
Primary Care Engagement Among Veterans with Experiences of Homelessness and Serious Mental Illness: An Evidence Map

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Prepared by:

Evidence Synthesis Program (ESP) Center
Durham VA Healthcare System
Durham, NC
Karen M. Goldstein, MD, MSPH, Co-Director
Jennifer M. Gierisch, PhD, MPH, Co-Director

Authors:

Megan Shepherd-Banigan, PhD
Connor Drake, PhD, MPA
Jessica R. Dietch, PhD
Abigail Shapiro, MPH
Amir Alishahi Tabriz, MD, PhD, MPH
Elizabeth E. Van Voorhees, PhD
Diya M. Uthappa, BS
Tsai-Wei Wang, BS
Jay B. Lusk, BSc
Stephanie Salcedo Rossitch, PhD
Jessica Fulton, PhD
Adelaide Gordon, MPH
Belinda Ear, MPH
Sarah Cantrell, MLIS
Jennifer M. Gierisch, PhD, MPH
John W. Williams, Jr., MD, MHSc
Karen Goldstein, MD, MSPH



U.S. Department of Veterans Affairs

Veterans Health Administration
Health Services Research & Development Service



PREFACE

The VA Evidence Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted healthcare topics of importance to clinicians, managers, and policymakers as they work to improve the health and healthcare 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 and Cochrane. The Coordinating Center was created to manage program operations, ensure methodological consistency and quality of products, and interface with stakeholders. 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](#).

Comments on this evidence report are welcome and can be sent to Nicole Floyd, Deputy Director, ESP Coordinating Center at Nicole.Floyd@va.gov.

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ACKNOWLEDGMENTS

This topic was developed in response to a nomination by the National Center on Homelessness Among Veterans to inform development of a new program to enhance primary care utilization among Veterans with experiences of homelessness and serious mental illness (SMI). The scope was further developed with input from the topic nominators (*ie*, Operational Partners), the ESP Coordinating Center, the report team, and the technical expert panel (TEP).

In designing the study questions and methodology at the outset of this report, the ESP consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicting opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

Operational Partners

Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend Technical Expert Panel (TEP) participants; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for dissemination of the report to field and relevant groups.

Dina Hooshyar, MD, MPH
Director, National Center on Homelessness Among Veterans

Technical Expert Panel (TEP)

To ensure robust, scientifically relevant work, the TEP guides topic refinement; provides input on key questions and eligibility criteria, advising on substantive issues or possibly overlooked areas of research; assures VA relevance; and provides feedback on work in progress. TEP members are listed below:

Daniel Bradford, MD, MPH
National Director, Intensive Case Management Services, VA Central Office
Durham, NC

Nicholas Bowersox, PhD, ABPP
Director, VA QUERI Center for Evaluation and Implementation
Ann Arbor, MI

Evelyn Chang, MD
Physician and Health Services Researcher at Department of Veterans Affairs
West Los Angeles, CA

Sonya Gabrielian MD, MPH
Physician and Health Services Researcher at Department of Veterans Affairs
West Los Angeles, CA



Andrew Pomerantz, MD
National Mental Health Director, Integrated Care, VA Central Office
Washington, DC

Michal Wilson, MD
Medical Advisor, Homeless Programs, VA Central Office
Washington, DC

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. 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 and the ESP Center work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

TABLE OF CONTENTS

Acknowledgments	ii
Executive Summary	1
Introduction.....	1
Methods	1
Results.....	2
Discussion.....	4
Evidence Report	6
Introduction	6
Methods	8
Topic Development.....	8
Search Strategy	10
Study Selection	10
Data Abstraction	12
Quality Assessment.....	12
Data Synthesis.....	12
Rating the Body of Evidence	13
Peer Review	13
Results	14
Literature Flow	14
Key Question 1: What intervention strategies have been studied among adults with experiences of homelessness or who are at high risk of experiencing homelessness and who have serious mental illness (SMI) to promote engagement in primary care?.....	15
Key Points	15
Detailed Findings	15
Intervention Complexity	29
Reported Effects of Included Studies	31
Key Question 2: What measures have been used to evaluate interventions among adults with experiences of homelessness or who are at high risk of experiencing homelessness and who have SMI to promote engagement in primary care?.....	32
Key Points.....	32
Detailed Findings	32
Summary of KQ 2 Findings	33
Summary and Discussion	34
Prior Systematic Reviews	34
Clinical and Policy Implications.....	35
Limitations	36
Study Quality and Design	36
Intervention Strategy Reporting.....	37
Generalizability and Applicability of Findings to the VA Population	38
Research Gaps/Future Research	38
Conclusions.....	39
References	40

TABLES

Table 1. Study Eligibility Criteria..... 10
Table 2. Evidence Profile of ACCESS Studies (n=7) 16
Table 3. Evidence Profile of Non-ACCESS Studies (n=15) 17
Table 4. Patient-level Intervention Strategies by Domain 21
Table 5. Clinic-level Intervention Strategies by Domain 23
Table 6. Clinic-level Staffing by Discipline 24
Table 7. Collaborative Agencies for Services Outside Core Intervention Offerings 24
Table 8. System-level Intervention Strategies 25
Table 9. ACCESS: Potential System Integration Strategies^a 26
Table 10. Elements of Primary Care Integration 29
Table 11. Evidence Gaps and Areas for Future Research Consideration 39

FIGURES

Figure 1. Conceptual Model 9
Figure 2. Literature Flow Chart 14
Figure 3. Sources of Patient Enrollment^{a,b} 18
Figure 4. Framework of Multi-Level Intervention Strategies..... 19
Figure 5. Studies per Domain at Patient, Clinic, and System Levels 20
Figure 6. Approaches to Engagement with Primary Care^{ab} 28
Figure 7. Intervention Complexity Heat Map by Core Dimension of iCAT_SR^a 30
Figure 8. Outcome Measures Mapping..... 33

Appendix A. Search Strategies 44
Appendix B. Study Characteristics Tables..... 48
Appendix C. Intervention Strategies Table 56
Appendix D. Summary of Outcome Measures..... 60
Appendix E. Reported Findings by Included Study 64
Appendix F. Excluded Studies Table 69
Appendix G. Intervention Complexity: ICAT Systematic Review Determinations 83
Appendix H. Peer Review Comments and Response Table..... 104



EVIDENCE REPORT

INTRODUCTION

Adults with experiences of homelessness, both those who have been homeless and those with housing insecurity, are more likely to suffer from higher rates of chronic illness and early mortality compared with those who are not homeless.¹⁻³ The homeless population also experiences a higher mental health burden than the general population; about 20-25% of people who experience homelessness in the United States also have diagnosed serious mental illness (SMI).^{4,5} Moreover, Veterans who experience homelessness and have used the emergency department have a 3.4-fold higher likelihood of being diagnosed with schizophrenia.⁶ The VA National Psychosis Registry defines SMI as the presence of schizophrenia, other psychotic disorders, or bipolar disorder. Mental and behavioral health disorders threaten household stability, which, in turn, leads to poor community integration and treatment dropout.⁷ Hence, both homelessness and mental illness are key vulnerabilities that undermine health and access to health care for this population. Individuals with experiences of homelessness and SMI would benefit greatly from medical care to help manage their chronic health needs, yet the underlying context of both homelessness and SMI restrict their engagement in traditional, clinic-based primary care. For example, stigma in the health system,⁸ lack of transportation, and prioritizing basic needs above health concerns limit their ability to obtain primary health care.⁹ Further, the risks of homelessness and SMI together likely amplify barriers to health care. For example, SMI increases housing insecurity,¹⁰ and housing insecurity impedes engagement in health care,^{11,12} which in turn increases SMI symptoms. As a result, these individuals receive less preventive care and chronic disease management and often receive the majority of their health care in acute care settings such as emergency departments.⁶

Thoughtful interventions have been developed to directly address some of the barriers to engaging in primary care for populations with housing instability and populations with SMI.¹³ However, despite the high prevalence of SMI among people who experience homelessness, most interventions tailored to this population currently focus on either SMI or homelessness and few efforts have been developed to address both vulnerabilities and the intersection between the two.^{14,15} The few studies that have sought to improve health care engagement to meet the complex health and social needs related to both homelessness and SMI have focused broadly on collaborative and patient-centered medical home models tailored for this population to address social determinants of health.¹⁵⁻¹⁷ Research shows that these interventions can improve continuity of care, use of primary and mental health care,¹⁶⁻¹⁸ and housing outcomes.^{19,20} While this research is promising, to date there have been no systematic examinations of the breadth of the literature about interventions that attempt to improve engagement in care for populations with intersecting needs related to SMI and homelessness.

For health systems to better meet the health care needs of this complex population, it is critical to learn about the types of interventions and strategies that have been evaluated to better connect patients with housing insecurity and SMI to primary care, and which outcomes they evaluated. In this evidence map, we systematically examine the literature and provide an overview of the quantity and distribution of intervention types and components that were assessed to improve engagement in primary care for individuals with housing insecurity and SMI. The overarching goal is to provide a better understanding of the breadth of intervention models that promote

primary care engagement among individuals with experiences of homelessness or who are at high risk of experiencing homelessness and who have a history of SMI.

The Key Questions (KQs) for this evidence map were:

- KQ 1:** What intervention strategies have been studied among adults with experiences of homelessness or who are at high risk of experiencing homelessness and who have serious mental illness (SMI) to promote engagement in primary care?
- KQ 2:** What measures have been used to evaluate interventions among adults with experiences of homelessness or who are at high risk of experiencing homelessness and who have SMI to promote engagement in primary care?

METHODS

We followed a standard protocol for this evidence mapping review, developed in collaboration with our operational partners and a technical expert panel. An evidence map “is a systematic search of a broad field to identify gaps in knowledge and/or future research needs that presents results in a user-friendly format, often a visual figure or graph, or a searchable database.”²¹ The protocol was developed prior to the conduct of the review, and was published online on the program website. There were not significant deviations after protocol publication. Each step was pilot-tested to train and calibrate study investigators. While there are no specific guidelines for reporting evidence maps, we followed the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) guidelines where applicable.²²

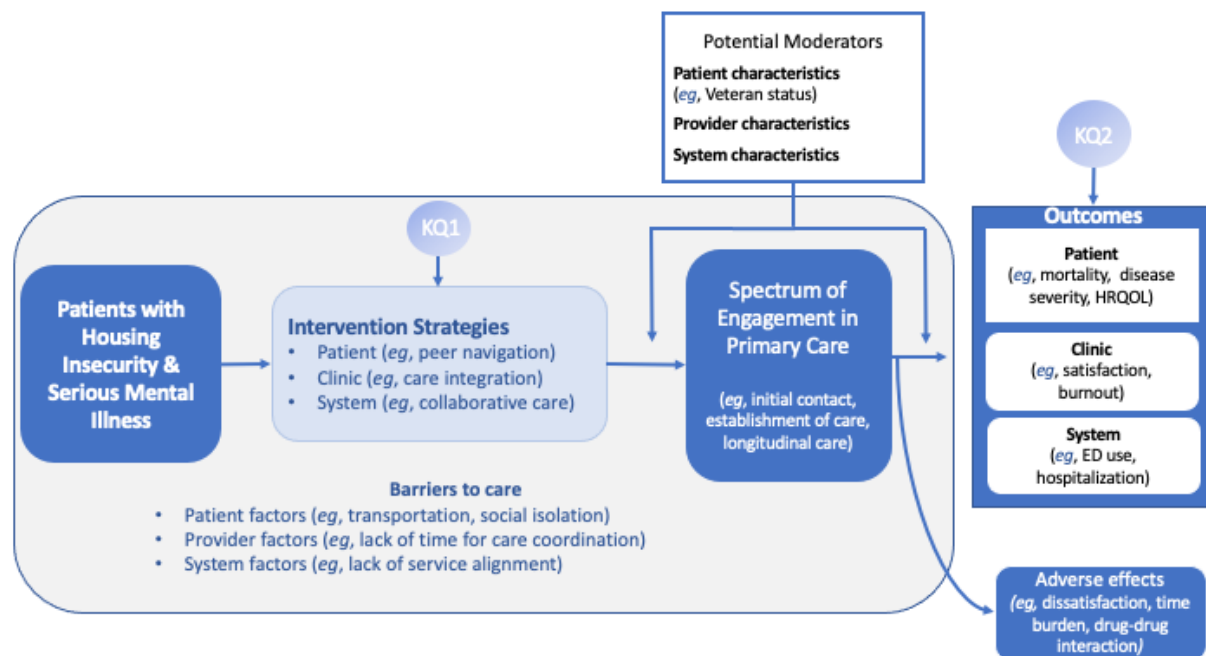
TOPIC DEVELOPMENT

This topic was requested by the National Center on Homelessness Among Veterans. Findings from this report will be relevant to the Veterans Health Administration (VHA) as it seeks to continue the provision of high-quality clinical care to the Veteran population with housing insecurity and SMI through the development of pilot programs to serve the primary care needs of this vulnerable population. The results of this project may also be relevant to individuals, health care providers, and other agencies seeking to improve the health and quality of life for individuals with housing insecurity and SMI.

Conceptual Model

To guide this evidence map, we developed the conceptual model depicted in Figure 1. Patients with housing insecurity and SMI experience numerous barriers to engaging in primary care that occur at the patient, provider, and system levels. We recognize that engaging with primary care occurs across a spectrum that includes initial contact, establishing care, and care provision over time. To overcome barriers to engaging in primary care, interventions can employ strategies at these same 3 levels (patient, clinic, and system). Patient-level strategies focused on clinical techniques and delivery models that directly targeted the patient. Clinic-level strategies related to clinic- or provider-targeted approaches, including workforce development, staffing, and capacity-building activities. System-level strategies were activities to improve system integration for multi-sector coordination. For example, peer navigators can directly connect patients with care to help overcome challenges related to lack of transportation and social isolation. Care integration improves coordination among providers to help connect patients with the care they need. Finally, models such as collaborative care address system-level barriers, including care fragmentation, by implementing structural processes that support service alignment. Patient, provider, and system characteristics modify patients’ ability to engage with primary care and have an impact on the effect of primary care engagement on outcomes. When interventions effectively help patients to establish and maintain primary care, benefits are expected for patient health (*eg*, improvements in psychiatric symptoms), provider satisfaction, and the system (*eg*, reduced emergency department use). We also recognize that these interventions might lead to adverse outcomes, including patient dissatisfaction with care, oversights in medication management, and time burden for providers. The first KQ focuses on intervention strategies to improve primary care engagement of patients with housing insecurity and SMI. The second KQ explores the breadth of outcomes used to evaluate relevant interventions.

Figure 1. Conceptual Model



Definitions

To guide the evidence mapping process, we established the following definitions in conjunction with our operational partners and technical expert panel.

- **Experiences with homelessness** is lacking a fixed, regular, and adequate night-time residence, including being unhoused or living in supervised shelters, supported housing, or places not intended for human habitation. **Housing insecurity** is being at risk for losing housing and lacking resources to obtain other permanent housing or receiving housing support services. However, because the terms “homeless” and “housing insecurity” are defining in multiple ways across the literature, we accepted any definition reported in the literature.
- **Serious mental illness (SMI)** is the presence of schizophrenia, other psychotic disorders, or bipolar disorder, consistent with the VA National Psychosis Registry (NPR). We acknowledge that there are multiple ways that SMI is defined. For example, some broader definitions of SMI include major depressive disorder (MDD) and posttraumatic stress disorder (PTSD). For the purposes of this evidence mapping review, we tracked which studies used the narrower (*ie*, NPR) definition and which used a broader definition, or which self-identified their targeted patient population as having SMI but did not provide enough information to determine whether it was the broader or narrower category.
- **Primary care** is a service that “provides long-term, patient-provider relationships, coordinates care across a spectrum of health services, educates, and offers disease prevention programs” to the general population.²³

- Primary care engagement** is the range of structured interactions between an individual patient and a primary care provider and/or primary care clinical team that has direct linkage to a prescribing primary care provider (eg, MD, DO, NP, PA). Specific engagement interactions can occur across a spectrum from initial contact (including patient identification and referral to primary care), establishment of a therapeutic relationship with a primary care clinic, and longitudinal patient-centered care delivery. In this context, a key component of engagement is the establishment of a relationship with a primary care clinic with the intent for regular, proactive contact for the purpose of managing health over time.

SEARCH STRATEGY

We collaborated with an expert medical librarian to conduct a primary search of the literature from database inception to May 15, 2020, in MEDLINE® (via Ovid®), EMBASE (via Elsevier), and PsycINFO (via Ovid®). We used a combination of database-specific subject headings and keywords (eg, homelessness, primary care, veterans) to search titles and abstracts (Appendix A). No limits were placed on date or language. Case reports, editorials, letters, and conference abstracts were excluded from the search. We hand-searched previous systematic reviews conducted on this topic for potential inclusion.

STUDY SELECTION

Studies identified through our primary search were classified independently by 2 investigators for relevance to the KQs based on our *a priori* eligibility criteria (Table 1), which were developed with the guidance of the technical expert panel. All citations classified for inclusion by at least 1 investigator were reviewed at the full-text level. The citations designated for exclusion by 1 investigator at the title-and-abstract level underwent screening by a second investigator. If both investigators agreed on exclusion, the study was excluded. All articles meeting eligibility criteria at full-text review were included for data abstraction. All results were tracked in both DistillerSR, a web-based data synthesis software program (Evidence Partners Inc., Manotick, ON, Canada), and EndNote® reference management software (Clarivate).

Table 1. Study Eligibility Criteria

Study Characteristic	Inclusion Criteria	Exclusion Criteria
Population	Ambulatory adults (≥18 years of age) who have had experiences of homelessness or those with housing insecurity <u>and</u> who have serious mental illness (SMI) as determined by meeting 1 of the following 3 criteria: <ul style="list-style-type: none"> • Primary SMI, defined as at least a one-time diagnosis of schizophrenia, other psychotic disorder, or bipolar disorder (as per VA NPR; see expanded definition above on page 13) • Secondary SMI, defined as the above diagnoses <u>plus</u> major depressive disorder (MDD) or posttraumatic stress disorder (PTSD) 	<ul style="list-style-type: none"> • Children, teens • People with substance use or depression not specified as MDD as the only diagnosed mental health condition • <75% adult population with SMI • Interventions that are not targeted toward homeless populations, or are targeted only to those with housing insecurity but who no longer need housing services

Study Characteristic	Inclusion Criteria	Exclusion Criteria
	<ul style="list-style-type: none"> The population was explicitly labeled as SMI by the study authors even if the operationalized definition of SMI is different than the above 2 categories (eg, could be labeled as severe and persistent mental illness (SPMI)) 	<ul style="list-style-type: none"> Mixed populations of homeless and nonhomeless without subgroup analysis
Interventions	<p>Interventions designed to promote structured interaction with a prescribing primary care clinician or with a clinical team member who has a direct linkage, or facilitates linkage, to a prescribing primary care clinician <u>and</u> that meet 1 of the following 3 criteria:</p> <ul style="list-style-type: none"> Intervention is specifically targeted to patients with housing insecurity and SMI Intervention is targeted to patients with housing insecurity, of whom at least 75% have SMI or diagnoses consistent with SMI Intervention is targeted to patients with housing insecurity and includes a subgroup analysis with outcomes reported separately for the group of interest 	<ul style="list-style-type: none"> Interventions that do not include a prescribing primary care healthcare clinician (eg, PCP, NP, PA), which has no direct linkage, or which do not facilitate linkage to one Interventions that involve a social worker or mental health provider without direct connection to a primary care clinical staff member
Comparators	Any comparator (eg, usual care, active comparator) or no comparator	Not applicable
Outcomes*	Any	Not applicable
Timing	Any	Not applicable
Setting	Any (eg, clinical, housing services, criminal justice system)	Not applicable
Study designs ^a	<ul style="list-style-type: none"> EPOC: randomized trials, nonrandomized trials, controlled before-after studies, interrupted time series^a Observational: cohort, organizational case study, program evaluation Relevant systematic reviews or patient-level meta-analyses must have search strategy, eligibility criteria, and analysis/synthesis plan Qualitative studies must include description of intervention strategy and/or components 	<ul style="list-style-type: none"> Not an intervention evaluation study (eg, editorial, nonsystematic review, letter to the editor, conference abstract) Clinical guidelines Protocol only Individual patient case study
Language	Any	Not applicable
Countries	OECD ^b	Non-OECD
Years	Any	Not applicable
Publication types	Full publication in a peer-reviewed journal	Letters, editorials, reviews, dissertations, meeting abstracts, protocols without results

^a Cochrane EPOC criteria identify study designs optimal for evaluation of health system interventions²⁴



^bOECD = Organization for Economic Co-operation and Development includes Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

Abbreviations: EPOC=Effective Practice and Organisation of Care; MDD=major depressive disorder; NP=nurse practitioner; PA=physician assistant; PCP=primary care physician; PTSD=posttraumatic stress disorder; SMI=serious mental illness; SPMI=severe and persistent mental illness

DATA ABSTRACTION

Data from included studies were abstracted into a customized DistillerSR database by 1 reviewer and over-read by a second reviewer. Disagreements were resolved by consensus or by obtaining a third reviewer's opinion when consensus was not reached. We treated multiple reports from a single study as a single data point, prioritizing results based on the most complete and appropriately analyzed data. We approached data abstraction in 2 phases.

First, data elements such as descriptors to assess applicability, high-level intervention details, and outcomes were abstracted. Key characteristics abstracted included patient descriptors (*eg*, age, sex, race), intervention characteristics (*eg*, entry point to care, engagement methods, provider type), comparator (if any), and outcomes. When critical data were missing or unclear in published reports, we requested supplemental data from the study authors. Key features relevant to applicability included the match between the sample and target populations (*eg*, age, Veteran status).

Second, a subgroup of the larger team (MSB, CD, JRD, KMG) abstracted specific strategies used by each intervention or program. An initial list of potential strategies was drawn from previous reviews of interventions linking primary care to patients with experiences of homelessness.^{14,15} The list of potential strategies was revised collaboratively by the subgroup of investigators after abstracting an initial 2 citations. The intervention strategies for the rest of the included studies were abstracted independently by 2 investigators and then reconciled for final determination. This group met regularly during this second-level abstraction to discuss any additional changes needed for the intervention strategies list.

For details of study characteristics, see Appendix B. Appendix C presents details of the intervention characteristics. Appendix D lists outcome measures, and Appendix E shows reported findings by included study. Appendix F lists excluded studies and the reason for exclusion.

QUALITY ASSESSMENT

As this is an evidence mapping review, we did not assess the methodological quality of individual studies.²¹

DATA SYNTHESIS

We summarized the literature using relevant data abstracted from the eligible studies. Summary tables describe the key study characteristics of the primary studies: study design, patient demographics, and details of the intervention. Data were summarized narratively. Data presentations include tabular and graphical formats, as appropriate, to convey key features of the literature.

In order to systematically characterize the complexity of included interventions and programs, we used the intervention Complexity Assessment Tool for Systematic Reviews (iCAT_SR).²⁵ Two investigators (KMG, MSB) applied the 10 iCAT_SR dimensions and assessment criteria to an initial 4 studies to establish an approach to application in the context of this mapping project. Then, the iCAT_SR was applied to the remaining included studies by 1 investigator and over-read by a second (Appendix G).

Next, we sought to determine an intervention's degree of integration with primary care. While we are aware of existing frameworks that allow for the categorization of interventions along a continuum of integration²⁶ or integrated mental health, such as the Integrated Practice Assessment Tool (IPAT),²⁷ we were unable to apply existing tools directly because of insufficient information provided by individual studies. Therefore, we identified the following individual key elements of integration based on such tools and identified the presence or absence of each element across the included studies:

- (1) **Standard referral:** nonspecific referral pathways linking patients to primary care without evidence of clear interactive communication
- (2) **Enhanced referral:** established relationships with primary care providers who are not an embedded part of the intervention, but with whom there is some form of interactive communication across disciplines that can be activated when needed
- (3) **Co-location:** primary care is co-located in same physical space as other disciplines working with targeted patient population (note this can occur with or without interdisciplinary care planning)
- (4) **Interdisciplinary care planning:** evidence of regular interdisciplinary collaboration around the planning of care for individual patients (note that this can occur with or without co-location of disciplines)

Our analysis is presented as a broad literature map without synthesis of the results across studies or quality of individual studies, or the strength of evidence for the KQs.

RATING THE BODY OF EVIDENCE

In keeping with established methods for evidence mapping reviews, we did not grade the strength of evidence for each KQ.²¹

PEER REVIEW

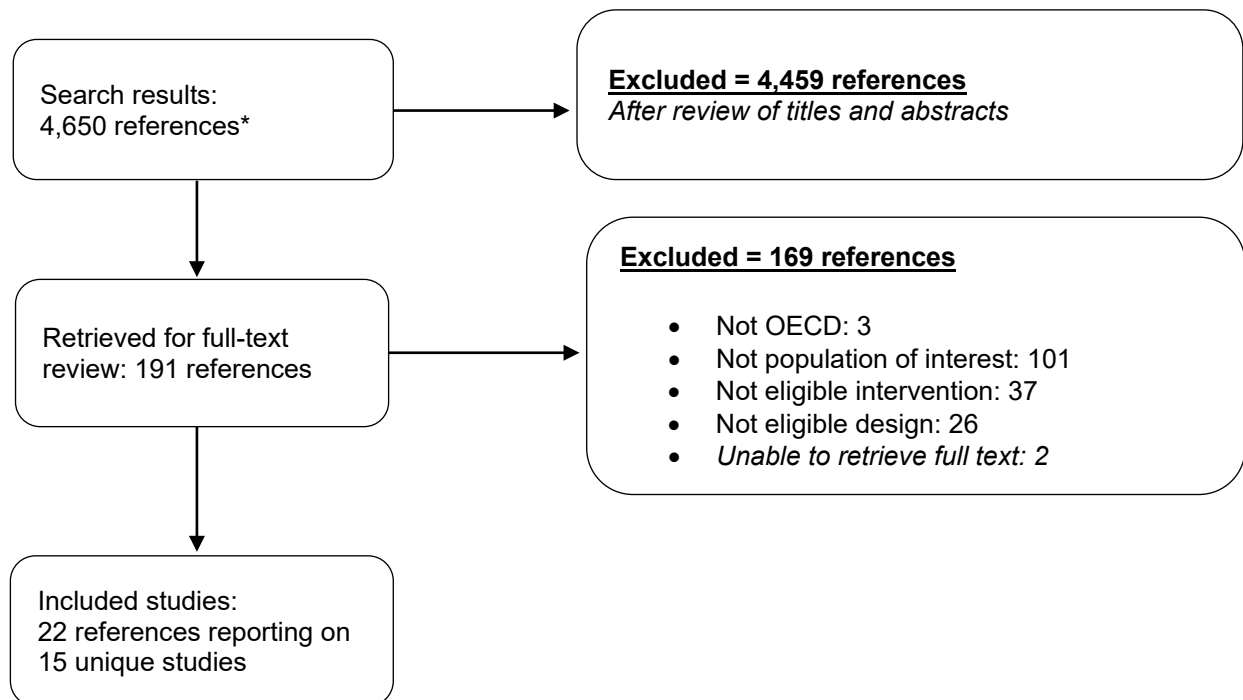
A draft version of this report was reviewed by technical experts and clinical leadership. A transcript of their comments and our responses is in Appendix H

RESULTS

LITERATURE FLOW

We identified 7,897 studies through searches of MEDLINE® (via Ovid®), EMBASE, and PsycINFO (Figure 2). An additional 7 articles were identified through reviewing bibliographies of relevant review articles for a total of 7,904 articles. After removing duplicates, there were 4,650 articles. After applying inclusion and exclusion criteria to titles and abstracts, 191 articles remained for full-text review. Included studies were conducted across Canada and the United States. Two studies were conducted within the VA.

Figure 2. Literature Flow Chart



*Search results from Ovid MEDLINE (3,358), EMBASE (942), PsycINFO (343), and identified from relevant articles (7) were combined.

KEY QUESTION 1: What intervention strategies have been studied among adults with experiences of homelessness or who are at high risk of experiencing homelessness and who have serious mental illness (SMI) to promote engagement in primary care?

Key Points

- Interventions designed to promote engagement in primary care for adults with experiences of homelessness or who are at high risk of experiencing homelessness and have SMI often employ multi-level strategies (*eg*, at the patient, clinic, and system levels).
- The most frequently described patient-level strategies include health education, service navigation, material housing support, and interdisciplinary needs assessment.
- Population-specific employee training was the most common clinic-level strategy, while psychiatry, primary care, and care management were the most frequently described disciplines delivering the intervention strategies across included studies.
- System-level strategies include shared documentation and record systems (*eg*, electronic health records and social services administrative records), standardized performance metrics, and a proactive monitoring system.
- There was a relatively even distribution of the 4 key elements of practice integration across included studies, including co-location of primary care with other disciplines, interdisciplinary care planning, a network of established referral pathways built to support interactive communication, and standard referral mechanisms.

Detailed Findings

We identified a total of 22 articles describing 15 different interventions and programs designed to support primary care engagement among patients with housing insecurity and SMI.²⁸⁻⁴⁹ Seven of the 22 included articles describe the ACCESS demonstration project,³⁸⁻⁴⁴ which we discuss separately from the other 14 individual interventions and programs.

ACCESS Characteristics and Demographics

The Access to Community Care and Effective Services and Support (ACCESS) was a federal demonstration program initiated in 1993. It was developed in response to recommendations from the Federal Task Force on Homelessness and Mental Illness, which sought to address the barriers generated by fragmented and isolated service delivery systems.³⁸⁻⁴⁴ Endorsed and funded by the US Department of Health and Human Services, the goal of ACCESS was to test the effectiveness of systems integration strategies hypothesized to support patients with experiences of homelessness and mental illness by improving coordination across the social and medical care continuum. The ACCESS program was implemented at 18 sites in 9 pairs across major cities in the United States; all sites were provided financial resources to enhance services, but only 9 were given additional funding to support system integration.

We identified 7 publications that evaluated different aspects of the ACCESS multi-site comparative program evaluation and which included reference to primary care as a component of

system integration (see Table 2 and Appendix B).³⁸⁻⁴⁴ Included ACCESS analyses were published in the 11 years spanning 1997 to 2008 and examined outcomes at the patient level (*eg*, physical and mental health status, health care utilization), clinic level (*eg*, patient referrals), and system level (*eg*, agency linkages and system coordination). One study compared the impact of gender on the outcomes of the ACCESS program.³⁸ Included studies examined data across ACCESS sites (all but one⁴¹ from all 18 different sites around the country. Four studies (57%) reported the source of patient enrollment, which included locations such as homeless shelters, the streets, drop-in centers, service agencies, and soup kitchens, among others.

Individual participants at ACCESS sites were required to be homeless (had spent at least 7 of the past 14 nights in a shelter, outdoors, or in a public or abandoned building); have severe mental illness (psychiatric eligibility was determined with a 30-item screening algorithm); and not be involved in ongoing mental health treatment. Two studies reported patient-level demographics.^{38,43} Both reported patient mean age as 38.5 years. One study reported the racial/ethnic make-up of patients, with 44.5% Black and 5.2% Hispanic.⁴³ One study reported mean monthly income of \$328 (standard deviation, \$449).⁴³ No study reported patient employment status. One study reported a 16% alcohol use disorder among patients.³⁸

Table 2. Evidence Profile of ACCESS Studies (n=7)

<p>Number of studies: 7 studies (1 intervention)</p> <p>Study designs: ACCESS multisite comparative program evaluation (n=7)</p> <p>Number of participants^a: n=7,229</p> <p>Enrollment setting^{a,b}: homeless shelters, the streets, drop-in centers, service agencies, and soup kitchens, among others (3 studies NR)</p> <p>Countries: 18 cities across USA (n=1)</p> <p>Serious mental illness: ACCESS intervention designed specifically for patients with SMI</p> <p>Housing insecurity: Participants had spent at least 7 of the past 14 nights in a shelter, outdoors, or in a public or abandoned building</p> <p>Patient demographics: median age = 38 years old (5 studies NR); women (37%) (5 studies NR) race (44.5% Black) (6 studies NR)</p> <p>Duration of intervention: 5-year demonstration project</p> <p>Patient-level intervention domains: education/training (n= 0); evidence-based patient interactions (n=3); outreach (n=0); clinical/case management (n=5); structural/material supports (n=4); low-barrier clinic approaches (n=1)</p> <p>Clinic-level intervention domains: program staff support (n=4); specialized team members (n=0); clinical offering domain (n=0)</p> <p>System-level intervention domains: data sharing infrastructure (n=4); evaluation (n=0); coordination approaches (n=3)</p> <p>Primary outcomes reported: system integration (n=3); health status (n=1); other (n=1) (2 studies NR)^c</p>

^a Not all ACCESS studies analyze data from full cohort

^b Studies recruited from multiple locations

^c Studies reported more than one primary outcome

Non-ACCESS Study Characteristics and Demographics

We identified 14 interventions to improve access to primary care for individuals with SMI experiencing homelessness (see Table 3 and Appendix B).^{28,30-37,45-49} Study designs included cohort studies (n=4^{28,36,45,47}), program evaluations (n=4^{32,35,48,49}), controlled before-after studies (n=2^{34,37}), randomized controlled trials (n=2^{31,33}), a cross-sectional study (n=1⁴⁶), and a qualitative study (n=1³⁰). Twelve studies (86%) reported participant-level enrollment.^{28,30-34,36,37,45-47,49} Of 12 studies reporting, 10 studies (83%) included 500 or fewer participants,^{28,30-34,36,37,46,49} 1 study had 501-1000 participants,⁴⁷ and 1 study had more than 1000 participants.⁴⁵ Eleven studies (79%) reported participant sex^{28,30-37,45-49}; 10 studies enrolled mostly men in the intervention group (range 62.6% to 100% male),^{28,30,33-37,45,46,49} and 1 study reported a slight minority of men in the intervention group (45% male).³¹ All 5 studies with comparison groups reported majority male samples (range 56% to 100%).^{28,31,34,36,37} Of the 10 studies (71%) reporting age of participants, the mean age range was 38.6 to 52.9 years.^{28,31,33-37,45,46,49} Four studies (28%) were majority white,^{28,31,34,45} 5 studies (36%) were majority Black,^{33,35,37,46,49} and 1 study reported most participants were of Hispanic ethnicity.³⁶ Four included studies (28%) did not report the racial/ethnic make-up of participants.^{30,32,47,48}

All 14 interventions were conducted in either the United States (n=10, 71%)^{30-33,35-37,45,46,48} or Canada (n=4, 28%)^{28,34,47,49}. While targeting patients with housing insecurity, 9 studies (64%) did not report specific baseline housing status of participants; 1 study (7%) reported number of nights spent on streets or in shelters in past 12 months³⁴; 1 study (7%) reported situational (*ie*, episodic) versus chronic homelessness³⁶; 1 study (7%) reported whether or not individuals were in transitional housing³⁰; and 1 study (7%) reported whether individuals lived in transitional housing (supervised or temporary shelters) or had a primary nighttime residence not meant for human habitation.³¹

Table 3. Evidence Profile of Non-ACCESS studies (n=15)

<p>Number of studies: 15 studies (14 interventions)</p> <p>Study designs: randomized controlled trial (n=2); controlled before and after (n=2); cohort (n=4); program evaluation (n=4); cross-sectional (n=1); qualitative (n=1)</p> <p>Number of participants: 3,945 (2 studies NR);</p> <p>Enrollment setting^a: housing services (n=7); clinical setting or a multidisciplinary program (n=5); criminal justice (n=2); soup kitchen (n=1); drop-in service center (n=1); outreach team (n=1); setting not reported (n=4)</p> <p>Countries: USA (n=10); Canada (n=4)</p> <p>Serious mental illness: explicitly designed for patients with SMI (n=11); 75% or more patients meeting broad definitions of SMI (n=7)</p> <p>Housing insecurity: all studies targeted patients with housing insecurity; number of nights on the street (n=1); situational vs chronic homelessness (n=1); transitional housing (n=2); specific housing status not reported (n=9)</p> <p>Patient demographics: median age = 44 years old (2 studies NR); women (10%) (6 studies NR); race (51% White) (10 studies NR) (50% Black) (8 studies NR)^p</p> <p>Duration of intervention: median duration was 12 months range (6 weeks to 2 years) (6 studies NR)</p> <p>Patient-level intervention domains: education/training (n= 5); evidence-based patient interactions (n=9); outreach (n=4); clinical/case management (n=13); structural/material supports (n=10); low-barrier clinic approaches (n=6)</p>
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Clinic-level intervention domains: program staff support (n=18); specialized team members (n=7); clinical offering (n=3)

System-level intervention domains: data sharing infrastructure (n=9-4); evaluation (n=2); coordination approaches (n=0)

Primary outcomes reported: healthcare utilization (n=4); health status (n=3); other (n=3) (5 studies NR)^c

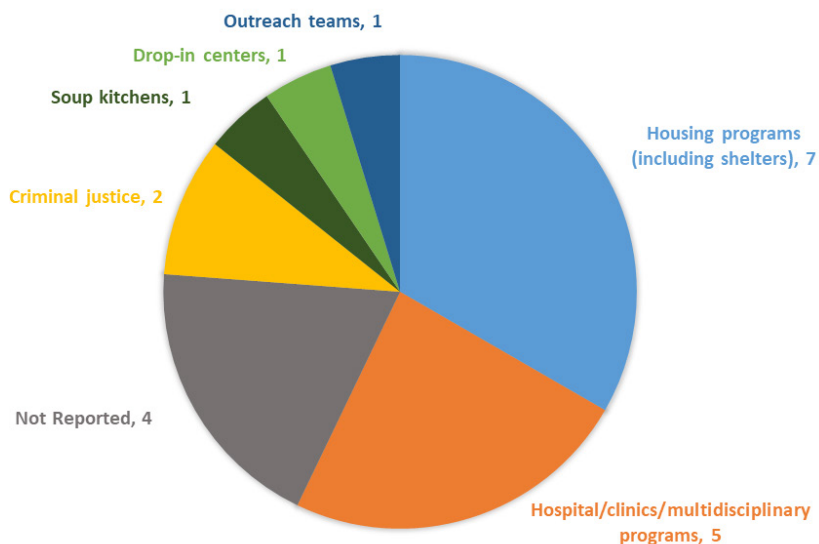
^a Studies recruited from multiple locations

^b Only 2 studies report both Black and White race information

^c Studies reported more than 1 primary outcome

The patient enrollment locations varied across the included studies (Figure 3.) Five studies reported recruiting from a clinical setting or a multidisciplinary program^{28,31,33,48,49}; 3 of these reported also recruiting from a housing services location.^{28,31,33} Four studies reported recruiting only from housing services.^{30,34,37,45} One study recruited from the criminal justice system alone,³⁶ and 1 study recruited from the criminal justice system in combination with other locations.⁴⁹ In addition to other recruitment locations, 1 study recruited from a drop-in service center,³⁷ 1 from a soup kitchen,⁴⁵ and 1 with the help of outreach teams.⁴⁹ Four studies did not report recruitment locations.^{32,35,46,47}

Figure 3. Sources of Patient Enrollment^{a,b}



^a Studies could use multiple sources for patient recruitment

^b Does not include ACCESS studies

The included studies met our eligibility criteria for being designed for patients with SMI as follows: 11 studies were explicitly designed for patients with SMI,^{30-35,45-49} and 3 studies were not specifically designed for patients with SMI but met our criteria for including 75% or greater patients meeting broad definitions of SMI (*ie*, also major depressive disorder and posttraumatic stress disorder).^{28,36,37} No studies met eligibility criteria by including a subgroup analysis limited to patients with SMI or by meeting the 75% criteria with the narrower definition of SMI (*ie*, schizophrenia, bipolar disorder, and other psychotic disorders). Three studies explicitly designed for patients with SMI did not report characteristics of SMI for their sample.^{32,47,48} Some studies also reported comorbid conditions, primarily other behavioral and mental health conditions. For

example, of the 7 studies reporting comorbid substance use, 9% to 74% of participants were identified to also have active drug and/or alcohol use.^{28,34,36,37,45-47,49}

Intervention Strategies by Level

For KQ 1, we identified all intervention strategies described by each study and categorized each individual strategy according to its targeted level of action: patient, clinic, or system. Intervention strategies identified were not restricted to those pertaining to primary care engagement. To organize these findings, we grouped intervention strategies within level into domains (see Figure 4). Across all included studies, we identified 22 patient-level intervention strategies across 6 domains; 4 clinic-level intervention strategies across 3 domains; and 5 system-level strategies across 3 domains (see Figure 5). Four studies included strategies at all 3 levels,^{31,32,34,35} and 1 study included strategies on only 1 level.⁴⁵ All studies used at least 2 patient-level strategies, and the total number of strategies described ranged from 2 to 11. Additionally, we found 6 different disciplines that compromised the core intervention staffing and 7 types of collaborating agencies typically partnered with for additional services. Next, we describe reported intervention strategies at each of the 3 levels. The median duration of these intervention was 12 months and ranged from 6 weeks to 2 years,^{28,30,31,33,37,46,47,49} although 6 studies did not report this information.^{32,34-36,45,48}

Figure 4. Framework of Multi-Level Intervention Strategies

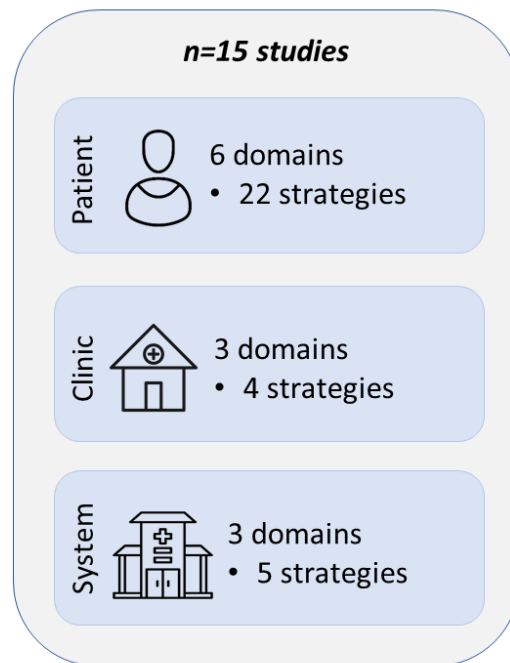
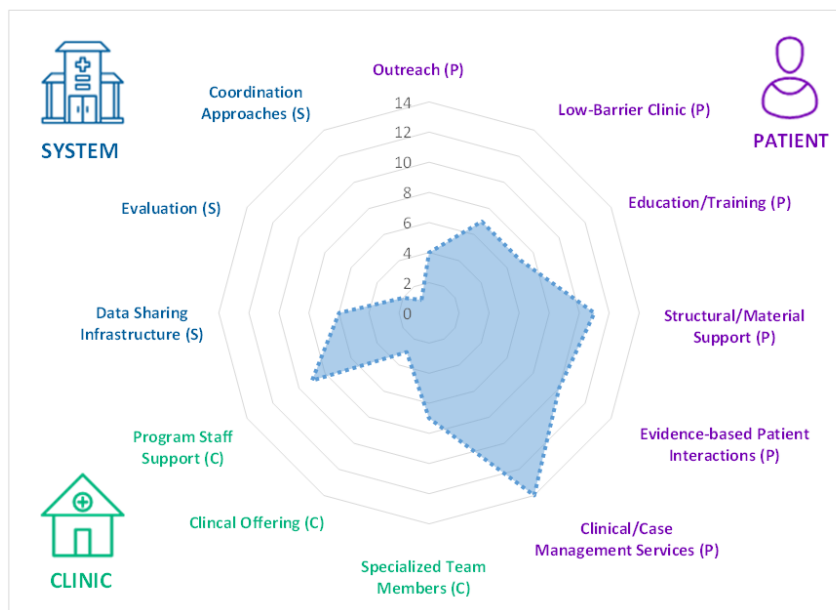


Figure 5. Studies per Domain at Patient, Clinic, and System Levels



Patient-level Intervention Strategies

Included studies employed a variety of intervention strategies which directly targeted patients, which we organized into 6 domains (*ie*, education/training, evidence-based patient interactions, outreach, clinical/case management, structural/material supports, low barrier clinic approaches). The most frequently described patient-level strategies were health education (5 studies), motivational interviewing (5 studies), interdisciplinary intake (7 studies), service navigation (6 studies), and material assistance for housing (9 studies) (Table 4). Interdisciplinary needs assessment and service navigation typically emphasized the uptake of services based on enhanced referral pathways to community-based organizations, social services, or specialized medical services. Additionally, 14 studies featured material supports by providing housing, access to technology, income assistance, and food assistance programs.^{30,31,34-37,39,40,42,44-47,49} This included but was not limited to studies that incorporated the “Housing First” program model, which prioritizes permanent, stable housing with supportive services, including linkages to non-mandated health services.⁵⁰ Eleven studies incorporated evidence-based therapies or interactions to improve patient-provider collaboration as an intervention component.^{28,30-33,36,39,40,44,48,49} The most frequently described of these techniques were motivational interviewing (5 studies), empathic/stigma reducing communication (4 studies). Eight studies included health education as an intervention component, often emphasizing chronic disease self-management, navigating the health care system, partnering with the care team, and social support.^{30-34,36,49} For example, Stergiopoulos et al and Stanhope et al both described the role of patient education that is responsive to both social and medical drivers of health by leveraging peer and social support.^{30,49} Additionally, 4 studies included crisis intervention as an available mechanism for a short-term intensive response.^{32,39,48,49} Baker et al describe a nurse practitioner-driven program that offered crisis services as a strategy to avoid unnecessary hospitalizations, incarceration, or a return to homelessness.³² Finally, 7 studies described strategies to facilitate uptake of medical services by

reducing clinic barriers.^{30,32,34,35,37,44,46} These strategies included reducing eligibility requirements (eg, no requirements for sobriety or substance use treatment to participate), wait times, appointment prioritization, and by embedding the clinic location within the target community. Importantly, interventions often combined strategies to enhance effectiveness. For example, Kelly et al describe how health education, case management, and evidence based patient interactions can be delivered in conjunction as a multi-component self-management intervention.³¹ It was delivered as a manualized, peer-led intervention using motivational interviewing, cognitive behavioral strategies, and psychoeducation about the healthcare system, benefits, health screenings, and working with medical providers.

Table 4. Patient-level Intervention Strategies by Domain

Intervention Strategy	Definition	Study
<i>Education/Training domain</i>		
Health education	Provide learning on health topics including navigation of the health system, ways to reduce barriers to care, health promotion/disease prevention strategies, and information about specific health conditions	Non-ACCESS ^{30,31,35,36,49}
<i>Patient-provider communication techniques domain</i>		
Motivational interviewing/ goal-setting	Building motivation for behavior change and/or engaging in realistic development of goals and plans to meet them	Non-ACCESS ^{30,31,33,36,49}
Trauma-informed care	A care approach that acknowledges the impact of trauma history and seeks to promote appropriate responses and avoid retraumatization	Non-ACCESS ³³
Empathic/stigma reduction	An approach that seeks to act with empathy for an individual’s state and reduce shame/negative associations associated with conditions or seeking care	ACCESS ⁴⁴ Non-ACCESS ^{36,48,49}
Supportive therapy	A form of psychotherapy that emphasizes the importance of the relationship between provider and patient in order to alleviate symptoms and address challenges	Non-ACCESS ²⁸
Cognitive behavioral therapy	A form of psychotherapy focused on addressing unhelpful beliefs and behaviors to improve symptoms	Non-ACCESS ³¹
Other therapies	Unspecified therapeutic interventions	Non-ACCESS ³²
Assertive community treatment	A multidisciplinary team approach which provides direct psychiatric care in the community, engages in assertive outreach, and offers rehabilitation and support services	ACCESS ^{39,40} Non-ACCESS ^{30,35}
Harm reduction	A public health philosophy and accompanying set of practices and principles aimed at reducing harms associated with drug use and drug policies, as opposed to focusing on a traditional approach of abstinence promotion	Non-ACCESS ^{33,49}
<i>Outreach domain</i>		
Assertive outreach	An intensive mental health services approach for individuals with serious mental illness that aims to promote engagement in the health care system	Non-ACCESS ^{28,35,46}
Hospital in-reach	An outreach approach that works with hospitalized individuals to support discharge transitions, connect	Non-ACCESS ²⁸

Intervention Strategy	Definition	Study
	them with services, and reduce unnecessary rehospitalization	
Justice system in-reach	A case management approach that seeks to support incarcerated individuals who are being released to connect with health care services	Non-ACCESS ³⁶
<i>Clinical/case management domain</i>		
Crisis intervention	Immediate, short-term emergency response for a distressed individual	ACCESS ³⁹ Non-ACCESS ^{32,48,49}
Interdisciplinary intake/needs assessment	Intake assessment/evaluation approach that engages multiple specialties (eg, psychiatrist, physician, case manager) with a focus on the patient's individuals needs	Non-ACCESS ^{28,31,32,35-37,49}
Service navigation	Linking patients and reducing barriers to essential health and community services and resources and/or coordinating these services	ACCESS ^{39,40,42-44} Non-ACCESS ^{28,30-37,45,46,49}
Transitions of care coordination	Coordination among health care providers as a patient changes providers or settings	Non-ACCESS ³⁶
<i>Structural/material supports domain</i>		
Transportation	Assistance for transportation in the form of dedicated financial support or items that support transportation (eg, bus pass)	Non-ACCESS ³⁷
Food	Money provided for the purchasing of food	Not applicable
Housing	Money provided toward temporary or permanent housing	ACCESS ^{40,42,44} Non-ACCESS ^{30,34-36,45-47,49}
Income/entitlement	Instrumental assistance in the procurement of financial or entitlement benefits	ACCESS ^{39,40,42,44} Non-ACCESS ⁴⁷
Access to computers/technology	Hardware made available for the use of participants	Non-ACCESS ³¹
<i>Low-barrier clinic approaches domain</i>		
Appointment prioritization	Ranking incoming referrals to prioritize a certain category of patients for available appointments	ACCESS ⁴⁴ Non-ACCESS ³⁷
Flexible appointment scheduling	Offering appointment scheduling in a way that allows greater flexibility than a typical scheduling process, which can include off-hours or extended hours access and walk-in or on-demand appointment scheduling (eg, extended hours/24-hour access)	ACCESS ⁴⁴ Non-ACCESS ^{32,35,37}
No waiting times	Reducing or eliminating waiting times for appointment scheduling	ACCESS ⁴⁴ Non-ACCESS ³⁷
On-site at shelter	Services available at location of temporary housing shelter	Non-ACCESS ³⁴
Reasonable costs	Not defined by author	ACCESS ⁴⁴
No sobriety/treatment requirements	Specifically notes lack of requirement of sobriety or substance use treatment engagement for program participation.	Non-ACCESS ^{30,46}

Clinic-level Intervention Strategies

All of the included studies contained a clinic-level intervention strategy. The most frequently described clinic-level strategy was population-specific employee training (n=9 studies). We also found that most studies leveraged a multidisciplinary team structure through interdisciplinary intervention staffing and established relationships with collaborative agencies to supplement internal resources (Tables 5-7). Nine studies (12 articles, 4 ACCESS) included training beyond what is required for discipline-specific licensure.^{31-34,36-39,41,43,48,49} Training and workforce development strategies focused on skills and techniques that are tailored to the complex patient population of interest. For example, the Jefferson Department of Family and Community Medicine and a Housing First agency, Pathways to Housing-PA, formed a partnership to serve patients with experiences of homelessness and SMI and required a homeless health training rotation to develop skills specific to this population.⁴⁶ Training and workforce development strategies were often linked to intervention strategies at the system or patient/delivery level. An illustrative example is “cross training” for programs in the ACCESS study that emphasized system integration to ensure personnel were familiar with services and procedures from partnering agencies to fully leverage service agreements that facilitated coordination and collaboration.³⁸⁻⁴⁴ We found significant variation in the composition of intervention staffing, with the most commonly represented disciplines being psychiatry, behavioral health, nursing, social work, primary care, and peer support/community health workers. This was in contrast to interventions that utilized referral networks to obtain support outside of core program offerings (eg, referrals to community-based shelters).

Table 5. Clinic-level Intervention Strategies by Domain

Intervention Strategy	Definition	Study
<i>Program staff support domain</i>		
Specific employee training	Training related to intervention objectives that is not necessarily part the employee’s disciplinary training (ie, motivational interviewing, stigma reduction)	ACCESS ^{38,39,41,43} Non-ACCESS ^{31-34,36,37,48,49}
<i>Specialized team members domain</i>		
Medical scribes	A person or paraprofessional who specializes in charting physician-patient encounters in real time, such as during medical examinations	None
Peer support/ community health workers	An individual based in the community who promotes health and wellbeing through liaison activities between health care agencies and the community, or provides social assistance and guidance to community residents	Non-ACCESS ^{28,30,31,33,35,36,48}
<i>Clinical offering domain</i>		
Medication review/ management	Provider team assesses the combination of over-the-counter and prescription drugs used by an individual to be sure they are safe and effective	Non-ACCESS ^{31,32,35}

Table 6. Clinic-level Staffing by Discipline

Intervention Strategy	Definition	Study
Behavioral health	Psychologist, licensed clinical social worker (LCSW), therapist	Kelly, 2018 ³¹ McGuire, 2009 ³⁷ Patterson, 2012 ⁴⁷ Rivas-Vazquez, 2009 ³⁶
Psychiatrist	Physicians trained in psychiatry, psychiatric/mental health nurse practitioners	Baker, 2018 ³² Kelly, 2018 ³¹ McGuire, 2009 ³⁷ Patterson, 2012 ⁴⁷ Solomon, 1988 ⁴⁸ Stergiopoulos, 2012 ⁴⁹ Stergiopoulos, 2015 ³⁴ Weinstein, 2013 ³⁵ Weinstein, 2013 ⁴⁶
Nursing	Nurses without prescribing privileges of any training level or not otherwise specified	^a Baker, 2018 ³² McGuire, 2009 ³⁷ Patterson, 2012 ⁴⁷ Rosenheck, 1993 ⁴⁵ Solomon, 1988 ⁴⁸ Weinstein, 2013 ³⁵ Weinstein, 2013 ⁴⁶
Primary care provider	Physicians trained in primary care, primary care nurse practitioners/physician assistants	McGuire, 2009 ³⁷ Patterson, 2012 ⁴⁷ Rivas-Vazquez, 2009 ³⁶ Solomon, 1988 ⁴⁸ Stanhope, 2014 ³⁰ ^b Stergiopoulos, 2015 ³⁴ Weinstein, 2013 ³⁵ Weinstein, 2013 ⁴⁶
Pharmacist		None
Case manager/ social worker (not as LCSW)	Outreach/other shelter staff	Kelly, 2018 ³¹ McGuire, 2009 ³⁷ Rivas-Vazquez, 2009 ³⁶ Rosenheck, 1993 ⁴⁵ Rosenheck, 1997 ⁴³ Solomon, 1988 ⁴⁸ Stergiopoulos, 2012 ⁴⁹ Stergiopoulos, 2015 ³⁴ Weinstein, 2013 ³⁵
Housing services	Short-term and long-term	Kelly, 2018 ³¹

^aStudy included nursing students

^bStudy includes 2 separate models of care: 1 involves on-site psychiatry which is embedded into an integrated, interdisciplinary team with primary care; in the second model, there is psychiatry available on-site but primary care is accessed via neighboring clinics

Table 7. Collaborative Agencies for Services Outside Core Intervention Offerings

Intervention Strategy	Study
Behavioral health/psychiatry	ACCESS ⁴¹ Non-ACCESS ^{28,30-32,34,45,46,49}
Medicine	ACCESS ⁴¹

Intervention Strategy	Study
	Non-ACCESS ^{28,31,32,34,45,46,49}
Social work/case management	ACCESS ^{40,41} Non-ACCESS ^{28,31,32,45}
Long-term housing services	ACCESS ⁴¹ Non-ACCESS ^{30,32,35,36}
Temporary housing services	ACCESS ⁴¹ Non-ACCESS ^{32,35,36,45,48}
Pharmacy	Not applicable
Senior living center	Non-ACCESS ³⁰
Vocational	Non-ACCESS ⁴⁹

System-level Intervention Strategies

Intervention strategies employed at the system level sought to improve multi-sector coordination, information exchange, and evaluation. The most frequently described system-level intervention components included shared electronic health record (n=4) and proactive patient monitoring technology infrastructure (n=3) (Table 8). These systems were used to improve communication, documentation, and care management. Similarly, proactive monitoring systems were also used to anticipate patient needs and tailor the approach. Kelly et al evaluated a peer-delivered health navigator model that incorporated the use of a collaborative electronic personal health record to address challenges for this population related to paper record keeping.^{31,51} This type of health record and electronic monitoring system and systems like it were used to organize care delivery, anticipate patient needs, and facilitate communication between the patient and service providers—an example of how organizations promoted interagency collaboration. We found 3 articles (all ACCESS studies) that included interagency collaboration as a system-level strategy.³⁹⁻⁴¹ Of note, this system-level strategy may have been used in other studies included in the analysis but was not explicitly referenced. Finally, we found 2 studies that reported using shared, standardized performance metrics to evaluate effectiveness across agencies and clinics.^{46,47} An illustrative example of both interagency collaboration and shared performance metrics is the intervention described in Patterson et al to improve outcomes for adults with SMI who are chronically homeless in British Columbia.⁴⁷ Shared performance metrics included increased use of primary care, decreased hospital lengths of stay, decreased interactions with the criminal justice system, and increased use of income assistance. The authors also describe a common monitoring framework to ensure fidelity and standardization across sites in a system as part of an overarching interagency collaboration.

Table 8. System-level Intervention Strategies

Intervention Strategy	Definition	Study
Data sharing infrastructure		
Shared electronic health record	Collaborating agencies use common electronic health record (EHR) for care and management of patients	Non-ACCESS ^{31,32,34,46}
Proactive monitoring system	Collaborating agencies use common electronic database for monitoring of patient needs in order to anticipate needs	ACCESS ^{38,39,41} Non-ACCESS ^{31,35}



Intervention Strategy	Definition	Study
Shared social services administrative record	Collaborating agencies use common administrative system for documentation of case management	ACCESS ^{39,44}
Evaluation		
Standard performance metrics	Agencies or clinics caring for patients report use of standard quality measures to evaluate and monitor care provided	Non-ACCESS ^{46,47}
Coordination Approaches		
Interagency collaborative body	A multidisciplinary group established to support ongoing interactions between agencies supporting the target population	ACCESS ³⁹⁻⁴¹

Access to Community Care and Effective Services and Supports (ACCESS)

In addition to the system-level intervention strategies noted above which were reported in the included articles, the ACCESS federal demonstration program also established a set of specific system integration strategies for use across its sites. Systems integration refers to efforts to improve service system for a defined population rather than for individual patients. System integration is a continuum of combined strategies at the system, clinic, and patient/delivery levels, ranging from information sharing and communication to full-service delivery integration (Table 9).⁴¹ As a part of ACCESS, participating sites were provided funding to facilitate adoption of a range of system integration strategies that were selected and tailored to their local context. As such, each site could have employed different combinations of strategies. While in the preceding tables, we identified individual strategies reported in included ACCESS papers. Below, we share the overarching range of potential system integration strategies used at each ACCESS site.

Table 9. ACCESS: Potential System Integration Strategies^a

ACCESS Strategy	Definition	Intervention Level
Co-location of services	A multiservice center in a single location to facilitate access to medical services, substance abuse treatment, housing assistance, entitlement programs, or financial assistance.	Clinic
Systems integration coordinator position	A staff position focused on implementing systems integration activities. These responsibilities include engaging stakeholders, staffing interagency coalition meetings, acting as a liaison to other systems, and coordinating joint proposal or service contracts.	Clinic
Cross-training	The training of staff on procedures and services available at other agencies. This can include training staff to utilize agreements to collaborate, accept referrals, coordinate services, or share patient information.	Clinic
Interagency service delivery team	A service delivery team that is composed of interdisciplinary staff from 1 or more agencies. The team-based approach is designed to address the complex patient needs in an integrated manner.	Clinic

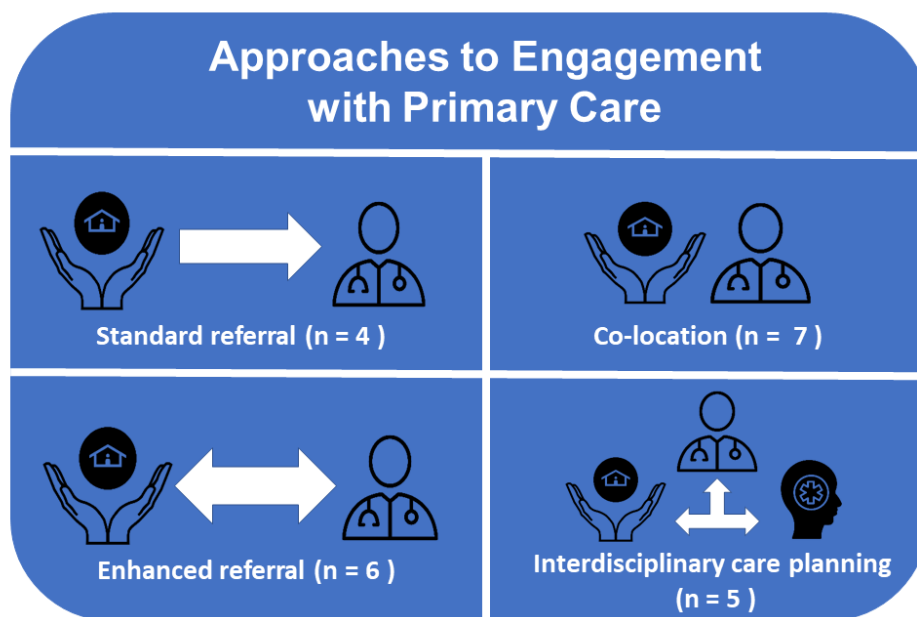
ACCESS Strategy	Definition	Intervention Level
Interagency coordinating body	An advisory group composed of representatives from multiple agencies to address common challenges including formal agreements to reduce barriers to services, eliminating duplication of services, and promoting access. An interagency coordinating body can be established at local or state level.	System
Interagency agreements	Formal or informal agreements among agencies to coordinate, collaborate, or offer combined services.	System
Joint funding	A broad array of agreements or arrangements to combine funding to offer additional resources or support interagency initiatives.	System
Flexible funding	The designation of flexible funding sources that can be used to purchase expertise, fill gaps, or coordinate the acquisition of addition resources.	System
Use of special waivers	A statutory or regulatory waiver aimed at reducing interagency barriers to services, eliminating duplication, or promoting access.	System
Consolidation of agencies	The process of combining multiple programs or agencies under a centralized administrative structure to better integrate delivery of services across previously fragmented systems.	System
Interagency management information and monitoring systems	Information tracking and management systems to facilitate transfer of patient information, simplify referral processes, reduce duplication of services or documentation, and improve access to services for patients.	System and Clinic
Uniform applications, eligibility criteria, and intake assessments	The standardization of processes used by participating agencies that potential patients must complete to apply for or receive services.	System, Clinic, and Patient

^aTable adapted from Cocozza, 2000.⁴¹

Approaches to Engagement with Primary Care

We considered the elements of integration between primary care and the other services provided to patients with SMI and housing insecurity (eg, standard referral, enhanced referral, co-location and interdisciplinary care planning) across each included study (Figure 6 and Table 10). We considered the presence or absence of each element individually. Standard referral reflects the most basic mechanism for patient referrals to primary care largely driven by insurance networks and approvals. An enhanced referral was identified when a program had a clearly described, established relationship with a primary care clinic that supported interactive communication between the program providing housing services or mental services. Co-location was identified if primary care and other program services are in physical proximity with each other. Finally, interdisciplinary care planning indicates that multiple disciplines worked together to generate and carry out plans of care for individual patients.

Figure 6. Approaches to Engagement with Primary Care^{ab}



^aThere could be overlap between approaches

^bDoes not include ACCESS studies

Overall, we found that there was a relatively even distribution of the 4 key elements of practice integration across included studies. Four studies included evidence of both co-location and regular interdisciplinary care planning,^{34,36,37,46} while 1 additional study employed interdisciplinary care planning but primary care was not co-located.³⁰ For example, McGuire et al reported on a VA-based integrated clinic in which homeless Veterans presenting to a housing program screening clinic were seen same-day by a specially trained, co-located primary care team.³⁷ Three studies describe models in which primary care was co-located but there was no clear reporting that interdisciplinary care planning took place.^{28,35,47} Six studies employed enhanced referral mechanisms to connect patients with primary care.^{28,32,45-48} Baker et al demonstrated an enhanced referral process as part of a psychiatric/mental health NP-run, independent community health center which cared for individuals who were homeless or had housing insecurity due to SMI; they maintained a “robust referral system” and regular contact to primary care within local major health care systems.³² Four studies used a standard referral process to connect patients with primary care based on typical consult mechanisms guided by insurance networks and without the benefit of established interactive relationships.^{31,33,34,49} Note that 1 of these studies is a 2-armed study in which 1 arm features fully integrated primary care that is co-located with interdisciplinary planning and the other arm used a standard referral process.³⁴ Some studies used multiple routes to connect patients with primary care; for example, Weinstein and colleagues report on a Philadelphia-based program which embedded a primary care provider from a nearby academic family and community medicine department into an existing Housing First care management team as part of an integrated care program, and also supported patients who preferred to receive primary care from a non-specific local source. Of note, for some of the included studies, the description of the connection with primary care was minimal and it is possible that included programs in practice incorporated more elements of integration with primary care than were reported in the published intervention description.

Table 10. Elements of Primary Care Integration

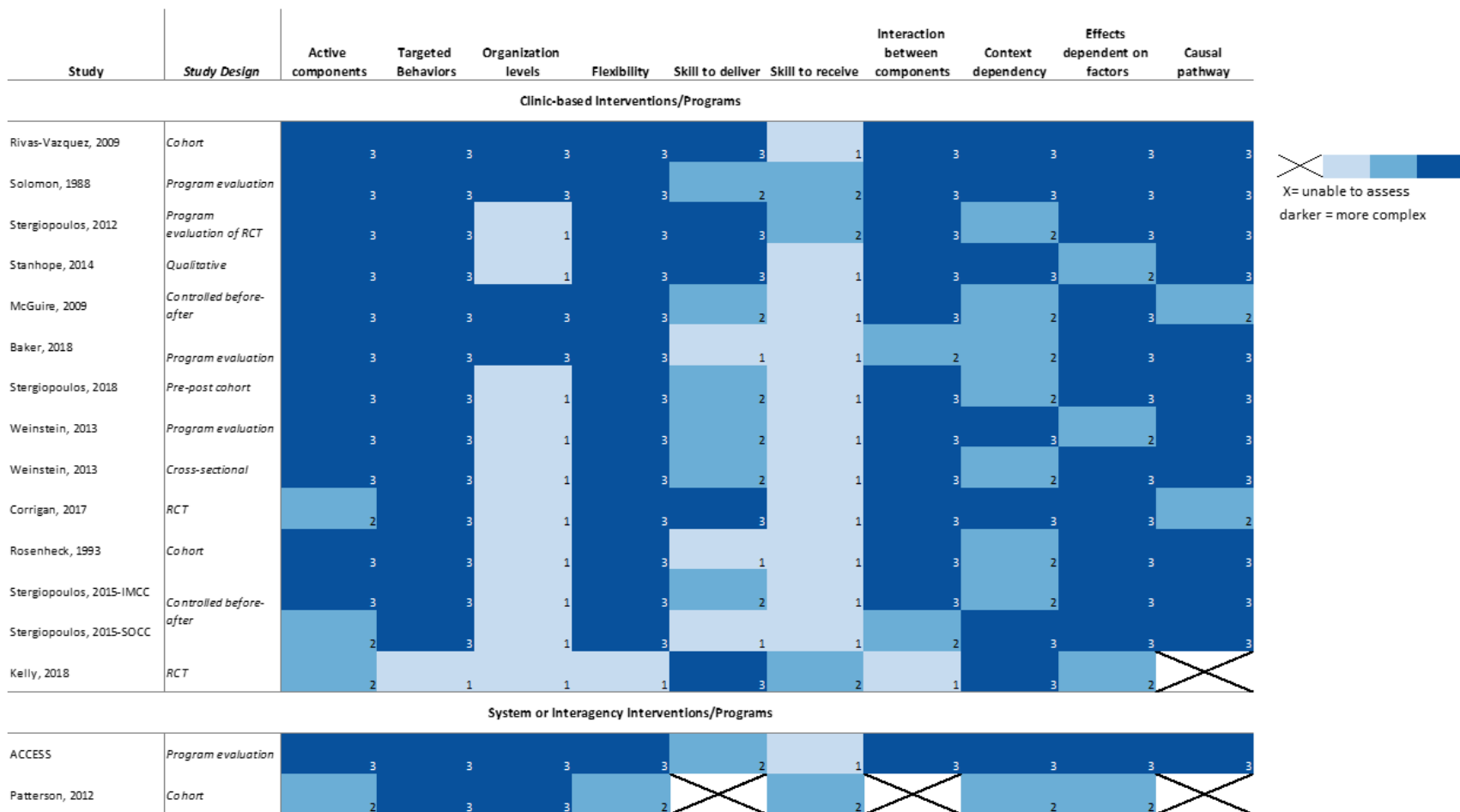
Intervention Strategy	Definition	Study
Interdisciplinary care planning	Multidisciplinary team (eg, medical providers, social workers, nurses) meet on a routine basis to discuss patient cases but not necessarily co-located	Non-ACCESS ^{30,34,36,37,46}
Co-location	Services that are located in the same physical space (eg, office, building, campus), though not necessarily fully integrated with one another (eg, mental health, primary health care)	Non-ACCESS ^{28,34-37,46,47a}
Enhanced referral	Existing relationships between the intervention site and community primary care, but which is not integrated into the intervention program	Non-ACCESS ^{28,32,45-48}
Standard referral	Intervention described as connecting patients to primary care but does not provide evidence of interactive communication with those services; this is akin to a case manager facilitating a referral to an external community based primary care clinic from which the patient may be eligible to receive services	Non-ACCESS ^{31,33,34,49}

^a Stergiopoulos 2015³⁴ includes 2 separate models of care: 1 involves onsite psychiatry that is embedded into an integrated, interdisciplinary team with primary care; 1 involves psychiatry available onsite but primary care is accessed via neighboring clinics.

Intervention Complexity

We categorized the complexity of included interventions using the iCAT_SR tool grouped by clinic-based interventions versus system or interagency interventions (see Appendix G for study-specific iCAT_SR determinations). Among interventions focused on individual clinical programs, areas of high complexity common across studies included having multiple active intervention components that targeted a complex collection of behaviors (Figure 7). Interventions were typically highly flexible to allow tailoring of support provided to individual patients depending on their clinical and housing needs. In general, the nature of the causal pathway from the intervention to the intended patient outcome (eg, improved physical/mental health, stable housing) was often not explicitly described, but inferred to be variable and to occur over an extended period of time, adding complexity. Areas of intervention complexity that varied from study to study included the organizational levels targeted by the intervention, as some interventions focused only patients receiving care while others also included provider and clinic level components. Interactions of intervention components were found to be moderately to highly complex as most interventions involved interdisciplinary care across multiple facets of a given patient’s social, mental, and physical health with an explicit expectation that these aspects of care be coordinated and intertwined. In general, we found that the effect of most interventions would be impacted by individual level factors for both patients (eg, degree of SMI symptom severity) and providers (eg, experience and comfort with caring for target population). In contrast, we found a low level of complexity related to expectations of the skills of program participants at entry, as patients could receive care at whatever baseline function they had. Similarly, the staff delivering these interventions were generally felt to require minimal skills beyond their standard disciplinary training with the exception of education on the specific health and social needs of the target population and possibly around interdisciplinary collaboration.

Figure 7. Intervention Complexity Heat Map by Core Dimension of iCAT_SR^a



^a1= lowest level complexity for dimension; 2 = moderate complexity; 3 = highest complexity

Reported Effects of Included studies

While in keeping with an evidence map, we did not seek to synthesize the effects of interventions described in the included articles. However, in order to facilitate contextualization of the included literature, we report the findings of included articles as reported by the authors. Appendix E includes high-level summaries of the authors reported findings by included study with note of the study design, length of follow-up, and total number of participants when relevant. Reported findings suggest possible benefit in the areas of improved health outcomes,^{28,37} reduced emergency room/hospital utilization,^{32,34,37} increased primary care use,⁴⁵ and reduced recidivism.^{36,46} In addition, reported findings suggest that integration of care across agencies within a larger system is complex and requires intentional efforts.^{41,42,44}

KEY QUESTION 2: What measures have been used to evaluate interventions among adults with experiences of homelessness or who are at high risk of experiencing homelessness and who have SMI to promote engagement in primary care?

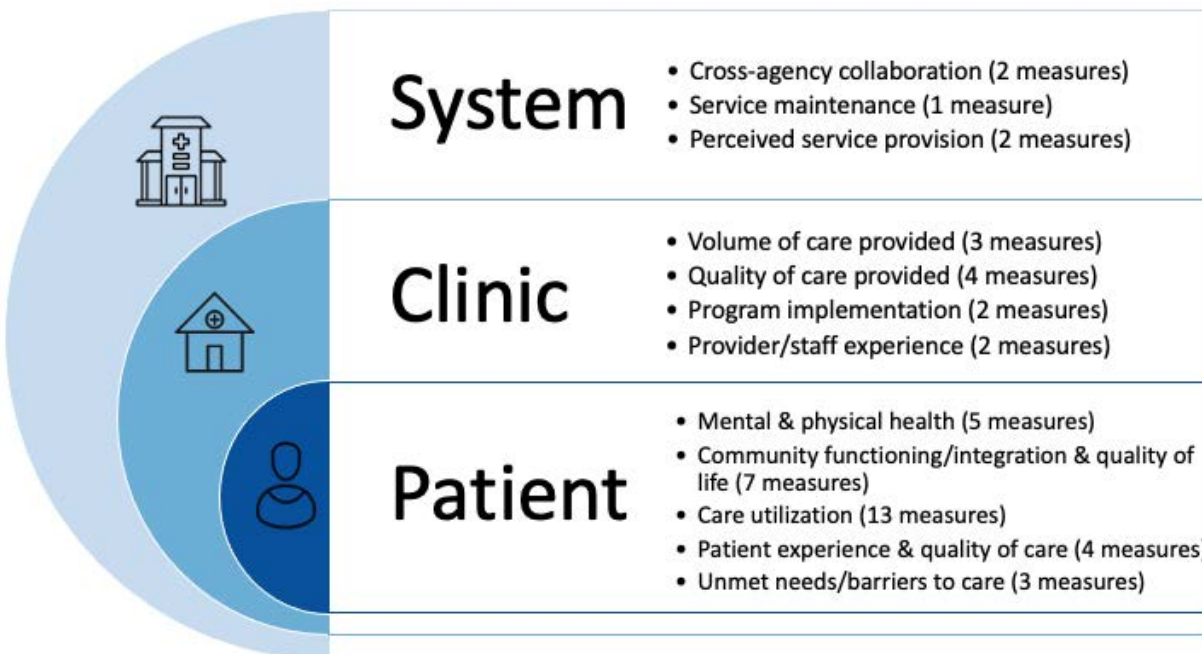
Key Points

- Included articles measured outcomes at the patient, clinic, or system level; patient level accounted for the majority of measured outcomes.
- Most common measures at the patient level were mental health status and substance use.
- Measures related to primary care integration included the number of primary care visits and the number of days between program enrollment and primary care visit.

Detailed Findings

For KQ 2, we organize findings on the approaches to measuring the effect of interventions seeking to promote primary care engagement for adults with SMI and housing insecurity at 3 levels: patient level, clinic level, and system level (Figure 8). Of the 22 included articles (evaluating 15 studies), only 1 included outcomes at all 3 levels of analysis.⁴⁰ Of the 5 articles that included outcomes at 2 levels, 4 examined both patient- and clinic-level outcomes^{31,32,48,49} and 1 examined both clinic- and system-level outcomes.⁴⁴ The remaining 15 articles examined outcomes at only 1 level: 12 at the patient level^{28-30,33,34,36-38,43,45-47}; 1 at the clinic level³⁵; and 3 at the system level.^{39,41,42} Overall, most studies (17) evaluated outcomes at the patient level, and the fewest studies (5) at the system level. Appendix D summarizes the specific outcomes measures used for the included studies.

Figure 8. Outcome Measures Mapping



Outcomes evaluated at the patient level spanned a range of potentially overlapping domains that could be loosely categorized as mental and physical health; community functioning, community integration and quality of life; care utilization; patient experience and quality of care; and unmet needs/barriers to care. At the patient level, outcomes most commonly assessed mental health (6 studies) and substance use (5 studies) outcomes. Measures used to assess mental health included validated interviews and questionnaires such as the SF-36, Diagnostic Interview Schedule, and Brief Psychiatric Rating Scale.^{28,33,34,37,40,45} Substance abuse outcomes were measured using either the Addiction Severity Index or self-report.^{28,32,34,37,40,45} Other patient-level outcomes commonly assessed were involvement with the justice system (*ie*, incarcerations, arrests)^{32,36,37,47}; housing-related outcomes (*ie*, self-reported number of days on the street or in shelter, achievement of independent housing)^{28,33,34,40}; emergency department visits or hospitalizations^{28,32,34,37,45,47}; and quality of life.^{28,33,40} Measures that specifically addressed primary care integration included the number of primary care visits^{34,37} and the number of days between program enrollment and primary care visit.³⁷ Of the 11 outcomes evaluated at the clinic level, only the fidelity-to-care model was measured in more than 1 study.^{40,49} Of the 5 outcomes evaluated at the system level, only integration strategies³⁹⁻⁴¹ and service linkage were measured in more than one study.^{42,44}

Summary of KQ 2 Findings

Overall, few consistent outcomes or outcome measures were used across studies. The only exception to this was the use of validated measures of mental health and substance abuse outcomes such as the Addiction Severity Index. Follow-up for outcome evaluation ranged from 3 weeks to 18 months, with the majority falling between 6 and 18 months. The concentration of outcome measures was greatest in the same area in which intervention strategies were found, specifically at the patient level.

SUMMARY AND DISCUSSION

We conducted an evidence map of interventions evaluated to promote primary care engagement of individuals with SMI and experiences of homelessness or who have housing insecurity. Overall, a modest body of literature has been published in this area, largely during the last 30 years. Most of the identified literature comprised program evaluations or observational studies of existing health system- or community-based programs, primarily from outside the VA but all within the United States or Canada. Few programs were solely focused on linking the target population to primary care; rather, connecting patients to longitudinal medical care was most often 1 of multiple intervention goals. Interventions were complex, particularly due to the employment of varied combinations of intervention strategies targeting multiple patient behaviors. Outcome measures were variable across studies with most at the patient level, and few studies measured engagement of primary care.

We identified 15 unique studies evaluating interventions to promote engagement in primary care for adults with experiences of homelessness and SMI). One study, ACCESS, was a multisite comparative program evaluation of a large HHS-funded demonstration project in the United States to improve population health for persons with experiences of homelessness and mental illness. The 14 other studies evaluated community and healthcare affiliated interventions, 10 of which were published in the United States and 4 in Canada. Most evaluations were observational, and only 2 used a randomized controlled trial (RCT) design. We identified intervention strategies across patient, clinic, and systems levels—most studies employed strategies at multiple levels. The most common patient-level strategies were case management, material assistance, evidence-based interactions, and health education. The most common clinic-level strategies were multidisciplinary teams, population-specific employee training, and established referral relationships with partner agencies. The most common system-level strategies were data sharing and patient monitoring technology. Studies used a range of approaches to integrate primary care with other services for this patient population, including co-location, interdisciplinary care planning, standard referral, and enhanced referral. In particular, the ACCESS program sought to integrate social and medical care for persons with experiences of homelessness and mental illness through formalizing and growing cross-agency linkages. For some studies, the description of primary care engagement was limited and difficult to categorize. Programs that had the highest degree of complexity generally included multiple intervention components, targeted a range of behaviors, were highly flexible, required additional staff training, and intervened across multiple service sectors. Most programs did not require program participants to have a high level of skill to participate despite the complexity of the targeted behaviors.

PRIOR SYSTEMATIC REVIEWS

Prior systematic reviews evaluated interventions for patients with SMI or who had experienced homelessness, but did not explicitly address the intersection of patients with experiences of homelessness and SMI. Health Quality Ontario (2016)¹⁴ reviewed 5 studies to identify interventions that improved access to a primary care provider for people with experiences of homelessness. Two studies included Veterans and 3 studies identified high rates of mental illness in their study populations. Intervention strategies identified included orientation to the clinic, outreach, primary care integration into homeless services, and housing and supportive services;

however, interventions were complex and included multiple components. The authors concluded that orientation to clinic services may improve access to a primary care provider, but in general evidence was of low quality. Jago and colleagues (2018) aimed to describe which primary care programs offer care to populations experiencing homelessness.¹⁵ That review included 19 studies of any design. Only 1 of these studies was included in the Health Quality Ontario review.⁵² Jago et al found that most programs were complex and included multidisciplinary team-based and integrated-care approaches. The results from both reviews about the importance of clinic orientation as a strategy to improve access to health care emerged from 1 RCT by O'Toole et al; clinic orientation was a treatment arm that comprised a personal health assessment and brief in-person introduction to the clinic. We did not find any studies that used this strategy in our evidence map. Similar to the findings of these prior reviews, we identified organizational strategies in studies with clearly defined homeless and mental illness samples. Interventions usually had multiple components and almost always relied on some level of multidisciplinary interaction among health and social service providers.

A 2011 systematic review conducted by the Durham VA ESP examined care models to improve health outcomes of individuals with serious mental illness, though primary care engagement was not the direct outcome of interest. Bradford and colleagues (2011) identified 7 papers, of which 4 were RCTs (n=3 in Veterans) that met study criteria.⁵³ The review found that most models were implemented in mental health specialty settings and relied on care management or care coordination strategies. Integration elements of the patient-centered medical home were not always clearly implemented. Our evidence map findings align with the findings of that systematic review in that we also identified care coordination and care management as commonly used strategies. Some of the studies we reviewed assessed strong models of integration, though in some studies models were not well described. Our evidence map advances current understanding for populations with an overlap in experiences of homelessness and mental illness. We benefitted from the organizational structures and components suggested by prior reviews, and we are able to disaggregate intervention components at multiple levels to understand patient, clinic, and organizational factors. However, none of the other reviews used a standardized approach to evaluate intervention complexity—our evidence map thus contributes to the literature in this unique way.

CLINICAL AND POLICY IMPLICATIONS

Our evidence map identified studies evaluating interventions which sought to promote primary care engagement among patients with experiences of homelessness and SMI, most of which had interventional elements occurring at 3 distinct levels (*ie*, patient, clinic, system). The included studies demonstrated heterogeneous approaches to promotion of primary care engagement, and it was clear that no single approach has been applied universally. While an evidence map is not intended to draw conclusions about which intervention approaches result in improved outcomes, our findings offer some implications for clinical and health policy groups charged with improving the care of this patient population. First, our study identifies and categorizes elements that have been employed in various combinations to improve primary care engagement among this target population. Health care systems, federal agencies, and nonprofits seeking to initiate or build similar programs could use our mapping of multi-level strategies to develop their intervention approach and ensure in-depth consideration of a variety of patient-facing clinic structure and interagency approaches. Second, our description of intervention complexity of the included studies could guide new programs in this area about the ways their intervention design

places demand on different dimensions of structural and person-level components. Moreover, existing programs could compare their program components against the examples described in this report to ensure that potential dimensions of complexity are both purposefully addressed and articulated for ideal communication. Finally, our outcome mapping can help programs for patients with SMI and housing insecurity consider the breadth of approaches to measuring program effectiveness and identify the strongest outcome.

Within the VA health care system, there are numerous rich resources both for complex mental health illnesses such as SMI and for individuals who are experiencing homelessness or housing security. For example, the VA offers a collaborative primary care model for Veterans who experience homelessness; these clinics co-locate staff with expertise in mental health, substance use, medical care, and homelessness support. Separately, the VA offers a Mental Health Intensive Care Management Program (MHICM) which helps Veterans with SMI live in the community through intensive case management; however, this program is not integrated with primary care. The VA is also testing an SMI PACT for individuals with SMI whose psychiatric symptoms can be managed in primary care with consultation from mental health and psychiatry services⁵⁴ and offers evidenced-based programs to help Veterans integrate into the community and earn an income through supported employment, which historically has focused on Veterans with SMI.⁵⁵ However, these resources often operate separately, and as a result, individuals who are part of this target population might fall through the cracks. Yet the existing resources offered by the VA could support the development of integrated population-specific programs that pool collective efforts in a patient-centered manner and that require less navigational and engagement skills from the patients themselves. Intentional program development with attention to intervention complexity and strategy choice could also inform the appropriate choice of outcome measures.

LIMITATIONS

This evidence synthesis should be interpreted in the context of several limitations, which are outlined in the following paragraphs.

Study Quality and Design

We found 1 significant limitation of the existing literature considered for this evidence map in the lack of studies designed to determine the effectiveness of care models focused on connecting patients with SMI and experiences of homelessness to primary care. While not surprising, much of the identified literature comprised non-comparative, 1-armed evaluations using varying approaches to assess outcomes. Moreover, many of the included interventions were not singularly focused on promoting primary care engagement. It is likely that there are additional programs in practice that have attempted to connect patients with SMI and experiences of homelessness to primary care but that have not been described in the peer-reviewed literature. We also found few pragmatic trials or implementation studies that would be helpful to inform future implementation of novel programs to support this patient population.

In addition, we found a wide variety of outcome measures used across studies without a consistent outcome for primary care engagement. This may have occurred because many of the studies were not focused on primary care engagement, or at least did not have this as a primary aim, as we included studies that may not have been designed for the express purpose of assessing

our outcome of interest. However, given that patient engagement with primary care occurs across a spectrum, from initial appointment scheduling to longitudinal interaction for chronic disease management, the field would benefit from clearly defined, patient-oriented, and clinically meaningful outcomes. In particular, further investigation is warranted to link programmatic elements with concrete outcomes and guide future development of programs. In addition to examining the impact of individual elements on outcomes, it is important to understand how the inclusion of elements at each level, and their interaction, are received by both patients and providers of services. For example, experience of homelessness (*ie*, street homeless vs housing instability) could moderate intervention effects, but few studies considered patient-level moderators. Given the range of outcomes evaluated, it is difficult to determine whether this length of time is sufficient to capture meaningful change in the constructs measured. From a broad perspective, there appears to be a lack of consistency in research in populations experiencing homelessness as to what constitutes “housing stability” or “tenancy sustainment”, which can make it challenging to systematically evaluate what interventions are necessary, and for how long, to achieve health- and stability-related outcomes.⁵⁶ Finally, no outcome measures were clearly validated or designed for the specific patient population of those with experiences of homelessness.

Intervention Strategy Reporting

We encountered challenges with the identification and interpretation of intervention strategies. In addition, the depth and detail provided about the intervention itself was generally insufficient for determining the level of integration using validated tools or for fully facilitating replication.²⁷ Types of information that we might recommend other program designers and evaluators report include the extent to which behavioral and medical providers are involved in clinical decision-making. Moreover, some included studies only provided details on a few specific intervention components, and thus it is possible that additional components were employed and just not described. For example, informal interagency or multi-sector collaboration agreements to facilitate referrals or shared resources may have been leveraged but not explicitly reported. No included studies reported using a theoretical model to guide intervention or program development or described potential mechanisms of effect. Additionally, we only found studies that focused on the pathway of engaging patients with SMI and housing insecurity to primary care, and none that were developed to provide or enhance services to patients already in primary care who develop housing insecurity or destabilizing of their SMI.

It is important to note the limitations of our approach to this evidence map as well. First, we limited our eligibility criteria to those studies that were either clearly intended for patients with SMI or met our criteria for SMI through other diagnoses. It is possible that we excluded studies that did not explicitly report serving a majority of patients with SMI and thus missed some potentially relevant literature. Second, we categorized intervention strategies according to our understanding of the target of the strategy itself (patient, clinic, or system). Some strategies, such as assertive community treatment, could be considered to target multiple levels, and others might have been categorized differently. Third, we chose to use the iCAT-SR, a state-of-the-art approach to classify complex interventions. Despite using this methodologically strong approach, other ways of examining this aspect of the literature (*eg*, TIDIER⁵⁷) may have produced dissimilar results.

Generalizability and Applicability of Findings to the VA Population

While patient populations represented in this evidence map are likely similar to Veterans with SMI and housing insecurity, the majority were not conducted in VA clinical settings (only 2 were in the VA^{37,45}). Yet most of the interventions described rely heavily on local resources and collaborative agencies to supply the complex and multifaceted health and social support needed, and the VA has many similar system-level offerings that could be brought to scale to address the primary care health needs of this population. For example, the VA is an integrated health and social service system that has a common medical record, robust homeless support services, co-located behavioral and physical health care, and primary care providers with training in evidence-based patient interactions like motivational interviewing. However, coordinating across these sectors in the VA is still a challenge,⁵⁸ and as with most interventions, these services address SMI and experience of homelessness as distinct vulnerabilities. Therefore, there are opportunities to improve current services by implementing clinic- and patient-level strategies for individuals with both conditions using consistent outcome measurement to assess their effect on primary care engagement.

RESEARCH GAPS/FUTURE RESEARCH

As 1 purpose of an evidence map is to identify gaps in the literature, here we consider areas that future work might address. First, we found only 1 study that enrolled patients directly from the criminal justice system. Given that this patient population has high levels of justice involvement, focusing on connecting with patients in this area would be valuable. Second, many of the included studies focused solely on either the initial connection with primary care or providing integrated care for acute issues. Attention to the longitudinal relationship of maintaining primary care engagement for this population will be crucial for improving long-term health outcomes. Third, additional validation of outcome measures across the spectrum of primary care engagement used consistently across studies and program evaluations would support comparisons and summary of effectiveness. Fourth, while randomized controlled trials are the gold standard for efficacy intervention evaluations, they are unlikely to be appealing or feasible in this context. Well-conducted stepped wedge design pragmatic trials could offer a rigorous approach to evaluating future interventions for this population. On a brief review of clinicaltrials.gov, no studies focused on patients with SMI and experiences of homelessness were identified, though there were a small number of studies focused on chronic medical conditions among patients with SMI (*eg*, diabetes, obesity, cardiovascular risk). Given the level of complexity needed to care for the target population, adaptive studies that build in ways to test various components and outcomes would constitute another potentially useful methodological approach. Relatedly, few studies employed rigorous implementation science methods. Most interventions were localized without a demonstrated vision for scaling up the effective components. Implementation science will be essential to understanding barriers and facilitators to implementation and how these interventions need to be adapted for broader scale up and dissemination. Table 11 outlines multiple other areas for consideration for future intervention strategy testing.

Table 11. Evidence Gaps and Areas for Future Research Consideration

Population
<ul style="list-style-type: none"> • Patients with SMI and experiences of homelessness identified through the criminal justice system
Interventions
<ul style="list-style-type: none"> • Interventions designed to follow patients throughout the spectrum of primary care engagement, including longitudinal follow-up • Optimal team composition and collaboration for interdisciplinary approach (eg, how primary care teams should differ when engaging this population) • Embedding technologies related to proactive monitoring and care coordination) • Identifying implementation strategies to facilitate adoption of evidence-based interventions • Identification of evidence based “core components” of multicomponent interventions • Theory-based interventions
Comparators
<ul style="list-style-type: none"> • Various models of primary care integration approaches • Different clinical and community settings or health care systems • Across important subpopulations for which programs might be more effective than for others
Outcomes
<ul style="list-style-type: none"> • Validated measures of primary care engagement across the spectrum of engagement from initial visit to longitudinal care • Cost effectiveness • Patient-reported outcomes
Setting
<ul style="list-style-type: none"> • Long-term housing support program • Rural communities • VA-based health care systems

CONCLUSIONS

Individuals with SMI and housing insecurity often have chronic, complicated health needs. Addressing these health needs requires population-tailored interventions to promote longitudinal primary care engagement. We mapped the breadth of literature seeking to engage this patient population with primary care, including those interventions focused at the individual clinic level to national multi-site demonstration projects. In general, studies did not focus on primary care engagement as a primary outcome. We found that programs typically employ multiple intervention strategies, usually across patient, provider, and system levels. While not always well-described, the approaches used to engage patients with primary care could involve co-location with other service disciplines, interdisciplinary care planning, and enhanced and standard referral processes. Organizations seeking to optimize the health care of this vulnerable patient population can use this map to inform program strategy choices during development and reevaluation. This literature could be improved by rigorous study designs to evaluate the effectiveness of interventions, standardized descriptions of intervention components sufficient for replication and full characterization, and a uniform and validated approach to measuring primary care engagement. As one of the nation’s largest integrated health care providers, the VA may be in a unique position, given its robust history of addressing the needs of Veterans experiencing homelessness, collaborative mental health care programs, and patient-centered medical home model, to consider tailoring and developing new programs for patients with SMI and housing insecurity incorporating the considerations noted above.⁵⁹

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