Systematic Review of the Effectiveness and Cost-Effectiveness of Permanent Supportive Housing and Income Support

Tim Aubry, Ph.D.
School of Psychology
University of Ottawa
Europe Housing First Hub
September 17, 2020

Development of Evidence Based Clinical Guidelines for Homeless, Vulnerably Housed and Persons with Lived Homelessness Experience

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A HOME, A JOB, A FRIEND AND SOCIAL CHANGE

Declarations

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Community Scholars

Christine Lalonde, Terry Hannigan, Dawnmarie Harriott

CMAJ Guideline Authors

Kevin Pottie, Claire Kendall, Tim Aubry, Olivia Magwood, Anne Andermann, Ginetta Salvalaggio, David Ponka, Gary Bloch, Vanessa Brcic, Eric Agbata, Kednapa Thavorn, Andrew Bond, Susan Crouse, Ritika Goel, Esther Shoemaker, Jean Zhuo Jing Wang, Sebastien Mott, Christine Mathew, Syeda Shanza Hashmi, Ammar Saad, Harneel Kaur, Thomas Piggott, Neil Arya, Nicole Kozloff, Dale Guenter, Wendy Muckle, Stephen Hwang, Vicky Stergiopoulos, and Peter Tugwell

Development of Evidence-Based Clinical Guidelines

GUIDELINE | VULNERABLE POPULATIONS CPD

Clinical guideline for homeless and vulnerably housed people, and people with lived homelessness experience

Kevin Pottie MD MClSc, Claire E. Kendall MD PhD, Tim Aubry PhD, Olivia Magwood MPH, Anne Andermann MD DPhil, Ginetta Salvalaggio MD MSc, David Ponka MDCM MSc, Gary Bloch MD, Vanessa Brcic MD, Eric Agbata MPH MSc, Kednapa Thavorn PhD, Terry Hannigan, Andrew Bond MD, Susan Crouse MD, Ritika Goel MD, Esther Shoemaker PhD, Jean Zhuo Jing Wang BHSc, Sebastian Mott MSW, Harneel Kaur BHSc, Christine Mathew MSc, Syeda Shanza Hashmi BA, Ammar Saad, Thomas Piggott MD, Neil Arya MD, Nicole Kozloff MD, Michaela Beder MD, Dale Guenter MD MPH, Wendy Muckle BScN MHA, Stephen Hwang MD, Vicky Stergiopoulos MD, Peter Tugwell MD

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Homeless and vulnerably housed populations are heterogeneous[1] and continue to grow in numbers in urban and rural settings as forces of urbanization collide with gentrification and austerity policies.[2] Collectively, they face dangerous living conditions and marginalization within health care systems.[3] However, providers can improve the health of people who are homeless or vulnerably housed, most powerfully by following evidence-based initial steps, and working with communities and adopting anti-oppressive practices.[1,4,5]

Broadly speaking, "homelessness" encompasses all individuals without stable, permanent and acceptable housing, or lacking the immediate prospect, means and ability of acquiring it.[6] Under such conditions, individuals and families face intersecting social, mental and physical health risks that significantly increase morbidity and mortality.[7,8] For example, people who are homeless and vulnerably housed experience a significantly higher prevalence of trauma, mental health conditions and substance use disorders than the general population.[7,9] Canadian research reports that people who experience homelessness face life expectancies as low as 42 years for men and 52 years for women.[7]

A generation ago, homeless Canadians were largely middle-aged, single men in large urban settings.[10] Today, the epidemiology has shifted to include higher proportions of women, youth, Indigenous people (Box 1), immigrants, older adults and people from rural communities.[11,14] For example, family homelessness (and therefore homelessness among dependent children and youth) is a substantial, yet hidden, part of the crisis.[15] In 2014, of the estimated 235 000 homeless people in Canada, 27.3% were women, 18.7% were youth, 6% were recent immigrants or migrants, and a growing number were veterans and seniors.[10]

KEY POINTS

- Clinical assessment and care of homeless and vulnerably housed populations should include tailoring approaches to a person's gender, age, Indigenous heritage, ethnicity and history of trauma; and advocacy for comprehensive primary health care.
- As initial steps in the care of homeless and vulnerably housed populations, permanent supportive housing is strongly recommended, and income assistance is also recommended.
- Case-management interventions, with access to psychiatric support, are recommended as an initial step to support primary care and to address existing mental health, substance use and other morbidities.
- Harm-reduction interventions, such as supervised consumption facilities, and access to pharmacologic agents for opioid use disorder, such as opioid agonist treatment, are recommended for people who use substances.

Practice navigators, peer-support workers and primary care providers are well placed to identify social causes of poor health and provide orientation to patient medical homes.[16,17] A patient's medical home is "a family practice defined by its patients as the place they feel most comfortable presenting and discussing their personal and family health and medical concerns."[18] Medical care is "readily accessible, centred on the patients' needs, provided throughout every stage of life, and seamlessly integrated with other services in the health care system and the community" (https://patientsmedicalhome.ca). Primary care providers are also well positioned to mobilize health promotion, disease prevention, diagnosis and treatment, and rehabilitation services.[18]

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TORONTO STAR

2017

Formerly homeless, they're now advising doctors drafting Canada's street health guidelines

UPCOMING WEBINAR!

ONTARIO HOUSING FIRST REGIONAL NETWORK COMMUNITY OF INTEREST'S WEBINAR ON HEALTH, HOMELESSNESS AND COVID-19

This webinar will look at:

- the common health issues faced by people who are homeless and the challenges associated with not having a primary care physician
- the recent Canadian Medical Association guidelines for physicians and health care workers working with people experiencing homelessness
- an example of partnerships between the health and housing sectors, highlighting the City of Windsor and public health's efforts to get everyone in shelters tested for COVID-19.

This webinar is for public health professionals, mental health and addictions stakeholders, and the health and housing sectors.

Presenters

- Dr. Stephen Hwang, Director, MAP Centre for Urban Health Solutions
- Dr. Kevin Pottie, Clinician Scientist, C.T. Lamont Primary Health Care Research Centre, Bruyère Research Institute
- Jennifer Tanner, Manager of Homelessness and Housing Support, City of Windsor

WEDNESDAY, SEPTEMBER 30, 2020
1PM–2:30PM EDT
REGISTER HERE: https://bit.ly/3hBJH95

This webinar is presented the Ontario Housing First Regional Network Community of Interest (OHFRN-COI). The OHFRN-CoI is intended to assist communities across Ontario to develop, evaluate, and improve Housing First programs based on the Pathways model, which was tested, adapted, and shown to be effective in the At Home/Chez Soi Demonstration Project.

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This CoI is supported by Evidence Exchange Network (EENet), which is part of the Provincial System Support Program (PSSP) at the Centre for Addiction and Mental Health. For more information, visit https://www.eenet.ca/node/1257#about.

Evidence Review Team for Permanent Supportive Housing and Income Support

- Tim Aubry
- Gary Bloch
- Vanessa Brcic
- Ammar Saad
- Olivia Magwood
- Tasnim Abdalla
- Oasem Alkhateeb
- Edward Xie

- Christine Matthew
- Chris Costello
- Terry Hannigan
- Kdnapa Thavorn
- Vicky Stergiopoulos
- Peter Tugwell
- Kevin Pottie

Articles

Effectiveness of permanent supportive housing and income assistance interventions for homeless individuals in high-income countries: a systematic review

oa

Tim Aubry, Gary Bloch, Vanessa Brcic, Ammar Saad, Olivia Magwood, Tasnim Abdalla, Qasem Alkhateeb, Edward Xie, Christine Mathew, Terry Hannigan, Chris Costello, Kednapa Thavorn, Vicky Stergiopoulos, Peter Tugwell, Kevin Pottie

Summary

Background Permanent supportive housing and income assistance are valuable interventions for homeless individuals. Homelessness can reduce physical and social wellbeing, presenting public health risks for infectious diseases, disability, and death. We did a systematic review, meta-analysis, and narrative synthesis to investigate the effectiveness and cost-effectiveness of permanent supportive housing and income interventions on the health and social wellbeing of individuals who are homeless in high-income countries.

Methods We searched MEDLINE, Embase, CINAHL, PsycINFO, Epistemonikos, NIHR-HTA, NHS EED, DARE, and the Cochrane Central Register of Controlled Trials from database inception to Feb 10, 2020, for studies on permanent supportive housing and income interventions for homeless populations. We included only randomised controlled trials, quasi-experimental studies, and cost-effectiveness studies from high-income countries that reported at least one outcome of interest (housing stability, mental health, quality of life, substance use, hospital admission, earned income, or employment). We screened studies using a standardised data collection form and pooled data from published studies. We synthesised results using random effects meta-analysis and narrative synthesis. We assessed certainty of the evidence using the Grading of Recommendations Assessment, Development, and Evaluation approach.

Findings Our search identified 15 908 citations, of which 72 articles were included for analysis (15 studies on permanent supportive housing across 41 publications, ten studies on income interventions across 15 publications, and 21 publications on cost or cost-effectiveness). Permanent supportive housing interventions increased long-term (6 year) housing stability for participants with moderate support needs (one study; rate ratio [RR] 1·13 [95% CI 1·01–1·26]) and high support needs (RR 1·42 [1·19–1·69]) when compared with usual care. Permanent supportive housing had no measurable effect on the severity of psychiatric symptoms (ten studies), substance use (nine studies), income (two studies), or employment outcomes (one study) when compared with usual social services. Income interventions, particularly housing subsidies with case management, showed long-term improvements in the number of days stably housed (one study; mean difference at 3 years between intervention and usual services 8·58 days; p<0·004), whereas the effects on mental health and employment outcomes were unclear.

Interpretation Permanent supportive housing and income assistance interventions were effective in reducing homelessness and achieving housing stability. Future research should focus on the long-term effects of housing and income interventions on physical and mental health, substance use, and quality-of-life outcomes.

Funding Inner City Health Associates.

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Objective

Systematic review to evaluate the effectiveness and cost-effectiveness of permanent supportive housing and income assistance on the health and social well-being of individuals who are homeless or vulnerably housed

Review of PSH & Income Support: Research Methods

- Homeless, vulnerably housed, PLE of homelessness
- PSH & income interventions to address homelessness
- MEDLINE, Embase, CINAHL, PsycINFO, Epistemonikos, NIHR-HTA, NHS EED, DARE, and the CCRCT
- RCT, quasi-experimental studies, cost-effectiveness studies
- Studies up February 2020
- In accordance with Campbell Collaboration Protocol, PRISMA, and SWiM reporting guideline
- Assessment the certainty of the evidence using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework

Study Selection

- Canada & U.S.
- 15 studies (41 pubs) on PSH (scattered and single site)
- 10 studies (15 pubs) on income assistance
- 21 pubs on cost and cost-effectiveness

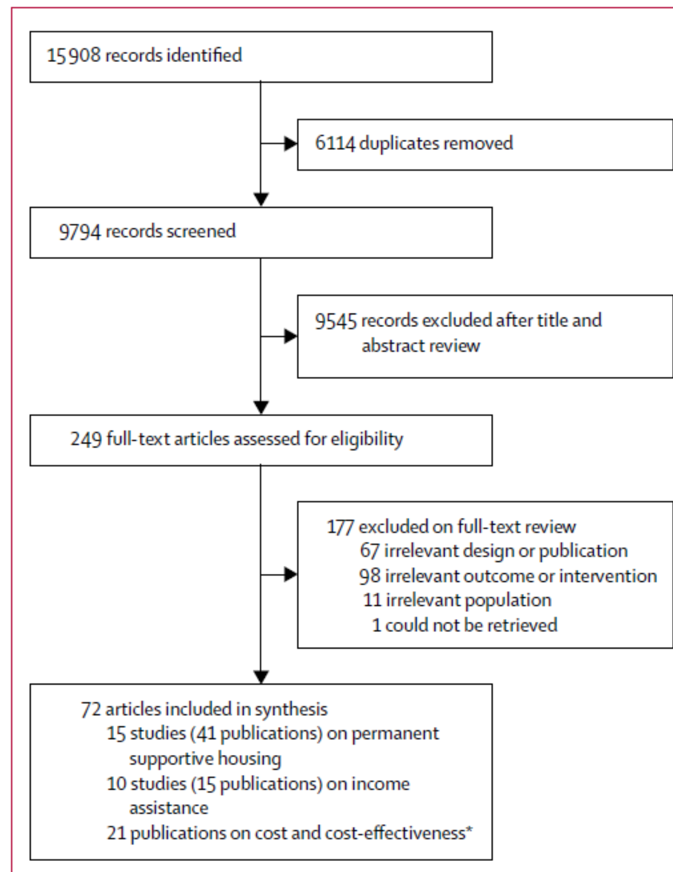
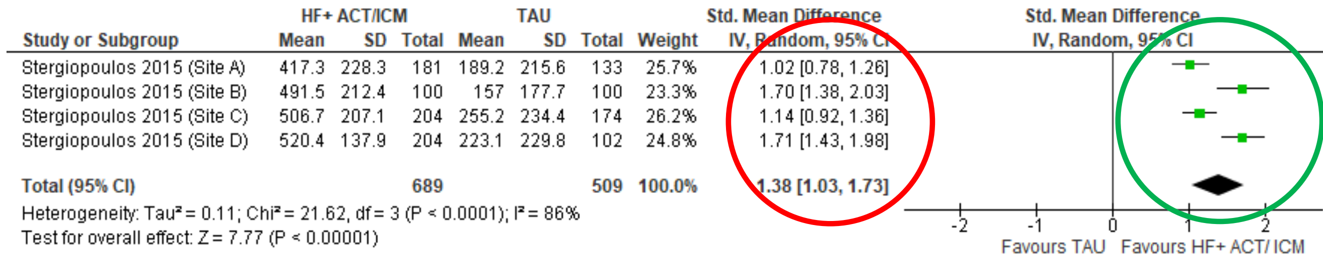


Figure 1: **Study selection**

*Five publications included in the cost-effectiveness analysis were also included in the analysis of permanent supportive housing or income assistance interventions.

Outcomes: Housing Stability

PSH vs TAU: number of days stably housed.

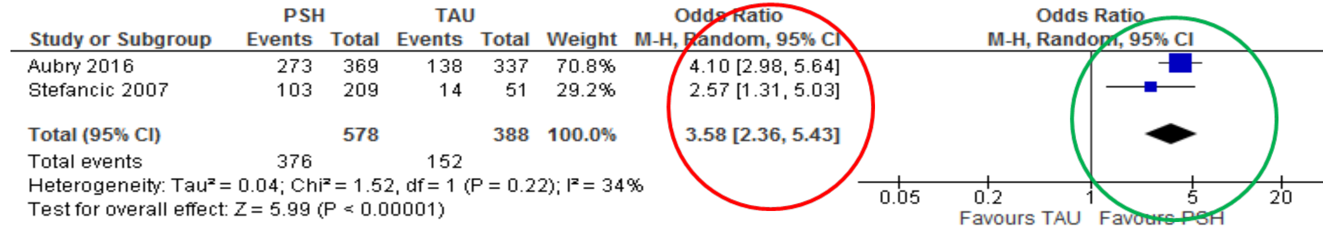


Study or Subgroup	HF+ ACT/ICM Mean	SD	Total	TAU Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Stergiopoulos 2015 (Site A)	417.3	228.3	181	189.2	215.6	133	25.7%	1.02 [0.78, 1.26]
Stergiopoulos 2015 (Site B)	491.5	212.4	100	157	177.7	100	23.3%	1.70 [1.38, 2.03]
Stergiopoulos 2015 (Site C)	506.7	207.1	204	255.2	234.4	174	26.2%	1.14 [0.92, 1.36]
Stergiopoulos 2015 (Site D)	520.4	137.9	204	223.1	229.8	102	24.8%	1.71 [1.43, 1.98]
Total (95% CI)			**689**			**509**	**100.0%**	**1.38 [1.03, 1.73]**

Heterogeneity: $Tau^2 = 0.11$; $Chi^2 = 21.62$, df = 3 ($P < 0.0001$); $I^2 = 86\%$

Test for overall effect: $Z = 7.77$ ($P < 0.00001$)

PSH vs TAU: # of participants in stable housing



Study or Subgroup	PSH Events	Total	TAU Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Aubry 2016	273	369	138	337	70.8%	4.10 [2.98, 5.64]
Stefancic 2007	103	209	14	51	29.2%	2.57 [1.31, 5.03]
Total (95% CI)		**578**		**388**	**100.0%**	**3.58 [2.36, 5.43]**
Total events	376		152			

Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 1.52$, df = 1 ($P = 0.22$); $I^2 = 34\%$

Test for overall effect: $Z = 5.99$ ($P < 0.00001$)

Housing Stability at 6 Years (Stergiopoulos et al., 2019)

Articles

Long-term effects of rent supplements and mental health support services on housing and health outcomes of homeless adults with mental illness: extension study of the At Home/Chez Soi randomised controlled trial

Vicky Stergiopoulos, Cilia Mejia-Lancheros, Rosane Nisenbaum, Ri Wang, James Lachaud, Patricia O'Campo, Stephen W Hwang

Summary

Background Housing First is increasingly implemented for homeless adults with mental illness in large urban centres, but little is known about its long-term effectiveness. The At Home/Chez Soi randomised controlled trial done in five cities in Canada showed that Housing First improved housing stability and other select health outcomes. We extended the At Home/Chez Soi trial at the Toronto site to evaluate the long-term effects of the Housing First intervention on housing and health outcomes of homeless adults with mental illness over 6 years.

Methods The At Home/Chez Soi Toronto study was a randomised, controlled trial done in Toronto (ON, Canada). Here, we present the results of an extension study done at the same site. Participants were homeless adults (aged ≥18 years) with a serious mental disorder with or without co-occurring substance use disorder. In phase 1, participants were stratified by level of need for mental health support services (high *vs* moderate), and randomly assigned (1:1) using adaptive randomisation procedures to Housing First with assertive community treatment (HF-ACT), Housing First with intensive case management (HF-ICM), or to treatment as usual (TAU). Participants with moderate support needs were further stratified by ethnoracial status. Considering the nature of the Housing First intervention, study participants and study personnel were not masked to group assignment. Phase 1 participants could choose to enrol in the extension study (phase 2). The primary outcome was the rate of days stably housed per year analysed in the modified intention-to-treat population, which included all randomly assigned participants who had at least one assessment for the primary outcome. Participants contributed data to the study up to the point of their last interview. Multilevel multiple imputation was used to handle missing data. The trial was registered with ISRCTN, ISRCTN42520374.

Findings Between Oct 1, 2009, and March 31, 2013, 575 individuals participated in phase 1 of the Toronto Site At Home/Chez Soi study (197 [34%] participants with high support needs and 378 [66%] with moderate support needs). Of the 378 participants with moderate support needs, 204 were randomly assigned to receive the HF intervention with ICM or with ethnoracial-specific ICM services (HF-ER-ICM; HF-ICM or HF-ER-ICM groups) and 174 were randomly assigned to TAU. Of the 197 participants with high support needs, 97 were randomly assigned to receive the HF intervention with ACT (HF-ACT treatment group) and 100 were randomly assigned to TAU group. Between Jan 1, 2014, and March 31, 2017, 414 (81%) of 575 phase 1 participants participated in the extended phase 2 study. The median duration of follow-up was 5·4 years (IQR 2·1–5·9). Among phase 2 participants, 141 had high support needs (79 participants in the HF-ACT group; 62 participants in the TAU group), and 273 had moderate support needs (160 participants in the HF-ICM or HF-ER-ICM group; 113 participants in the TAU group). 187 high support needs participants (93 participants in the HF-ACT group, 94 participants in the TAU group), and 361 moderate support needs participants (201 participants in the HF-ICM or HF-ER-ICM group, 160 participants in the TAU group) were included in the modified intention-to-treat analysis for the primary outcome. The number of days spent stably housed was significantly higher among participants in the HF-ACT and HR-ICM or HF-ER-ICM groups than participants in the TAU groups at all timepoints. For participants with moderate support needs, the rate ratio (RR) of days stably housed in the Housing First group, compared with TAU, was 2·40 (95% CI 2·03–2·83) in year 1, which decreased to 1·13 (1·01–1·26) in year 6. The RR of days stably housed for participants with high support needs, compared with TAU, was 3·02 (2·43–3·75) in year 1 and 1·42 (1·19–1·69) in year 6. In year 6, high support needs participants in the Housing First group spent 85·51% of days stably housed compared with 60·33% for the TAU group, and moderate needs participants in the Housing First group spent 88·16% of days stably housed compared with 78·22% for the TAU group.

Interpretation Rent supplements and mental health support services had an enduring positive effect on housing stability for homeless adults with mental illness in a large, resource-rich urban centre, with a larger impact on individuals with high support needs than moderate support needs.

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See Comment page 879

MAP Centre for Urban Health Solutions (V Stergiopoulos MD, C Mejia-Lancheros PhD, R Nisenbaum PhD, R Wang MMath, J Lachaud PhD, P O'Campo PhD, S W Hwang MD) and Applied Health Research Centre (R Nisenbaum), Li Ka Shing Knowledge Institute, St Michael's Hospital, Toronto, ON, Canada; Department of Psychiatry (V Stergiopoulos), Division of General Internal Medicine, Department of Medicine (S W Hwang), and Dalla Lana School of Public Health (R Nisenbaum, P O'Campo), University of Toronto, Toronto, ON, Canada; and Centre for Addiction and Mental Health, Toronto, ON, Canada (V Stergiopoulos)

Correspondence to: Dr Vicky Stergiopoulos, Centre for Addiction and Mental Health, Toronto, ON, M6J 1H4, Canada vicky.stergiopoulos@camh.ca

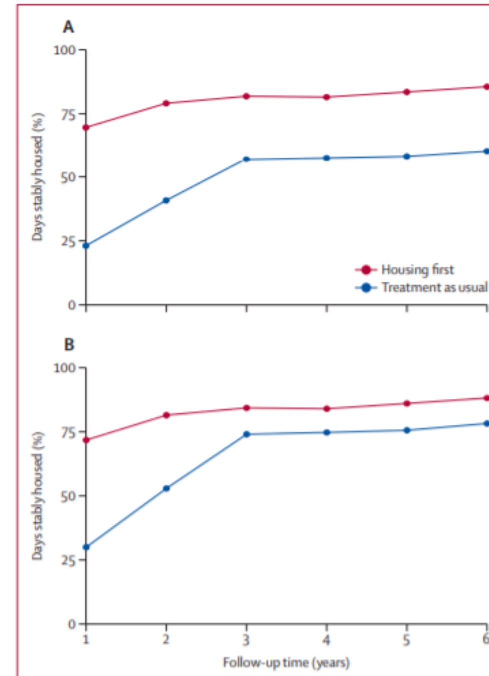


Figure 2: Percentage of days stably housed per year by treatment group and level of need for mental health services for At Home/Chez Soi participants at the Toronto site (n=548)
(A) High need participants. (B) Moderate need participants. A negative binomial generalised estimating equation model with log link was used to estimate rate of days stably housed per person-years. Each person-year was based on 360 days. Percentage of days stably housed was calculated by dividing the rate by 360 and multiplying by 100.

Health and Social Outcomes

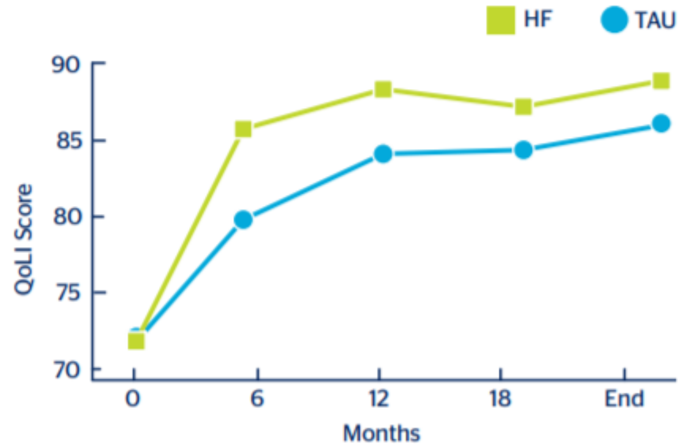
No effects on:

- ➢ Mental health
- ➢ Substance use
- ➢ Employment
- ➢ Income

Mixed findings for:

- ➢ Quality of life
- ➢ Hospitalization

Quality of Life (Goering et al., 2014):



Mental Health Commission of Canada

Commission de la santé mentale du Canada

Life Changes: Comparison of HF & TAU (Nelson et al., 2015)

ARTICLES

Life Changes Among Homeless Persons With Mental Illness: A Longitudinal Study of Housing First and Usual Treatment

Housing First

100
80
60
40
20
0

Positive
Mixed
Negative

Treatment As Usual

100
80
60
40
20
0

Positive
Mixed
Negative

Mantel Haenszel χ^2=28.5, df=1, p=.0000001

Effectiveness of Income Assistance Interventions

1. Associated with significant short and long term improvements in housing stability outcomes.
2. Associated with improvements in reported quality of life, depression symptoms, and stress levels
3. Compensated work therapy and individual placement and support are associated with reduced homelessness and increased housing stability

Cost Effectiveness Studies on PSH

- PSH results in cost offsets but requires additional resources for implementation
- Latimer et al. (2019) - $56 per each additional day of stable housing for people with moderate level of needs (46% cost offset for HF + ICM)
- Latimer et al. (2020) - $42 per each additional day of stable housing for people with high level of needs (69% cost offset for HF + ACT)

JAMA Network Open

Original Investigation | Psychiatry

Cost-effectiveness of Housing First Intervention With Intensive Case Management Compared With Treatment as Usual for Homeless Adults With Mental Illness

Secondary Analysis of a Randomized Clinical Trial

Eric A. Latimer, PhD; Daniel Rabouin, MSc; Zhirong Cao, MSc; Angela Ly, MHA; Guido Powell, MSc; Carol E. Adair, PhD; Jitender Sareen, MD; Julian M. Somers, PhD; Vicky Stergiopoulos, MD; Andrew D. Pinto, MD; Erica E. M. Moodie, PhD; Scott R. Veldhuizen, PhD; for the At Home/Chez Soi Investigators

Abstract

IMPORTANCE In the At Home/Chez Soi trial for homeless individuals with mental illness, the scattered-site Housing First (HF) with Intensive Case Management (ICM) intervention proved more effective than treatment as usual (TAU).

OBJECTIVE To evaluate the cost-effectiveness of the HF plus ICM intervention compared with TAU.

DESIGN, SETTING, AND PARTICIPANTS This is an economic evaluation study of data from the At Home/Chez Soi randomized clinical trial. From October 2009 through July 2011, 1198 individuals were randomized to the intervention (n = 689) or TAU (n = 509) and followed up for as long as 24 months. Participants were recruited in the Canadian cities of Vancouver, Winnipeg, Toronto, and Montreal. Participants with a current mental disorder who were homeless and had a moderate level of need were included. Data were analyzed from 2013 through 2019, per protocol.

INTERVENTIONS Scattered-site HF (using rent supplements) with off-site ICM services was compared with usual housing and support services in each city.

MAIN OUTCOMES AND MEASURES The analysis was performed from the perspective of society, with days of stable housing as the outcome. Service use was ascertained using questionnaires. Unit costs were estimated in 2016 Canadian dollars.

RESULTS Of 1198 randomized individuals, 795 (66.4%) were men and 696 (58.1%) were aged 30 to 49 years. Almost all (1160 participants, including 677 in the HF group and 483 in the TAU group) contributed data to the economic analysis. Days of stable housing were higher by 140.34 days (95% CI, 128.14-153.31 days) in the HF group. The intervention cost $14 496 per person per year; reductions in costs of other services brought the net cost down by 46% to $7868 (95% CI, $4409-$11 405). The incremental cost-effectiveness ratio was $56.08 (95% CI, $29.55-$84.78) per additional day of stable housing. In sensitivity analyses, adjusting for baseline differences using a regression-based method, without altering the discount rate, caused the largest change in the incremental cost-effectiveness ratio with an increase to $60.18 (95% CI, $35.27-$86.95). At $67 per day of stable housing, there was an 80% chance that HF was cost-effective compared with TAU. The cost-effectiveness of HF appeared to be similar for all participants, although possibly less for those with a higher number of previous psychiatric hospitalizations.

Key Points

Question Is a Housing First intervention with Intensive Case Management for homeless people with mental illness cost-effective compared with treatment as usual?

Findings In this economic evaluation study of data from the At Home/Chez Soi randomized clinical trial with 1198 initially homeless participants, the incremental cost-effectiveness ratio was $56.08 per additional day of stable housing. At $67 per day of stable housing, there was an 80% chance that the Housing First intervention with Intensive Case Management was cost-effective compared with treatment as usual.

Meaning Expanding access to Housing First with Intensive Case Management appears to be warranted from an economic point of view.

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

Cost-Effectiveness of Housing First With Assertive Community Treatment: Results From the Canadian At Home/Chez Soi Trial

Eric A. Latimer, Ph.D., Daniel Rabouin, M.Sc., Zhirong Cao, M.Sc., Angela Ly, M.H.A., Guido Powell, M.Sc., Tim Aubry, Ph.D., Jino Distasio, Ph.D., Stephen W. Hwang, M.D., M.P.H., Julian M. Somers, Ph.D., Ahmed M. Bayoumi, M.D., M.Sc., Craig Mitton, Ph.D., Erica E. M. Moodie, Ph.D., Paula N. Goering, R.N., Ph.D., For the At Home/Chez Soi Investigators

Objective: The At Home/Chez Soi trial for homeless individuals with mental illness showed scattered-site Housing First with Assertive Community Treatment (ACT) to be more effective than treatment as usual. This study evaluated the cost-effectiveness of Housing First with ACT and treatment as usual.

Methods: Between October 2009 and June 2011, a total of 950 homeless individuals with serious mental illness were recruited in five Canadian cities: Vancouver, Winnipeg, Toronto, Montreal, and Moncton. Participants were randomly assigned to Housing First (N=469) or treatment as usual (N=481) and followed up for up to 24 months. The intervention consisted of scattered-site Housing First, using rent supplements, with ACT. The treatment-as-usual group had access to all other services. The perspective of society was adopted for the cost-effectiveness analysis. Days of stable housing served as the outcome measure. Retrospective questionnaires captured service use data.

Results: Most (69%) of the costs of the intervention were offset by savings in other costs, such as emergency shelters, reducing the net annual cost of the intervention to about Can$6,311 per person. The incremental cost-effectiveness ratio was Can$41.73 per day of stable housing (95% confidence interval=Can$1.96–$83.70). At up to Can$60 per day, Housing First had more than an 80% chance of being cost-effective, compared with treatment as usual. Cost-effectiveness did not vary by participant characteristics.

Conclusions: Housing First with ACT appeared about as cost-effective as Housing First with intensive case management for people with moderate needs. The optimal mix between the two remains to be determined.

Psychiatric Services in Advance (doi: 10.1176/appi.ps.202000029)

A significant minority of homeless people experience serious mental illness (1). Housing First, which provides immediate access to subsidized housing together with support services, has proven the most effective approach to helping such individuals access and maintain permanent housing (2). Previous analyses have reported significant cost offsets associated with the provision of Housing First (3).

The At Home/Chez Soi trial compared outcomes of the scattered-site variant of Housing First, in which participants receive rent supplements for private-market apartments of their choice (4), to outcomes of treatment as usual. The trial tested, in parallel, both Housing First with assertive community treatment (ACT) (5, 6) for people who had more severe mental illness and functional difficulties (7) and Housing First with intensive case management for those whose needs were less severe (8). A cost-effectiveness analysis of Housing First with intensive case management has recently been published (9). Summary results of a cost analysis of Housing First with ACT, but not a cost-effectiveness analysis, were included in the main trial

HIGHLIGHTS

- In the At Home/Chez Soi Canadian trial of Housing First with assertive community treatment (ACT), about two-thirds of the costs of the intervention were offset by savings in other costs.
- The net cost of the intervention per additional day of stable housing and the actual cost of the intervention per day are well within the range of the costs of many currently funded housing programs for people experiencing homeless that do not provide individualized and intensive services such as ACT.
- The intervention appeared cost-effective regardless of participant sex, alcohol or drug abuse or dependence, level of functioning, prior hospitalizations, or recent arrest history.

Limitations of Research

1. Wide range of PSH programs have been studied that are not clearly described in cases
2. PSH comparison to a wide range of usual care
3. Narrative synthesis of non-housing outcomes
4. Published effectiveness studies are only from North America
5. Short period of follow-up (24 months or less) for all but one study
6. Small number of comprehensive costing studies

Future Directions for Research

1. Research on PSH with enriched community support with evidence-based interventions (e.g., SBCM, IDDT, IPS, Peer Support)
2. Comparison of PSH with different types and intensity of support (ACT vs. ICM vs. FACT)
3. Identification of characteristics of non-responders to HF in scattered site and single site PSH
4. Cost-benefit and cost-effectiveness of PSH programs with comprehensive costing methods
5. Development of fidelity measure for single site programs
6. Examination of outcomes using mixed methods

Thank You!

E-mail: taubry@uottawa.ca