p. e2110275.
47. Wray, C.M., L. Lopez, and S. Keyhani, "Comparing VA and Non-VA Care Quality". J Gen Intern Med, 2019. 34(4): p. 485.
48. Yoon, J., et al., Use of the Veterans' Choice Program and Attrition From Veterans Health Administration Primary Care. Med Care, 2020. 58(12): p. 1091-1097.
49. Yu, M.K., et al., Trends in Timing of Dialysis Initiation within Versus Outside the Department of Veterans Affairs. Clin J Am Soc Nephrol, 2015. 10(8): p. 1418-27.
50. Zulman, D.M., et al., Effects of Intensive Primary Care on High-Need Patient Experiences: Survey Findings from a Veterans Affairs Randomized Quality Improvement Trial. Journal of General Internal Medicine, 2019. 34(1): p. 75-81.
51. Gaffney, A., et al., Uptake and Equity in Influenza Vaccination Among Veterans with VA Coverage, Veterans Without VA Coverage, and Non-Veterans in the USA, 2019-2020. J Gen Intern Med, 2022: p. 1-8.

Not Research, *N* = 7

1. Cordasco, K.M., et al., Coordinating Care Across VA Providers and Settings: Policy and Research Recommendations from VA's State of the Art Conference. Journal of General Internal Medicine, 2019. 34(1): p. 11-17.
2. Cordasco, K.M., et al., Improving Care Coordination for Veterans Within VA and Across Healthcare Systems. Journal of General Internal Medicine, 2019. 34(1): p. 1-3.
3. Gittell, J.H. and L. Hajjar, Strengthening Patient-Centered Care in the VHA: A Relational Model of Change. Journal of General Internal Medicine, 2019. 34(1): p. 7-10.
4. Mattocks, K.M., et al., Recommendations for the Evaluation of Cross-System Care Coordination from the VA State-of-the-art Working Group on VA/Non-VA Care. Journal of General Internal Medicine, 2019. 34(1): p. 18-23.
5. Mattocks, K.M., et al., Innovations in Community Care Programs, Policies, and Research. Med Care, 2021. 59(Suppl 3): p. S229-S231.
6. McDonald, K.M., et al., Incorporating Theory into Practice: Reconceptualizing Exemplary Care Coordination Initiatives from the US Veterans Health Delivery System. Journal of General Internal Medicine, 2019. 34(1): p. 24-29.
7. Mengeling, M.A., et al., Partnership Forum: The Role of Research in the Transformation of Veterans Affairs Community Care. Med Care, 2021. 59(Suppl 3): p. S232-S241.

Background, *N* = 6

1. Garvin, L.A., et al., Interorganizational Care Coordination of Rural Veterans by Veterans Affairs and Community Care Programs: A Systematic Review. Med Care, 2021. 59(Suppl 3): p. S259-S269.
2. Gordon, S.H., et al., County-level Predictors of Growth in Community-based Primary Care Use Among Veterans. Med Care, 2021. 59(Suppl 3): p. S301-S306.
3. Greenstone, C.L., et al., Standardizing Care Coordination Within the Department of Veterans Affairs. Journal of General Internal Medicine, 2019. 34(1): p. 4-6.
4. Hynes, D.M., et al., Veterans' Use of Veterans Health Administration Primary Care in an Era of Expanding Choice. Med Care, 2021. 59(Suppl 3): p. S292-S300.
5. Mattocks, K.M., et al., Understanding VA's Use of and Relationships With Community Care Providers Under the MISSION Act. Med Care, 2021. 59(Suppl 3): p. S252-S258.
6. Vashi, A.A., et al., Community Urgent Care Use Following Implementation of the Veterans Affairs Maintaining Internal Systems and Strengthening Integrated Outside Networks Act. Med Care, 2021. 59(Suppl 3): p. S314-S321.

About Surgery, *N* = 5

1. Billig, J.I., et al., The Impact of Community Care Referral on Time to Surgery for Veterans With Carpal Tunnel Syndrome. Med Care, 2021. 59(Suppl 3): p. S279-S285.
2. George, E.L., et al., Comparing Veterans Affairs and Private Sector Perioperative Outcomes After Noncardiac Surgery. JAMA Surg, 2021.
3. Harris, A.H.S., et al., Comparing Complication Rates After Elective Total Knee Arthroplasty Delivered Or Purchased By The VA. Health Aff (Millwood), 2021. 40(8): p. 1312-1320.
4. Pettey, W.B.P., et al., Comparing Driving Miles for Department of Veterans Affairs-delivered Versus Department of Veterans Affairs-purchased Cataract Surgery. Med Care, 2021. 59(Suppl 3): p. S307-S313.

5. Rosen, A. K., E. E. Beilstein-Wedel, A. H. S. Harris, M. Shwartz, M. E. Vanneman, T. H. Wagner and N. J. Giori (2022). "Comparing Postoperative Readmission Rates Between Veterans Receiving Total Knee Arthroplasty in the Veterans Health Administration Versus Community Care." Med Care 60(2): 178-186.

Unrepresentative Samples or Comparisons, *N* = 5

1. Bartel, M.J., D.J. Robertson, and H. Pohl, Colonoscopy practice for veterans within and outside the Veterans Affairs setting: a matched cohort study. Gastrointest Endosc, 2016. 84(2): p. 272-8.
2. Chao, D., et al., Outcomes Comparison of the Veterans' Choice Program With the Veterans Affairs Health Care System for Hepatitis C Treatment. Fed Pract, 2020. 37(Suppl 3): p. S18-s24.
3. Cullen, S.W., et al., Comparing Rates of Adverse Events and Medical Errors on Inpatient Psychiatric Units at Veterans Health Administration and Community-based General Hospitals. Med Care, 2019. 57(11): p. 913-920.
4. Dueker, J.M. and A. Khalid, Performance of the Veterans Choice Program for Improving Access to Colonoscopy at a Tertiary VA Facility. Fed Pract, 2020. 37(5): p. 224-228.
5. Grubbs, K.M., et al., A Comparison of Collaborative Care Outcomes in Two Health Care Systems: VA Clinics and Federally Qualified Health Centers. Psychiatr Serv, 2018. 69(4): p. 431-437.

No Outcomes of Interest, *N* = 2

1. Dismuke-Greer, C.E., et al., Economic impact of comorbid TBI-dementia on VA facility and non-VA facility costs, 2000-2020. Brain Inj, 2022. **36**(5): p. 673-682.
2. Wray, C., et al., Digital Health Skillsets and Digital Preparedness: Comparison of Veterans Health Administration Users and Other Veterans Nationally. JMIR Form Res, 2022. **6**(1): p. e32764.

SURGICAL EXCLUDES

Does Not Compare Quality of Clinical Data in VA and US Non-VA Settings, *N* = 19

1. Benzer, J.K., et al., Survey of Patient-Centered Coordination of Care for Diabetes with Cardiovascular and Mental Health Comorbidities in the Department of Veterans Affairs. Journal of General Internal Medicine, 2019. 34(1): p. 43-49.
2. Billig, J.I., et al., Surgical Timing for Carpal Tunnel Syndrome: A Comparison of Health Care Delivery in the Veterans Administration and Private Sector. J Hand Surg Am, 2021. 46(7): p. 544-551.
3. Clarke, E.L., et al., Association of Tumor Characteristics With Insurance Type Among Patients Undergoing Mohs Micrographic Surgery for Nonmelanoma Skin Cancer. JAMA Dermatol, 2022. 158(8): p. 919-922.
4. Dayoub, E.J., et al., Federal Payments for Coronary Revascularization Procedures Among Dual Enrollees in Medicare Advantage and the Veterans Affairs Health Care System. JAMA Netw Open, 2020. 3(4): p. e201451.
5. Jones, A.L., et al., National Media Coverage of the Veterans Affairs Waitlist Scandal: Effects on Veterans' Distrust of the VA Health Care System. Med Care, 2021. 59(Suppl 3): p. S322-S326.

6. Leonard, C., et al., Operationalizing an Implementation Framework to Disseminate a Care Coordination Program for Rural Veterans. Journal of General Internal Medicine, 2019. 34(1): p. 58-66.
7. Lewinski, A.A., et al., Applied Rapid Qualitative Analysis to Develop a Contextually Appropriate Intervention and Increase the Likelihood of Uptake. Med Care, 2021. 59(Suppl 3): p. S242-S251.
8. Mattocks, K.M., et al., Understanding Maternity Care Coordination for Women Veterans Using an Integrated Care Model Approach. Journal of General Internal Medicine, 2019. 34(1): p. 50-57.
9. McCreight, M.S., et al., Practical Use of Process Mapping to Guide Implementation of a Care Coordination Program for Rural Veterans. Journal of General Internal Medicine, 2019. 34(1): p. 67-74.
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APPENDIX D. NON-SURGICAL QOC EVIDENCE TABLE

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
Nuti, 2016[20] Y (**National**) Retrospective Acute myocardial infarction, heart failure, pneumonia Clinical quality/safety	2013-2016, vs. other non-VA; CMS Standard Analytic Files and Enrollment Database vs. VA administrative claims	N: 7929-26,231 Mortality (AMI): M 13.52/30d, 95% CI 13.38 to 13.66; Mortality (HF): M 11.43/30d, 95% CI 11.11 to 11.75; Mortality (Pneu): M 12.63/30d, 95% CI 12.19 to 13.07; Readmissions (AMI): M 17.84/30d, 95% CI 17.71 to 17.96; Readmissions (HF): M 24.66/30d, 95% CI 24.31 to 25.02; Readmissions (Pneu): M 19.44/30d, 95% CI 19.19 to 19.69	N: 124,220-269,856 Mortality (AMI): M 13.69/30 d, 95% CI 13.64 to 13.74; Mortality (HF): M 11.87/30d, 95% CI 11.80 to 11.93; Mortality (Pneu): M 12.17/30d, 95% CI 12.08 to 12.26; Readmissions (AMI): M 17.21/30d; 95% CI 17.17 to 17.25; Readmissions (HF): M 23.46/30d; 95% CI 23.39 to 23.53; Readmissions (Pneu): M 18.68/30d; 95%CI 18.63 to 18.73	Mortality (AMI): VA<non-VA,p=0.02; Mortality (HF): VA<non-VA, p=0.008; Mortality (Pneu): VA>non-VA, p=0.045; Readmissions (AMI): VA>non-VA, p<0.001; Readmissions (HF): VA>non-VA, p<0.001; Readmisions (Pneu): VA>non-VA, p<0.001;	Statistics: Hierarchical logistic regression to estimate values; t-tests to compare Other methods of controlling: NR Covariates: Age, patient cardiovascular medical history, comorbid conditions, hospital random effects	Y	

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
Vanneman, 2020[40] Y (**National**) Retrospective Outpatient specialty, primary, and mental health care Access Patient experience	2016-2017, vs Veterans in VA-paid community care; SHEP vs CAHPS	N=29,095-432,218 (combined VA and non-VA) NR	N=29,095-432,218 (combined VA and non-VA) NR	Access to care (specialty care): -0.0023 (VA vs non-VA; p=ns); Access to care (primary care): -0.0003 (VA vs non-VA; p=ns); Access to care (mental health): -0.001 Patient experience (specialty care): 0.0005 (VA vs non-VA; p=ns); Patient experience (primary care): -0.0137 (VA vs non-VA; p=ns); Patient experience (mental health): -0.0218 (VA vs non-VA; p=ns);	Statistics: Multivariate regression models Other methods of controlling: NR Covariates: age, sex, race, ethnicity, education level, marital status, rurality, VA enrollment priority, and Nosos health risk score, perceived physical health status, perceived mental health status, insurance status, number of days between the outpatient visit and survey return date, and VA facility fixed effects	Y	Regression coefficients over entire time period reported
Gurewich, 2021[37] Y (**National**) Retrospective Physical therapy, cardiology, optometry, dental care, and orthopedics Access	2014-2018 (FY15-FY18), vs Veterans in VA-paid community care; CDW (both VA and non-VA)	N=420,590 (FY15), 487,014 (FY18) FY15 (wait time in days for urban Veterans): Physical therapy: 30.62 Cardiology: 26.77	N=76,706 (FY15), 150,429 (FY18) FY15 (wait time in days for urban Veterans): Physical therapy: 28.94 Cardiology: 28.46 Optometry: 41.85	VA had greater wait time declines from FY15 to FY18 than non-VA except for cardiology (p<0.001)	Statistics: Linear regression Other methods of controlling: NR Covariates: Rurality, age, sex, race/ethnicity, marital status, FY, Nosos score, priority level,	Y	NA

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
		Optometry: 42.84 Orthopedic: 35.26 Dental: 27.70; FY18 (wait time in days for urban Veterans): Physical therapy: 26.26 Cardiology: 24.15 Optometry: 34.32 Orthopedic: 27.73 Dental: 24.01;	Orthopedic: 37.35 Dental: 25.99; FY18 (wait time in days for urban Veterans): Physical therapy: 28.84 Cardiology: 27.55 Optometry: 36.90 Orthopedic: 32.87 Dental: 25.90;		age/sex*FY18 interactions		
Davila, 2021[41] Y (**National**) Retrospective Primary and specialty care Access Patient experience	FY16-FY19, vs Veterans in VA-paid community care; SHEP and CDW (both VA and non-VA)	N=1,019,732 FY16 (primary care, access, urban): 3.18; FY16 (specialty care, access, urban): 3.09; FY19 (primary care, access, urban): 3.27; FY19 (specialty care, access, urban): 3.17; FY16 (primary care, access, rural): 3.24; FY16 (specialty care, access, rural): 3.15;	N=63,638 FY16 (primary care, access, urban): 2.91; FY16 (specialty care, access, urban): 3.17; FY19 (primary care, access, urban): 3.12; FY19 (specialty care, access, urban): 3.28; FY16 (primary care, access, rural): 3.11; FY16 (specialty care, access, rural): 3.17;	FY 16 VA vs CC (rural, primary care, access): 0.17; FY 19 VA vs CC (rural, primary care, access): 0.21; FY 16 VA vs CC (rural, specialty care, access): -0.02; FY 19 VA vs CC (rural, specialty care, access): -0.07; FY 16 VA vs CC (rural, primary care, provider rating): 0.35;	Statistics: Multiple regression models Other methods of controlling: NR Covariates: Age, sex, race, education level, marital status, VA enrollment priority, Nosos risk score, and self-rated physical and mental health	Y	SHEP scores analyzed in raw column, effect sizes reported in comparison column; "Effect sizes [ESs] of 0.10 are often interpreted as indicating 'negligible' differences between groups; ESs of 0.20, 0.50, and 0.80 are considered 'small,' 'medium,' and 'large,' respectively"

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
		FY19 (primary care, access, rural): 3.31; FY19 (specialty care, access, rural): 3.23 ; FY16 (primary care, provider rating, urban): 8.83; FY16 (specialty care, provider rating, urban): 8.69; FY19 (primary care, provider rating, urban): 8.92; FY19 (specialty care, provider rating, urban): 8.88; FY16 (primary care, provider rating, rural): 8.80; FY16 (specialty care, provider rating, rural): 8.73; FY19 (primary care, provider rating, rural): 8.90;	FY19 (primary care, access, rural): 3.16; FY19 (specialty care, access, rural): 3.28; FY16 (primary care, provider rating, urban): 7.28; FY16 (specialty care, provider rating, urban): 8.46; FY19 (primary care, provider rating, urban): 8.30; FY19 (specialty care, provider rating, urban): 8.70; FY16 (primary care, provider rating, rural): 8.14; FY16 (specialty care, provider rating, rural): 8.43; FY19 (primary care, provider rating, rural): 8.56;	FY 19 VA vs CC (rural, primary care, provider rating): 0.19; FY 16 VA vs CC (rural, specialty care, provider rating): 0.16; FY 19 VA vs CC (rural, specialty care, provider rating): 0.12			

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
		FY19 (specialty care, provider rating, rural): 8.92	FY19 (specialty care, provider rating, rural): 8.72				
Intrator, 2021[22] Y (**National**) Retrospective Nursing homes Clinical quality/safety	2015-2016, vs non-Veterans in non-VA nursing homes; Vets and non-Vets in MDS, VA data (unspecified), and Medicare claims	N=23,839 Rehospitalization: M 22.51, SD 6.17; Emergency department visits: M 8.27, SD 4.56; Successful discharge: M 67.74, SD 11.47	N=1,674,578 Rehospitalization: M 21.10 SD, 5.94; Emergency department visits: M 11.85, SD 5.32; Successful discharge: M 57.04, SD 10.54	Rehospitalization: VA>non-VA, p<0.001; Emergency department visits: VA<non-VA, p<0.001; Successful discharge: VA>non-VA, p<0.001	Statistics: 2-sample z test Other methods of controlling: NR Covariates: CMS risk adjust model, including age, marital status, length of stay, medication utilization, treatments, comorbidities, and activities of daily living	Y	NA
LaBedz, 2021[30] Y (**National**) Retrospective COPD Clinical quality/safety	2015-2018, vs all patients in non-VA hospitals; CMS Hospital Compare (VA vs non-VA)	N=126 Readmissions: M 15.3, standard error (SE) 0.17; Mortality: M 6.0, SE 0.11	N=3523 Readmissions: M 19.5 SE, 0.2; Mortality: M 8.5 SE, 0.02	Readmissions: VA<non-VA, M -4.2, 95% CI -4.5 to -3.9; Mortality: VA<non-VA, M -2.6, 95% CI -2.8 to -2.4	Statistics: T-tests, linear regression Other methods of controlling: NR Covariates: Age, comorbid conditions, and indicators of frailty	Y	Supplementary analyses: Increased readmission were associated with lower mortality for non-VA hospitals (p=0.003; “50 fewer deaths per

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							1000 more readmissions"); no association was found for VA hospitals
Gidwani, 2021[43] Y (**National**) Retrospective Cancer Cost/efficiency	FY10-FY14, vs Veterans in non-VA hospitals; VA administrative data vs Medicare claims	N=10,341 NR	N=18,542 NR	Total costs: VA<Medicare; beta-coeff: M -0.1, 95% CI -0.15 to -0.06; Inpatient costs: VA<Medicare; beta-coeff: M -0.12, 95% CI -0.22 to -0.02; Outpatient costs: VA<Medicare; beta-coeff: M -0.31, 95% CI -0.35 to -0.28; Drug costs: VA>Medicare; beta-coeff: M -0.71, 95% CI 0.64 to 0.78	Statistics: Generalized estimating equations Other methods of controlling: Three-level models Covariates: Age, race, distance from VA facility, rurality, enrollment priority, and type of solid tumor, and conditioning on geographic region	Y	NA

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Griffith, 2020[38] Y (**National**) Retrospective Cardiology, gastroenterology, orthopedics, and urology Access	2018-2019, vs Veterans in VA-paid community care; VA CDW (for VA and non-VA)	N=2,504,355 consultations Cardiology: M 33d, SD 8.7d; Gastroenterology: M 53.9 SD 15.9d; Orthopedics: M 36.2d SD 9.3d; Urology: M 36.1d SD 9.5d; Overall: M 41.1d SD 15.9d	N=533,609 consultations Cardiology: M 38.0d, SD 9.2d; Gastroenterology: M 60.3d SD 16.0d; Orthopedics: M 43.6d SD 12.9d; Urology: M 50.5d SD 14.5d; Overall: M 49.0d SD 15.5d	NR	NR	Y	>50% of VA facilities had lower wait times for cardiology, orthopedics, urology, and overall
Gidwani-Marszowski, 2020[34] Y (**National**) Retrospective Cancer Clinical quality/safety	FY10-FY14, vs Veterans in non-VA care; VA and Medicare administrative data	N=9522 444 potentially avoidable hospitalizations	N=17,921 1271 potentially avoidable hospitalizations	Medicare vs VA: adjusted odds ratio 1.55, 95% CI 1.37 to 1.66	Statistics: Generalized estimating equations with a logit link and a binomial family Other methods of controlling: Patients nested within geographic area (hospital referral region) Covariates: Age, number of chemotherapy treatments, receipt of concurrent radiotherapy (defined as radiotherapy within 14 days of the	Y	Sensitivity analysis covariates: enrollment priority, race, rurality, and distance from a VA facility

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					receipt of chemotherapy), and cancer type		
Penn, 2019[36] Y (**National**) Retrospective Primary care, dermatology, cardiology, orthopedics Access	2014-2017, vs non-Veterans in non-VA community care; VA administrative data vs Merritt Hawkins secret shopper survey	N=NR, 15 metropolitan areas in 2014, 30 metropolitan areas in 2017 NR	N=NR, 15 metropolitan areas in 2014, 30 metropolitan areas in 2017 NR	VA vs non-VA, 2014: Primary care: ns; Dermatology: ns; Cardiology: ns; Orthopedics: M 9.9d SD 4.7d vs M 23.9d SD 8.1d, p<.001; Overall: ns; VA vs non-VA, 2017: Primary care: M 20.0d SD 10.4d vs M 40.7d SD 35.0d, p=0.005; Dermatology: M 15.6 d SD 12.2d vs M 32.6d SD 16.5d, p<0.001; Cardiology: M 15.3d SD 12.6d vs M 22.8d SD 10.1d, p=0.04; Orthopedics: M 20.9d SD 13.3d vs	Statistics: Linear regression Other methods of controlling: NR Covariates: Metropolitan area, specialty	Y	

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				M 12.4d SD 5.5d, p=0.01; Overall: ns			
Makarov, 2018[42] Y (**National**) Retrospective Cancer Clinical quality/safety Cost/efficiency	2004-2008, vs non-Veterans in non-VA care; CDW vs SEER Medicare	N=27,811 Low-risk men: Guideline-concordant care: 60.6%; Any imaging: 45.9%; High-risk men: Guideline-concordant care: 68.7%; Any imaging: 75.3%	N=56,671 Low-risk men: Guideline-concordant care: 53.1%; Any imaging: 52.5%; High-risk men: Guideline-concordant care: 66.8%; Any imaging: 76.8%	No statistical comparisons reported	Statistics: NR Other methods of controlling: NR Covariates: NR	Y	
Wang, 2019[24] Y (**National**) Retrospective ESRD Clinical quality/safety	2008-2013, vs Veterans in VA-paid community care; VA enrollment, inpatient, outpatient, and purchased care data vs Medicare enrollment, claims, and USRDS data	N=1100; Two-year mortality: 24.5%	N=18,215 Two-year mortality: 41.8%	VA vs Medicare, two-year mortality: hazard ratio 0.84 95% CI 0.73 to 0.96	Statistics: Cox proportional hazards model Other methods of controlling: NR Covariates: Age, race/ethnicity, sex, employment status, regional and urban residential status, calendar year of dialysis initiation,	Y	

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					baseline eGFR at dialysis initiation, receipt of pre-ESRD nephrology care within or outside the VA in the 2 years before ESRD onset, incident dialysis modality, type of vascular access at time of dialysis initiation, history of renal transplant, cause of ESRD, 29 indicators of diagnosed physical health conditions and mental health comorbidity, body mass index, hospitalization and institutionalization in the year before dialysis initiation, hospice use in the 90 days before dialysis initiation, dialysis in the inpatient setting, insurance coverage, VA copayment exempt status, distance to nearest VA		

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					outpatient dialysis unit and VAMC, degree of VA reliance for other outpatient care, presence of dialysis unit or nephrology services in nearest or most used VAMC, and FY11 occupancy rate of nearest VA outpatient dialysis unit.		
Thorpe, 2018[21] Y (**National**) Retrospective Dementia Clinical quality/safety	2007-2010, Veterans in non-VA care; VA Medical SAS and VA PBM vs Medicare MedPAR, Part D, and MBSF	N=35,647 Medication undersupply with no oversupply: 40%; Medication oversupply with no undersupply: 9%; Simultaneous medication oversupply and undersupply: 4%	N=9922 Medication undersupply with no oversupply: 47%; Medication oversupply with no undersupply: 5%; Simultaneous medication oversupply and undersupply: 3%	Non-VA vs VA, odds ratio: Medication undersupply with no oversupply: 1.13 95% CI 1.03 to 1.25; Medication oversupply with no undersupply: 0.39 95% 0.32 to 0.47; Simultaneous medication oversupply and undersupply: 0.48 95% CI 0.40 to 0.57	Statistics: Multinomial logistic regression Other methods of controlling: NR Covariates: Age, sex, race/ethnicity, VA priority status, Medicaid status, distance to nearest VAMC, Elixhauser Comorbidity Index, use of memantine, number of VA ED and inpatient stays and use of VA home-based primary care in 2009, days alive in	Y	

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					2010, number of unique generic medications in 2010, and VISN indicator		
Vercammen-Grandjean, 2018[31] Y (**National**) Retrospective COPD Clinical quality/safety	2007-2011, vs non-Veterans in non-VA care; CDW vs Medicare inpatient files	N=32,856 Participation in pulmonary rehabilitation after hospital discharge: N=485	N=158,137 Participation in pulmonary rehabilitation after hospital discharge: N=3199	VA vs non-VA; Participation in pulmonary rehabilitation after hospital discharge: 1.5% vs 2%	Statistics: None Other methods of controlling: NR Covariates: NR	Y	No formal statistical comparison between VA and non-VA but sample size is large enough to estimate a significant difference
Wang, 2018[25] Y (**National**) Retrospective Dialysis patients Clinical quality/safety Cost/efficiency	2006-2013, vs Veterans in VA-paid community care; VA Enrollment, MiniVitals, Patient Treatment, Outpatient Care, Fee Basis files vs Medicare Beneficiary Summary, MedPAR, Outpatient, and Carrier files,	N=1101 Number of hospital days over 2 years follow-up period from chronic dialysis initiation: M 24.1 SD (37.2)	N=3085 (VA Purchase Care) N=18,267 (Medicare) Number of hospital days over 2 years follow-up period from chronic dialysis initiation: VA-PC: M 22.4 SD (29.3); Medicare: M 21.9 SD (26.0)	Number of hospital days over 2 years follow-up period from chronic dialysis initiation: VA vs VA-PC, incident rate ratio 0.97 95% CI 0.91 to 1.03,p=0.34; vs Medicare, incident rate ratio 0.98 95% CI 0.90 to 1.07,p=0.73; VA vs VA-PC or Medicare:	Statistics: Zero inflated negative binomial regression model Other methods of controlling: NR Covariates: Sex, urban vs non-urban residence, year of chronic dialysis start date, employment status, factors surrounding dialysis initiation that would influence treatment setting (e.g., pre-	Y	Outcomes not significantly different between healthcare systems

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	and USRDS data			Risk of hospitalization after dialysis: p<0.0001, but authors note differences are not clinically meaningful; Days of hospitalization after dialysis: p=0.80	ESRD nephrology care within or outside the VA, incident dialysis modality, type of vascular access at time of dialysis initiation, history of prior kidney transplant, cause of ESRD), distance to the nearest VA medical center (VAMC, i.e., the center most frequently used for non-dialysis care, else the nearest VAMC to residence), the extent of VA reliance for other outpatient care, initiated dialysis in the inpatient vs outpatient setting, 29 indica- tors of diagnosed physical health conditions, BMI, hospitalization and institutionalization in the prior year, hospice use in the past 90 days,		

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					whether nearest VAMC had an on-site nephrology services or dialysis unit, and the 2011 fiscal year occupancy rate for nearest VAMC facility		
Augustine, 2018[9] Y (**Regional**) Retrospective Kidney transplants Access Clinical quality/safety Access	2004-2016, non-Veterans in non-VA care; SRTR (VA and non-VA data)	N=3663 Median distance to transplant center: 282 miles	N=297,794 Median distance to transplant center: 22 miles	All kidney transplants: VA vs non-VA: adjusted hazard ratio (AHR) 0.72, 95% CI 0.68 to 0.76; VA vs Medicare: AHR 0.85, 95% CI 0.81 to 0.90; VA vs Medicaid: AHR 1.00, 95% CI 0.94 to 1.06; Deceased donor kidney transplant: VA vs non-VA: AHR 0.85, 95% CI 0.80 to 0.90; VA vs Medicare: AHR 0.91, 95% CI 0.85 to 0.96; VA vs Medicaid: AHR 1.01, 95% CI 0.95 to 1.08;	Statistics: Cox models Other methods of controlling: Matching VA to local non-VA facility Covariates: Age group, race, gender, diagnosis group, time on dialysis at listing, candidate status at listing, panel reactive antibody, BMI group, education, malignancy, peripheral vascular disease, region, year of listing, log distance to center and community risk score	N	Note: * = p<0.05; RoB criteria not met: unbalanced samples

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				Live donor kidney transplant: VA vs non-VA: AHR 0.51, 95% CI 0.46 to 0.57; VA vs Medicare: AHR 0.77, 95% CI 0.69 to 0.86; VA vs Medicaid: AHR 1.00, 95% CI 0.89 to 1.12; Patient death: VA vs non-VA: AHR 0.89, 95% CI 0.82 to 0.97; VA vs Medicare: AHR 0.77, 95% CI 0.71 to 0.84; VA vs Medicaid: AHR 0.76, 95% CI 0.70 to 0.83; Delisting from kidney transplant list due to "health deterioration" or "other": VA vs non-VA: AHR 1.38, 95% CI 1.26 to 1.51; VA vs Medicare: AHR, 1.1 95% CI 1.001 to 1.2;			

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				VA vs Medicaid: AHR 1.04, 95% CI 0.95 to 1.05			
Anhang Price, 2018[29] Y (**National**) Retrospective Inpatient and outpatient care Clinical quality/safety Patient experience	2014, vs non-Veterans in non-VA care; CMS Hospital Compare (VA), VA Inpatient Evaluation Center, and VA Office of Performance Measurement vs CMS Hospital Compare (non-VA)	N=135 facilities In-hospital deaths per 1000 surgical discharges with serious treatable complications (inpatient): 100.6; Postoperative pulmonary embolism or deep vein thrombosis rate (inpatient): 3.3; Acute myocardial infarction 30-day readmission rate (inpatient): 18.6; Heart failure 30-day mortality rate (inpatient): 11; Evaluation of left ventricular systolic (LVS) function (inpatient): 99.8; Prophylactic antibiotic received	N=402 facilities In-hospital deaths per 1000 surgical discharges with serious treatable complications (inpatient): 118.8; Postoperative pulmonary embolism or deep vein thrombosis rate (inpatient): 4.6; Acute myocardial infarction 30-day readmission rate (inpatient): 17.8; Heart failure 30-day mortality rate (inpatient): 11.8; Evaluation of left ventricular systolic (LVS) function (inpatient): 98.5; Prophylactic antibiotic received	All VA and non-VA differences significant ($p<0.05$); last 3 comparisons: VA vs Medicare HMO	Statistics: T-tests Other methods of controlling: Matching VA to local non-VA facility Covariates: Bed size (< 100 beds, 100–199 beds, and 200+ beds), Census division (East North Central, East South Central, Mid-Atlantic, Mountain, New England, Other, Pacific, South Atlantic, West North Central, and West South Central), location (urban, rural), and teaching status (teaching facility,	Y	

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		within 1 h prior to surgical incision (inpatient): 96.3; Communication with doctors (inpatient): 77.1; Care transition (inpatient): 53.7; Overall rating of hospital (inpatient): 67.1; Diabetes: Eye examination: 95.9%; Tobacco use: advising smokers and tobacco users to quit (outpatient): 90.0%; Hypertension: Controlling high blood pressure (diagnosis of hypertension, 18–85 years and < 140/90 mmHg): 76.1%	within 1 h prior to surgical incision (inpatient): 98.5; Communication with doctors (inpatient): 80.3; Care transition (inpatient): 43.3; Overall rating of hospital (inpatient): 70.3; Diabetes: Eye examination: 84.6% Tobacco use: advising smokers and tobacco users to quit (outpatient): 68.5%; Hypertension: Controlling high blood pressure (diagnosis of hypertension, 18–85 years and < 140/90 mmHg): 65.5%		nonteaching fa-cility)		

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Kurella Tamura, 2018[26] Y (**National**) Retrospective Pre-ESRD nephrology care Clinical quality/safety	2008-2011, vs Veterans in non-VA care; VA administrative data vs Medicare Claims, USRDS (both)	N=2966 Dialysis treatment within 2 years of incident kidney failure in pre-ESRD patients: 50.9%	N=2966 Dialysis treatment within 2 years of incident kidney failure in pre-ESRD patients: 79.2%	Medicare vs VA Dialysis treatment within 2 years of incident kidney failure in pre-ESRD patients: relative risk 1.56 95%, CI 1.50 to 1.62; Mortality after receiving dialysis care for pre-ESRD patients: -8%, 95% CI -5% to -11%;	Statistics: Poisson regression; marginal standardization Other methods of controlling: Propensity score matching Covariates: Age, sex, race, marital status, VA co-pay, distance to nearest VA with nephrology services, Charlson Comorbidity Index, and rate of eGFR decline prior to incident kidney failure	Y	
Barnett, 2018[19] Y (**National**) Retrospective Elective coronary revascularization patients (PCI & CABG) Clinical quality/safety Access Cost/efficiency	2008-2011, vs Veterans in VA-paid community care; VA and non-VA: ArcGIS, VA Vital Status File, VA Managerial Cost Accounting System	N=15,340 Total cost (procedure + readmission + travel), PCI: M $15,683.00 SD ($16,493.00); Total cost (procedure + readmission + travel), CABG: M $63,144.00 SD ($46,018.00);	N=3715 Total cost (procedure + readmission + travel), PCI: M $22,025.00 SD ($30,701.00); Total cost (procedure + readmission + travel), CABG: M $55,526.00 SD ($74,797.00);	30-day mortality, PCI: VA>non-VA, relative risk (RR) 2.40 95% CI 1.57 to 3.66, p<0.001; 30-day mortality, CABG: VA=non-VA, RR 0.89 95% CI 0.45 to 1.77, p=0.74; 30-day readmissions, PCI: VA=non-VA, RR 0.96 95% CI 0.79 to 1.16, p=0.68;	Statistics: Generalized estimating equations Other methods of controlling: Propensity weighting Covariates: age, sex, race/ethnicity, recent myocardial infarction, prior PCI, prior CABG surgery, cerebrovascular	Y	

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		Actual distance traveled, PCI: M 90.8 Actual distance traveled, CABG: M 123.2	Actual distance traveled, PCI: M 60.1 Actual distance traveled, CABG: M 81.5	30-day readmissions, CABG: VA=non-VA, RR 1.16 95% CI 0.89 to 1.50, p=0.28; Total cost (procedure + readmission + travel), PCI: VA<non-VA, p<0.001; Total cost (procedure + readmission + travel), CABG: VA>non-VA, p<0.001; Actual distance traveled, PCI: VA>non-VA, p<0.001; Actual distance traveled, CABG: VA>non-VA, p=0.002	disease, peripheral vascular disease, congestive heart failure, type 1 and type 2 diabetes, body mass index, renal function, dialysis, chronic obstructive pulmonary disease, atrial fibrillation, and the number of vessels revascularized		
Heidenrich, 2017[14] Y (**National**) Retrospective Hospital care Patient experience	2014; vs non-Veterans in non-VA care; Yelp (both)	N=39 facilities Patient ratings (weighted for number of reviews): M 3.70 SD 0.74	N=39 facilities Patient ratings (weighted for number of reviews): M 3.19 SD 0.54	VA vs non-VA: Difference in ratings, weighted by review count: p=0.0025 Covariate adjusted rating difference	Statistics: Multivariate regression Other methods of controlling: Local affiliate matching Covariates: Bed size, membership	N	RoB criteria not met: analysis of Yelp reviews of only 39 of 131 VA facilities due to lack of data

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				0.65, 95% CI 0.18 to 1.12	in COTH, presence of an accredited graduate medical education program, and certification by TJC		
Blay, 2017[28] Y (**National**) Retrospective Hospital care Clinical quality/safety Patient experience	2012-2015, vs non-Veterans in non-VA care; Both VA and non-VA: Hospital Compare, AHA Annual Survey	N=129 facilities Pressure ulcers: M 0.28, 95% CI 0.21 to 0.27; Death among surgical inpatients with serious treatable conditions: M 105.82, 95% CI 96.7 to 114.92; Iatrogenic pneumothorax: M 0.27, 95% CI 0.22 to 0.32; 30-day mortality, AMI: 9.27, 95% CI 9.0 to 9.46; 30-day readmissions, AMI: M 15.59 95% CI, 15.45 to 15.74; Doctor communication: top box 76.70%,	N=4010 facilities Pressure ulcers: M 0.44, 95% CI 0.44 to 0.46; Death among surgical inpatients with serious treatable conditions: M 136.34, 95% CI 135.42 to 137.26; Iatrogenic pneumothorax: M 0.41, 95% CI 0.40 to 0.41; 30-day mortality, AMI: M 14.1, 95% CI 14.04 to 14.15; 30-day readmissions, AMI: M 16.89, 95% CI 16.84 to 16.94; Doctor communication:	VA<non-VA for all clinical quality/safety outcomes, p<0.03; Non-VA>VA for all patient experience outcomes (p<0.005) except cleanliness and care transition	Statistics: T-tests Other methods of controlling: Outcomes were rates per 1000 discharges; Bonferroni correction Covariates: NR	Y	

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		95% CI 76.01 to 77.39%; Cleanliness: top box 73.41% 95% CI 71.95 to 74.87%; Care transition: top box 53.62%, 95% CI 51.79% to 54.46%; Quietness: 55.80% , 95% CI 54.24% to 57.37%; Recommendation of hospital to others: top box, 67.92% 95% CI 66.56 to 69.28%;	top box 82.14%, 95% CI 81.95 to 82.32%; Cleanliness: 74.14%, 95% CI 73.86% to 74.41%; Care transition: top box 52.71%, 95% CI 52.47% to 52.96%; Quietness: top box 62.93 %, 95% CI 62.59% to 63.26%; Recommendation of hospital to others: top box 71.66%, 95% CI 71.33% to 71.99%				
Mody, 2017[15] N (**NA**) Prospective survey Nursing home care Clinical quality/safety	2014-2015; vs non-Veterans in non-VA care; Original surveys (both VA and non-VA data)	N=47 facilities Policy for appropriate indications for catheter use: 63.8%; Policy for urinary catheter maintenance: 78.7%; Urinary catheters removed within	N=306 facilities Policy for appropriate indications for catheter use: 81.4%; Policy for urinary catheter maintenance: 92.8%; Urinary catheters removed within	Policy for appropriate indications for catheter use: VA<non-VA, p=0.004; Policy for urinary catheter maintenance: VA<non-VA, p=0.001; Urinary catheters removed within	<u>Statistics:</u> Multivariable logistic regression models <u>Other methods of controlling:</u> All nursing homes participating in AHRQ HAI/CAUTI patient safety collaborative <u>Covariates</u>: Number of	N	RoB criteria not met: data from only half of states

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		24–48 hrs. of admission unless there are appropriate: 74.5%; Catheter-associated urinary tract infection surveillance performed: 93.6%	24–48 hrs. of admission unless there are appropriate: 93.8%; Catheter-associated urinary tract infection surveillance performed: 65.7%	24–48 hrs. of admission unless there are appropriate: VA<non-VA, p<0.001; Catheter-associated urinary tract infection surveillance performed: VA>non-VA, p<0.001	residents in facility, short-term sub-acute rehabilitation offered, presence of an HAI committee, infection prevention training, and infection preventionist with 3 or more years of experience		
Shields, 2017[17] Y (**National**) Retrospective Psychiatric care Clinical quality/safety	2014, vs non-Veterans in non-VA care; HBIPS	N=105 facilities NR	N=141 facilities (for-profit), 180 (non-VA government) NR	For-profit vs VA: Admissions screening for inpatient psychiatric care: 37.2%, p<0.001; Restraint hours per 1000 patient hours: -77.9%, p=0.004; Seclusion hours per 1000 patient hours: -61.6%, p=0.01; Creating a continuing care plan at discharge: 41.7%, p<0.001; Transmitting a continuing care	Statistics: T-tests Other methods of controlling: NR Covariates: NR	N	RoB criteria not met: no adjustment for patient characteristics

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				plan at discharge: 40.4%, p<0.001; Non-VA government vs VA: Appropriate justification of antipsychotics at discharge: 33.9%, p<0.001			
Burke, 2016[10] Y (**National**) Retrospective Headache and neuropathy Clinical quality/safety	2004-2011, vs non-Veterans in non-VA care; CDW vs MedPAR/HRS	N=256,608 Imaging for nontraumatic headache: 22.1%; Imaging for nontraumatic headache excluding cancer, hemiplegic migraine, giant cell arteritis, epilepsy, cerebrovascular disease including TIA, head or neck trauma, altered mental status, personal history of stroke/TIA or cancer, multiple sclerosis, or dementia: 15.3%; Imaging for migraine excluding	N=2005 Imaging for nontraumatic headache: 49.0%; Imaging for nontraumatic headache excluding cancer, hemiplegic migraine, giant cell arteritis, epilepsy, cerebrovascular disease including TIA, head or neck trauma, altered mental status, personal history of stroke/TIA or cancer, multiple sclerosis, or dementia: 27.1%; Imaging for migraine excluding	VA<non-VA for all outcomes, p<0.001; except for imaging for migraine, p=0.027	Statistics: T-tests Other methods of controlling: NR Covariates: NR	N	RoB criteria not met: unbalanced samples

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		cancer, hemiplegic migraine, giant cell arteritis, epilepsy, cerebrovascular disease including TIA, head or neck trauma, altered mental status, personal history of stroke/TIA or cancer, multiple sclerosis, or dementia: 7.1%;	cancer, hemiplegic migraine, giant cell arteritis, epilepsy, cerebrovascular disease including TIA, head or neck trauma, altered mental status, personal history of stroke/TIA or cancer, multiple sclerosis, or dementia: 15.6%;				
		Neuroimaging any component of neuroaxis: 9%;	Neuroimaging any component of neuroaxis: 23.7%;				
		Neuroimaging any component of neuroaxis excluding cancer, hemiplegic migraine, giant cell arteritis, epilepsy, cerebrovascular disease including TIA, head or neck trauma, altered mental status, personal history of stroke/TIA or cancer, multiple sclerosis, or dementia: 6.1%	Neuroimaging any component of neuroaxis excluding cancer, hemiplegic migraine, giant cell arteritis, epilepsy, cerebrovascular disease including TIA, head or neck trauma, altered mental status, personal history of stroke/TIA or cancer, multiple sclerosis, or dementia: 15%				

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Lee, 2017[11] Y (**National**) Retrospective Headache and neuropathy Access	2010-2011, vs non-Veterans in non-VA care; Both VA and non-VA: Health Tracking Household Survey	N=203 Self-reported delay in care in last 12 months: M 28.68%, 95% CI 20.18% to 39.0%	N=10,719 Self-reported delay in care in last 12 months: Commercial: M 17.3, 95% CI 16.18% to 18.49%; Medicare: M 17.97 %, 95% CI 13.88% to 22.87%; Medicaid/other: M 15.26%, 95% CI 12.55% to 18.43%	Self-reported delay in care in last 12 months: VA vs commercial: adjusted odds ratio 1.76, 95% CI 1.11 to 2.80, p<0.05	Statistics: Multivariate logistic regression Other methods of controlling: NR Covariates: Perceived general health status, perceived health care satisfaction, age, gender, education, annual family income, race, and region	N	RoB criteria not met: unbalanced samples
Axon, 2016[16] Y (**Regional**) Retrospective Heart failure Clinical quality/safety	2007-2011, vs Veterans in non-VA care; CDW vs Medicare inpatient, outpatient, and carrier files	N=2242 Emergency department visits: All cause: M 72.6 SD (79.0); HF-related: M 6.2 SD (22.8); Hospitalizations: All cause: M 31.5 SD (56.7); HF-related: M 6.5 SD (27.1); 30-day readmissions: All cause: M 30.6 SD (54.6); HF-related: M 6.4 SD (27.0)	N=8825 Emergency department visits: All cause: M 45.0 SD (67.5); HF-related: M 3.6 SD (12.6); Hospitalizations: All cause: M 26.0 SD (34.5); HF-related: M 2.8 SD (12.4); 30-day readmissions: All cause: M 23.2 SD (32.4); HF-related: M 2.2 SD (10.2)	Non-VA vs VA Emergency department visits: All cause: adjusted odds ratio (AOR) 0.62, 95% CI 0.60 to 0.64; HF-related: AOR 0.60, 95% CI 0.55 to 0.66; Hospitalizations: All cause: AOR 0.98, 95% CI 0.95 to 1.02; HF-related: AOR 0.61, 95% CI 0.55 to 0.68; 30-day readmissions:	Statistics: Zero-inflated negative binomial models Other methods of controlling: NR Covariates: Age, race, gender, year of visit, dual use category, year of visit, and comorbidities that were found to be significant using a stepwise selection procedure	N	P-values not reported; RoB criteria not met: data only from South Carolina

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				All cause: AOR 0.87, 95% CI 0.83 to 0.90; HF-related: AOR 0.51, 95% CI 0.46 to 0.57			
Jia, 2016[23] Y (**National**) Retrospective Nursing home care Clinical quality/safety	2006-2009, vs Veterans in VA-paid community care; VA MDS 2.0 vs CMS MDS 2.0	N=12,660 Rehabilitation therapy: 75.5%; Restorative nursing care: 33.%	N=5612 Rehabilitation therapy: 76.4%; Restorative nursing care: 30.6%	VA vs non-VA: Rehabilitation therapy: adjusted odds ratio (AOR) 1.16, 95% CI 1.01 to 1.32, p=0.033; Restorative nursing care: AOR 2.28, 95% CI 2.02 to 2.57, p<0.0001	Statistics: 2-part log-linear model Other methods of controlling: NR Covariates: Gender, education, depression score, ADL score, cognition score, comorbidity index score, number of assessments, facility region, facility rurality, facility hospital status, facility beds, facility resident-to-bed ratio	Y	
Watkins, 2016[32] Y (**National**) Retrospective Schizophrenia, bipolar disorder, posttraumatic stress disorder, major	FY07-FY08, vs non-Veterans in non-VA care; VA inpatient, laboratory and pharmacy files vs Thomson-Reuters	N=836,519 Medication laboratory tests: 77.4%; Any laboratory screening tests: 86.9%;	N=545,484 Medication laboratory tests: 5.8%; Any laboratory screening tests: 49.7%;	VA>non-VA for all outcomes, p<0.001	Statistics: NR Other methods of controlling: NR Covariates: Age, gender	Y	

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depression, and substance use disorders Clinical quality/safety	MarketScan Commercial Claims and Encounter Database	Antipsychotics, 12-week supply: 50.0%; Maintenance antipsychotics: 37.4%; Maintenance mood stabilizers: 31.3%; Antidepressants, 12-week supply: 49.0%; Maintenance antidepressants: 31.3%	Antipsychotics, 12-week supply: 22.8%;; Maintenance antipsychotics: 23.1% Maintenance mood stabilizers: 20.3%;; Antidepressants, 12-week supply: 20.2% Maintenance antidepressants: 13.1%				
Jones, 2015[7] N (**NA**) Retrospective analysis of RCT Advanced chronic systolic heart failure Clinical quality/safety	1999, vs non-Veterans in non-VA care; BEST data (VA and non-VA)	N=898 NR	N=1216	VA vs non-VA: All-cause mortality among patients with advanced chronic systolic HF: adjusted odds ratio (AOR) 0.94, 95% CI 0.80 to 1.10, p=0.448; Cardiovascular mortality among patients with advanced chronic systolic HF: AOR 0.92, 95% CI 0.74 to 1.10, p=0.359; HF mortality among patients with advanced	Statistics: Cox proportional hazard models Other methods of controlling: NR Covariates: Age, race, body mass index, smoking, HF duration, coronary artery disease, diabetes mellitus, hypertension, atrial fibrillation, peripheral vascular disease, chronic kidney disease, randomization to bucindolol, use of angiotensin-	N	RoB criteria not met: clinical trial sample

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
				chronic systolic HF: AOR 0.76, 95% CI 0.57 to 1.02, p=0.064; Sudden cardiac death among patients with advanced chronic systolic HF: AOR 1.05, 95% CI 0.83 to 1.03, p=0.664; Mortality due to AMI among patients with advanced chronic systolic HF: AOR 3.12, 95% CI 1.19 to 8.19, p=0.021; All-cause hospitalization among patients with advanced chronic systolic HF: AOR 0.99 95%, CI 0.88 to 1.10; p=0.868; HF hospitalization among patients with advanced chronic systolic HF: AOR 0.88, 95% CI 0.76 to 1.02, p=0.092	converting enzyme inhibitors or angiotensin-receptor blockers, digoxin, and diuretics, NYHA class symptoms, LVEF and right ventricular EF (RVEF), cardiothoracic ratio, pulmonary edema, heart rate, systolic and diastolic blood pressure, hemoglobin, serum creatinine, and serum cholesterol		

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Chan, 2022[58] Y (**National**) Retrospective Emergency department care Clinical quality/safety	2001-2018, vs Veterans in non-VA care; CDW and VBA death records vs Medicare claims and SSA death records	N=231,611 30-day mortality after ambulance ride: 9.32 deaths per 100 patients, 95% CI 9.15 to 9.50	N=1,238,546 30-day mortality after ambulance ride: 11.67 deaths per 100 patients, 95% CI 11.58 to 11.76	VA vs non-VA 30-day mortality after ambulance ride: difference -2.35 deaths per 100 patients, 95% CI -2.16 to -2.54	Statistics: Ordinary least squares regression Other methods of controlling: NR Covariates: Zip code of residence, demographic characteristics (age in two year bands, race or ethnic origin, and sex), six binary variables indicating receipt of VA or non-VA primary care, emergency care, and inpatient care in the 12 months before the ride, and previous medical diagnoses, specified as 31 indicators for Elixhauser comorbidities recorded in the 12 months before the ride, origin of the ride (residence; residential, domiciliary, or custodial facility; skilled nursing facility; or scene of	Y	

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					accident or acute event), time (day of the week, month-year interactions), life support capabilities, classified according to categories for basic and advanced life support specified in the Healthcare Common Procedure Coding System codes, and primary diagnosis made during the ride, coded according to ICD-9		
Florez, 2021[8] N (**NA**) Retrospective analysis of RCT Type 2 diabetes Clinical quality/safety	NR, vs non-Veterans in non-VA care; GRADE data (both VA and non-VA)	N=1216 HbA1c < 7% (<53 mmol/mol) among patients with a history of CVD: 18.1% BP < 140/90 mmHg among patients with a history of CVD: 80.2%; Treated for HTN among patients with a history of CVD: 93.7%;	N=3831 HbA1c < 7% (<53 mmol/mol) among patients with a history of CVD: 10.9% BP < 140/90 mmHg among patients with a history of CVD: 70.1%; Treated for HTN among patients with a history of CVD: 93.0%;	VA>non-VA, adjusted analyses BP < 140/90 mmHg among patients with a history of CVD: p=0.035 Treated for HTN among patients with no history of CVD: p=0.006 LDLc < 70 mg/dL (1.8 mmol/L) among patients	<u>Statistics:</u> Pearson's chi-squared test with Yates' continuity correction <u>Other methods of controlling:</u> NR <u>Covariates</u>: Age, sex, race, and ethnicity	N	RoB criteria not met: clinical trial sample

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
		LDLc < 70 mg/dL (1.8 mmol/L) among patients with a history of CVD: 50.0%; LDLc < 100 mg/dL (2.6 mmol/L) among patients with a history of CVD: 81.1%; Statin use among patients with a history of CVD: 87.4%; Aspirin use among patients with a history of CVD: 81.9%; HbA1c < 7% (<53 mmol/mol) among patients with a history of CVD: 15.1%; BP < 140/90 mmHg among patients with no history of CVD: 73.6%; Treated for HTN among patients with no history of CVD: 74.9%; LDLc < 70 mg/dL (1.8 mmol/L)	LDLc < 70 mg/dL (1.8 mmol/L) among patients with a history of CVD: 36.9%; LDLc < 100 mg/dL (2.6 mmol/L) among patients with a history of CVD: 74.4%; Statin use among patients with a history of CVD: 84.1%; Aspirin use among patients with a history of CVD: 76.6%; HbA1c < 7% (<53 mmol/mol) among patients with a history of CVD: 14.2%; BP < 140/90 mmHg among patients with no history of CVD: 76.0%; Treated for HTN among patients with no history of CVD: 65.4%; LDLc < 70 mg/dL (1.8 mmol/L)	with no history of CVD: p=0.045 Aspirin use among patients with no history of CVD: p=0.028 HbA1c < 7% (<53 mmol/mol) among patients with no history of CVD: p=0.003			

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		among patients with no history of CVD: 34.9%; LDLc < 100 mg/dL (2.6 mmol/L) among patients with a history of CVD: 68.2%; Statin use among patients with no history of CVD: Aspirin use among patients with no history of CVD: 70.8%; HbA1c < 7% (<53 mmol/mol) among patients with no history of CVD: 46.6%	among patients with no history of CVD: 24.2%; LDLc < 100 mg/dL (2.6 mmol/L) among patients with a history of CVD: 62.9% ; Statin use among patients with no history of CVD: Aspirin use among patients with no history of CVD: 59.5%; HbA1c < 7% (<53 mmol/mol) among patients with no history of CVD: 40.2%				
Feyman, 2022[39] Y (**National**) Retrospective Primary, specialty, and mental health care Access	2018-2021, vs Veterans in VA-paid community care; CDW (VA and non-VA)	N=4,016,156 Average wait times: Primary care: 29.0 (SD 5.5) days; Mental health care: 33.6 (SD 4.6) days; All other specialties: 35.4 (SD 2.7) days	N=3,042,060 Average wait times: Primary care: 38.9 (SD 8.2) days; Mental health care: 43.9 (SD 9.0) days; All other specialties: 41.9 (SD 5.9) days	Average wait times: Primary care: VA<non-VA in 15 of 18 VISNs; Mental health: VA<non-VA in 16 of 18 VISNs; All other specialties: VA<non-VA in 17 of 18 VISNs	Statistics: Ordinary least squares regressions; 2-sided t-tests Other methods of controlling: NR Covariates: Specialty mix (distribution of stop codes), VISN	Y	

Author, Year of Publication Large Database (Y/N) **Study Design Medical Condition Outcome Domains**	**Years of Source Data, Comparison of VA Veterans to: __; Data Source(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Value**	**Comparison Statistics Adjusted Model Findings**	**Statistical Method Other Methods of Controlling; Covariates in Model**	**Bias Criteria Met?**	**Comments & Reason If Bias Criteria Not Met**
Cashion, 2021[27] Y (**National**) Retrospective Post-kidney transplant care Quality/safety	2008-2016, vs Veterans in non-VA care; CDW vs Medicare data	N=752 5-year mortality: 11%	N=2092 5-year mortality: 20%	VA vs non-VA 5-year mortality: adjusted hazard ratio 2.2, 95% CI [1.5, 3.1]	Stats: Multivariable Cox regression Other methods of controlling: NR Covariates: Age at transplantation, sex, race, clinical comorbidities, transplant surgery site (within VA versus outside VA via Medicare), year of transplant, prior kidney transplantation, pretransplant dialysis, duration of prior dialysis, and type of transplant (living versus deceased donor)	Y	
Presley, 2022[18] Y (**National**) Retrospective Nonsmall lung cancer Clinical quality/safety	2006-2012, vs non-Veterans in non-VA care; Veterans Central Cancer Registry (VACCR) vs Surveillance, Epidemiology, and End Results (SEER) and Medicare claims	N=18,054 Change in aggressive care at end of life between 2006 and 2012: -15.0% (46.0% to 31.0%)	N=13,277 Change in aggressive care at end of life between 2006 and 2012: -3.8% (41.9% to 38.0%)	Change in aggressive care at end of life between 2006 and 2012: VA>non-VA, p<0.001; % change in hospice admissions in Medicare hospital referral region on aggressive care at matched VA	Statistics: Chi-square tests Other methods of controlling: NR Covariates: Age, sex, race, comorbidities	N	No adjustment for demographic covariates in main analysis; composition of multicomponent aggressive care measure unclear

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				facility: AOR 0.13, 95% CI 0.08 to 0.23			
Pickering, 2022[44] Y (**National**) Retrospective Low-value prostate-specific antigen (PSA) testing Cost/efficiency	FY2017-FY2018, vs Veterans in non-VA care; CDW, Area Resource File, and VHA Service Support Center vs Beneficiary Summary File, Medicare Provider Analysis and Review, Inpatient, Skilled Nursing Facility, Outpatient, Home Health Agency, Hospice, Durable Medical Equipment, and Carrier files	N=36,469 Total downstream or "cascade" services related to low-value PSA testing: 53.9 services/100 Veterans; Cost of cascade services related to low-value PSA testing: $45.1/Veteran	N=17,981 Total downstream or "cascade" services related to low-value PSA testing: 45.3 services/100 Veterans; Cost of cascade services related to low-value PSA testing: $35.0/Veteran	Non-VA vs VA Adjusted difference in downstream or "cascade" services related to low-value PSA testing: 9.9 services/100 Veterans, 95% CI 9.7 to 10.1; Adjusted cost of cascade services related to low-value PSA testing: $11.9/Veteran, 95% CI $7.6 to $16.2	Statistics: Negative binomial models; weighted linear regression Other methods of controlling: Stabilized inverse probability of treatment weights Covariates: Age, race and ethnicity, VA priority group, driving distance to the nearest VA facility, number of Elixhauser conditions, individual Elixhauser conditions, academic affiliation, facility size, census region, rurality, and complexity level at the VA medical center-level	Y	

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Fortney, 2022[12] N (**NA**) Prospective survey In-person- and tele-mental health care Access Cost/efficiency Patient experience Clinical quality/safety	2019-2020, vs Veterans in VA-paid community care; CDW and telephone survey	N=303 Number of barriers to care: M 0.9, SD 1.3; Number of encounters: M 5.9, SD 7.3; Patient centeredness: M 4.3, SD 0.6; Change in PHQ-8 (depression symptoms): M -1.2, SD -4.9; Change in PCL-5 (post-traumatic stress disorder symptoms): M -3.4, SD -12.5	N=242 Number of barriers to care: M 1.3, SD 1.6; Number of encounters: M 6.2, SD 6.8; Patient centeredness: M 4.2, SD 0.7; Change in PHQ-8 (depression symptoms): M -2.2, SD -5.3; Change in PCL-5 (post-traumatic stress disorder symptoms): M -6.0, SD -12.6	Number of access-related barriers to care: VA<non-VA: p<0.001; Number of encounters: VA=non-VA; p=0.276; Patient centeredness: VA=non-VA; p=0.243; Change in PHQ-8 (depression symptoms): VA>non-VA; p=0.011; Change in PCL-5 (post-traumatic stress disorder symptoms): VA=non-VA; p=0.148	Statistics: Multivariate statistical analyses; chi-square and t-tests Other methods of controlling: NR Covariates: Provisional diagnosis, suicidality, rurality, and prior VA mental health use	N	Small sample size
Scheuner, 2022[35] Y (**National**) Retrospective Genetic counseling Clinical quality/safety	2010-2017, vs Veterans in VA-paid community care; CDW	N=6775 Genetic referrals completed (% of total referrals): 5073 (74.9%)	N=3423 Genetic referrals completed (% of total referrals): 1961 (57.3%)	Non-VA vs VA: Completed genetic consultations: OR 0.43, 95% CI 0.28 to 0.65; Follow-up cancer surveillance and risk-reducing procedures among those who completed a	Statistics: Multivariate regression models Other methods of controlling: NR Covariates: Genetic referral models: care model x age, x race or ethnicity, and x gender	Y	

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				genetic consultation: OR 0.64, 95% CI 0.52 to 0.78	interactions; Risk-reducing surveillance/ procedures models: care model x consultation status interactions, and cardiovascular disease		
Petros, 2022[13] Y (**Local**) Retrospective Colorectal cancer Clinical quality/safety Access	2015-2018, vs Veterans in VA-paid, community care; Chart review	N=235 Adenomas detection (adenoma detection rate): 147 (62.6%); Compliance with surveillance guidelines: 93.3%; Time to colonoscopy: M 83.8 days, 95% CI 45.2 to 122.4 days	N=235 Adenomas detection (adenoma detection rate): 86 (36.7%); Compliance with surveillance guidelines: 74.9%; Time to colonoscopy: M 58.4 days, 95% CI 24.7 to 92.1 days	Non-VA vs VA: Adenoma detection rate: OR 0.39, 95% CI 0.25 to 0.63; Compliance with surveillance guidelines: OR 0.21, 95% CI 0.09 to 0.45; Time to colonoscopy: non-VA<VA, p<0.0001	<u>Statistics:</u> Multivariate logistic regression <u>Other methods of controlling:</u> NR <u>Covariates:</u> (Adenoma model) Diabetes mellitus, preparation quality adequate, and cecal intubation; (Guideline model) adenoma detected, performed by non-gastroenterologist, screening indication, surveillance indication, and adequate bowel preparation	N	Small sample size; only one facility sample; no demographic controls in statistical models

APPENDIX E. SURGICAL QOC EVIDENCE TABLE

First Author Year of Publication Large Database (Y/N) **Study Design Surgical Procedure**	**Years of Source Data; Comparison of VA Veterans to:__; Data Sources(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Values**	**Comparison Statistics Adjusted Model Findings (Specify Reference Group)**	**Statistical Method Other Methods of Controlling: Propensity Score, Matching, *etc* Covariates in Model**	**Bias Criteria Met?**	**Comments**
George, 2021[59] Y (**National**) Retrospective Noncardiac surgery	2015-2018, vs other non-VA VASQIP vs NSQIP	N: 736477 30-day mortality: 8008 (1.1%) 30-day complications: 125816 (17.1%) Failure to rescue: 5918 (4.7%)	N: 3174274 (NSQIP) 30-day mortality: 2602 (0.8%) 30-day complications: 299984 (9.5%) Failure to rescue: 19936 (6.7%)	VA vs NSQIP 30-day mortality: RR(adj)=0.59 (95% CI: 0.47-0.75), p<0.001 Failure to rescue (with complications): RR=0.55 (95% CI: 0.44-0.68) (reference group: gen pop)	Stats: Multivariate log binomial regression Other methods of controlling: Serial modeling with subgroup analysis for 30-day mortality Covariates: age, sex, race/ethnicity, oss, rai, emergency/elective, postoperative complication	Y	Also performed sensitivity analyses with frailty and urgency (not abstracted)
Heiden, 2021[57] Y (**National**) Retrospective Lung resection	2006-2016 (vs other non-VA: NCDB) VA CDW vs NCDB	N: 6792 Length of stay: 8.12 days (SD 6.59) 30-day readmissions: 523 (7.70%) 30-day mortality: **128** (1.9%) 90-day mortality: **250** (3.7%) Median overall survival: **71.4 months**	N: 6792 (NCDB) Length of stay: **7.08 days** (SD 7.54) 30-day readmissions: 470 (7.02%) 30-day mortality: 188 (2.8%) 90-day mortality: 331 (5.0) Median overall survival: 65.2 months	Unadjusted/matched cohort: Length of stay: p<0.001 30-day readmissions: p=0.132 Median overall survival: p<0.001 30-day mortality: p<0.001 90-day mortality: p<0.001 Median overall survival, VA vs NCDB: p=0.0006	Stats: Kaplan-Meier with log-rank tests Other methods of controlling: **propensity score matching** Covariates: age, sex, race, income, educational level, Charlson/Deyo score, distance to hospital, tumor size, year of diagnosis	Y	

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Blay, 2017[28] Y (**National**) Retrospective Hospital PSI	2012-2015, vs other non-VA Hospital Compare	N: 129 hospitals Death among surg inpatients w/ treatable conditions: **105.82** per 1000 discharges Postoperative sepsis: 7.52 per 1000 discharges Postoperative wound dehiscence: 2.17 per 1000 discharges VTE: 3.94 per 1000 discharges	N: 4010 hospitals Death: 136.34 per 1000 discharges Postoperative sepsis: 10.22 per 1000 discharges Postoperative wound dehiscence: 2.32 per 1000 discharges VTE: 5.08 per 1000 discharges	Death: VA 95% CI 96.7-114.92; non-VA 95% CI 135.42-137.26 (P<0.05 with Bonferroni correction) Postoperative sepsis: VA 95% CI 6.10-8.95; non-VA 95% CI 10.12-10.32 (P<0.05 with Bonferroni correction) Postoperative wound dehiscence: VA 95% CI 1.64-2.71; non-VA 95% CI 2.30-2.33 VTE: VA 95% CI 3.42-4.45; non-VA 95% CI 5.00-5.15	Stats: t tests with and without Bonferroni correction for multiple comparisons to evaluate pairwise comparisons between VA and non-VA hospitals for risk-adjusted rates of outcome measures Other methods of controlling: N/A Covariates: N/A	Y	Hospital level data. Subgroups of only medical reasons for death and readmissions were not collected
Eid, 2020[45] N (**National**) Retrospective Surgery PSI/ satisfaction	2018, vs other non-VA Hospital Compare	N: 34 hospitals DVT/PE: 3.56 per 1000 patients Wound dehiscence: **0.29** per 1000 patients Postoperative mortality: **95** per 1000 patients Surgical-specific patient safety indicator: 18.0 per 1000 patients Compiled patient satisfaction star ratings: 2.96	N: 319 hospitals DVT/PE: 4.05 per 1000 patients Wound dehiscence:0.83 per 1000 patients Postoperative mortality: 167 per 1000 patients Surgical-specific patient safety indicator: 51.4 per 1000 patients Patient satisfaction star ratings: 2.97 recommended hospital rating 3.13	DVT/PE: p=**0.18** Wound dehiscence: p<0.01 Postoperative mortality: p<0.001 Surgical-specific patient safety indicator: p<0.001 Patient satisfaction star ratings: p=0.9 Recommended hospital rating: p= 0.007	Stats: paired-sample t-test Other methods of controlling: N/A Covariates: N/A	N (relative to Blay fewer hospital and fewer years	

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		Recommended hospital rating 2.7					
Harris, 2021[60] Y (**National**) retrospective cohort Elective TKA	VA: 2017-2019 vs Veteran in non-VA ("VA-purchased") CDW/ Medicare vs CDW/ Medicare	N: 24,407 Any complication: 712 (2.9%) MI: 45(0.2%) Joint/wound infection: 236 (1.0%) Pneumonia: 129 (0.5%) PE: 193 (0.8%)	N: 18,964 Any complication: 611 (3.2%) MI: 92 (0.5%) Joint/wound infection: 128 (0.7%) Pneumonia: 140 (0.7%) PE: 109 (0.6%)	adjusted odds ratios (reference group: CC): Any complication: 0.45 (95% CI: 0.38, 0.54) MI: 0.21 (p<0.001, CIs not reported) Joint/wound infection: 0.69 (p<0.001) Pneumonia 0.34 (p<0.001) PE 0.73 (p<0.01) (reference group: CC)	Stats: mixed-effects logistic regression (random effects for patients, setting, and VA facility) Covariates: age, sex, race, marital status, rurality, priority level (service connected disability/income level), Nosos risk score	Y	Full sample (not the 30-30 volume based sample) used to data abstract. *Reason for map being "mixed". National level data show VA better but 5 individual VA facilities (supplement S7) had worse complications*

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Rosen A, 2021[61] Y (**National**) Retrospective Cataract surgery	2014-2015, VA vs vets in non-VA ("CC") CDW	N: 44546 30-day complication for complex surgeries in all eyes: 164 (1.61%) 30-day complication for routine surgeries in all eyes: 313 (0.65%) 90-day complication for complex surgeries in all eyes: 228 (2.24%) 90-day complication for routine surgeries in all eyes: 476 (0.99%)	N: 17203 30-day complication for complex surgeries in all eyes: 58 (1.52%) 30-day complication for routine surgeries in all eyes: 131 (0.59%) 90-day complication for complex surgeries in all eyes: 81 (2.13%) 90-day complication for routine surgeries in all eyes: 195 (0.89%)	30-day complication for complex surgeries in all eyes: RR(unadj)=0.94 (95% CI: 0.70, 1.27); AR=-0.09 (95% CI: -0.56, 0.38) 30-day complication for routine surgeries in all eyes: RR(unadj)=0.91 (95% CI: 0.74, 1.16); AR=-0.06 (95% CI: -0.19, 0.07) 90-day complication for complex surgeries in all eyes: RR(unadj)=0.95 (95% CI: 0.74, 1.22); AR=-0.12 (95% CI: -0.66, 0.43) 90-day complication for routine surgeries in all eyes: RR(unadj)=0.89 (95% CI: 0.75, 1.05); AR=-0.11 (95% CI: -0.26, 0.05) (Reference group: VA) 90-day complication (CC vs VA): OR(adj)=0.918 (95% CI: 0.765-1.097), p=0.349	Stats: Firth's penalized maximum likelihood logistic regression Other methods of controlling: N/A Covariates: community care status, complex surgery, eye risk group, complex surgery*CC, complex surgery*high-risk eye, CC*high-risk eye, complex surgery*CC*high-risk eye, demographic variables (i.e., rural status, race, number of preoperative ocular conditions)	Y	Did not abstract low- and high- risk eyes subgroups

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Rosen, 2021[47] Y (**National)** Retrospective TKA	2016-2019, VA vs vets in non-VA ("CC") CDW and medicare data	N: 25,384 All-cause readmission rate: 4.3% TKA-related readmission rate: 1.3%	N: 19,990 All-cause readmission rate: 4.6% TKA-related readmission rate: 1.2%	adjusted odds ratio (reference: CC) all-cause readmissions: OR=0.35 (95% CI: 0.30-0.40) TKA-related readmissions: OR=0.30 (95% CI: 0.23-0.38)	Stats: mixed effects logistic regression (fixed effects for setting, random effects for VA facility and setting) Covariates: gender, age, race, marital status, rurality, Medicaid insurance, priority level, Nosos risk score	Y	Used the data that included Medicare data (did not use analysis that removed medicare) did not abstract individual facility level OR (finding: 1 VA facility had sig higher odds of all-cause readmits than paired CC; 3 VA facilities had sig higher odds TKA-related readmit vs paired CC)--*thus mixed findings*

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Williams, 2020[51] Y (**National**) Retrospective Lung resection	2001-2009, vs other non-VA VA CDW vs SEER-Medicare	N: 7895 Black vs White overall 5-year survival: no raw event data Black vs White lung cancer-specific 5-year survival: no raw event data Overall treatment type: *None:* 1930 (24.5%) *Surgery only:* 3648 (46.2%) *RT only:* 1446 (18.3%) *Chemo only:* 181 (2.3%) *>1 treatment:* 690 (8.7%)	N: 8744 (Seer-Medicare) Black vs White overall 5-year survival: no raw event data Black vs White lung cancer-specific 5-year survival: no raw event data Overall treatment type: *None:* 1412 (16.2%) *Surgery only:* 4454 (50.9%) *RT only:* 978 (11.2%) *Chemo only:* 171 (2.0%) *>1 treatment:* 1729 (19.8%)	Black vs White overall 5-year survival: VA cohort HR(adj)=1.08 (95% CI: 1.00-1.16), P=0.041; SM cohort HR(adj)=1.17 (95% CI: 1.06-1.30), P<0.0001 Black vs White lung cancer-specific 5-year survival: VA cohort HR(adj)=1.06 (95% CI: 0.96-1.17), P=0.26; SM cohort HR(adj)=1.21 (95% CI: 1.07-1.37), P<0.0001 Unadjusted overall treatment type: p<0.01 for VA and SM Blacks vs White surgery only treatment group: VA cohort OR(adj)=0.73 (95% CI: 0.62-0.86); SM cohort OR(adj)=0.57 (95% CI: 0.47-0.70)	Stats: multinomial logistic regression for odds of treatment type; univariate Kaplan-Meier for survival, White/Black groups compared by log-rank test. Other methods of controlling: N/A Covariates: age at diagnosis, marital status, Charlson comorbidity score, histology stage, year of diagnosis	Y	Findings confirmed by multivariate (less difference between Black and White in VA compared with non-VA)

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Kesseli, 2020[52] Y (**National)** Retrospective Kidney transplant	2001-2016, SRTR (vs other non-VA)	N: 1508 transplants report observed number / expected number (O:E ratio) 1-year graft survival: 78/97.8 (0.79) 1-month mortality: 3/11.3 (0.26) 1-year mortality: 33/53.6 (0.57) N: 617 transplants 3-year graft loss: O:E = 0.88 (95% CI 0.69–1.09)	N: 227,680 transplants 1-year graft survival: 14,185/14,149 (1.00) 1-month mortality: 1348/1340 (1.01) 1-year mortality: 6190/6174 (1.00) N: 74,478 transplants 3-year graft survival: O:E = 1.00 (95% CI: 0.98–1.02)	1-year graft survival: O:E= 0.79 (95% CI 0.63–0.98) vs 1.00 (0.98–1.02), P = 0.15 1-month mortality: O:E = 0.27 (0.05–0.65) VA vs 1.00 (0.95–1.06) non-VA, P = 0.03 1-year mortality: O:E = 0.62 (0.42–0.84) VA vs 1.00 (0.98–1.03) non-VA, P = 0.03 3-year graft survivial: p=0.46	Stats: observed vs expected ratios. Expected probabilities calculated from Scientific Registry of Transplant Recipients using Cox proportional hazard model from national data (includes 33 patient, donor, and transplant characteristics)	Y	Abstracted data for VA and non-VA sites (did not include VA-affiliate sites) given all data reported in paper, reporting as **equal/mixed** (abstracted data shows mostly VA better)

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Barnett, 2018[19] Y (**National**) Retrospective CABG	2014 - 2017, Veterans in VA vs Veterans not in VA ("CC") ?data source: ?CDW vs CC claims	N: 4866 Actual distance traveled: 123.2 miles 30-day mortality: 1.50% (77 deaths) 30-day readmission: 7.12% (346 readmissions) Total cost (no unadjusted data)	N: 952 Actual distance traveled: 81.5 miles 30-day mortality: 1.26% (12 deaths) 30-day readmission: 8.25% (79 readmissions) Total cost (no unadjusted data)	Actual **travel distance**: p=0.02 Unadjusted 30d mortality: p=0.57 Adjusted 30d mortality: 1.51% for VA vs 1.33% for CC (p=0.74); RR (adj)=0.89 (95% CI: 0.45-1.77) Adjusted 30-day readmission: 7.00% for VA vs 8.13% for CC (p=0.28); RR (adj)=1.16 (95% CI: 0.89-1.50) Mean adjusted total cost: $65264 (SD: $47978) for VA vs $56749 (SD: $77283) for CC (p<0.01) [adjusted: CC is reference]	Stats: log binomial models for mortality and readmission, log gamma models for costs Other methods of controlling: **propensity weighting** to control for differences in case mix between VA and CC patients Covariates (in propensity adjustment): age, sex, race/ethnicity, recent myocardial infarction, prior PCI, prior CABG surgery, cerebrovascular disease, peripheral vascular disease, congestive heart failure, Type 1 diabetes, Type 2 diabetes, body mass index, renal function, dialysis, chronic obstructive pulmonary disease, atrial fibrillation, number of vessels revascularized	Y	Did not abstract PCI data Travel data: reported only actual distance traveled Costs: total cost (Table 3), which is different from mean-adjusted index cost Mortality: reporting figure 1 adjusted at patient (not hospital) level factors

First Author Year of Publication Large Database (Y/N) **Study Design Surgical Procedure**	**Years of Source Data; Comparison of VA Veterans to:__; Data Sources(s)**	**VA Care: N Outcomes - Raw Values**	**Non-VA Care: N (Population) Outcomes - Raw Values**	**Comparison Statistics Adjusted Model Findings (Specify Reference Group)**	**Statistical Method Other Methods of Controlling: Propensity Score, Matching, *etc* Covariates in Model**	**Bias Criteria Met?**	**Comments**
Frisch, 2020[48] Y (**National**) Retrospective Elective THA	2014 (vs other non-VA) CDW vs NSQIP	N: 10460 Length of stay 4 days or greater: 4805 (47%) 30-day complications: 908 (9%) PE: 74 (0.7%) MI: 39 (0.4%) DVT: 152 (1.5%) Pneumonia: 82 (0.8%) Post-operative infection: 220 (2%) 30-day readmissions: 1773 (17%)	N: 58820 (NSQIP) Length of stay 4 days or greater: 9815 (17%) 30-day complications: 1608 (3%) PE: 308 (0.5%) MI: 121 (0.2%) DVT: 414 (0.7%) Pneumonia: 10 (<0.1%) Post-operative infection: 619 (1%) 30-day readmissions: 1955 (3%)	OR(adj) for LOS >3d (VA vs non-VA) =4.46 (95% CI: 4.21-4.72) OR(adj) for 30-d complications (VA vs non-VA) =2.58 (95% CI: 2.31-2.89) OR(adj) for 30-day readmissions (VA vs non-VA)=4.94 (95% CI: 4.51-5.41) Unadjusted length of stay 4 days or greater: p<0.001 Unadjusted 30-day complications: p<0.001 Unadjusted 30-day readmissions: p<0.001 Unadjusted PE: p=0.019 Unadjusted MI: p=0.001 Unadjusted DVT: p<0.001 Unadjusted pneumonia: p<0.001 Unadjusted post-operative infection: p<0.001 (Reference for adjusted measurements: non-VA)	Stats: multivariate logistic regression Other methods of controlling: N/A Covariates: sex, age, race, BMI, diabetes mellitus, chronic obstructive pulmonary disease, chronic kidney disease, metastatic cancer, hypertension, congestive heart failure	Y	Reported OR(adj) for length of stay greater than 3 days rather than 4 days because missing latter analysis

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Hutt, 2015[50] N (**National**) Retrospective Hip fracture repair	2003-2005 VA vs other non-VA VA NSQIP vs Medicare	N: 947 Avg days from admission to surgery: 5.64 (SD 43.25) Survival at 30-days: 89.65% Survival at 1yr: 63.04%	N: 947 (Medicare) Avg days from admission to surgery: 1.78 (SD 2.35) Survival at 30-days: 92.93% Survival at 1yr: 70.43%	Unadjusted/matched cohort: Avg days from admission to surgery: p=.0063 Survival at 30-days: p=0.0106 Survival at 1 year: p=0.0006 30-day survival odds (Medicare vs VA) OR :1.701 (95% CI: 1.184-2.445) (p<0.001) 1 year survival odds (Medicare vs VA) OR :1.504 (95% CI: 1.208-1.872) (p<0.001)	Stats: Multivariate logistic regression Other methods of controlling: **Propensity matching** Covariates: propensity matching: age, sex, race, prehospital location, type of surgery, comorbidities, region, year of surgery, primary diagnosis; odds of survival using matched cohort: year of surgery, number of hospital days before/after surgery, chronic conditions	Y	Large dot because N=947 per group in the propensity matched sample, used VASQIP and Medicare data)
Griffith, 2020[38] Y (**National**) Retrospective Ortho/Urology wait times	2013-2019 vs 2018-2019 (vs Vets in non-VA)	N: 506945 (orthopedics), 353029 (urology) Mean wait time for orthopedics: 36.2 days (SD 9.3) Mean wait time for urology: 36.1 days (SD 9.5)	N: 139827 (orthopedics), 37089 (urology) Mean **wait time** for orthopedics: 43.6 days (SD 12.9) Mean wait time for urology: 50.5 days (SD 14.5)	orthopedics (r=0.50) urology (r=0.30)	Stats: mean appointment wait times; Weighted Pearson correlation coefficients between VHA and CC wait times Other methods of controlling: N/A Covariates: N/A	Y	

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Billig, 2021[46] N (**National**) Retrospective Carpal tunnel	2010-2015 (vs Veteran in non-VA) CDW data	N: 23330 Median Referral PCP to CTR days: 176 days IQR: 94-470)	N: 5912 (mixed care) Median Referral PCP to CTR days: 378 days (IQR: 136-1136)	Median Referral **PCP to CTR days** (VA vs mixed care): HR(unadj)=0.63 (95% CI: 0.61-0.64); HR(adj)=0.63 (95% CI: 0.61-0.65)	Stats: Multivariable cox proportional hazard models; kaplan meier with log-rank comparisons Other methods of controlling: Controlling for other services received in community Covariates: age, sex, race, CCI, diabetes, VA priority group, PCP facility type, PCP and surgical specialist located within same facility, proportion of patients referred for any community care for a CTS-related service at the facility level	N (mixed care group was not uniform)	Note: comparison group is people with some portion of their diagnostic workup, nonsurgical or surgical care being in community, compared to entire workup/ treatment in VA. Likely some bias with some VA surgeries occurring in the mixed comparison group, thus small circle.
Pettey, 2021[55] Y (**National**) retrospective Cataract	FY2015 (vs vets in non-VA "CC")	N: 58050 cataract procedures Median driving miles to closest VA facility: 28.1 (SD 39.2) Median driving miles to actual VA facility: 31.2 (SD 110.9)	N: 25825 cataract procedures Median **driving miles** to closest CC facility: 8.7 (SD 21.7) Median driving miles to actual CC facility: 19.7 (SD 296.0)	N/A	Stats: drive distances generated with Geographic Information System (GIS) Other methods of controlling: N/A Covariates: N/A	Y	Reported national findings (there were additional state/regional data) and excluded heatmap data Considered mixed results because closest driving miles for CC was lower than that for VA but VA better in portion of comparisons (26% of CC surgeries

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							took place further than the closest VA, for instance)
Augustine, 2018[9] Y (**National**) Retrospective Kidney transplant	2004-2016, SRTR (vs other non-VA)	N: 2905 patients (no raw mortality, delisting event data) median distance transplant center (25%, 75%): 347.0 (196.9, 701.8)	N: 3751 (private) N: 3109 (Medicare) (no raw event data) median distance transplant center, private (25%, 75%): 42.5 (12.9, 101.1) median distance transplant center, Medicare (25%, 75%): 55.6 (16.4, 102.6)	VA vs private all transplants: HR(adj) **0.72** (95% CI: 0.65-0.79) VA vs private Mortality: HR(adj) 1.00 (95% CI: 0.83-1.20) VA vs private delisting: HR(adj**) 1.23** (95% CI: 1.003-1.50) VA vs Medicare Mortality: HR(adj) 0.81 (95% CI: 0.68-0.96) VA vs Medicare delisting: HR(adj) 0.82; 95% CI, 0.68 to 0.99) unadjusted median **distance**: p<0.001	Stats: multivariable cox regression Control: matched VA with local non-VA centers in same DSA Covariates: age group, race, sex, diagnosis group, time on dialysis at listing, candidate status at listing, panel reactive antibody (PRA), body mass index group, education, malignancy, peripheral vascular disease, year of listing, region, log distance from candidate residence to listing center (distance in miles transformed on a log-10 scale), and community risk score	Y	Only reporting matched subset (another unmatched outcome set) Supplements were reviewed for raw event data - not included

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Wu, 2018[54] Y (**National**) Retrospective Cataract	2002-2012 (vs other non-VA) VHA claims data vs medicare data	N: 1,917,254 patients Surgery within 1 y of cataract dx: 120,196 (6.3%) Surgery within 5 y of cataract diagnosis: 240,884 (12.6%)	N: 1,156,211 patients (Medicare) Surgery within 1 y of cataract dx: 213,589 (18.5%) Surgery within 5 y of cataract diagnosis: 414,586 (35.9%)	Surgery within 1 y of cataract dx: p<0.001; OR(adj): 3.39 (95% CI: 3.36-3.41) **Surgery** within 5 y of cataract dx: p<0.001; OR(adj): 3.89 (95% CI: 3.87-3.91) (Reference group: VHA)	Stats: multivariable logistic regression Other methods of controlling: N/A Covariates: age group, sex, race/ethnicity, region of US residence, Charlson Comorbidity Index score, systemic comorbidities, ocular comorbidities	Y	
Wagner, 2021[56] Y (**National**) Retrospective TKA and cataract	2017-2018 (vs vets in non-VA, "VA purchased") CDW	N: 6179 for inpatient TKAs and 65799 outpatient cataracts Average total cost of inpatient TKAs: $28969 (SD $10778) Average total cost of outpatient cataract surgeries: $4301 (SD $2835)	N: 6337 for inpatient TKA and 5959 for outpatient cataracts Average total cost of inpatient TKAs: $13339 (SD $23698) Average total cost of outpatient cataract surgeries: $1585 (SD $629)	TKA: OLS regression coef=14869.2 (SE: 299.9), p<0.001 Cataract: OLS regression coef=2680.0 (SE: 15.8), p<0.001 (Reference group: VA-purchased)	Stats: ordinary least squares Other methods of controlling: adjusted standard errors for clustering within person to account for the fact that people can have more than 1 cataract or TKA Covariates: age, gender, Nosos risk score, location of care (only for TKA analysis)	Y	Only reported inpatient TKA and outpatient cataract data
Mull, 2022[53] Y (**National)** Retrospective Hernia repair	2018-2019 vs Veterans getting hernia repair through community care CDW	N: 7991 Unadjusted postoperative complications VA 4.0%, community care = 6.6%	N: 771 Unadjusted postoperative complication rate community care = 6%	Adjusted complication rate: no statistically significant difference	Stats: unadjusted – 2 sided t-tests, adjusted – 2-stage multivariable models Covariates: comorbidity, demographics, surgical complexity, historical referral rate	Y	

APPENDIX F. NON-SURGICAL RISK OF BIAS TABLE

Author, Year	Time Frames	Samples (Both VA and Non-VA)	How Did the Specifications for the Outcome Assessments Compare in VA and Non-VA Samples?	Statistical Methods
Nuti, 2016[20]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Vanneman, 2020[40]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Gurewich, 2021[37]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Davila, 2021[41]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Intrator, 2021[22]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
LaBedz, 2021[30]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Gidwani, 2021[43]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Griffith, 2020[38]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Gidwani-Marszowski, 2020[34]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Penn, 2019[36]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Makarov, 2018[42]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)

Author, Year	Time Frames	Samples (Both VA and Non-VA)	How Did the Specifications for the Outcome Assessments Compare in VA and Non-VA Samples?	Statistical Methods
Wang, 2019[24]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Thorpe, 2018[21]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Vercammen-Grandjean, 2018[31]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Wang, 2018[25]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Augustine, 2018[9]	Contemporaneous time frames	All between A and C	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Anhang Price, 2018[29]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Kurella Tamura, 2018[26]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Barnett, 2018[19]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Heidenreich, 2017[14]	Contemporaneous time frames	All between A and C	Identical	All between A and C
Blay, 2017[28]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Mody, 2017[15]	Contemporaneous time frames	All between A and C	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Shields, 2017[17]	Contemporaneous time frames	All between A and C	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)

Author, Year	Time Frames	Samples (Both VA and Non-VA)	How Did the Specifications for the Outcome Assessments Compare in VA and Non-VA Samples?	Statistical Methods
Burke, 2016[10]	Contemporaneous time frames	Small, limited, unequal or non-representative samples	Identical	Insufficient sample size and/or methods questionable to address hypothesis(ses)
Lee, 2017[11]	Contemporaneous time frames	All between A and C	Identical	All between A and C
Axon, 2016[16]	Contemporaneous time frames	All between A and C	Identical	All between A and C
Jia, 2016[23]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Watkins, 2016[32]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Jones, 2015[7]	Contemporaneous time frames	All between A and C	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Chan, 2022[58]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Florez, 2021[8]	Contemporaneous time frames	All between A and C	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Feyman, 2022[39]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Cashion, 2021[27]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Presley, 2022[18]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	All between A and C
Pickering, 2022[44]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)

Author, Year	Time Frames	Samples (Both VA and Non-VA)	How Did the Specifications for the Outcome Assessments Compare in VA and Non-VA Samples?	Statistical Methods
Fortney, 2022[12]	Contemporaneous time frames	All between A and C	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Scheuner, 2022[35]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Petros, 2022[13]	Contemporaneous time frames	All between A and C	Identical	All between A and C

APPENDIX G. SURGICAL RISK OF BIAS TABLE

Author, Year	Time Frames	Samples (Both VA and Non-VA)	How Did the Specifications for the Outcome Assessments Compare in VA and Non-VA Samples?	Statistical Methods
Harris, 2021[60]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Pettey, 2021[55]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Rosen, 2021[47]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Wagner, 2021[56]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Sufficiently similar for valid comparison	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Heiden, 2021[57]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Sufficiently similar for valid comparison	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Billig, 2021[46]	Contemporaneous time frames	Small, limited, unequal or non-representative samples	Identical	All between A and C
Griffith, 2020[38]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Kesseli, 2020[52]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Rosen, 2020[61]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)

Author, Year	Time Frames	Samples (Both VA and Non-VA)	How Did the Specifications for the Outcome Assessments Compare in VA and Non-VA Samples?	Statistical Methods
Eid, 2020[45]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Frisch, 2020[48]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Williams, 2020[51]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Augustine, 2018[9]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Wu, 2018[54]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Barnett, 2018[19]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Sufficiently similar for valid comparison	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Blay, 2017[28]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Hutt, 2015[50]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Sufficiently similar for valid comparison	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
George, 2021[59]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Sufficiently similar for valid comparison	Sufficient sample size and/or methods appropriate to address hypothesis(ses)
Mull, 2022[53]	Contemporaneous time frames	Representative or national samples (both VA and non-VA)	Identical	Sufficient sample size and/or methods appropriate to address hypothesis(ses)

APPENDIX H. SURGICAL QOC EVIDENCE TABLE – QUALITY/SAFETY

Author, Year	Operation, Setting	Comparison	N	Quality/Safety		
George, 2021[59]	Non-Cardiac Surgery National			30d Mortality, N (%)	30d Complications, N (%)	Failure to Rescue, N (%)
		VA pt.	736477	8008 (1.1)	125816 (17.1)	5918 (4.7)
		gen. pop. (Ref)	3174274	2602 (0.8) RR: 0.59(0.47,0.75)[b]	299984 (9.5)	19936 (6.7) RR: 0.55(0.44,0.68)[b]
Harris, 2021[60]	TKA National			Any Complication, N (%)	Joint/Wound Infection, N(%)	PE, N (%)
		VA pt.	24407	712(2.9)	236(1.0)	193(0.8)
		non-VA pt.(Ref)	18964	611(3.2) OR: 0.45(0.38,0.54)[b]	128(0.7) OR: 0.69[b]	109(0.6) OR: 0.73 (p<0.01)[b]
Rosen, 2021[47]	TKA National			All-Cause Readmission Rate, %	TKA-related Readmission Rate, %	
		VA pt.	25384	4.3	1.3	
		non-VA pt. (Ref)	19990	4.6 RR: 0.35(0.30-0.40)[b]	1.2 RR:0.30(0.23-0.38)[b]	
Frisch, 2020[48]	TKA National			30d Complications, N (%)	DVT, N (%)	30d Readmit, N (%)
		VA pt.	10460	908(9)	152(1.5)	1773(17)
		gen. pop. (Ref)	58820	1608(3) OR: 2.58(2.31-2.89)[c]	414(0.7)[c]	1955(3) OR:4.94(4.51-5.41)[c]
Hutt, 2015[50]	Hip Fracture Repair National			30d Survival,%	1-Yr Survival, %	Admit to Surgery Time, Days(SD)
		VA pt. (Ref)	947	89.65 OR: 1.701(1.184-2.445)[c]	63.04 OR: 1.504(1.208-1.872)[c]	5.64(43.25)
		Medicare	947	92.93	70.43	1.78(2.35)[c]

Author, Year	Operation, Setting	Comparison	N	Quality/Safety		
Heiden, 2021[57]	Lung Resection National			30d Mortality, N (%)	Median Overall Survival, Months	30d Readmit, N (%)
		VA pt.	6792	128 (1.9)[a]	71.4[a]	523 (7.70)
		non-VA pt.	6792	188 (2.8)	65.2	470 (7.02)[ns]
Williams, 2020[51]	Lung Cancer Treatment National			Surgical Treatment Only, N(%)	Chemotherapy Only, N(%)	5-Year Overall Survival,%
		VA Black vs White (Ref)	7895	3648(46.2) OR:0.73(0.62-0.86)	181(2.3)	HR:1.08(1.00-1.16)
		gen. pop. Black vs White (Ref)	8744	4454(50.9) OR: 0.57(0.47-0.70)	171(2.0)	HR:1.17(1.06-1.30)
Augustine, 2018[9]	Kidney Transplant National			Mortality	Delisting	
		VA pt.	2905			
		Private (Ref) Medicare (Ref)	3751 3109	HR:1.00(0.83,1.20)[ns] HR:0.81(0.68,0.96)[b]	HR:1.23(1.003,1.50)[ns] HR:0.82(0.68,0.99)[b]	
Kesseli, 2020[52]	Kidney Transplant National			1-Month Mortality, O/E	1-Year Graft Survival, O/E	
		VA pt.	1508	3/11.3 (0.26) O/E adj:0.27(0.05-0.65)[b]	78/97.8 (0.79) O/E adj:0.79(0.63-0.98)[ns]	
		gen. pop.	227680	1348/1340 (1.01) O/E:1.00(0.95-1.06)	14185/14149 (1.00) O/E adj:1.00(0.98-1.02)	
Barnett, 2018[19]	CABG National			30d Mortality, N (%)	30d Readmit, N (%)	
		VA pt.	4866	77(1.50)	346 (7.12)	
		non-VA pt. (Ref)	952	12(1.26) RR: 0.89(0.45,1.77)[ns]	79(8.25) RR: 1.16(0.89,1.50)[ns]	

Author, Year	Operation, Setting	Comparison	N	Quality/Safety		
Blay, 2017[28]	Surgical PSI National			Failure to Rescue,#/1000 Discharges (CI)	Wound Dehiscence,#/1000 Discharges (CI)	VTE/PE,#/1000 Discharges (CI)
		VA hospital	129	105.82(96.7-114.92)[b]	2.17(1.64-2.71)[ns]	3.94(3.42-4.45)[b]
		non-VA pt.	4010	136.34(135.42-137.26)	2.32(2.30-2.33)	5.08(5.00-5.15)
Eid, 2020[45]	Surgical PSI National			Postop Mortality,#/1000 Patients	Wound Dehiscence,#/1000 Patients	VTE/PE,#/1000 Patients
		VA hospital	34	95[b]	0.29[b]	3.56[ns]
		non-VA pt.	319	167	0.83	4.05
Rosen, 2021[61]	Cataract National			30d Complication Complex Surgery, N (%)	30d Complication Routine Surgery, N (%)	90d Complication, N
		VA pt. (Ref)	44546	164 (1.61) RR 0.94(0.70-1.27)[ns]	313 (0.65) RR 0.91(0.74,1.16)[ns]	704 OR: 0.918(0.765,1.097)[ns]
		non-VA pt.	17203	58 (1.52)	131 (0.59)	276

Notes. Data shown as 95% CI and mean (SD) unless otherwise specified. P values: ns: p>0.05; [b] Significantly favors VA; [c] Significantly favors non-VA .
Abbreviations: RR=relative risk; OR=odds ratio; OLS coeff=ordinary least squares coefficient; LOS=length of stay; PSI=patient safety indicators; O/E=observed/expected ratio; med.=median; IQR=inter-quartile range; n.s.=not significant; TKA=total knee arthroplasty; ortho=orthopedics; uro=urology; inpt=inpatient; outpt=outpatient.

APPENDIX I. SURGICAL QOC EVIDENCE TABLE – ACCESS, PATIENT EXPERIENCE, COST/EFFICIENCY

Author, Year	Operation Setting	Comparison	N	Access	Patient Experience	Cost/ Efficiency
Barnett, 2018[19]	CABG National			Travel Distance, mi		Total Cost ($)
		VA pt.	4866	123.2		65264 (47978)
		non-VA pt. (Ref)	952	81.5[c]		56749 (77283)[c]
Augustine, 2018[9]	Kidney Transplant National			Transplant Rate		Med Driving Distance to Transplant Center, mi(IQR)
		VA pt.	2905			347.0(196.9-701.8)
		Private (Ref) Medicare (Ref)	3751 3109	HR:0.72(0.65,0.79)[c] HR:0.85(0.81,0.90)[c]		42.5(12.9,101.1)[c] 55.6(16.4,102.6)[c]
Wu, 2018[54]	Cataract National			Access to Surgery w/i 1 yr of dx, N(%)		
		VA pt. (Ref)	1917254	120196(6.3) OR:3.39(3.36,3.41)[c]		
		Medicare	1156211	213589(18.5)		
Pettey, 2021[55]	Cataract National			Med Driving Distance to Actual VA, mi(SD)	Med Driving Distance to Actual CC, mi(SD)	
		VA pt.	58050	31.2(110.9)	N/A	
		non-VA pt.	25825	N/A	19.7(296.0)	
Eid, 2020[45]	Surgical PSI National				Pt. Satisfaction Star Rating (scale 1-5)	
		VA hospital	34		2.96	
		non-VA pt.	319		2.97[ns]	

Author, Year	Operation Setting	Comparison	N	Access	Patient Experience	Cost/ Efficiency
Frisch, 2020[48]	TKA National					LOS ≥4d,N(%)
		VA pt.	10460			4805(47)
		gen. pop. (Ref)	58820			9815(17) OR for LOS>3d: 4.46(4.21-4.72)[c]
Griffith, 2020[38]	Ortho, Uro Specialty Clinic Care National					Wait Time, Days(SD)
		VA pt.	Ortho: 506945 Uro: 353029			36.2(9.3)[b] 36.1(9.5)[b]
		non-VA pt.	Ortho: 139827 Uro: 37089			43.6(12.9) 50.5(14.5)
Billig, 2021[46]	Carpal Tunnel Release National					Time To Surgery, Days(IQR)
		VA pt.	23330			176(94-470)
		mixed pop. (Ref)	5912			378(136-1136) HR:0.63(0.61-0.65)[b]
Heiden, 2021[57]	Lung Resection, National					LOS, Days (SD)
		VA pt.	6792			8.12 (6.59)
		non-VA pt.	6792			7.08 (7.54)[c]
Wagner, 2021[56]	TKA and Cataract National					Total Cost, $(SD)
		VA pt. in VA (Ref)	TKA: 6179 Cataract:65799			28969(10778) 4301(2835)
		non-VA pt. (Ref)	TKA: 6337 Cataract:5959			13339(23698) 1585(629) coeff:14869.2(SE:299.9)[c] coeff:2680.0(SE:15.8)[c]

Notes. Data shown as 95% CI and mean (SD) unless otherwise specified. P values: <0.05 * , < 0.01 **.
Abbreviations. RR=relative risk; OR=odds ratio; OLS coeff=ordinary least squares coefficient; LOS=length of stay; PSI=patient safety indicators; O/E=observed/expected ratio; med.=median; IQR=inter-quartile range; n.s.=not significant; TKA=total knee arthroplasty; ortho=orthopedics; uro=urology; inpt=inpatient; outpt=outpatient.

APPENDIX J. PEER REVIEW DISPOSITION

Comment #	Reviewer #	Comment	Author Response
Are the objectives, scope, and methods for this review clearly described?			
1	1	Yes	Thank you.
2	2	Yes	Thank you.
3	3	Yes	Thank you.
4	4	Yes	Thank you.
5	5	Yes	Thank you.
6	7	Yes	Thank you.
7	8	Yes	Thank you.
8	10	Yes	Thank you.
Is there any indication of bias in our synthesis of the evidence?			
9	1	No	Thank you.
10	2	No	Thank you.
11	3	No	Thank you.
12	4	No	Thank you.
13	5	No	Thank you.
14	7	No	Thank you.
15	8	No	Thank you.
16	10	No	Thank you.
Are there any published or unpublished studies that we may have overlooked?			
17	1	No	Thank you.
18	2	No	Thank you.
19	3	No	Thank you.
20	4	No	Thank you.
21	5	Yes - Recent JAMA Open Network paper on wait times in VA and Community Care by Feyman et al.	This has been added to the report and map.
22	7	No	Thank you.

Comment #	Reviewer #	Comment	Author Response
23	8	No	Thank you.
24	10	No	Thank you.
Additional suggestions or comments can be provided below.			
25	1	Overall this is an excellent review of the literature comparing VA to non VA care. The authors have divided the available studies into surgical and non surgical care, and divided the outcomes according to standard health services research categories. I was particularly glad to see that more studies are now available outside of quality and safety. The summary figure is very useful and will no doubt be very informative to policy makers.	Thank you for your comment.
26	1	The search methods were quite thorough and I have little doubt that they have found all the relevant published literature. The inclusion criteria are very reasonable. I have some curiosity about whether the few excluded lower quality (fatal flaw) studies tended in the same direction of equal or better VA care overall, but in the end I think it is probably better that the authors did not spend time in sensitivity analyses in that direction.	We have now added information about these fatal flaw studies.
27	1	Most of my suggestions revolve around interpretation. I would give more valence to more recent studies as the both the VA and non VA system are evolving over time. The last paragraph of the discussion covers the difference between the pre2015 and post2015 studies. I would have liked a bit more detail those differences.	We have now called out in each text section those studies specifically about the CHOICE/MISSION act comparisons, which are most of the more recent studies, and the comparison of greatest policy interest.
28	1	Similarly there were innovative recent studies that probably deserve more highlighting. Observational studies are of course always subject to bias, and the authors do a great job of assessing how robust the individual studies are. However the recent Chan study on	Unfortunately the Chan study was the only one if its kind. We have beefed up and discussed in more detail that the #1 limitation to all studies is the possibility of unmeasured confounding. I don't think we can do better than that.

Comment #	Reviewer #	Comment	Author Response
		mortality was particularly interesting in that it used a novel instrumental variable and was directed at a particularly important outcome - mortality. There were only a handful of other mortality studies in either surgical or nonsurgical care, and by the description provided all of narrower scope or poorer quality. I would have like to see a paragraph or at least a statement on how this key outcome compared.	
29	1	Finally it is important to note that almost all the studies covered only a single or small subset of conditions. Thus the overall conclusion about VA care could be limited to those conditions and that might be noted.	This has been added to the Limitations.
30	2	Well conducted review. Limitation of what's available is noteworthy. Looking at the surgical topics, the specialty areas are focused on specific operations/diseases eg. lung resection for NSC; or kidney transplant. These clearly are important, but are probably not the common bread/butter operations that all the VA surgical care address.	This has been added to the Limitations.
31	3	An obvious limitation is that the data do not provide insights on social challenges of veteran patients that are exacerbated by receiving care in a VHA facility that can influence hospital length of stay following surgery (e.g. availability of family/friend to take home when meeting discharge criteria).	This has been added to the Limitations.
32	4	Page 14, lines 20-21. One of the main impetus for carrying out this evidence synthesis was to evaluate the quality of care Veterans receive in the community following passage of the Choice (2014) and MISSION (2018) Acts. And the authors were tasked with categorizing studies based on whether Veterans received care at a VA facility as opposed to a community facility	We have now separated out in the map and the text the studies that are about non-VA care received as part of the CHOICE or MISSION Act. Given that we identified some studies that compared VA care to VA-paid community care that preceded the CHOICE Act, we grouped all of these into a

Comment #	Reviewer #	Comment	Author Response
		through the Choice and MISSION Acts. However, a lot of the studies included in this summary had analyzed data that pre-dated the Choice and MISSION Acts. It would be nice to have some delineation or header in the manuscript for studies that specifically analyzed data after passage of the Choice legislation starting in 2014/2015.	category now called “compared to Veterans getting VA-paid community care”
33	4	Page 15, line 24: Was 'Timing' defined by publication date or when data was collected. As mentioned above, it appears that a lot of data included in this evidence synthesis was collected prior to 2015.	Timing was publication date as this update was intended to pick up the evidence where the last systematic review stopped.
34	4	Page 21, line 60. I was wondering why cardiovascular revascularization procedures were included in KQ#1 group as opposed to KQ#2. It might make more sense to group all interventional procedures in the surgical group.	We agree that this is one potential classification system, but elected to keep the organization consistent with the prior 2012 review, which classified studies into surgery vs non-surgery (medical).
35	4	Page 24, line 45: There is a typo; delete "for".	This has been fixed, thank you.
36	4	Page 27, line 46: I am curious why the authors included "Hospital Patient Safety Indicators and Outpatient Quality of Care" studies under the Patient Experience heading. It seems out of place.	This paragraph about these two studies was inadvertently placed in Patient Experience. It has now been moved to where it belongs in Quality and Safety.
37	5	In general, this is a succinct, clearly written report. The organization is clear , the methods seem appropriate and the conclusions generally sound. I have inserted a number of comments directly in the report but have 4 general observations/suggestions:	Thank you for your comments.
38	5	1. The report describes two general types of studies: comparisons restricted to Veterans getting care in VA or non-VA setting, and comparisons of VA outcomes to general	We have now split out the studies of comparison to CHOICE/MISSION Act care.

Comment #	Reviewer #	Comment	Author Response
		population outcomes. In fact there are further differences. In the first category, there are studies comparing enrolled veterans who get care in VA or VA-paid care provided outside VA through Community Care/choice/contracted care. There are also studies comparing outcomes of dually eligible veterans who get care in VA vs in Medicare. Among the second group of studies, there are studies where comparison population are all insured (Medicare, Medicaid or HMO comparisons) and others where the population comparisons are non-VA hospital patients who include a mix of insured and uninsured.	
39	5	2. The report gives insufficient attention to the challenges in comparing quality and outcomes based on available data and how various sources of bias will vary based on the populations being compared and the outcomes used. I would have preferred more comment on the adequacy of efforts to control for clinical factors – if this was part of the evaluation of methods in the bias assessment it should be stated more clearly. The ability to adequately control for clinical and sociodemographic factors that affect clinical outcomes like mortality and readmission will vary substantially if some of the records are Medicare or private health systems. The cleanest comparisons are those that use Veteran populations and compare care in VA to that bought outside VA for the same patients, since both populations are insured, have comparable data, and are using the VA. For studies comparing enrolled Veterans getting VA care vs Medicare, there are selection factors that lead to greater VA or greater Medicare use that can bias outcomes. For some outcomes, claims level data may be adequate but for others such as CHF and MI, severity may vary by the source of care.	The issue of comparability has been added to the Limitations.

Comment #	Reviewer #	Comment	Author Response
		Perhaps this is less than an issue than I worry, but some discussion should be included about what we know about the severity of illness and comorbidity of Veterans who get care in VA and those who get care in Medicare, or of Veterans vs. general Medicare population. Similarly, comparing VA hospital outcomes to private hospitals will be affected by the comorbidity of patient populations and sociodemographics. Readmissions may be driven by patients who are uninsured with poor social supports.	
40	5	3. Table D on the medical care studies is confusing and spars in the data. Table E is much better organized and it would be preferable that Table D be reformatted in that manner. At a minimum, better description of the PICOTs elements for each study should be included at the beginning before listing all the individual outcome comparisons.	This has been reformatted.
41	5	4. The conclusions should spend a little more time in discussing the potential uses of this data and which comparisons might be most useful. First, comparisons are useful in identifying possible quality issues where VA performance should be improved. Looking at specific outcomes is important. Second, comparisons of VA vs Community Care are critical to shaping decisions about the expansion of that program and determining whether sending Veterans out for care in an effort to improve timeliness or convenience comes as a cost in terms of clinical outcomes. Third, some comparisons are useful at judging the potential advantages of the VA's national system of integrated care vs. care delivery in less organized settings – eg delivery of preventive care and control of chronic disease.	This has been added to the Discussion.

Comment #	Reviewer #	Comment	Author Response
42	5	5. Recommendations for research are underdeveloped.	This has been fixed.
43	5	Page 16, Line 11: What about studies ability to adjust for differences in patient population -- eg underlying health status? If you didnt include this perhaps state why.	Adjusting for differences in patient population was one of the factors considered in “appropriate statistical methods”. We have added this to the text.
44	5	Literature Flow: Is it meant to be "...Clinical Care in VA..."	This has been fixed.
45	5	Literature Flow: Same error here: ...Quality of clinical CARE...	This has been fixed.
46	5	Page 22, Line 46: Did this study adjust for HF severity?	This study was not able to adjust for HF severity, only for the presence or absence of multiple comorbidities. We added this information to the text, and noted in the Limitations that the inability to control for things like this is a problem.
47	5	Page 23, Line 11: The nursing home populations are very different in VA and non-VA settings, especially by gender, age and presence of dementia. The ability to adjust for these differences will depend on the outcome being assessed.	We have added to the text the variables that were used in adjustments.
48	5	Page 23, Line 31: What risk factors were adjusted for?	We have added to the text the variables that were used in adjustments.
49	5	Page 23, Line 51: This sentence is potentially confusing -- I assume that is is a hazard ratio from a time-dependent model, but the point that it implies lower rates of transplant may be lost. I would clarify with a parenthetical phrase (lower rate of transplant)	We added this parenthetical phrase.
50	5	Page 26, Line 40: Better?	We changed ‘higher’ to ‘better’.
51	5	Page 26, Line 56: Is timing to transplant affected by the organ allocation system that VA does not control?	We do not know the answer to this question and the article itself does not provide information about this.
52	5	Page 28, Line 4: Risk adjusted readmission?	Yes these are risk-adjusted and we have added that to the text.

Comment #	Reviewer #	Comment	Author Response
53	5	Page 36, Line 35: Length of stay in VA can be driven by problems with nursing home placements. While this is a relevant indication of a problem it is different than if it were due to other factors.	This is acknowledged but nevertheless, the data are what they are and are compatible with the experience of VA clinicians on the inpatient service: length of stay is much longer in VA due to disposition challenges.
54	5	Page 36, Line 60: I think more needs to be said about the ability of individual studies to account for differences in study populations, differences in who seeks community care, etc. These differences paly out differently depending on study design and outcome. A study of CHF mortality that cant adjust for severity of CHF is prone to error. Can we say anything about the underlying comorbidity of VA vs, medicare patients?	This has been added to the Limitations.
55	7	None	
56	8	This report is flawless from a standpoint of rigor and analysis. It is, however, a bit dense for busy policymakers. The bubble charts (a nice innovation) help but take a bit of time to absorb. I suggest 2 minor enhancements:	Thank you for your comment.
57	8	1. Include a "Pull Out Box" that quickly states what this new report adds. (I note that BMJ, Annals, MMWR have recently instituted these so check them out if you want to see what I'm talking about)	We think the “Key Findings” box at the beginning of the Executive Summary does this.
58	8	2. To make the bubble charts easier to use, start with a set of instructions first (right now, the key is a footnote to the chart) that orient the user. (This may take a bit of trial and error and perhaps a willing "test audience")	This set of instructions is contained in the text.
59	10	This evidence synthesis report updates prior comparisons of the quality of VA and non-VA care to include those published between 2015 to 2021. The comparisons were grouped under the broad category of non-surgical and surgical care - again in line with previously published	Thank you for your comment.

Comment #	Reviewer #	Comment	Author Response
		evaluations. The search strategy appeared comprehensive and the studies were graded in a rigorous manner. I think this was a well-done synthesis.	
60	10	Main suggestions: 1) One of the key conclusions is as follows: "In the domain of quality and safety, the great majority of studies found that VA care is as good as, or better than, care in the community." While this is a reasonable summary, I view "better than" to be fundamentally distinct from "as good as". I would consider whether this distinction should be made in the abstract/executive summary. Ie, XXX studies demonstrated the VA was better than, YYY sudies showed the VA was as good as , and ZZZ studies showed the VA delivered worse ..." This grouping would align better with the evidence maps that bucketed studies into the following groupings: "VA care is better", "VA and community have equal or mixed results", and "community care is better".	We considered adding this….but ultimately elected not to do so, because it may make casual readers assume that we – the authors – are giving equal weight to each study, which we aren't doing.
61	10	2) Although there was a lot of appropriate description of the validity of the studies and grading the quality of the research among a number of dimensions. I wonder if the research team included the importance of the outcome or quality measure in its assessment. In otherwords, some measures - like mortality and patient ratings of care - have strong face validity as important indicators of quality. For others - like length of stay and costs, it is not clear whether these actually represent quality measures (vs undefined metrics of resource utilization), whether lower is necessarily better, or whether they are appropriately risk-adjusted - particularly for critical factors like social support, function, or availability of stable housing.	This is a great question and one we discussed extensively. The problem is that if we, the research team, picks "importance" it is necessarily a subjective assessment. While at the extremes this may not be controversial—the example given of mortality compared to length of stay—other distinctions might be more controversial: for example, which is more important? Wait times for a urology appointment versus length-of-stay following joint replacement surgery? Because we did not think we could draw a bright and defensible line between important and less important outcomes, we elected to put them all in without an "importance" qualfier. But we did add to the Limitations that some outcomes will be more important than others and that this may vary by stakeholder.

Comment #	Reviewer #	Comment	Author Response
62	10	3) There were five studies excluded because of 'fatal flaws". Would consider adding a brief description of the fatal flaw to exhibit B - similar to what was done in Exhibit C to describe why each studies did not meet inclusion criteria.	This was probably a bad use of jargon on our part. We have re-named them for what they are: unrepresentative samples, most single provider or single site studies.
63	10	4) It is unclear why studies of travel distance were included in this review. Longer travel distances for Veterans receiving some kinds of care (ie transplant) compared to non-Veterans may relate to decisions about whether VA patients are more likely to live in rural locations and the fact that the VA serves a subset of military veterans in ~130 centers whereas community care by definition includes the entire US population and all clinical facilities.	Travel distance was included in the review because it was in CHOICE as a criterion. We have added to the Limitations that travel distance may be of differing importance to different stakeholders.
64	10	5) In grading the quality of the evidence, did the authors consider the appropriateness of the risk-adjustment models? Many of the studies that examine mortality and readmission rely on claims-based approaches and compare outcome in the VA with that in Medicare. Given the incentives for private providers to overcode comorbidities, this kind of approach may penalize the VA since Medicare or private-sector patients would be labeled as being sicker. If some comparisons include a more comprehensive (and less "gameable") set of risk-adjustment variables, perhaps they should be called out as being stronger.	This is a great comment and something we tried to assess but have added to the limitations that for some it is impossible (like the upcoding in FFS medicine).