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ORIGINALRESEARCH



Quality of Depression Care for Veterans Affairs Primary Care Patients with Experiences of Homelessness

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BACKGROUND: Persons who experience homelessness (PEH) have high rates of depression and incur challenges accessing high-quality health care. Some Veterans Affairs (VA) facilities offer homeless-tailored primary care clinics, although such tailoring is not required, within or outside VA. Whether services tailoring enhances care for depression is unstudied.

OBJECTIVE: To determine whether PEH in homeless-tailored primary care settings receive higher quality of depression care, compared to PEH in usual VA primary care.

DESIGN: Retrospective cohort study of depression treatment among a regional cohort of VA primary care patients (2016–2019).

PARTICIPANTS: PEH diagnosed or treated for a depressive disorder.

MAIN MEASURES: The quality measures were timely follow-up care (3+ completed visits with a primary care or mental health specialist provider, or 3+ psychotherapy sessions) within 84 days of a positive PHQ-2 screen result, timely follow-up care within 180 days, and minimally appropriate treatment (4+ mental health visits, 3+ psychotherapy visits, 60+ days antidepressant) within 365 days. We applied multivariable mixed-effect logistic regressions to model differences in care quality for PEH in homeless-tailored versus usual primary care settings.

KEY RESULTS: Thirteen percent of PEH with depressive disorders received homeless-tailored primary care ($n=374$), compared to usual VA primary care ($n=2469$). Tailored clinics served more PEH who were Black, who were non-married, and who had low income, serious mental illness, and substance use disorders. Among all PEH, 48% received timely follow-up care within 84 days of depression screening, 67% within 180 days, and 83% received minimally appropriate treatment. Quality metric attainment was higher for PEH in homeless-tailored clinics, compared to PEH in usual VA primary care: follow-up within 84 days (63% versus 46%; adjusted odds ratio [AOR]=1.61, $p=.001$), follow-up within 180 days (78% versus 66%; AOR=1.51, $p=.003$), and minimally appropriate treatment (89% versus 82%; AOR=1.58, $p=.004$).

CONCLUSIONS: Homeless-tailored primary care approaches may improve depression care for PEH.

KEY WORDS: primary care; depression; homelessness; veterans

Abbreviations

| | |
|--------|-------------------------------------|
| H-PACT | Homeless Patient-Aligned Care Team |
| PACT | Patient Aligned Care Team |
| PEH | Persons who experience homelessness |
| PHQ-2 | Patient Health Questionnaire |
| US | United States |
| VA | Department of Veterans Affairs |

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INTRODUCTION

Depression is prevalent among persons who experience homelessness (PEH) and contributes to poor health and social outcomes.^{1,2} Nearly one in four PEH is likely to meet criteria for a depressive disorder³ that, when present, contributes to chronic disease burden (e.g., hypertension, cardiovascular disease, diabetes), functional impairment, persisting homelessness, suicide, and premature mortality.^{4–10} While effective treatments exist, some PEH face challenges accessing high-quality depression care due to lack of transportation, competing demands, difficulty obtaining medications, and other factors.^{11–13} Compared to housed persons, PEH face poorer treatment prognosis.¹⁴ Many healthcare systems, clinics, and hospitals deliver services for the nearly 2 million PEH annually,¹⁵ but there is little research into optimal service arrangements for this population.

Based on certain high-performing non-VA model programs,¹⁶ the Department of Veterans Affairs (VA) pursued a national primary care redesign effort with service customization for PEH. Beginning in 2010, for all Veterans,

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the VA implemented a team-based patient-centered medical home (called patient-aligned care teams, “PACT”s).¹⁷ Each team has a prescribing provider, nurse care manager, clinical staff assistant, and clerk who are responsible for providing timely, high-quality care; they are supported by a network of pharmacists, social workers, and other specialized providers. In the PACT model, VA nurses typically conduct annual depression screenings, and prescribing primary care clinicians follow up to assess for depressive disorders, discuss treatment options, and refer for mental health care, when indicated.¹⁸ Primary care-mental health integration clinicians (e.g., psychologists, psychiatrists, mental health nurse care managers) are available in-person or remotely to assist primary care teams with diagnosis and coordination with specialty care.^{19,20}

For PEH in particular, some VA facilities implemented homeless-tailored primary care clinics (called H-PACT)²¹ that differ from other PACTs in several ways.²² They have smaller panel sizes (100–500 patients, compared to > 1000) to protect time for PEH engagement. Other aspects of tailored service design may include walk-in policies, tangible goods on-site, street outreach, or having mental health clinicians embedded in the care team.²³ H-PACTs are not available at all VAs; primarily, they have been implemented in urban medical centers serving large numbers of PEH.²⁴ They tend to serve Veterans with recent homeless experience, some of whom are unsheltered or chronically homeless.^{25,26} Veterans can be referred to H-PACTs from clinicians in other medical service lines, or identified through homeless outreach or Veteran word-of-mouth.²⁷

Homeless-tailored primary care approaches could improve depression treatment and outcomes among PEH, but there is little evidence as to whether they do. This information could guide policy within and outside of VA. For example, the primary non-VA homeless care program under the U.S. Department of Health and Human Services does not impose unique service requirements for Health Care for the Homeless Programs. Within VA, two studies of H-PACTs suggest they may focus on mental health more than other PACTs.^{28,29} One study of healthcare utilization after H-PACT enrollment found increases in primary care visits, and reductions in specialty mental health service visits; this could reflect a shift of such care to the H-PACT itself.²⁹ In a second study of patient experience, PEH in H-PACTs were more likely than PEH in other PACTs to report their primary care provider inquired about mental health/substance use concerns.²⁸

The goal of this study was to determine whether PEH in homeless-tailored primary care settings receive higher quality of depression care, compared to PEH in non-tailored settings. To test the study hypothesis that H-PACTs would achieve more timely depression follow-up care and treatment, we analyzed existing data from a large VA service region³⁰ that serves many PEH. The VA is the largest integrated health-care system in the US, and the greatest numbers of Veteran

PEH are counted in cities and suburbs covered by the Desert Pacific VA service region.³¹ Thus, study findings from the Desert Pacific VAs would have implications for many PEH and could inform care delivery regionally and nationally.

METHODS

Study Design and Data Sources

We conducted a retrospective cohort study of depression care quality among PEH in VA primary care from 2016 to 2019. All variables were extracted from VA administrative and patient health records, documented in the VA Corporate Data Warehouse. Study procedures were part of an ongoing quality improvement effort and thus deemed exempt from review by the institutional review board at the senior author’s institution.³⁰

Setting

The Desert Pacific VA Service Network includes 8 healthcare systems spanning Southern California, Arizona, and New Mexico. Nine of the 82 VA facilities offering primary care services in the region have implemented an H-PACT.

Participants

For each study year (2016–2019), we identified a cohort of patients screening positive for depression on the two-item Patient Health Questionnaire (PHQ-2; score ≥ 3) during a primary care visit and who had evidence of homelessness in their medical record. Homelessness was designated from international classification of disease (ICD) codes and/or use of VA homeless services in the study year. We restricted the sample to patients with 1 + primary care visit within 12 months following their PHQ-2 screen result to allow sufficient opportunity for follow-up. To focus on patients for whom clinically significant depression was detected, we further narrowed the sample to patients who were formally diagnosed with a depressive disorder or prescribed an antidepressant in the 12 months following their positive PHQ-2 screen. Then, to identify a new care episode, we excluded patients engaged in depression treatment in the 6 months prior to screening (i.e., those with a depressive disorder diagnosis or receipt of minimally appropriate treatment [see “Quality Outcomes” below]). While uncommon (< 3%), patients could meet cohort criteria (e.g., homeless experience and incident depression diagnosis or treatment) in > 1 study year.

Exposure of Interest

We designated patients’ primary care clinic type (H-PACT or other PACT) based on where they obtained the most

primary care visits during the applicable study year. Patients who had an equal number of visits to H-PACTs and other PACTs were coded as receiving H-PACT primary care.

Quality Outcomes

Three population-based depression quality metrics were developed from VA and National Committee for Quality Assurance guidelines, and endorsed by a modified Delphi panel of VA and non-VA experts in March, 2015.³² Timely follow-up was defined as ≥ 3 mental health specialty visits, ≥ 3 psychotherapy visits, or ≥ 3 primary care visits with a depressive disorder diagnosis within 84 days following a positive PHQ-2 screen. We also calculated timely follow-up within 180 days from their PHQ-2 screening. The third measure, minimally appropriate treatment, was defined as receiving 60+ days' supply of antidepressant prescriptions, 4+ mental health specialist visits, or 3+ psychotherapy visits within 12 months of screening. Each measure was dichotomized as receipt or non-receipt of appropriate treatment.

Covariates

We controlled for patient- and facility-level variables known to be associated with access to depression treatment. Demographic characteristics (e.g., age, sex, race, ethnicity, marital status, service-connected disability rating (0%, 1–50%, 50–100%), and exemption from copayments due to financial hardship) were extracted from VA administrative records. We also controlled for Charlson comorbidity index scores and mental health and substance use disorder diagnoses, determined from ICD-10 diagnosis codes in the year of the PHQ-2 screening.^{33,34} At the facility level, patients were assigned to the facility where they obtained the most primary care visits during the applicable study year. We controlled for whether the facility was a hospital or community-based clinic.

Statistical Analyses

We first used cross-tabulations and bivariate statistics (*t*-tests, X^2 tests) to examine the distributions of patient and facility characteristics among PEH managed in H-PACT, compared to PEH in other PACTs. If PEH met the study criteria in > 1 year, we summarized the characteristics available from their most recent year. Next, we calculated the unadjusted rates of achieving each depression quality metric for the eligible sample, then tested for unadjusted differences between H-PACT and PACT using X^2 tests. Third, using data from all PEH person-years, we used multilevel logistic regression models to test for differences in depression quality among PEH in H-PACTs, compared to PEH in other PACTs. The models included fixed effects for study year, and patient and facility covariates. Healthcare system random effects were included to

account for clustering of patients and clinical teams within healthcare systems, and standard errors were adjusted to account for repeated observations across study years.

Finally, we conducted sensitivity analyses to assess whether the study findings were driven by specific H-PACT locations. Preliminary analyses revealed a large portion of H-PACT patients received care in the Greater Los Angeles (GLA) VA healthcare system, which operates 3 H-PACTs and serves more PEH than any other VA.³⁵ To assess for potentially different impacts, we calculated the rates of depression quality separately for clinics in GLA versus other healthcare systems in the VA Desert Pacific region. All analyses were conducted in Stata version 15.1, and *p*-values < 0.05 were considered statistically significant.

RESULTS

Among PEH administered the PHQ-2 during a primary care visit in 2016–2019 (157,875 person-years), 14,644 PEH person-years (9.3%) screened positive. Of those with a positive screen, 12,036 person-years (82.2%) had 1+ primary care visit post-screening, 5575 (38.1%) were not already engaged in mental health treatment, and 2901 (19.8%) were newly diagnosed or treated for depression following their positive screen result and thus were eligible for the depression quality metrics. The eligible cohort included 2843 unique PEH with an incident depression diagnosis or treatment, of whom 374 (13%) were managed in H-PACTs and 2469 (87%) in other PACTs.

Regardless of primary care type, most PEH diagnosed or treated for depression were male, non-White, and unmarried (Table 1). Nearly half had an existing medical condition, or a concurrent diagnosis of post-traumatic stress disorder or anxiety disorder. One in five were diagnosed with an alcohol use disorder, and one-half received primary care at a hospital-based clinic rather than a community-based outpatient clinic.

Characteristics of PEH Managed in H-PACTs

There were differences among PEH seen in H-PACTs versus other PACTs (Table 1). H-PACT patients were more likely to be female, non-Hispanic Black, unmarried, and exempt from copayment requirements (reflective of a proxy for low-income). The patterns of medical and mental health comorbidity appeared similar for PEH managed in H-PACTs compared to PEH in other PACTs with a few exceptions. PEH treated in H-PACTs were more likely to have a diagnosis of severe mental illness and substance use disorder. PEH in H-PACTs were more likely to receive primary care in a hospital-based clinic as compared to a community-based clinic. One half of H-PACT patients received care at GLA, versus other healthcare systems in the Desert Pacific region.

Table 1 Characteristics of VA Primary Care Patients with Experiences of Homelessness who were Diagnosed or Treated for Depression, by Type of Primary Care

| | Total <i>n</i> = 2843 | Type of VA primary care | | <i>p</i> -value |
|--|--------------------------|--------------------------|-------------------------------|-----------------|
| | | H-PACT <i>n</i> = 374 | Other PACT <i>n</i> = 2469 | |
| Age (mean/SD) | 49.1 (15.2) | 49.1 (13.8) | 49.1 (15.4) | 0.49 |
| Female sex | 334 (11.8%) | 75 (20.1%) | 259 (10.5%) | <0.001 |
| Race/ethnicity | | | | <0.001 |
| White | 1189 (41.8%) | 129 (34.5%) | 1060 (42.9%) | |
| Black | 743 (26.1%) | 148 (39.6%) | 595 (24.1%) | |
| Hispanic | 537 (18.9%) | 59 (15.8%) | 478 (19.4%) | |
| Other | 159 (5.6%) | 18 (4.8%) | 141 (5.7%) | |
| Unknown/missing | 215 (7.6%) | 20 (5.4%) | 195 (7.9%) | |
| Non-married | 2240 (78.8%) | 327 (87.4%) | 1913 (77.5%) | <0.001 |
| Means test | | | | <0.001 |
| Exempt | 1089 (38.3%) | 189 (50.5%) | 900 (36.5%) | |
| Non-exempt | 230 (8.1%) | 19 (5.1%) | 211 (8.6%) | |
| Any copay required | 209 (7.4%) | 21 (5.6%) | 188 (7.6%) | |
| Missing | 1315 (46.3%) | 145 (38.8%) | 1170 (47.4%) | |
| Service-connection rating | | | | <0.001 |
| 0% | 101 (3.6%) | 19 (5.1%) | 82 (3.3%) | |
| 1–50% | 592 (20.8%) | 60 (16.0%) | 532 (21.6%) | |
| 51–100% | 831 (29.2%) | 83 (22.2%) | 748 (30.3%) | |
| Missing | 1319 (46.4%) | 212 (56.7%) | 1107 (44.8%) | |
| Charlson comorbidity index | | | | 0.25 |
| 0 | 1748 (61.5%) | 237 (63.4%) | 1511 (61.2%) | |
| 1 | 553 (19.5%) | 61 (16.3%) | 492 (19.9%) | |
| 2+ | 542 (19.1%) | 76 (20.3%) | 466 (18.9%) | |
| Mental health/substance use disorder | | | | |
| Anxiety disorder | 1207 (42.5%) | 150 (40.1%) | 1057 (42.8%) | 0.32 |
| Post-traumatic stress disorder | 1371 (48.2%) | 180 (48.1%) | 1191 (48.2%) | 0.97 |
| Bipolar, schizophrenia, or other psychotic disorders | 253 (8.9%) | 53 (14.2%) | 200 (8.1%) | <0.001 |
| Alcohol use disorder | 643 (22.6%) | 116 (31.0%) | 527 (21.3%) | <0.001 |
| Drug use disorder | 454 (16.0%) | 97 (25.9%) | 357 (14.5%) | <0.001 |
| Facility characteristics | | | | |
| Hospital-based | 1337 (47.0%) | 220 (58.8%) | 1117 (45.2%) | <0.001 |
| Greater Los Angeles vs other healthcare system | 857 (30.1%) | 182 (48.7%) | 675 (27.3%) | <0.001 |

H-PACT homeless patient-aligned care team, PACT patient aligned care team, VA Department of Veterans Affairs

Rates of Depression Follow-up and Treatment

In the overall cohort, 48.0% of PEH with depression received timely follow-up within 84 days, 67.1% within 180 days, and 83.7% received minimally appropriate treatment. For all three measures, rates of timely follow-up and treatment were higher among PEH in H-PACTs compared to PEH in other PACTs (Fig. 1).

Adjusted Differences in Depression Follow-up and Treatment in H-PACTs versus Other PACTs

After controlling for sociodemographic and health system covariates, rates of depression follow-up and treatment remained superior for PEH in H-PACTs (Table 2). The odds of meeting depression follow-up and treatment criteria for PEH in H-PACTs, compared to PEH in PACTs, were 61% greater for follow-up in 84 days, 51% greater for follow-up in 180 days, and 58% greater for minimally appropriate treatment.

Several other patient and facility-level characteristics were associated with receipt of timely depression follow-up and treatment. For instance, PEH who were ages 65 and older were less likely than the youngest PEH to receive timely follow-up care in 84 days and 180 days (adjusted odds ratio [AOR] = 0.64). Female PEH were more likely than male PEH to receive timely follow-up within 180 days (AOR = 1.33) or minimally appropriate treatment (AOR = 1.56). Those with a service-connected disability of 51–100% were less likely than PEH without any service-connected disability to receive timely follow-up within 84 days or 180 days (AORs = 0.62, 0.64). For all outcomes, having a co-occurring mental health or substance use disorder diagnosis was associated with increased odds of receiving appropriate follow-up and treatment (AORs: 1.48–2.64). PEH who received primary care at a VA hospital, compared to a community-based outpatient clinic, were also more likely to receive timely follow-up care and minimally appropriate treatment (AORs = 1.24, 1.48, 1.26).

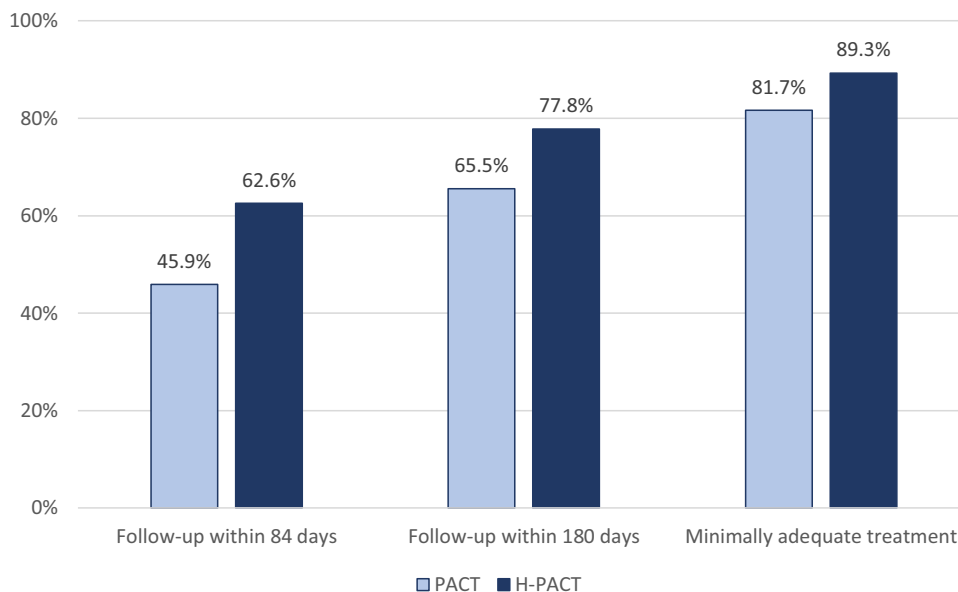


Figure 1 Rates of depression care quality provided in homeless-tailored primary care (H-PACT), compared to non-tailored primary care (PACT) clinics. Follow-up is defined as ≥ 3 mental health specialty visits, ≥ 3 psychotherapy visits, or ≥ 3 primary care visits with a depressive disorder diagnosis within 84 days following a positive depression screen. Rates of follow-up are also calculated within 180 days following a positive depression screen. Minimally appropriate treatment is defined as receiving 60+ day supply of antidepressant prescriptions, 4+ mental health specialist visits, or 3+ psychotherapy visits within 365 days following a positive depression screen.

Sensitivity Analyses

The pattern of superior H-PACT performance was observed in GLA and in other VA healthcare systems with smaller H-PACT programs (Fig. 2).

DISCUSSION

This study examined primary care service arrangements that could facilitate provision of high-quality depression care for PEH. Overall, we found high rates of depression follow-up and treatment among PEH managed in the VA's patient-centered medical home model of primary care. However, VA primary care clinics tailored for PEH (H-PACTs) achieved superior performance on all three quality metrics. Since H-PACTs serve PEH who may be difficult to engage in treatment by virtue of clinical and social vulnerability burden, this suggests a programmatic benefit. This study adds to a body of research that suggests benefits from tailored primary care service designs for PEH.^{21,25,28} It could guide non-VA primary care programs funded by the US Department of Health and Human Services to consider service tailoring as a program requirement. While prior studies have examined the role of H-PACTs in mitigating acute service utilization or enhancing patient experience with care,^{21,25,28,36} this study is among the first to demonstrate improvement in process-based quality measures that are more proximally linked to health outcomes.

Among depression quality measures assessed, we found the largest difference between homeless-tailored and non-tailored clinics in 84-day depression follow-up care,

suggesting early treatment access is a benefit of H-PACT enrollment. Several H-PACT features may account for this finding. First, in addition to smaller panel sizes, some H-PACTs offer special access accommodations not seen in usual VA primary care, such as walk-in appointments or evening/weekend scheduling. Enhanced primary care access offers more opportunities for depression treatment.^{37,38} Second, some H-PACTs have an embedded mental health provider who participates in team huddles. Having mental health expertise in tailored clinics may assist with diagnosis and treatment plans through review of issues in team meetings and promote warm hand-offs to specialty mental health care.³⁹⁻⁴² In general, VA facilities with greater primary care-based mental health staffing achieve superior performance on measures of depression care quality.²⁰ Collaborative care approaches, such as those encouraged in H-PACTs, have also been shown to improve patient access to depression treatment in non-VA settings.⁴³ Finally, patient experience may play an important role in early treatment engagement. Patients in H-PACTs are more likely than PEH in other PACTs to report positive experiences with provider communication, involvement in shared decision-making, and care coordination.^{25,28,44} Positive care experience in these domains have been shown in other populations to predict depression treatment initiation.^{45,46} While the present study was unable to test whether access accommodations, staffing mix, or patient-centered orientation may improve depression care for PEH, our results offer a compelling rationale for future research into the relative contribution of these features to high-quality depression care.

Table 2 Clinic and Patient Characteristics Associated with Receipt of Depression Follow-up Care and Treatment, among VA Primary Care Patients with Experiences of Homelessness

| | Follow-up within 84 days | | Follow-up within 180 days | | Minimally appropriate treatment | |
|--|--------------------------|-----------|---------------------------|-----------|---------------------------------|-----------|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| H-PACT | 1.61 [‡] | 1.21–2.15 | 1.51 [‡] | 1.15–1.99 | 1.58 [†] | 1.15–2.16 |
| Age | | | | | | |
| 18–44 (ref) | 1.0 | | 1.0 | | 1.0 | |
| 45–64 | 1.08 | 0.87–1.35 | 0.95 | 0.80–1.14 | 1.18 | 0.89–1.57 |
| 65+ | 0.64 [†] | 0.46–0.89 | 0.64 [*] | 0.44–0.94 | 0.79 | 0.57–1.10 |
| Female sex | 1.16 | 0.89–1.51 | 1.33 | 1.00–1.75 | 1.56 [*] | 1.01–2.43 |
| Race/ethnicity | | | | | | |
| White (ref) | 1.0 | | 1.0 | | 1.0 | |
| Black | 1.12 | 0.82–1.51 | 1.12 | 0.88–1.43 | 1.10 | 0.88–1.38 |
| Hispanic | 1.13 | 0.90–1.44 | 1.05 | 0.75–1.39 | 0.91 | 0.68–1.21 |
| Other | 0.80 | 0.63–1.02 | 0.81 | 0.58–1.13 | 0.83 | 0.52–1.31 |
| Unknown/missing | 1.16 | 0.82–1.64 | 1.10 | 0.77–1.58 | 0.87 | 0.58–1.31 |
| Married | 1.09 | 0.92–1.29 | 0.92 | 0.77–1.09 | 1.07 | 0.85–1.35 |
| Means Test | | | | | | |
| Non-exempt (ref) | 1.0 | | 1.0 | | 1.0 | |
| Any copay required | 0.87 | 0.65–1.15 | 1.20 | 0.94–1.54 | 1.10 | 0.81–1.49 |
| Exempt/missing | 0.81 [*] | 0.67–0.97 | 0.90 | 0.74–1.09 | 0.96 | 0.72–1.27 |
| Service-connected disability | | | | | | |
| 0% (ref) | 1.0 | | 1.0 | | 1.0 | |
| 1–50% | 0.86 | 0.68–1.09 | 0.87 | 0.69–1.10 | 1.02 | 0.72–1.44 |
| 51–100% | 0.62 [‡] | 0.52–0.73 | 0.64 [‡] | 0.50–0.81 | 0.92 | 0.70–1.21 |
| Charlson comorbidity index | | | | | | |
| 0 (ref) | 1.0 | | 1.0 | | 1.0 | |
| 1 | 0.89 | 0.77–1.04 | 1.07 | 0.86–1.33 | 0.92 | 0.71–1.18 |
| 2+ | 0.80 | 0.62–1.02 | 0.93 | 0.71–1.22 | 0.97 | 0.75–1.25 |
| Mental health/substance use disorders | | | | | | |
| Anxiety disorder | 1.67 [‡] | 1.45–1.93 | 1.82 [‡] | 1.03–1.73 | 1.59 [‡] | 1.32–1.92 |
| Post-traumatic stress disorder | 1.55 [‡] | 1.32–1.82 | 1.88 [‡] | 1.58–2.10 | 2.31 [‡] | 1.90–2.81 |
| Bipolar, schizophrenia, or other psychotic disorders | 1.77 [‡] | 1.39–2.09 | 2.00 [‡] | 1.44–2.77 | 2.64 [†] | 1.27–5.46 |
| Alcohol use disorder | 1.70 [‡] | 1.39–2.09 | 2.00 [‡] | 1.49–2.67 | 1.75 [‡] | 1.34–2.28 |
| Drug use disorder | 1.48 [‡] | 1.22–1.79 | 1.51 [*] | 1.16–1.96 | 1.86 [†] | 1.22–2.82 |
| Hospital-based | 1.24 | 0.98–1.57 | 1.48 [‡] | 1.18–1.86 | 1.26 | 0.97–1.64 |
| Year | | | | | | |
| 2016 (ref) | 1.0 | | 1.0 | | 1.0 | |
| 2017 | 0.96 | 0.79–1.16 | 0.91 | 0.75–1.09 | 0.82 | 0.66–1.03 |
| 2018 | 0.86 | 0.70–1.05 | 0.92 | 0.76–1.11 | 0.80 | 0.58–1.09 |
| 2019 | 1.08 | 0.83–1.40 | 0.95 | 0.73–1.24 | 0.65 [†] | 0.49–0.85 |

AOR adjusted odds ratio, CI 95% confidence interval, H-PACT homeless patient-aligned care team, VA Department of Veterans Affairs

Follow-up is defined as ≥3 mental health specialty visits, ≥3 psychotherapy visits, or ≥3 primary care visits with a depressive disorder diagnosis within 84 days following a positive PHQ-2 screen result. Rates of follow-up are also calculated within 180 days following a positive PHQ-2 screen result. Minimally appropriate treatment is defined as receiving 60+ day supply of antidepressant prescriptions, 4+ mental health specialist visits, or 3+ psychotherapy visits within 365 days following a positive PHQ-2 screen result

* $p < .05$; † $p < .01$; ‡ $p < .001$

The rates of depression follow-up and treatment among all PEH (48%/83% for 84-day follow-up/minimally appropriate treatment) were superior to those reported among general VA outpatients (32%/77%),³⁰ an unexpected finding. Prior studies of depression treatment had shown gaps in antidepressant prescribing and adherence among PEH.^{11,13,47} Barriers to antidepressant treatment such as medication side effects, contraindications due to medical or psychiatric comorbidity, or lack of safe storage options for medications for unsheltered persons may explain prior findings of sub-optimal antidepressant medication treatment among PEH.⁴⁸ In contrast to prior work, the present study examined a more

comprehensive definition of depression care that included psychotherapy, follow-up visits with a mental health specialist or primary care provider, or medication treatment. While the present study did not assess treatment preferences or modality, it is possible that non-pharmacologic treatments may be preferred among some PEH such as racial/ethnic minorities.¹² Specialty mental health care may also be more appropriate for PEH with high psychiatric comorbidity. Indeed, the presence of co-occurring mental health or substance use disorders was among the most salient predictors of receiving timely follow-up care and treatment in our sample. However, our finding of lower receipt of follow-up care

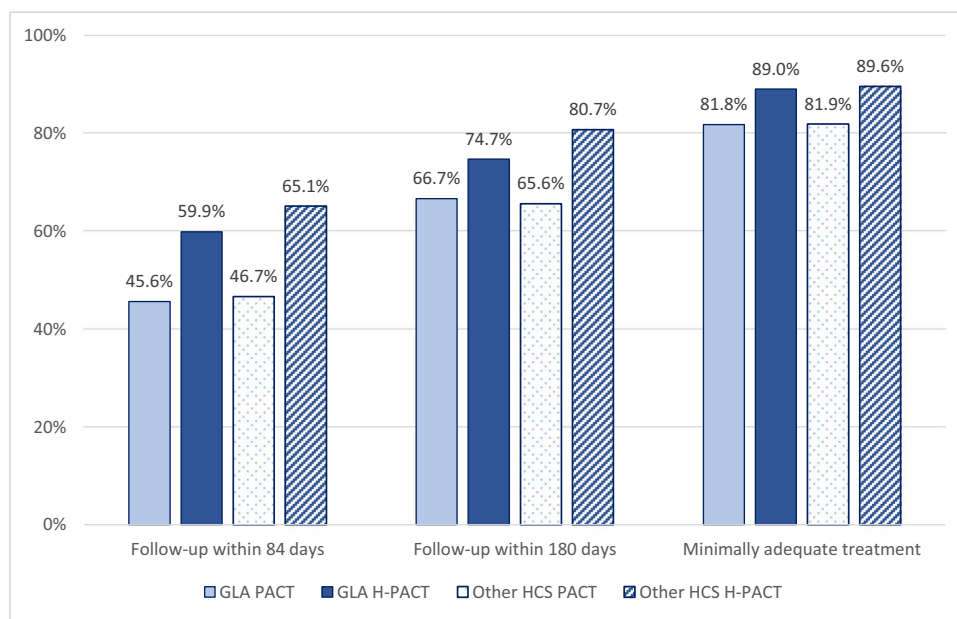


Figure 2 Rates of depression care quality in homeless-tailored primary care (H-PACT), compared to non-tailored primary care (PACT) clinics. Rates calculated separately for primary care clinics in the Greater Los Angeles (GLA) healthcare system compared to clinics in other VA healthcare systems (HCS) in the Desert Pacific region. Follow-up is defined as ≥ 3 mental health specialty visits, ≥ 3 psychotherapy visits, or ≥ 3 primary care visits with a depressive disorder diagnosis within 84 days following a positive depression screen. Rates of follow-up are also calculated within 180 days following a positive depression screen. Minimally appropriate treatment is defined as receiving 60+ day supply of antidepressant prescriptions, 4+ mental health specialist visits, or 3+ psychotherapy visits within 365 days following a positive depression screen.

and treatment in some demographic subgroups suggests that additional outreach may be needed. Lower receipt of care for men, older PEH, and those with high service connection ratings due to military injuries are consistent with prior research among non-homeless samples,^{30,49} and may reflect stigma, negative attitudes toward care, or competing priorities for medical services.^{50–52} Additional follow-up may also be warranted for PEH who screened positive but did not return to the VA for follow-up care, and thus were excluded from quality metrics.

Among notable limitations, this study reflects one geographic region with a high concentration of PEH which may not generalize to low prevalence areas. Also, these findings originate in a VA healthcare system and may not generalize to other healthcare settings. However, homeless-tailored primary care programs originated outside of the VA,¹⁶ and the first comparative study of homeless-tailored service included VA and non-VA settings and patients,³⁶ suggesting a degree of generalizability. Finally, studies derived from administrative records risk potential misclassification of treatment need, housing status, and H-PACT care, and cannot determine the resolution of depressive symptoms. Future research should assess whether access to high-quality care, as observed in this study, improves clinical outcomes among PEH.

Our results have implications for VA and non-VA healthcare systems. At a time when public discourse on homelessness is increasingly fraught, there are popular concerns

and research findings to suggest that care may well fall short even when housing solutions are offered.^{53–55} Our data find benefits to tailored primary care specifically in responding to mental health care needs. Within the VA, there may be value in expanding H-PACT, or applying some H-PACT service features for PEH in non-tailored settings. Outside of the VA, there are 299 Health Care for the Homeless program sites serving over 900,000 PEH a year. As consolidated under the Consolidated Health Centers Appropriations Act of 1996, Health Care for the Homeless programs do not mandate any form of services tailoring. While we cannot be sure the same benefits would be achieved if tailoring was required among today's 299 grantees, the study suggests it is a matter worthy of study and programmatic attention.

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