
Evidence Map: Implementation Factors Influencing the Transition from Emergency to Outpatient Care Settings

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The findings and conclusions in this document are those of the author(s) who are responsible for its contents and do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. No investigators have any affiliations or financial involvement (eg, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

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 three 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 VA Health Services Research and Development Service (HSR&D). The scope was further developed with input from Operational Partners (below) and the ESP Coordinating Center review team. Comments on this report are welcome and should be sent to Nicole Floyd, Deputy Director, ESP Coordinating Center at Nicole.Floyd@va.gov.

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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 F in Supplemental Materials 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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EXECUTIVE SUMMARY

Key Findings

- Twenty-four studies reported outcomes related to care utilization, intermediate outcomes, or patient outcomes. Six were conducted in VHA outpatient settings. Only 3 studies examined patient outcomes. All but 1 study reported that interventions were as or more effective than comparison conditions (typically usual care).
- Eleven studies reported barriers related to intervention characteristics. Two were conducted in VHA settings. Common among community providers was difficulty identifying patients as Veterans. Both community providers and Veterans reported challenges related to VA formulary. In other settings, patients perceived very little or no communication between providers.
- Eleven studies reported barriers related to implementation processes. In the 3 studies conducted in VHA settings, barriers included concerns about workflow, differences in stakeholder priorities, and time. In other settings workflow was also a concern, as were time and inefficiency.
- Only 1 of the 11 studies related to the outer setting was conducted in the VHA. Common across studies were barriers related to rural residence, and lack of transportation, childcare, and insurance.
- Thirteen studies reported barriers related to the inner setting, 3 of which were performed in VHA settings. Across settings, components of the organizational culture served as barriers and patients found obtaining a follow-up appointment challenging.
- Of the 14 studies reporting barriers related to characteristics of individuals, 2 were of Veterans or VHA providers/staff. Patient-reported barriers included trust, time, and stage of change. Providers reported feeling uninformed and expressed concerned about increased workload.
- Future studies of interventions to mitigate frequent ED use are needed, as are investigations of patient outcomes across key populations.
- Future systematic reviews should include observational and quality improvement studies. In addition, a systematic review augmented by VHA stakeholder interviews investigating common themes from qualitative research on this topic may provide important insight for implementation.

Background

The Evidence Synthesis Program Coordinating Center is responding to a request from VA's Health Services Research and Development Service (HSR&D) for an Evidence Map on implementation factors that influence the effectiveness of emergency department to outpatient transitions of care across health systems. Findings from this Evidence Map will be used to inform a January 2022 State-of-the-Art (SOTA) conference on emergency medicine.

Methods

To identify studies, we searched MEDLINE®, Cochrane Database of Systematic Reviews, and other sources up to September 2021. We used prespecified criteria for study selection and data abstraction. We provide an Evidence Map and organize findings using the Consolidated Framework for Implementation Research (CFIR) domains of intervention characteristics, outer setting, inner setting, characteristics of individuals, and implementation processes. See the Methods section for full details of our methodology.

Transitions between different health care settings present a range of challenges to the management and continuity of care, such as electronic health record (EHR) interoperability and miscommunication between providers. Patients transitioning from the ED to outpatient care

across health care settings are especially vulnerable, as they are likely recovering from injuries or acute illness and being treated by a new provider with limited access to their medical history. This report aims to provide an overview of available research on interventions to improve transitions from emergency to outpatient care settings (in the form of an Evidence Map), and to summarize the findings of research examining care transition-related barriers and facilitators.

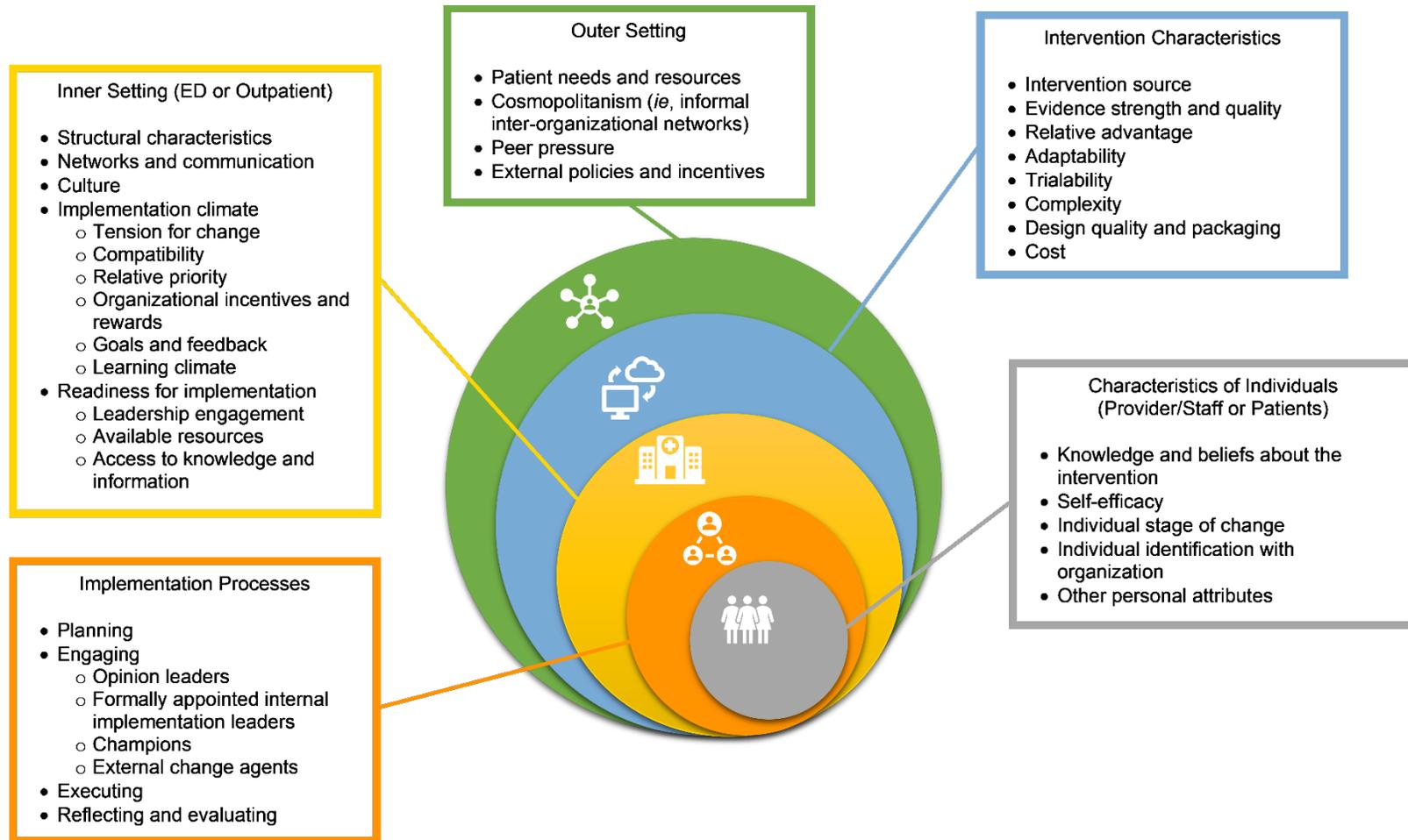
Table ES1. Evidence Map Dimensions, Data Elements, and Categories

Dimension	Data Element	Categorization
Quadrant	Population	1) Veterans, 2) High ED Utilizing Patients, 3) Older Adults, 4) General/Other
x-axis	Outcomes	1) Utilization, 2) Intermediate Outcomes, 3) Patient Outcomes
y-axis	Reported Effect	1) Positive Effect, 2) No Effect or Equal, 3) Negative Effect
Bubble Size	Sample Size	1) < 200, 2) 200-999, 3) 1000-4999, 4) ≥ 5000
Bubble Color	Study Design	1) Trials, 2) Prospective Observational, 3) Other Observational, 4) Qualitative
Bubble Shape	Study Type	1) Primary Study, 2) Systematic Review

Note. Trials includes non-randomized clinical trials as well as randomized controlled trials (RCTs).

Abbreviation. ED=emergency department

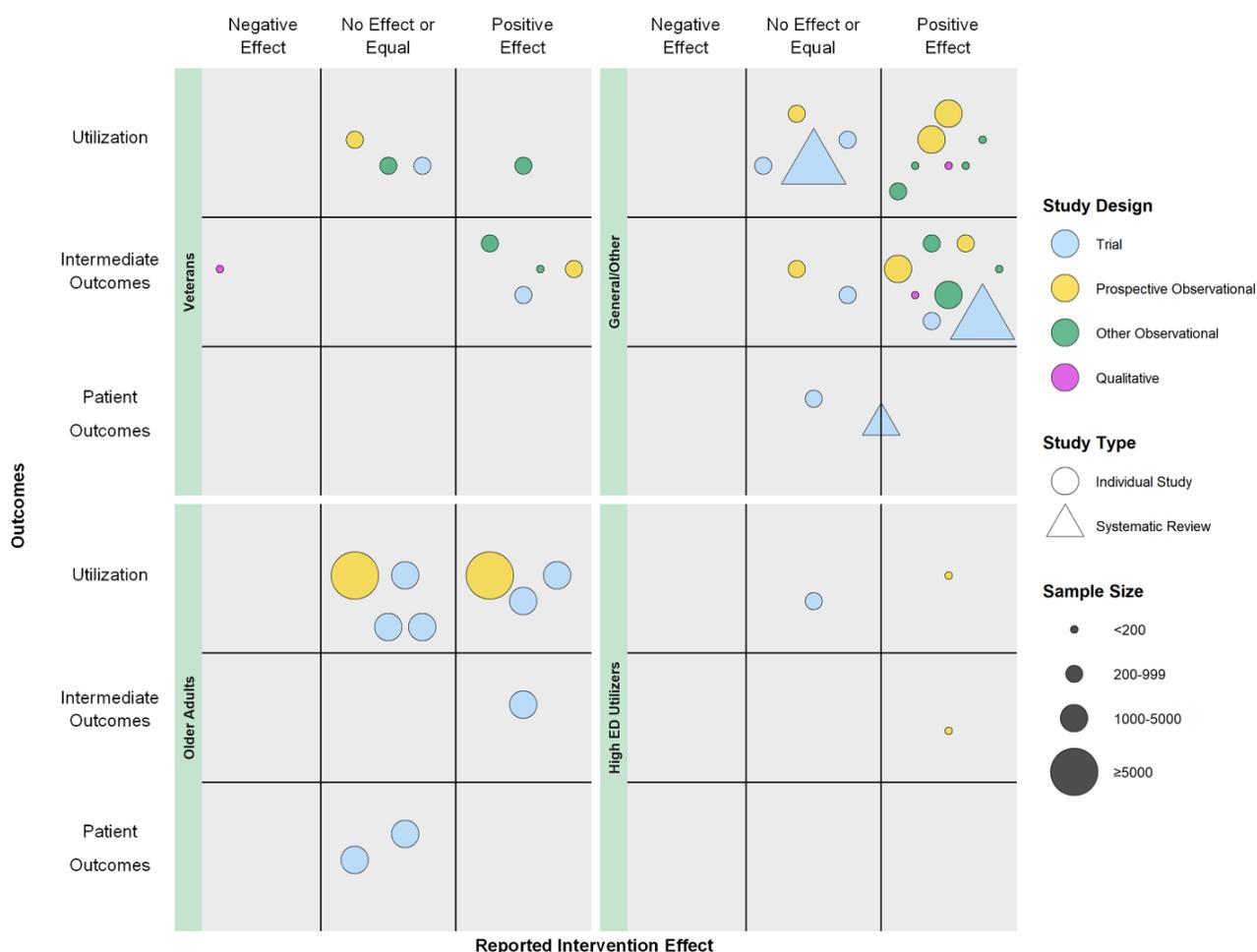
Figure ES1. Consolidated Framework for Implementation Research



Note. See Appendix B in Supplemental Materials for definitions.
 Abbreviation: ED=emergency department

We identified 24 studies examining ED to outpatient care transition interventions. Outcomes related to ED and hospital utilization were the most commonly reported, followed by measures of follow-up or engagement with outpatient providers. Overall, included interventions were as or more effective than comparison conditions (typically usual care). However, the findings from a qualitative study of care coordination between VHA and community settings for Veterans with COPD underscores the importance of effective communication, and the need for system-level solutions to avoid duplicative tests (eg, imaging) and other wasted resources. Common patient-reported barriers included challenges related to scheduling follow-up appointments and those related to access, such as transportation and child care. Barriers across settings highlight the challenges of sharing protected information across health systems – particularly when interventions are not aligned with workflow and lack staff and provider buy-in.

Figure ES2. ED to Outpatient Care Transition Study Characteristics and Reported Effects



There are a number of limitations to this Evidence Map. To illustrate the evidence, we categorized the patient population as belonging to 1 of 4 groups. Our categories were determined by population categories available across included studies. We recognize that patients may fall into more than 1 group, and that our categorization may not well represent the heterogeneity within each group. None of the 13 studies conducted in VHA settings were specific to discharge from the ED. These studies were considered important to include because of the unique nature of

the VHA as a centralized health care system, and the applicability to the transition between community settings and VHA outpatient care. However, some aspects may be less applicable due to differences in departmental workflow and other factors.

EVIDENCE MAP

INTRODUCTION

PURPOSE

The ESP Coordinating Center (ESP CC) is responding to a request from VA's Health Services Research and Development Service (HSR&D) for an Evidence Map on implementation factors that influence the effectiveness of emergency department (ED) to outpatient transitions of care across health systems. Findings from this Evidence Map will be used to inform a January 2022 State-of-the-Art (SOTA) conference on emergency medicine.

BACKGROUND

Transitions of care between different health care settings present a range of challenges to the management and continuity of care, such as electronic health record (EHR) interoperability¹ and miscommunication between providers.² Patients transitioning from the ED to outpatient care across health care settings are especially vulnerable, as they are likely recovering from injuries or acute illness and being treated by a new provider with limited access to their medical history.³

A recent systematic review examined the effect of interventions for improving the transition between the ED and outpatient care on the rate follow-up visits, ED revisits, and hospital admission after ED discharge.⁴ However, the systematic review included only RCTs and only ED-based interventions. This report aims to provide a broad overview of available research on interventions to improve transitions from ED to outpatient care settings (in the form of an Evidence Map), and to summarize the findings of research examining care transition-related barriers and facilitators.

METHODS

KEY QUESTIONS

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

KQ1: What implementation factors impact the benefits and harms of transition of care from emergency departments (EDs) in 1 health system to outpatient care settings in another?

KQ1a: Does the implementation of transition of care interventions differ by patient characteristics (eg, clinical severity, demographics, level of emergency care utilization)?

ELIGIBILITY CRITERIA

The ESP included studies that met the following criteria:

<i>Population</i>	Any adult discharged from the emergency department to outpatient care and Veterans discharged from a community EDs or inpatient setting to VHA outpatient care.
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<i>Intervention</i>	Interventions will be those that include “a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care”. ⁵ With the exception of studies examining interventions for the transition from community settings to the VHA, all interventions must focus on the transition from the emergency department to outpatient care. For studies examining Veterans transitioning to the VHA, interventions may focus on the transition from the emergency department or inpatient settings to VHA outpatient care. All interventions must involve the transition from 1 health system to another. Interventions can take place before or after discharge and may include components that span settings.
<i>Comparator</i>	Usual care or other interventions.
<i>Outcomes</i>	<ul style="list-style-type: none"> • <i>Patient outcomes:</i> Mortality, patient satisfaction • <i>Intermediate outcomes:</i> Over- or inappropriate prescribing, duplicate tests or imaging, follow-up by primary care (# days), purpose of tests or images ordered in the ED are clear • <i>Utilization:</i> ED utilization (up to 1 year), inpatient admission (direct or via ED) within 30 days of last ED visit, ambulatory care sensitive hospitalizations within 30 days • <i>Barriers and facilitators to care transitions</i>
<i>Timing</i>	Primarily ≤ 30 days. Up to 1 year for outcomes related to frequent utilization.
<i>Setting</i>	Non-VHA emergency departments in the US, Canada, and Europe. We will include both integrated and non-integrated care settings.
<i>Study Design</i>	Any, but we may prioritize articles using a best-evidence approach to accommodate Evidence Map timeline.

DATA SOURCES AND SEARCHES

To identify articles relevant to the key questions, a research librarian searched Ovid MEDLINE, Embase, and ClinicalTrials.gov, as well as AHRQ, Cochrane Database of Systematic Reviews, and HSR&D through September 10, 2021 using terms for *emergency department, care coordination, care transitions, and discharge* (see Appendix A in Supplemental Materials for complete search strategies). Additional citations were identified from hand-searching reference lists and consultation with content experts. To identify additional articles examining care transitions from community to outpatient VHA settings, we conducted a targeted hand search of reference lists and searched terms for *health information exchange*. 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. Titles, abstracts, and full-text articles were reviewed by 1 investigator and checked by another. All disagreements were resolved by consensus or discussion with a third reviewer.

DATA ABSTRACTION AND ASSESSMENT

From each study we abstracted data related to study design, number of participants, setting, population, intervention and comparator characteristics, outcomes, whether the reported intervention effect was positive, equal, or negative, as well as barriers and facilitators to successful ED to outpatient transitions. From systematic reviews, we abstracted the number of studies, number of participants, relevant findings, and reported strength of evidence. All data abstraction was first completed by 1 reviewer and then checked by another; disagreements were resolved by consensus or discussion with a third reviewer. Given that the purpose of our review was to identify and classify the broad body of research related to care transition interventions, we did not formally assess the quality of individual studies.

SYNTHESIS

We provide an Evidence Map illustrating outcomes research in the care transitions literature and provide figures summarizing barriers and facilitators. Findings are organized using the Consolidated Framework for Implementation Research (CFIR) domains of intervention characteristics, outer setting, inner setting, characteristics of individuals, and implementation processes (see Figure 1 and Appendix B in Supplemental Materials).⁶

An Evidence Map is a bubble plot that provides information in 6 dimensions: quadrant, x-axis, y-axis, bubble color, bubble size, and bubble shape. Table 1 outlines the data element and categories for each dimension. Patient population categories were determined by the available population categories across included studies. When a study could have been categorized into more than 1 group, we selected the group that represented the target population of the intervention. The population for all studies conducted in VHA outpatient settings were coded as Veterans.

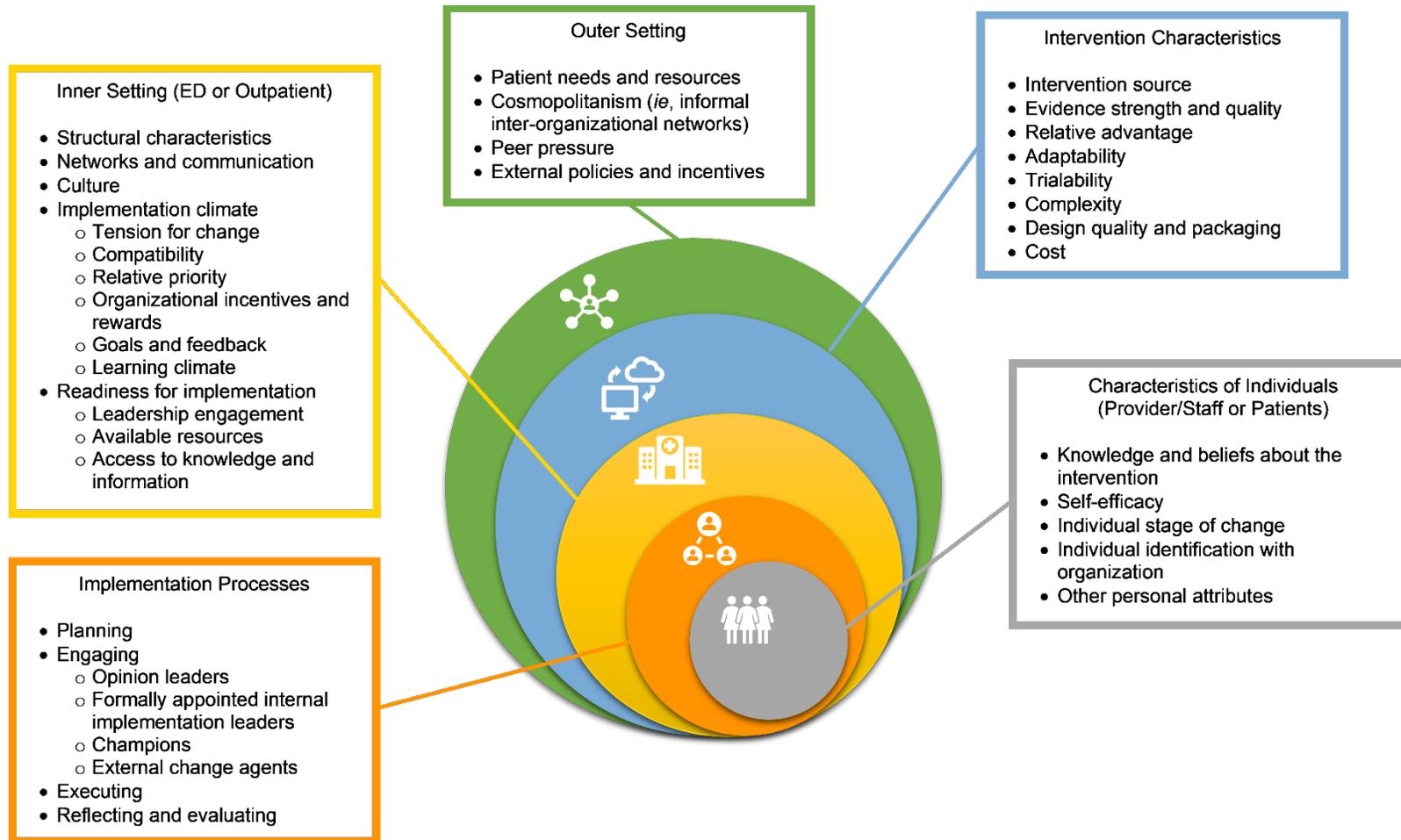
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Figure 1. Consolidated Framework for Implementation Research



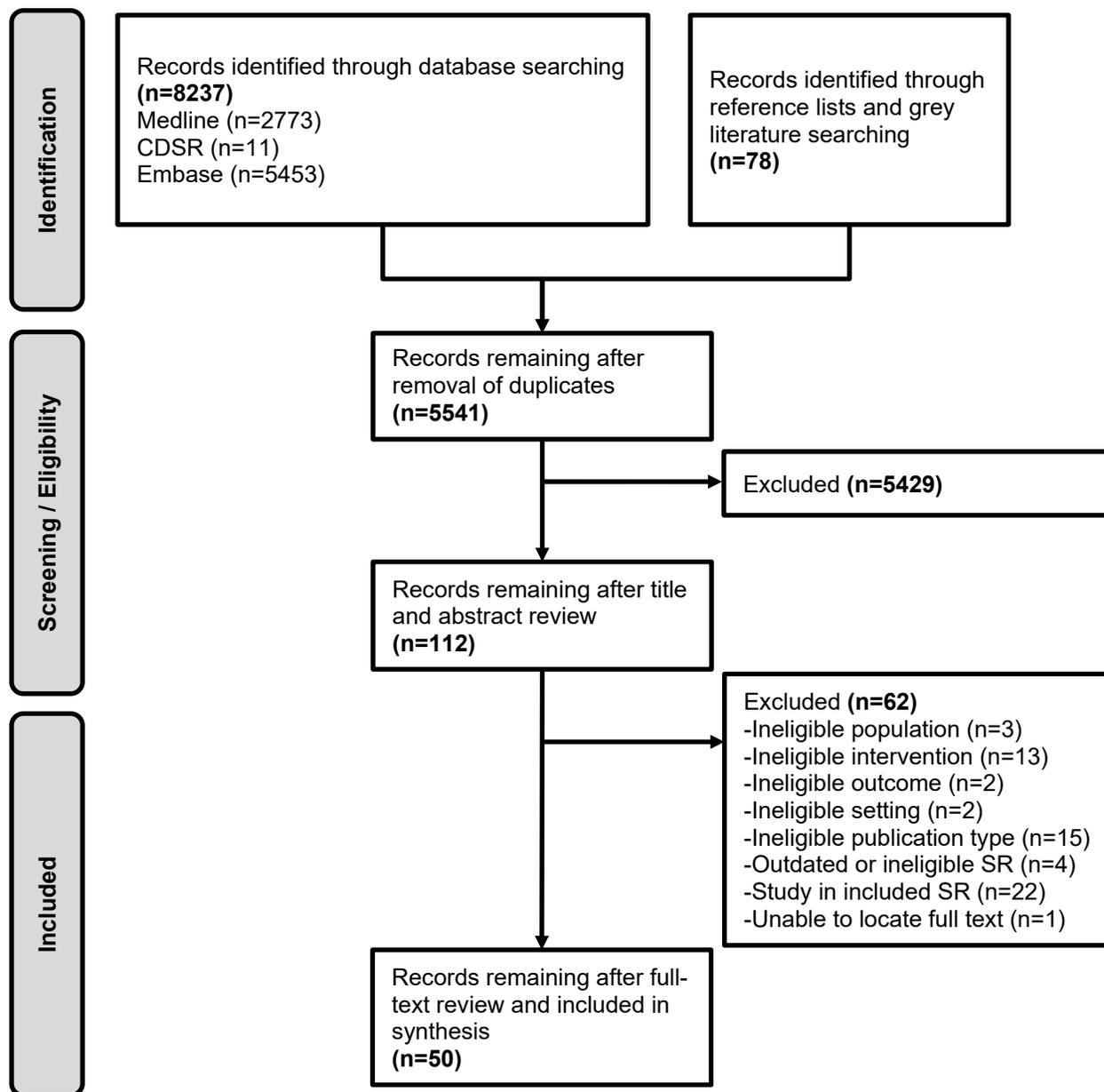
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 Abbreviation. ED=emergency department

RESULTS

LITERATURE FLOW

The literature flow diagram (Figure 2) summarizes the results of the study selection process (full list of excluded studies available in Appendix C in Supplemental Materials).

Figure 2. Literature Flowchart

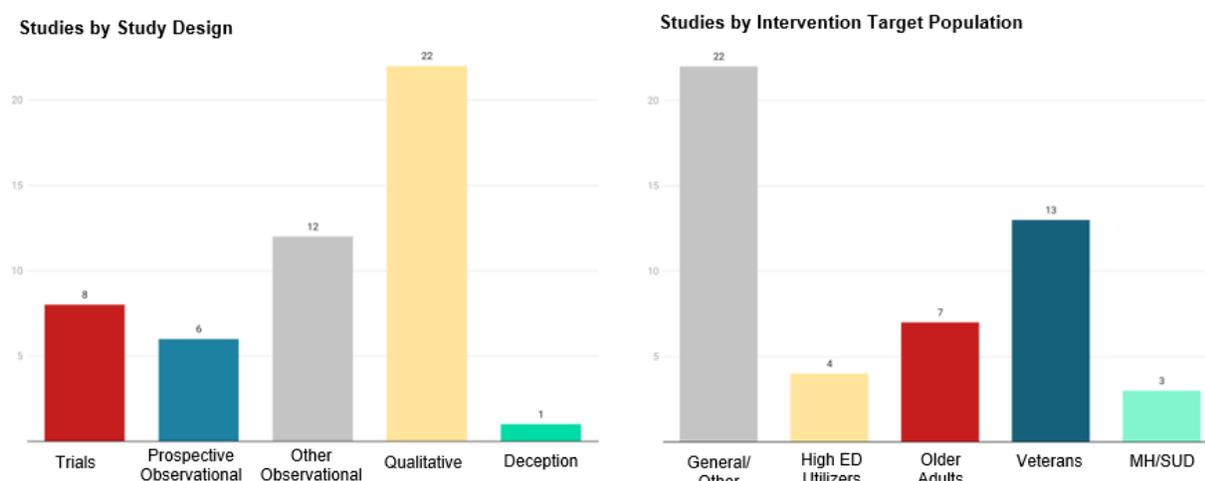


Abbreviations. CDSR=Cochrane Database of Systematic Reviews; SR=systematic review

LITERATURE OVERVIEW

Our search identified 5,541 potentially relevant articles. We included 50 studies: 1 systematic review⁴ and 49 primary studies.^{1,2,7-53} Twenty-four studies^{1,10-14,18,22,24,26,28,29,32-34,36-38,41,46-50} reported intervention outcomes of care transition interventions and 28 studies^{1,2,7-9,15-17,19-25,27,30,31,35,39,40,42-45,51-53} reported information on barriers and facilitators to care transitions (not mutually exclusive). Figure 3 characterizes the included primary studies. Most studies were in the US and included interventions targeted to the general ED population. The identified systematic review⁴ included 35 studies examining the effect of ED-based care transition interventions on outpatient follow-up rates, ED utilization, and patient satisfaction. We identified 3 underway or unpublished studies examining the effects of emergency department-based interventions in facilitating transition to outpatient care (see Appendix E in Supplemental Materials).

Figure 3. Primary Study Characteristics



Note. Study counts are not mutually exclusive.

Abbreviations. ED=emergency department; MH=mental health; SUD=substance use disorder

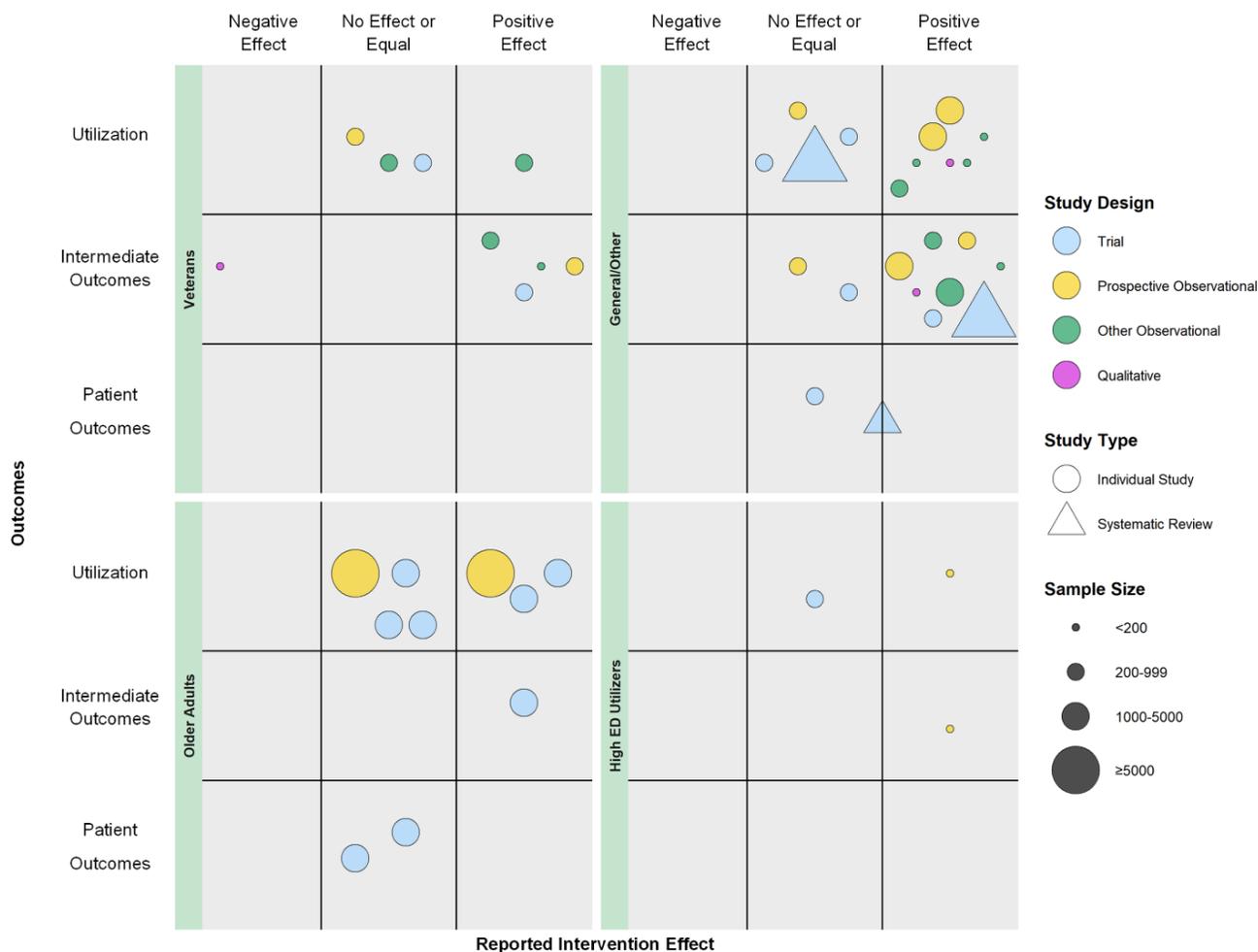
INTERVENTION CHARACTERISTICS

Of the 24 studies reporting outcomes of interest, 8 were trials, 6 were prospective observational studies, 8 were retrospective observational or cross-sectional studies, and 2 were qualitative studies. For the systematic review, the authors rated the strength of evidence for all conclusions as low.⁴ Figure 4 illustrates the reported findings of the systematic review and primary studies by population and outcome (see Appendix D in Supplement Materials for full study details).

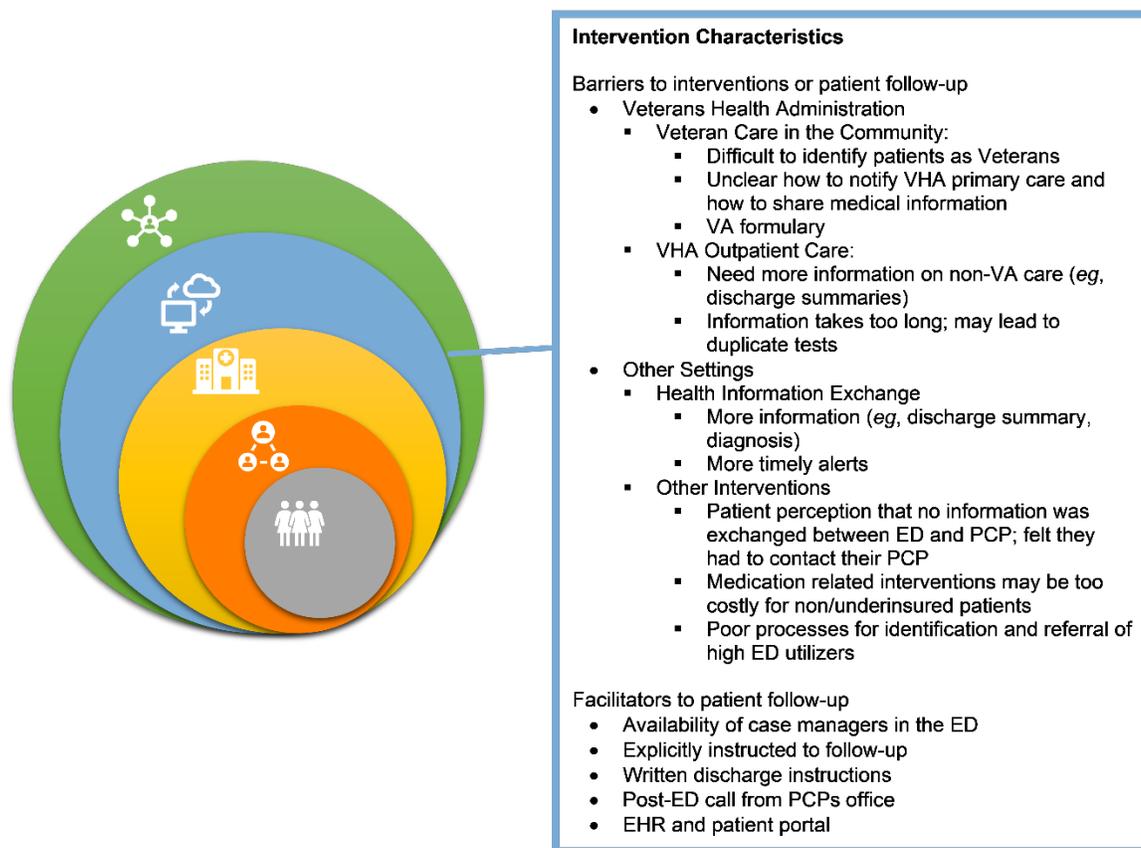
Six studies were conducted in VHA settings.^{1,10,18,26,33,47} Five interventions targeted older adults,^{13,28,29,41,46} 2 were for patients with patterns of high ED utilization,^{14,38} and the remaining were for general or other populations. There were 21 studies^{10-14,18,24,26,28,29,32-34,36-38,41,46,48-50} reporting outcomes related to utilization, 15 studies^{1,10,11,18,22,24,26,29,32,34,36,38,47,48,50} that reported intermediate outcomes, and 3 studies reporting patient outcomes.^{13,41,48} Utilization-related outcomes were primarily ED revisits and hospital admissions at different end points. Follow-up with primary care was the predominant intermediate outcome reported. Only 1 study,¹ examining

care transitions for Veterans with COPD, reported the ordering of duplicate tests. Reported patient outcomes were 30-day mortality^{13,41} and patient satisfaction⁴⁸ (Appendix D in Supplemental Materials provides more detail).

Figure 4. ED to Outpatient Care Transition Study Characteristics and Reported Effects



Eleven studies reported barriers or facilitators that were a characteristic or component of an intervention. Four studies were conducted in VHA outpatient settings,^{9,23,35,39} 2 studies targeted high ED utilizing patients,^{15,30} 1 study targeted ED patients seen for opioid use disorders,²⁷ 1 focused on older adults,¹⁶ and 3 studies were of general or other patient populations.^{7,21,45} Figure 5 details the barriers and facilitators identified in these studies. Three of the 11 studies were of Health Information Exchanges (HIEs),^{7,23,35} 2 of which were in VHA settings.^{23,35} One study examined intensive case management.³⁰ The remaining 7 studies examined general care coordination or were non-specific (see Appendix D in Supplemental Materials for more detail). Only 1 study explored differences by patient characteristics. It reported no differences in the odds of scheduling a follow-up appointment by insurance status, including Medicaid, and age over 65 years.³⁷

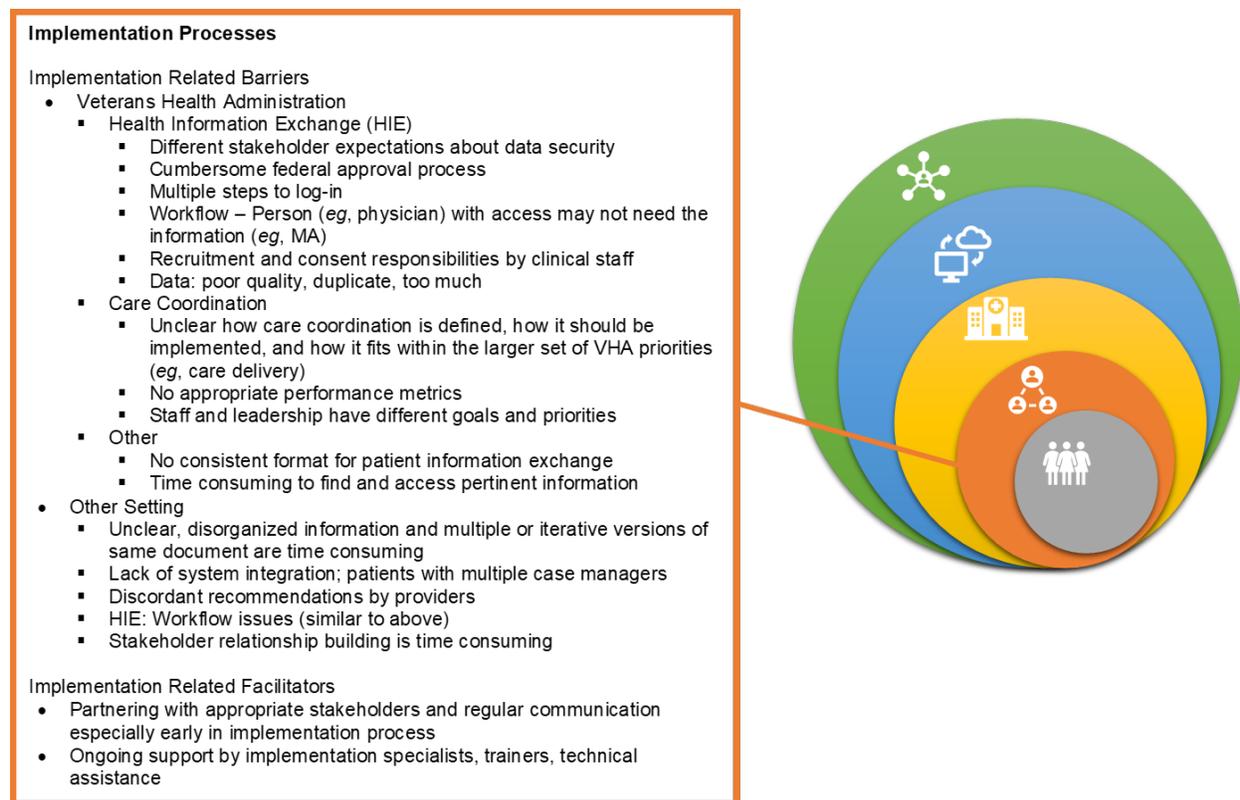
Figure 5. Intervention Barriers and Facilitators

Abbreviations. ED=emergency department; EHR=electronic health record; VHA=Veterans Health Administration; PCP=primary care provider

IMPLEMENTATION PROCESSES

We identified 11 studies that reported barriers or facilitators related to implementation processes. Three studies were conducted in VHA outpatient settings,^{1,19,35} 1 study examined care transitions for high ED utilizing patients,³⁰ 2 studies were of patients presenting to the ED with mental health or substance use disorders,^{27,42} 1 study examined older adults,¹⁶ and 3 studies included general or other populations.^{2,7,31} Figure 6 details the barriers and facilitators identified in these studies.

Of the studies that specified an intervention, 5 examined HIEs,^{7,19,23,35,40} 2 were of intensive case management,^{30,42} 2 focused specifically on provider communication,^{2,31} and 1 targeted Veterans with chronic obstructive pulmonary disease (COPD)¹ (see Appendix D in Supplemental Materials for more detail).

Figure 6. Implementation Barriers and Facilitators

Abbreviations. HIE=health information exchange; MA=medical assistant; VHA=Veterans Health Administration.

OUTER SETTING

There were 11 studies that included barriers or facilitators related to the outer setting. One study examined Veterans in a VHA setting,²⁰ 2 studies were of patients with mental health or substance use disorders,^{27,52} 1 was of patients with a history of high ED utilization,¹⁵ and 1 study focused on older adults.²⁵ All other studies were of general or other populations.^{8,17,22,24,43,45,53} One study focused on a HIE in a VHA setting.²⁰ All others were non-specific (see Appendix D in Supplemental Materials for more detail). Figure 7 details the barriers and facilitators identified in these studies.

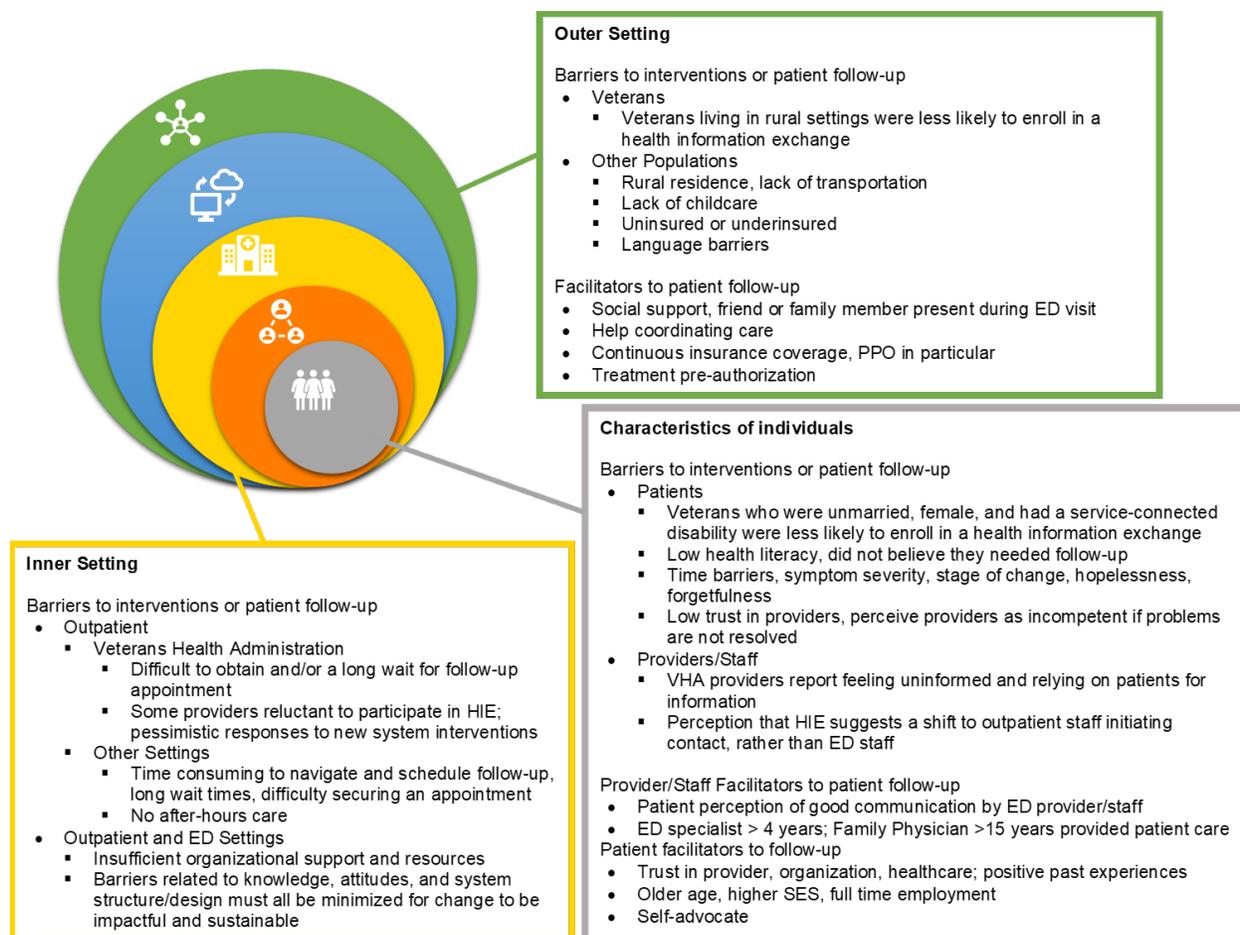
INNER SETTING

We identified 13 studies that reported barriers or facilitators related to the inner setting. Ten studies focused on outpatient settings,^{8,9,19,22,25,30,43-45,51} 1 study described barriers related to the transition from a community setting to a VHA patient-aligned care team (PACT),³⁹ and 2 studies applied to both EDs and outpatient settings.^{24,27} Two of the 10 outpatient focused studies were conducted in the VHA,^{9,19} 1 study focused on an intervention for older adults,²⁵ and the remaining 7 studies were of care transitions for general or other populations.^{8,21,22,43-45,51} Only 2 studies were of specific interventions, 1 of which was HIE,¹⁹ the other intensive case management³⁰ (see Appendix D in Supplemental Materials for more detail). Figure 7 details the barriers and facilitators identified in these studies.

CHARACTERISTICS OF INDIVIDUALS

Fourteen studies report barriers or facilitators related to personal characteristics of health care providers/staff (6 studies)^{1,2,7-9,45} and/or patients (10 studies).^{8,15-17,20,21,42,44,45,52} Two studies were of providers/staff in VHA settings,^{1,9} and 1 study applied to Veterans²⁰ (see Appendix D in Supplemental Materials for more detail). Figure 7 details the barriers and facilitators identified in these studies.

Figure 7. Outer Setting, Inner Setting, and Individual-level Barriers and Facilitators



Abbreviations. ED=emergency department; HIE=health information exchange; PPO=preferred provider organization; SES=socio-economic status

DISCUSSION

The purpose of this report was to identify, classify, and organize the broad body of research on interventions to improve patient transition across health care settings and systems. Outcomes related to ED and hospital utilization were the most common, followed by measures of follow-up or engagement with outpatient providers. Overall, included interventions were as or more effective than comparison conditions (typically usual care). However, the findings from a qualitative study of care coordination between VHA and community settings for Veterans with COPD underscored the importance of effective communication, and the need for system-level solutions to avoid duplicative tests (eg, imaging) and other wasted resources. Common patient-reported barriers included challenges related to scheduling follow-up appointments and those related to access, such as transportation and child care. Barriers across settings highlight the challenges of sharing protected information across health systems – especially when interventions are not aligned with workflow and lack staff and provider buy-in.

LIMITATIONS

There are a number of limitations to this Evidence Map. To illustrate the evidence, we categorized the patient population as belonging to 1 of 4 groups. Our categories were determined by population categories available across included studies. We recognize that patients may fall into more than 1 group, and that our categorization may not well represent the heterogeneity within each group. None of the 13 studies conducted in VHA settings were specific to discharge from the ED. These studies were considered important to include because of the unique nature of the VHA as a centralized health system, and the applicability to the transition between community settings and VHA outpatient care. However, some aspects may be less applicable due to differences in departmental workflow and other factors.

FUTURE RESEARCH

This report was intended to broadly describe the state of the evidence examining cross-system care transitions from the ED to outpatient settings within the context of an implementation framework. There are several promising areas for future research. The evidence suggests primary research is needed on patient outcomes of care transition interventions and on interventions to mitigate frequent ED use. Additionally, the systematic review we identified included only ED-based RCTs, and a future evidence review that includes observational and quality improvement studies is warranted to provide a more complete picture of available evidence on system-level interventions. We also identified a moderately sized body of qualitative research exploring barriers and facilitators to successful cross-system care transitions. Although formal theme analysis was outside of the scope of this report, we identified overlap in key findings across these studies. A systematic review augmented by VHA stakeholder interviews investigating common themes from qualitative research on this topic would likely provide important insights for implementing care transition interventions in the VHA context.

REFERENCES

1. Rinne ST, Resnick K, Wiener RS, Simon SR, Elwy AR. VA provider perspectives on coordinating copd care across health systems. *Journal of general internal medicine*. 2019;34(1):37-42.
2. Rider AC, Kessler CS, Schwarz WW, et al. Transition of care from the emergency department to the outpatient setting: A mixed-methods analysis. *The Western Journal of Emergency Medicine*. 2018;19(2):245-253.
3. National Quality Forum. Emergency department transitions of care: A quality measurement framework—final report: Dhhs contract hhs-500-2012-000091, task order hhs-500-t0025. 2017.
4. Aghajafari F, Sayed S, Emami N, Lang E, Abraham J. Optimizing emergency department care transitions to outpatient settings: A systematic review and meta-analysis. *American Journal of Emergency Medicine*. 2020;38(12):2667-2680.
5. Coleman EA, Smith JD, Frank JC, Min S-J, Parry C, Kramer AM. Preparing patients and caregivers to participate in care delivered across settings: The care transitions intervention. *Journal of the American Geriatrics Society*. 2004;52(11):1817-1825.
6. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implement Sci*. 2009;4:50.
7. Altman R, Shapiro JS, Moore T, Kuperman GJ. Notifications of hospital events to outpatient clinicians using health information exchange: A post-implementation survey. *Informatics in Primary Care*. 2012;20(4):249-255.
8. Atzema CL, Yu B, Ivers NM, et al. Predictors of obtaining follow-up care in the province of ontario, canada, following a new diagnosis of atrial fibrillation, heart failure, and hypertension in the emergency department. *CJEM Canadian Journal of Emergency Medical Care*. 2018;20(3):377-391.
9. Ayele RA, Lawrence E, McCreight M, et al. Perspectives of clinicians, staff, and veterans in transitioning veterans from non-VA hospitals to primary care in a single VA health care system. *Journal of hospital medicine*. 2020;15(3):133.
10. Ayele RA, Liu W, Rohs C, et al. VA care coordination program increased primary care visits and improved transitional care for veterans post non-VA hospital discharge. *American Journal of Medical Quality*. 2021;36(4):221-228.
11. Bauer KL, Sogade OO, Gage BF, Ruoff B, Lewis L. Improving follow-up attendance for discharged emergency care patients using automated phone system to self-schedule: A randomized controlled trial. *Academic Emergency Medicine*. 2021;28(2):197-205.
12. Bell LC, Norris-Grey C, Luintel A, et al. Implementation and evaluation of a covid-19 rapid follow-up service for patients discharged from the emergency department. *Clinical Medicine*. 2021;21(1):e57-e62.
13. Biese KJ, Busby-Whitehead J, Cai J, et al. Telephone follow-up for older adults discharged to home from the emergency department: A pragmatic randomized controlled trial. *Journal of the American Geriatrics Society*. 2018;66(3):452-458.
14. Bodenmann P, Velonaki VS, Griffin JL, et al. Case management may reduce emergency department frequent use in a universal health coverage system: A randomized controlled trial. *J Gen Intern Med*. 2016;32(5):508-515.

15. Chang L, Wanner KJ, Kovalsky D, Smith KL, Rhodes KV. "It's really overwhelming": Patient perspectives on care coordination. *Journal of the American Board of Family Medicine: JABFM*. 2018;31(5):682-690.
16. Coe AB, Moczygemba LR, Ogbonna KC, Parsons PL, Slattum PW, Mazmanian PE. Low-income senior housing residents' emergency department use and care transition problems. *Journal of Pharmacy Practice*. 2018;31(6):610-616.
17. Cornell SD, Valerio MA, Krause T, Cornell J, Revere L, Taylor BS. Low adherence to post emergency department follow-up among hypertensive patients with medical insurance. *Journal of Emergency Medicine*. 2020;58(2):348-355.
18. Dixon BE, Judon KM, Schwartzkopf AL, et al. Impact of event notification services on timely follow-up and rehospitalization among primary care patients at two veterans affairs medical centers. *Journal of the American Medical Informatics Association*. 2021.
19. Dixon BE, Luckhurst C, Haggstrom DA. Leadership perspectives on implementing health information exchange: Qualitative study in a tertiary veterans affairs medical center. *JMIR medical informatics*. 2021;9(2):e19249.
20. Dixon BE, Ofner S, Perkins SM, et al. Which veterans enroll in a VA health information exchange program? *Journal of the American Medical Informatics Association*. 2017;24(1):96-105.
21. Flink M, Ohlen G, Hansagi H, Barach P, Olsson M. Beliefs and experiences can influence patient participation in handover between primary and secondary care--a qualitative study of patient perspectives. *BMJ Quality & Safety*. 2012;21 Suppl 1:i76-83.
22. Foster SD, Hart K, Lindsell CJ, Miller CN, Lyons MS. Impact of a low intensity and broadly inclusive ed care coordination intervention on linkage to primary care and ed utilization. *American Journal of Emergency Medicine*. 2018;36(12):2219-2224.
23. Franzosa E, Traylor M, Judon KM, et al. Perceptions of event notification following discharge to improve geriatric care: Qualitative interviews of care team members from a 2-site cluster randomized trial. *Journal of the American Medical Informatics Association*. 2021;28(8):1728-1735.
24. Galarraga JE, DeLia D, Wilhite D, et al. Emergency department care coordination strategies and perceived impact under maryland's hospital payment reforms. *American Journal of Emergency Medicine*. 2021;45:578-589.
25. Gettel CJ, Hayes K, Shield RR, Guthrie KM, Goldberg EM. Care transition decisions after a fall-related emergency department visit: A qualitative study of patients' and caregivers' experiences. *Academic Emergency Medicine*. 2020;27(9):876-886.
26. Hastings SN, Stechuchak KM, Coffman CJ, et al. Discharge information and support for patients discharged from the emergency department: Results from a randomized controlled trial. *Journal of General Internal Medicine*. 2020;35(1):79-86.
27. High PM, Marks K, Robbins V, et al. State targeted response to the opioid crisis grants (opioid str) program: Preliminary findings from two case studies and the national cross-site evaluation. *Journal of Substance Abuse Treatment*. 2020;108:48-54.
28. Hwang U, Dresden SM, Rosenberg MS, et al. Geriatric emergency department innovations: Transitional care nurses and hospital use. *Journal of the American Geriatrics Society*. 2018;66(3):459-466.
29. Jacobsohn GC, Jones CMC, Green RK, et al. Effectiveness of a care transitions intervention for older adults discharged home from the emergency department: A randomized controlled trial. *Academic Emergency Medicine*. 2021;26:26.

30. Kahan D, Leszcz M, O'Campo P, et al. Integrating care for frequent users of emergency departments: Implementation evaluation of a brief multi-organizational intensive case management intervention. *BMC Health Services Research*. 2016;16:156.
31. Lockman KA, Lee WH, Sinha R, et al. Effective acute care handover to gp: Optimising the structure to improve discharge documentation. *Acute Medicine*. 2018;17(2):68-76.
32. Losonczy LI, Hsieh D, Wang M, et al. The highland health advocates: A preliminary evaluation of a novel programme addressing the social needs of emergency department patients. *Emerg Med J*. 2017;34(9):599-605.
33. Lovelace D, Hancock D, Hughes SS, Wyche PR, Jenkins C, Logan C. A patient-centered transitional care case management program: Taking case management to the streets and beyond. *Professional Case Management*. 2016;21(6):277-290.
34. Luciani-McGillivray I, Cushing J, Klug R, Lee H, Cahill JE. Nurse-led call back program to improve patient follow-up with providers after discharge from the emergency department. *Journal of Patient Experience*. 2020;7(6):1349-1356.
35. Martin TR, Gasoyan H, Pirrotta G, Mathew R. A national survey assessing health information exchange: Readiness for changes to veterans affairs access standards. *Perspectives in Health Information Management*. 2021;18(3).
36. McCormack RP, Hoffman LF, Wall SP, Goldfrank LR. Resource-limited, collaborative pilot intervention for chronically homeless, alcohol-dependent frequent emergency department users. *American journal of public health*. 2013;103(S2):S221-S224.
37. Nanavati M, Saenz S, Swayne K, Carek P. The golden letter: Innovation collaboration to reduce avoidable hospital admissions. *Journal of the American Board of Family Medicine: JABFM*. 2020;33(6):1011-1015.
38. Nossel IR, Lee RJ, Isaacs A, Herman DB, Marcus SM, Essock SM. Use of peer staff in a critical time intervention for frequent users of a psychiatric emergency room. *Psychiatr Serv*. 2016;67(5):479-481.
39. Olmos-Ochoa TT, Bharath P, Ganz DA, 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):82-89.
40. Pearson M, Karen B, Burgess MPPM A, Gale MS JA, Coburn PhD AF, Yousefian Hansen M. Health information exchange: A strategy for improving access for rural veterans in the maine flex rural veterans health access. 2016.
41. Pedersen LH, Gregersen M, Barat I, Damsgaard EM. Early geriatric follow-up visits to nursing home residents reduce the number of readmissions: A quasi-randomised controlled trial. *Eur Geriatr Med*. 2018;9(3):329-337.
42. Poremski D, Harris DW, Kahan D, et al. Improving continuity of care for frequent users of emergency departments: Service user and provider perspectives. *General Hospital Psychiatry*. 2016;40:55-59.
43. Richards D, Meshkat N, Chu J, Eva K, Worster A. Emergency department patient compliance with follow-up for outpatient exercise stress testing: A randomized controlled trial. *Canadian Journal of Emergency Medicine*. 2007;9(6):435-440.
44. Rising KL, Padrez KA, O'Brien M, Hollander JE, Carr BG, Shea JA. Return visits to the emergency department: The patient perspective. *Annals of Emergency Medicine*. 2015;65(4):377-386.e373.
45. Schenhals E, Haidet P, Kass LE. Barriers to compliance with emergency department discharge instructions: Lessons learned from patients' perspectives. *Internal & Emergency Medicine*. 2019;14(1):133-138.

46. Schumacher JR, Lutz BJ, Hall AG, et al. Impact of an emergency department-to-home transitional care intervention on health service use in medicare beneficiaries: A mixed methods study. *Medical Care*. 2021;59(1):29-37.
47. Sherman RL, Judon KM, Koufacos NS, et al. Utilizing a health information exchange to facilitate covid-19 VA primary care follow-up for veterans diagnosed in the community. *JAMIA open*. 2021;4(1):ooab020.
48. Shuen JA, Wilson MP, Kreshak A, et al. Telephoned, texted, or typed out: A randomized trial of physician-patient communication after emergency department discharge. *Journal of Emergency Medicine*. 2018;55(4):573-581.
49. Soto GE, Huenefeldt EA, Hengst MN, et al. Implementation and impact analysis of a transitional care pathway for patients presenting to the emergency department with cardiac-related complaints. *BMC Health Services Research*. 2018;18(1):672.
50. Tessitore A, Brennan-Cook J. Improving outpatient follow-up through innovative appointment scheduling at emergency department discharge. *Advanced Emergency Nursing Journal*. 2021;43(1):71-78.
51. Vieth TL, Rhodes KV. Nonprice barriers to ambulatory care after an emergency department visit. *Annals of Emergency Medicine*. 2008;51(5):607-613.
52. Walker ER, Fukuda J, McMonigle M, Nguyen J, Druss BG. A qualitative study of barriers and facilitators to transitions from the emergency department to outpatient mental health care. *Psychiatric Services*. 2021:appips202000299.
53. Wexler R, Hefner JL, Sieck C, et al. Connecting emergency department patients to primary care. *The Journal of the American Board of Family Medicine*. 2015;28(6):722-732.