2017

Needles in a haystack: screening and healthcare system evidence for homelessness

Needles in a Haystack: Screening and Healthcare System Evidence for Homelessness

Jamison D. FARGO[a,1], Ann Elizabeth MONTGOMERY[b], Thomas BYRNE[c], Emily BRIGNONE[a], Meagan CUSACK[d], Adi V. GUNDLAPALLI[e]
[a]*Salt Lake City VA Medical Center and Utah State University, Logan, UT, USA*
[b]*Birmingham VA Medical Center and University of Alabama at Birmingham, Birmingham, AL, USA*
[c]*Boston VA Medical Center and Boston University, Boston, MA, USA*
[d]*Corporal Michael J. Crescenz VA Medical Center, Philadelphia, PA, USA*
[e]*Salt Lake City VA Medical Center and University of Utah, SLC, UT, USA*

Abstract. Effectiveness of screening for homelessness in a large healthcare system was evaluated in terms of successfully referring and connecting patients with appropriate prevention or intervention services. Screening and healthcare services data from nearly 6 million U.S. military veterans were analyzed. Veterans either screened positive for current or risk of housing instability, or negative for both. Current living situation was used to validate results of screening. Administrative evidence for homelessness-related services was significantly higher among positive-screen veterans who accepted a referral for services compared to those who declined. Screening for current or risk of homelessness led to earlier identification, which led to earlier and more extensive service engagement.

Keywords. Homeless, Screening, Veterans

1. Introduction

Early identification of homelessness is imperative for successful prevention or intervention efforts, which can include providing appropriate services or directing individuals to existing resources. Apart from homeless shelters and other similar agencies, healthcare clinics, hospitals, and systems can serve as a means to identify individuals who are experiencing homelessness or risk. Although screening for homelessness has been attempted in a variety of settings, empirical evidence of its efficacy is lacking. Accurately targeting individuals with the greatest need for homelessness prevention and intervention—and forecasting the onset of homelessness based on known risk factors—is complicated and often associated with a high false positive rate, making homelessness prevention relatively inefficient [1-2].

A population that is particularly vulnerable to homelessness is U.S. military veterans, who, as compared to the general population, are over-represented among individuals experiencing homelessness. Despite significant policy and programmatic steps in the U.S. Department of Veterans Affairs' (VA) shift toward homelessness prevention, limited evidence exists as to which prevention-oriented strategies implemented by VA mitigate homelessness risk. Improving measurement of

[1] Corresponding author, Jamison D. Fargo, e-mail: jamison.fargo@usu.edu.

homelessness risk, identifying veterans at greatest risk, and intervening effectively is essential to ongoing VA initiatives.

In 2012, the VA deployed a largescale implementation of a screening instrument known as the Homelessness Screening Clinical Reminder (HSCR), which presents a unique opportunity to quantify the prevalence of homelessness [3-4]. Additionally, limited research on homelessness risk has examined approaches to engage persons identified as at imminent risk for homelessness and provide services to mitigate such risk [5]. Rigorously examining the validity and efficacy of this instrument will ensure the effective use of limited resources. The HSCR is designed to link veterans immediately with Veterans Health Administration (VHA) homeless programs or social work services, but its effectiveness at making these linkages is unclear. Therefore, the objective of this evaluation study was to evaluate criterion validity of the HSCR, as well as the processes by which veterans who are currently experiencing homelessness or risk are linked with services.

2. Methods

2.1. Homelessness Screening Clinical Reminder

To assist in the identification of veterans in need of homelessness prevention, the National Center on Homelessness Among Veterans in Philadelphia, PA, USA, developed the HSCR, a two-question universal screener that assesses housing instability and risk among veterans who present for outpatient care and are not already engaged with VHA homeless programs. The two questions are:

- *In the past 2 months, have you been living in stable housing that you own, rent, or stay in as part of a household?* ["No" indicates veteran is positive for current housing instability]

- *Are you worried or concerned that in the next 2 months you may NOT have stable housing that you own, rent, or stay in as part of a household?* ["Yes" indicates veteran is positive for risk of housing instability]

Veterans who screen positive to either question are then asked where they have lived for most of the previous two months and whether they want to be referred for services. In conjunction with the veteran's self-reported living situation, results of screening were used to form three major groups [6]: 1) positive screen for housing instability, 2) positive screen for risk of housing instability, 3) negative screen for housing instability or risk; and then group 1 was further subdivided into two groups: 1a) positive screen for housing instability with a current homeless living situation (i.e., shelter, on the street, with a family member or friend [doubled-up], or in a motel/hotel) and 1b) positive screen for housing instability without a current homeless living situation (i.e., subsidized or unsubsidized housing, or in an institution). Group 1a represented the most stringent classification for current housing instability or homelessness. Veterans whose current living situation was "Other" at the time of screening were not included in groups 1a or 1b.

2.2. Data

Veterans Informatics and Computing Infrastructure (VINCI) provides secure access to VA data sources through an integrated suite of databases in a secure, high-performance-computing environment [7]. VINCI houses data on over 21 million veterans nationwide. Data available on VINCI for this study included veterans' demographic, military, and healthcare characteristics (International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM] codes, clinic stop codes, inpatient treatment specialty codes, and National Homeless Registry data [longitudinal data for veterans who have experienced homelessness]). Homelessness was defined as receiving a clinical diagnostic code (ICD-9 v60.0) indicative of housing instability, participation in a VA homelessness-related clinical service or treatment specialty, and/or participation in a VHA homeless program within 90 days of initial HSCR response [8]. Results of the HSCR were matched with demographic, military service, and healthcare data.

2.3. Sample

A total of 5,845,937 veterans were asked to complete the HSCR between October 1, 2012 through September 30, 2014. However, 74,441 (1.3%) were excluded or not screened because they 1) reported that they were already receiving housing assistance (n=11,020), 2) declined screening (n=2,656), 3) were a nursing home resident (n=1,202), 4) were unable to perform screening (n=148), 5) used a VHA homeless program in the 6 months prior to screening (n=57,356), or 6) were missing screening results (n=2,059). This resulted in a final sample of 5,771,496 veterans with HSCR results. A majority of the sample was male (92.8%, n=5,356,442), White (76.2%, n=4,396,989), had served in the Army (53.0%, n=3,060,863), and had served in conflicts other than operations in Iraq or Afghanistan (88.8%, n=5,126,393); mean age was 61.1 years (SD=16.6; median = 64.0).

2.4. Evaluation

Descriptive statistics were computed for demographic and HSCR variables, including current living situation and referral acceptance in cases of positive screens. The criterion validity of the HSCR was evaluated by comparing the positive screens for current or risk of housing instability with the current living situation. Among veterans who screened positive for current or risk of housing instability, presence of administrative evidence for homelessness was compared between those who accepted or declined a referral for services using logistic regression analyses in order to evaluate screening and referral effectiveness in connecting veterans to services.

3. Results

3.1. Results of the HSCR

Results of initial screening showed that 0.8% (n=45,282) were positive for current housing instability, 1.0% (n=54,882) were positive for risk of housing instability, and 98.2% (n=5,671,332) screened negative (see Table 1). Among those who screened

positive for housing instability, 61.9% were living in an homelessness situation, 24.5% were not; for those who screened positive for risk, 25.1% were living in a homeless situation, 65.3% were not. Results were similar whether we excluded or retained veterans without a current homeless living situation from the group that screened positive for housing instability. Administrative evidence for homelessness significantly varied depending on whether veterans accepted or declined a referral for services, with 61.3% of positive screens for housing instability who accepted services showing administrative evidence for homelessness as compared to only 19.0% who declined (p<.01); a similar difference was observed for other groups (p<.01).

Table 1. Homelessness Screening Clinical Reminder, Living Situation, Acceptance of Referral, and Administrative Evidence of Homelessness within 90 Days of Screening.

	Group 1: Housing Instability N=45,282 (0.8%)			**Group 2: Risk of Housing Instability N=54,882 (1.0%)**	**Group 3: Negative N=5,671,332 (98.2%)**	**Total**
Living Situation						
Homeless	27,878 (61.9%)			13,768 (25.1%)		41,646 (41.5%)
Friend/Family	18,355 (40.8%)			12,720 (23.2%)		31,075 (31.1%)
Shelter	2,091 (4.6%)			177 (0.3%)		2,268 (2.3%)
Street	4,791 (11.0%)			307 (0.6%)		5,278 (5.3%)
Motel/Hotel	2,461 (5.5%)			564 (1.0%)		3,025 (3.0%)
Non-Homeless	11,106 (24.5%)			35,843 (65.3%)		46,949 (46.8%)
Subsidized Housing	971 (2.2%)			3,110 (5.7%)		4,081 (4.1%)
Unsub. Housing	9,179 (20.4%)			32,395 (59.0%)		41,574 (41.6%)
Institution	866 (1.9%)			338 (0.6%)		1,204 (1.2%)
Unknown	6,127 (13.6%)			5,269 (9.6%)		11,396 (11.4%)
	Group 1: Overall	**Group 1a: Homeless Living Situation N=27,878**	**Group 1b: Non-Homeless Living Situation N=11,106**			
Accepted Referral for Service	28,279 (65.6%)	18,073 (67.9%)	6,664 (62.4%)	31,868 (60.5%)		60,147 (62.8%)
Administrative Evidence of Homelessness	21,502 (47.5%)	14,444 (51.8%)	4,017 (36.5%)	12,129 (22.1%)	43,955 (0.8%)	77,586 (1.3%)
If Accepted Referral	17,336 (61.3%)	11,755 (65.0%)	3,381 (50.7%)	10,054 (31.5%)		27,390 (45.8%)
If Declined Referral	2,922 (19.0%)	1,994 (23.3%)	453 (11.6%)	1,462 (7.0%)		4,384 (12.3%)

4. Discussion

A majority (61.9%) of veterans who self-identified or screened positive for current housing instability were indeed living in a homeless situation (e.g., shelter, street, hotel/motel, or doubled-up with friends or family) and conversely, a majority of those who screened positive for risk of housing instability were not currently living in a homeless situation (65.3%) (e.g., subsidized or unsubsidized housing, an institution). These results speak to the criterion validity of the HSCR in terms of differentiating between homelessness and risk of homelessness. Additionally, as evidenced by receipt

of administrative homelessness codes within 90 days after screening, veterans who screened positive for current housing instability and accepted a referral for services were more likely to receive homelessness prevention and intervention services (61.3%) than those who declined the referral (19.0%). Similarly, administrative evidence for homelessness was apparent for 31.5% of those with a positive screen for risk of housing instability who accepted a referral for services, as compared to only 7.0% for those who declined the referral. Thus, screening for housing instability and risk, which results in an acceptance of a referral for services in cases of positive screens, in turn leads to provision of homelessness-related services at a higher level, as evidenced by administrative data. A limitation of this study is that living situation was self-reported and those who screen negative are not asked to report their living situation, thus full diagnostic statistics including sensitivity and specificity cannot be computed.

5. Conclusion

The results of this study of almost 6 million records from a healthcare system suggests that screening for current housing instability and risk can lead to earlier identification, which can then lead to earlier referral for service provision. If such referrals are accepted, service provision is more likely to occur, as evidenced by administrative documentation of homelessness prevention and intervention services.

Acknowledgement

Funding provided by VA Health Services Research & Development grants IIR-13-334 and IIR 12-084. The views expressed are those of the authors and do not necessarily reflect the position or policy of the VA or the United States Government.

References

[1] Burt MR, Pearson CL, Montgomery AE. Community-wide strategies for preventing homelessness: Recent evidence. *Journal of Primary Prevention.* 2007;28, 213–228.

[2] Culhane DP, Metraux S, Byrne T. A prevention-centered approach to homelessness assistance: A paradigm shift? *Housing Policy Debate*. 2011;21(2):295–315.

[3] Montgomery AE, Fargo JD, Byrne TH, Kane V, Culhane DP. Universal screening for homelessness and risk for homelessness in the Veterans Health Administration. *American Journal of Public Health.* 2013;103(S2), S210–S211. doi:10.2105/AJPH.2013.301398

[4] Montgomery AE, Fargo JD, Kane V, Culhane DP. Development and validation of an instrument to assess imminent risk of homelessness among Veterans. *Public Health Reports.* 2014;129, 439–447.

[5] Montgomery AE, Dichter ME, Thomasson AM, Roberts CB. Services receipt following Veteran outpatients' positive screen for homelessness. *American Journal of Preventive Medicine.* 2016;50(3), 336–343. doi:10.1016/j.amepre.2015.06.035

[6] U.S. Department of Housing and Urban Development. Homeless emergency assistance and rapid transition to housing (HEARTH): defining "homeless" final rule. 2012. Retrieved from https://www.hudexchange.info/resource/1928/hearth-defining-homeless-final-rule/

[7] US Department of Veterans Affairs, VA Informatics and Computing Infrastructure (VINCI), in, US Department of Veterans Affairs, Washington DC, 2016.

[8] Peterson R, Gundlapalli AV, Carter ME, Palmer M, Redd A, Samore MH, Metraux S, Fargo JD. Identifying homelessness among Veterans using VA administrative data: Opportunities to expand detection criteria. *Plos ONE*. 2015;10(7):1-14; e0132664.doi:10.1371 /journal.pone.0132664.