

# Primary Care Engagement Among Individuals with Experiences of Homelessness and Serious Mental Illness: an Evidence Map



Megan Shepherd-Banigan, PhD, MPH<sup>1,2,3</sup> , Connor Drake, PhD, MPA<sup>2</sup>, Jessica R. Dietch, PhD<sup>4</sup>, Abigail Shapiro, MSPH<sup>1</sup>, Amir Alishahi Tabriz, MD, PhD, MPH<sup>5,6</sup>, Elizabeth E. Van Voorhees, PhD<sup>7,8</sup>, Diya M. Uthappa, BS<sup>9,10</sup>, Tsai-Wei Wang, MS<sup>2</sup>, Jay B. Lusk, BSc<sup>9,11</sup>, Stephanie Salcedo Rossitch, PhD<sup>7</sup>, Jessica Fulton, PhD<sup>7,8</sup>, Adelaide Gordon, MPH<sup>1</sup>, Belinda Ear, MPH<sup>1</sup>, Sarah Cantrell, MLIS<sup>9,12</sup>, Jennifer M. Gierisch, PhD, MPH<sup>1,2,13</sup>, John W. Williams, MD, MHS<sup>1,7,13</sup>, and Karen M. Goldstein, MD, MSPH<sup>1,7,13</sup>

<sup>1</sup>Durham Center of Innovation To Accelerate Discovery and Practice Transformation, Durham Veterans Affairs Medical Center, Durham, NC, USA; <sup>2</sup>Department of Population Health Sciences, Duke University School of Medicine, Duke University, Durham, NC, USA; <sup>3</sup>Margolis Center for Health Policy, Duke University, Durham, NC, USA; <sup>4</sup>School of Psychological Science, Oregon State University, Corvallis, OR, USA; <sup>5</sup>Department of Health Outcomes and Behavior, Moffitt Cancer Center, Tampa, FL, USA; <sup>6</sup>Department of Oncological Sciences, University of South Florida Morsani College of Medicine, Tampa, FL, USA; <sup>7</sup>Durham Veterans Affairs Health Care System, Durham, NC, USA; <sup>8</sup>Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, Durham, NC, USA; <sup>9</sup>Duke University School of Medicine, Durham, NC, USA; <sup>10</sup>Duke Global Health Institute, Durham, NC, USA; <sup>11</sup>Duke University Fuqua School of Business, Durham, NC, USA; <sup>12</sup>Duke University Medical Center Library & Archives, Durham, USA; <sup>13</sup>Department of Medicine, Division of General Internal Medicine, Duke University, Durham, NC, USA.

**BACKGROUND:** Experiences of homelessness and serious mental illness (SMI) negatively impact health and receipt of healthcare. Interventions that promote the use of primary care services for people with both SMI and homelessness may improve health outcomes, but this literature has not been evaluated systematically. This evidence map examines the breadth of literature to describe what intervention strategies have been studied for this population, elements of primary care integration with other services used, and the level of intervention complexity to highlight gaps for future intervention research and program development.

**METHODS:** We followed an a priori protocol developed in collaboration with clinical stakeholders. We systematically searched the published literature to identify interventions for adults with homelessness who also had SMI. We excluded case reports, editorials, letters, and conference abstracts. Data abstraction methods followed standard practice. Data were categorized into intervention strategies and primary care integration strategies. Then we applied the Complexity Assessment Tool for Systematic Reviews (iCAT\_SR) to characterize intervention complexity.

**RESULTS:** Twenty-two articles met our inclusion criteria evaluating 15 unique interventions to promote engagement in primary care for adults with experiences of homelessness and SMI. Study designs varied widely from randomized controlled trials and cohort studies to single-site program evaluations. Intervention strategies varied

across studies but primarily targeted patients directly (e.g., health education, evidence-based interactions such as motivational interviewing) with fewer strategies employed at the clinic (e.g., employee training, multidisciplinary teams) or system levels (e.g., data sharing). We identified elements of primary care integration, including referral strategies, co-location, and interdisciplinary care planning. Interventions displayed notable complexity around the number of intervention components, interaction between intervention components, and extent to which interventions were tailored to specific patient populations.

**DISCUSSION:** We identified and categorized elements used in various combinations to address the primary care needs of individuals with experiences of homeless and SMI.

**KEYWORDS:** Housing insecurity; Serious mental illness; Primary care.

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## INTRODUCTION

Adults who have experienced homelessness or housing insecurity have higher rates of chronic illness, ED utilization rates,<sup>1,2</sup> and early mortality compared with those who have not.<sup>3–5</sup> Mental health burden is also high in this population as 20–25% of people who experience homelessness in the USA also have diagnosed serious mental illness (SMI).<sup>6,7</sup> Mental and behavioral health disorders further threaten housing stability<sup>8</sup> which impedes engagement in healthcare.<sup>9,10</sup> The

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intersection of homelessness and SMI amplifies barriers to engaging in traditional, clinic-based primary care, including stigma within the health system<sup>11</sup> and prioritization of basic needs above other health concerns.<sup>12</sup> As a result, adults with SMI and experiences of homelessness receive less preventive care and chronic disease management and are more likely to obtain healthcare in emergency departments.<sup>13</sup> Identifying feasible approaches to integrate primary care and community-based services for this population could improve chronic disease management and general health.

Interventions have been developed to address barriers to primary care engagement for populations with housing instability or SMI<sup>14</sup> and improve continuity of care, use of primary and mental healthcare,<sup>15–17</sup> and housing outcomes.<sup>18,19</sup> However, most interventions for this population focus on either SMI or homelessness; few interventions address the intersection of both vulnerabilities.<sup>15,16,20,21,21</sup> Furthermore, there have been no systematic examinations of the literature which evaluates interventions that include strategies to promote engagement in primary care for populations with SMI and homelessness. We conducted an evidence map to systematically examine the literature, categorize intervention strategies, evaluate intervention complexity, and determine the elements of integration between primary care and other services. We also review gaps in the evidence-base to identify future research needed to improve health care engagement and health outcomes for this population.<sup>22</sup>

## METHODS

This work was part of a Veterans Health Administration (VHA)–funded report available online ([www.hsrd.research.va.gov/publications/esp](http://www.hsrd.research.va.gov/publications/esp)). 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.”<sup>23</sup> We followed a standard, a priori developed protocol that was posted online ([https://www.hsrd.research.va.gov/publications/esp/in\\_progress.cfm](https://www.hsrd.research.va.gov/publications/esp/in_progress.cfm)) and used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines where applicable for an evidence map (i.e., we did not evaluate the risk of bias assessment or define effect measures).<sup>24</sup>

### Search Strategy

Table 1 presents definitions that guided this study. An expert medical librarian conducted a primary search of the literature from database inception through 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 (e.g., homelessness, primary care, veterans) to search titles and abstracts (Supplement A). No limits were placed on date or language. We excluded case reports, editorials, letters, and conference

**Table 1 Definitions**

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| <p><b>Experience with homelessness</b> 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.</p> <p><b>Housing insecurity</b> 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 defined in multiple ways across the literature, we accepted any definition reported in the literature</p> <p><b>Serious mental illness (SMI)</b> 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 (i.e., 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</p> <p><b>Primary care</b> 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.<sup>53</sup></p> <p><b>Primary care engagement</b> is the range of structured interactions between an individual patient and a primary care provider and/or primary care clinical team that has a direct linkage to a prescribing primary care provider (e.g., 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</p> |
|--|

abstracts. We hand-searched references cited by previous systematic reviews conducted on this topic for potential inclusion.

### Study Selection

Studies identified through our primary search were classified independently by 2 investigators based on a priori eligibility criteria (Table 2) (all authors). 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 (Supplement B). All articles meeting eligibility criteria at full-text review were included for data abstraction.

### 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 a third reviewer. We treated multiple publications from a single study as a single data point. Data abstraction forms are included in Supplement C. When critical data were missing or unclear in published reports, we requested supplemental data from the study authors.

A subgroup of authors (KMG, MSB, CD, JRD) collated and organized a list of previously described strategies used in primary care engagement interventions for patients with experiences of homelessness (e.g., outreach, case

Table 2 Study Eligibility Criteria

| Study characteristic | Inclusion criteria   | Exclusion criteria  |
|----------------------|--|---|
| Population           | <p>Ambulatory adults (<math>\geq 18</math> years of age) who have had experiences of homelessness or those with experiences with homelessness <i>and</i> who have a serious mental illness (SMI) as determined by meeting 1 of the following 3 criteria:</p> <ul style="list-style-type: none"> <li>•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)</li> <li>•Secondary SMI, defined as the above diagnoses <i>plus</i> major depressive disorder (MDD) or posttraumatic stress disorder (PTSD)</li> <li>•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 (e.g., could be labeled as severe and persistent mental illness (SPMI))</li> </ul> | <ul style="list-style-type: none"> <li>•Children, teens</li> <li>•People with substance use or depression not specified as MDD as the only diagnosed mental health condition</li> <li>•&lt;75% adult population with SMI</li> <li>•Interventions that are not targeted toward homeless populations, or are targeted only to those with experiences with homelessness but who no longer need housing services</li> <li>•Mixed populations of homeless and nonhomeless without subgroup analysis</li> </ul> |
| 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 <i>and</i> that meet 1 of the following 3 criteria:</p> <ul style="list-style-type: none"> <li>•Intervention is specifically targeted to patients with experiences with homelessness and SMI</li> <li>•Intervention is targeted to patients with experiences with homelessness, of whom at least 75% have SMI or diagnoses consistent with SMI</li> <li>•Intervention is targeted to patients with experiences with homelessness and includes a subgroup analysis with outcomes reported separately for the group of interest</li> </ul>  | <ul style="list-style-type: none"> <li>•Interventions that do not include a prescribing primary care healthcare clinician (e.g., PCP, NP, PA), which has no direct linkage, or which do not facilitate linkage to one</li> <li>•Interventions that involve a social worker or mental health provider without direct connection to a primary care clinical staff member</li> </ul>   |
| Comparators          | Any comparator (e.g., usual care, active comparator) or no comparator  | Not applicable  |
| Outcomes*            | Any  | Not applicable  |
| Timing               | Any  | Not applicable  |
| Setting              | Any (e.g., clinical, housing services, criminal justice system)  | Not applicable  |
| Study designs*       | <ul style="list-style-type: none"> <li>•EPOC: randomized trials, nonrandomized trials, controlled before-after studies, interrupted time series<sup>a</sup></li> <li>•Observational: cohort, organizational case study, program evaluation</li> <li>•Relevant systematic reviews or patient-level meta-analyses must have a search strategy, eligibility criteria, and analysis/synthesis plan</li> <li>•Qualitative studies must include a description of intervention strategy and/or components</li> </ul>  | <ul style="list-style-type: none"> <li>•Not an intervention evaluation study (e.g., editorial, nonsystematic review, letter to the editor, conference abstract)</li> <li>•Clinical guidelines</li> <li>•Protocol only</li> <li>•Individual patient case study</li> </ul>  |
| Language             | Any  | Not applicable  |
| Countries            | OECD <sup>†</sup>  | Non-OECD  |
| Years                | Any  | Not applicable  |
| Publication types    | Full publication in a peer-reviewed journal  | Letters, editorials, reviews, dissertations, meeting abstracts, protocols without results   |

\* *Cochrane EPOC criteria identify study designs optimal for evaluation of health system interventions*<sup>54</sup>

<sup>†</sup>OECD 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, UK, USA

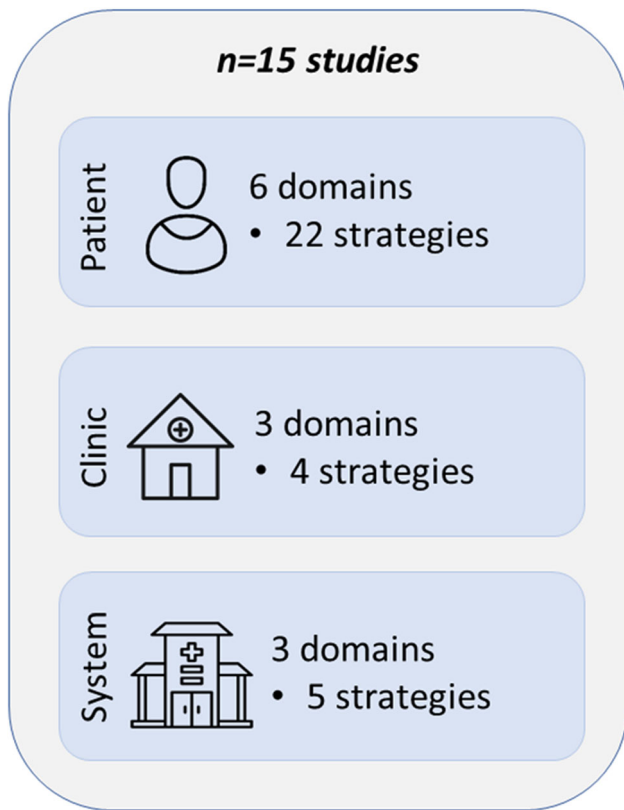
Abbreviations: EPOC *Effective Practice and Organization of Care*; MDD *major depressive disorder*; NP *nurse practitioner*; PA *physician assistant*; PCP *primary care physician*; PTSD *posttraumatic stress disorder*; SMI *serious mental illness*; SPMI *severe and persistent mental illness*

management, team-based care).<sup>20,21</sup> Strategies were categorized by level of intended action (e.g., patient, clinic, system) and domains that were similar from a service delivery perspective (e.g., education/training, communication, outreach) (Fig. 1; Appendix Table 1). Working in pairs, subgroup members added strategies identified during a targeted review of intervention descriptions and iteratively reconciled differences; then, we met as a large group to finalize decisions. Recognizing that the same intervention strategy can be used to promote service engagement across sectors (e.g., primary care and specialty care), the strategies identified were not restricted to those pertaining to primary care engagement only, but included all strategies that attempted to meet the intersectional needs of this population within the context of an intervention

that in some way promoted engagement with primary care. Study characteristic details are in Supplement D. Supplement B lists studies at the full-text review stage and the reason for exclusion.

## Data Synthesis

In addition to identifying and grouping intervention strategies that promoted primary care engagement, we also sought to characterize the degree of primary care integration with other services within a given intervention (Table 3). Included studies did not provide sufficient information to apply existing primary care and mental health integration frameworks that categorize interventions along an integration continuum.<sup>25,26</sup>



**Fig. 1 Non-ACCESS studies per domain at patient, clinic, and system levels. Non-ACCESS intervention studies (n = 15) included intervention strategies at 3 levels, the patient, clinic, and system. Within each level, we identified overall strategic domains (e.g., patient-provider communication) and specific strategies (e.g., motivational interviewing)**

Therefore, we identified elements of integrated primary care mental health practice from these tools and catalogued the presence or absence of each element across the included studies: standard referral (e.g., non-specific referral to primary care), enhanced referral (e.g., established relationships with primary care providers with whom there is a degree of interactive communication), co-location (e.g., primary care is co-located in same physical space as other disciplines), and interdisciplinary care planning (e.g., regular interdisciplinary care planning for individual patients). Finally, two investigators (KMG, MSB) applied the Complexity

Assessment Tool for Systematic Reviews (iCAT\_SR) to characterize the complexity of included interventions.<sup>27</sup> Complexity is determined on a relative continuum from 1 (least complex) to 3 (most complex) (Fig. 2 for details).

**RESULTS**

First, we provide an overview of the studies identified. Next, we provide details about the interventions described by those studies, including ACCESS and non-ACCESS programs. Then, we describe the intervention strategies categorized at the patient, clinic, and system levels and elements of primary care integration. Finally, we discuss the findings about intervention complexity.

**Literature Flow**

We identified 22 articles that represented 15 unique interventions that included some element of support for primary care engagement for patients with experiences with homelessness and SMI (Fig. 3). Studies were conducted in Canada (n = 4) and the USA (n = 18). Two studies were conducted within the VA. Seven of the 22 articles describe the Access to Community Care and Effective Services and Support (ACCESS) demonstration project and the remaining articles describe other unique interventions. For more details about sample characteristics, see Supplement D. Study Characteristics Tables.

**Detailed Findings**

**Studies Conducted Within the ACCESS Program.** ACCESS was an 18-site federal demonstration program initiated in 1993 and funded by the US Department of Health and Human Services.<sup>28-34</sup> ACCESS tested the effectiveness of systems integration strategies to support patients with experiences of homelessness and mental illness. ACCESS sites were provided funding to adopt system integration strategies that were tailored to their local context. Individual participants at ACCESS sites were required to be experiencing homelessness (had spent at least 7 of the past 14 nights in a shelter, outdoors, or in a public or abandoned building); have a severe mental

**Table 3 Elements of Primary Care Integration**

| Intervention Strategy           | Definition  | Study                                   |
|---------------------------------|---|---|
| Interdisciplinary care planning | Multidisciplinary team (e.g., medical providers, social workers, nurses) meet on a routine basis to discuss patient cases but not necessarily co-located  | Non-ACCESS <sup>36,40-43</sup>          |
| Co-location                     | Services that are located in the same physical space (e.g., office, building, campus), though not necessarily fully integrated with one another (e.g., mental health, primary healthcare)   | Non-ACCESS <sup>35,40-43,45,46*</sup>   |
| Enhanced referral               | Existing relationships between the intervention site and community primary care, but which is not integrated into the intervention program  | Non-ACCESS <sup>35,38,41,44,46,47</sup> |
| Standard referral               | Intervention is 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 <sup>37,39,40,48</sup>       |

\* Stergiopoulos 2015<sup>40</sup> 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



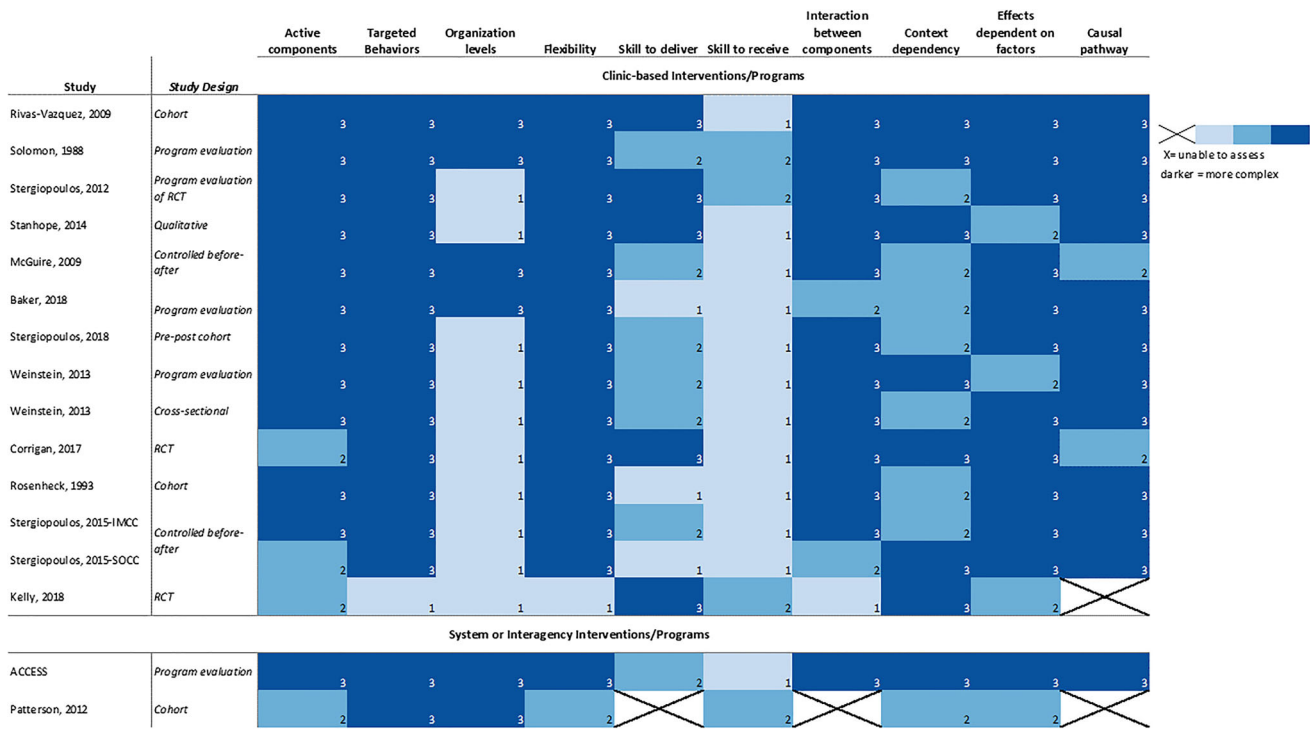


Fig. 2 A heat map illustrating, for each study, the level of complexity for each core dimension of the i\_CAT tool. The top row starting with “Active components” through “Causal pathway” are the core dimensions of the i\_CAT tool. Each row represents an eligible study. Complexity is determined on a relative continuum from 1 (least complex) to 3 (most complex) which is also indicated by the light to dark blue colors. For example, the row that pertains to the study by Rivas-Vazquez et al., 2009 illustrates that the intervention was evaluated to be “most complex” on all i\_CAT core dimensions, except for “Skill to receive.” Definitions of each complexity domain:<sup>55</sup> “Active” components included in the intervention, in relation to the comparison: 1 “more than one component and delivered in a bundle,” 2 “more than one,” 3 “one component,” 4 “varies.” Targeted behaviors (of intervention recipients): 1 “multi-target,” 2 “dual target,” 3 “single target,” 4 “varies.” Organization levels: 1 “multi-level,” 2 “multi-category,” 3 “single category.” Flexibility (degree of tailoring): 1 “highly,” 2 “moderately,” 3 “inflexible,” 4 “varies.” Skill to deliver: 1 “high skills,” 2 “intermediate skills,” 3 “basic skills,” 4 “varies.” Skills to receive: 1 “high skills,” 2 “intermediate skills,” 3 “basic skills,” 4 “varies.” Interaction between components: 1 “high level interaction,” 2 “moderate interaction,” 3 “independent,” 4 “varies.” Context dependency: 1 “highly context dependent,” 2 “moderately context dependent,” 3 “independent of context,” 4 “varies.” Effects dependent on factors: 1 “highly dependent on individual-level factors,” 2 “moderately dependent on individual-level factors,” 3 “largely independent on individual-level factors,” 4 “varies, 5 “unclear.” Causal pathway: 1 “pathway variable, long,” 2 “pathway linear, long,” 3, “pathway linear, short,” 4 “varies,” 5 “unclear.”

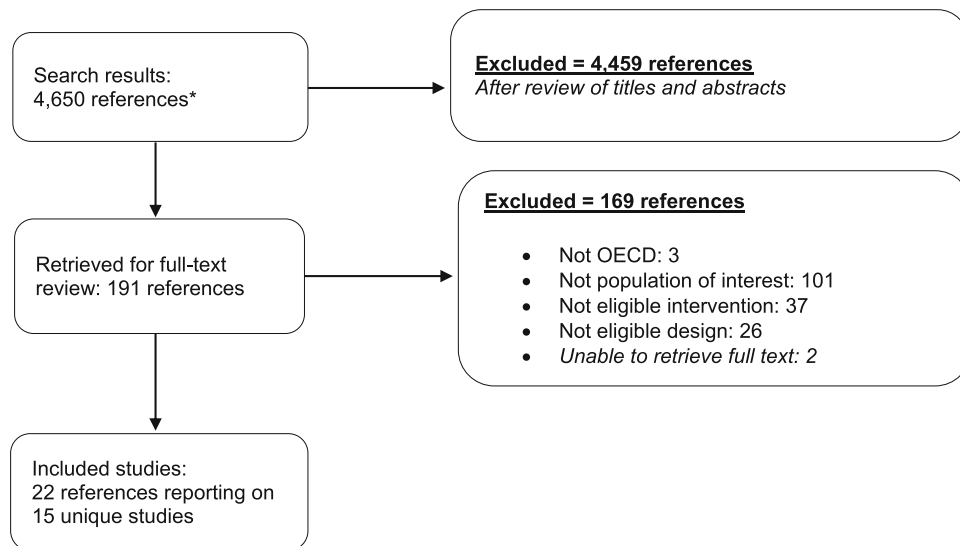


Fig. 3 Literature flow chart

illness (psychiatric eligibility was determined with a 30-item screening algorithm); and not be involved in ongoing mental health treatment.

Seven publications evaluated different aspects of the ACCESS multi-site comparative program evaluation and included reference to primary care as a component of system integration (Supplement D).<sup>28–34</sup> These publications were published between 1997 and 2008 and examined outcomes at the patient level (e.g., physical and mental health status, healthcare utilization), clinic level (e.g., patient referrals), and system level (e.g., agency linkages and system coordination). One study compared the impact of patient gender on program outcomes.<sup>28,31</sup>

**Studies Conducted Outside the ACCESS Program.** Fifteen articles conducted described 14 interventions with elements of primary care engagement for individuals with SMI experiencing homelessness (Supplement D).<sup>35–48</sup> Study designs included cohort studies ( $n = 4$ <sup>35,42,44,46</sup>), program evaluations ( $n = 4$ <sup>38,45,47,48</sup>), controlled before-after studies ( $n = 2$ <sup>40,43</sup>), RCTs ( $n = 2$ <sup>37,39</sup>), a cross-sectional study ( $n = 1$ <sup>41</sup>), and a qualitative study ( $n = 1$ <sup>36</sup>).

**Intervention Strategies.** Within the 15 interventions, we identified 22 patient-level, 4 clinic-level, and 5 system-level strategies. Four studies included strategies at all 3 levels,<sup>37,38,40,45</sup> and 1 study included strategies on 1 level.<sup>44</sup> All studies used at least 2 patient-level strategies, and the total number of strategies described ranged from 2 to 11. Figure 4 shows the frequency of intervention strategies by level and domain.

**Patient-Level Intervention Strategy Domains.** Patient-level intervention strategies were organized into 6 domains (i.e., 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) (Appendix Table 1). 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, or food assistance programs.<sup>29,30,32,34,36,37,40–46,48</sup> Eleven studies incorporated evidence-based therapies or interactions to improve patient-provider collaboration as an intervention component.<sup>29,30,34–39,42,47,48</sup> The most frequently described of these techniques were motivational interviewing (5 studies) and empathic/stigma reducing communication (4 studies). Five studies included health education, often emphasizing chronic disease self-management, navigating the healthcare system, and partnering with the care team, and social support.<sup>36–40,42,48</sup> Additionally, 4 studies included crisis intervention as an available mechanism for a short-term intensive response.<sup>29,38,47,48</sup> 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.<sup>38</sup> Finally, 7 studies described strategies to facilitate uptake of medical services by reducing clinic barriers,<sup>34,36,38,40,41,43,45</sup>

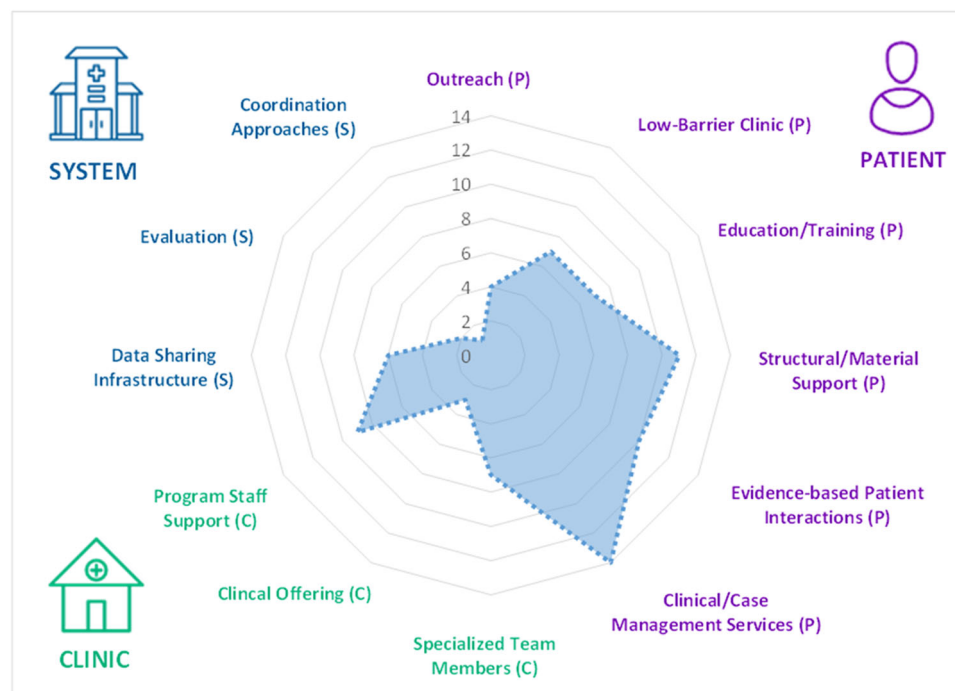


Fig. 4 Framework of multilevel intervention strategies. Figure 4 shows the number of intervention strategy within domain and by level (e.g., patient (P), clinic (C), system(S))

including reducing eligibility requirements (e.g., no requirements for sobriety or substance use treatment to participate), reducing wait times, appointment prioritization, and embedding the clinic location within the target community. Interventions often combined strategies to enhance effectiveness. For example, Kelly et al. describe how health education, case management, and patient/provider communication techniques were delivered together as a multi-component self-management intervention.<sup>37</sup>

**Clinic-Level Intervention Strategy Domains.** All included studies used a clinic-level intervention strategy (Appendix Table 2). The most frequently described clinic-level strategy was population-specific employee training ( $n = 9$  studies). Most studies also leveraged a multidisciplinary team structure through interdisciplinary intervention staffing and established relationships with collaborative agencies to supplement internal resources (Appendix Table 2). Nine studies (12 articles, 4 of which were ACCESS) included training beyond what is required for discipline-specific licensure.<sup>28,29,31,33,37-40,42,43,47,48</sup> Training and workforce development strategies focused on skills and techniques tailored to the complex patient population. 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.<sup>41</sup> 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.<sup>28-34</sup>

**System-Level Intervention Strategy Domains.** 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 records ( $n = 4$ ) and proactive patient monitoring technology infrastructure ( $n = 3$ ) (Appendix Table 3). Proactive monitoring systems promoted interagency collaboration by improving communication, documentation, and care management. Kelly et al. evaluated a peer-delivered health navigator model that used an electronic personal health record to reduce challenges related to paper record keeping.<sup>37,49</sup> ACCESS established system integration strategies across sites ranging from community and information sharing to full-service delivery integration. For example, 3 ACCESS evaluations included interagency collaboration, joint funding for interagency initiatives, and the reduction of regulatory barriers through special waivers as system-level strategies.<sup>29-31</sup> Finally, we found 2 studies that reported using shared, standardized performance metrics to evaluate effectiveness across agencies and clinics.<sup>41,46</sup>

**Elements of Primary Care Integration.** We considered the elements of integration between primary care and the other services (e.g., standard referral, enhanced referral, co-location, and interdisciplinary care planning) across each included study (Fig. 5 and Table 3). We found a relatively even distribution of the 4 key elements across studies. Four studies included evidence of both co-location and regular

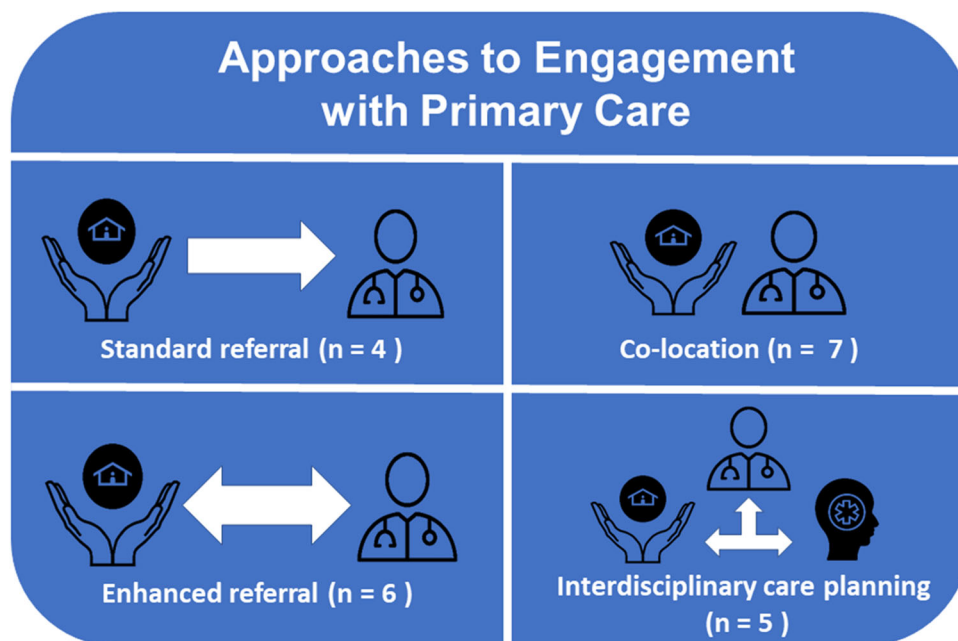


Fig. 5 Elements of primary care integration. \*There could be overlap between approaches. †Does not include ACCESS studies. Figure 5 illustrates the number of studies that incorporated the elements of primary care integration

interdisciplinary care planning,<sup>40–43</sup> while 1 study employed interdisciplinary care planning but primary care was not co-located.<sup>36</sup> 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.<sup>43</sup> Three studies describe models in which primary care was co-located but there was no clear reporting that interdisciplinary care planning took place.<sup>35,45,46</sup> Six studies employed enhanced referral mechanisms to connect patients with primary care.<sup>35,38,41,44,46,47</sup> 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 experiences with homelessness due to SMI; they maintained a “robust referral system” and regular contact to primary care within local major healthcare systems.<sup>38</sup> 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.<sup>37,39,40,48</sup> Some studies used multiple routes to connect patients with primary care; for example, a Philadelphia-based program 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.

### Intervention Complexity

We evaluated the complexity of included interventions using the iCAT\_SR tool grouped by clinic-based interventions versus system or interagency interventions. Areas of high complexity identified across studies included having multiple active intervention components that targeted a complex collection of behaviors (Fig. 2). 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 (e.g., improved physical/mental health, stable housing) was not explicitly described but inferred to be variable (adding complexity) and to occur over an extended period of time. Areas of intervention complexity that varied from study to study included the organizational levels targeted by the intervention, as some interventions focused only on patients receiving care (less complex) while others also included provider and clinic level components (more complex). Interactions of intervention components were moderate 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 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 their baseline level of function. Similarly, staff delivering these

interventions required minimal skills beyond their standard disciplinary training.

## DISCUSSION

We identified 22 studies that described a wide range of intervention strategies with the potential to promote primary care engagement for patients with experiences of homelessness and SMI. Our findings align with prior research showing that care coordination and case management are commonly used strategies to improve health for individuals with SMI or individuals with experiences of homelessness<sup>21,50,51</sup> and that interventions often used several components implemented at multiple levels by multi-disciplinary teams.<sup>20,21</sup> We identified other previously reported strategies, including health education, material housing support, interdisciplinary needs assessments, provider training, and shared record systems and strategies not previously reported by other reviews, including supportive therapy and cognitive behavioral therapy, stigma reduction, trauma-informed care, justice system in-reach, and eliminating sobriety requirements.

Implementing the strategies we identified would help to move policy to action. For example, a recent National Academies of Sciences, Engineering, and Medicine report discusses how to make high quality primary care available within the USA,<sup>52</sup> including moving towards payment models that enable team-based care and address social determinants of health by coordinating across multiple settings. The strategies that we identified could be incentivized by policy-makers and used by program administrators to support new models of care for populations with limited interaction with primary care.

### Limitations and Areas

This evidence synthesis should be interpreted in the context of several limitations related to our approach and to the existing literature. First, unlike a systematic review, an evidence map is not intended to draw conclusions about intervention effectiveness. Unfortunately, given the limited evidence-base we were unable to conduct a systematic review. Also, we accepted studies that were either clearly intended for patients with SMI or met our criteria for SMI and may have excluded studies that did not explicitly report serving a majority of patients with SMI. Second, in general, the literature applied low-quality study designs, including non-comparative, one-armed evaluations. We also found few pragmatic trials or implementation studies that would be helpful to inform future implementation and scale up of novel programs to support this patient population. Many included interventions were not singularly focused on promoting primary care integration—our outcome of interest—and as a result, studies did not report consistent outcomes for primary care integration. Relatedly, the depth and detail provided about interventions themselves were generally insufficient for determining the level of integration using validated tools.<sup>26</sup> Many



of the included studies focused on either the initial connection with primary care or providing integrated care for acute issues versus ensuring longitudinal engagement with primary care to manage chronic conditions which we expect would have a more sustained impact on health.

## Areas for Future Research

Through this evidence map, we identified limitations in the existing published literature and a paucity of studies about how to foster primary care integration for populations with both SMI and experiences of homelessness. Current work on this topic is similarly underdeveloped. For example, a brief review of [clinicaltrials.gov](https://clinicaltrials.gov) yielded no studies of patients with SMI and experiences of homelessness. More research is needed in this area to address current limitations. To strengthen the impact of these interventions on long-term health outcomes, future studies could monitor ongoing engagement in primary care over time for this population. To support comparisons and summary of effectiveness, the field needs to develop, validate, and consistently use outcome measures of primary care integration. The methodological rigor of studies for this population also needs to be improved while also focusing on translating the results more quickly into community settings. In addition to employing more RCT or rigorous observational studies, stepped wedge design pragmatic trials or adaptive studies that test multiple intervention strategies are novel designs to evaluate future interventions. Finally, effective interventions must be adopted into practice in ways that promote intervention sustainability. Implementation science methods are one approach that can be combined with pragmatic trials to intentionally adapt interventions to fit local contexts.

## CONCLUSIONS

Individuals with SMI and experiences with homelessness often have chronic, complicated health needs. Systems and agencies that seek to implement similar interventions could use our mapping of multilevel strategies to develop their program. Also, our description of intervention complexity could guide new programs on how their intervention design might place demands on different dimensions of structural and person-level components.

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**Corresponding Author:** Megan Shepherd-Banigan, PhD, MPH; Durham Center of Innovation To Accelerate Discovery and Practice Transformation, Durham Veterans Affairs Medical Center, Durham, NC, USA (e-mail: [megan.shepherd-banigan@va.gov](mailto:megan.shepherd-banigan@va.gov)).

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**Conflict of Interest:** *The authors declare that they do not have a conflict of interest.*

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