

Appendix 4 (as supplied by the authors)

QUESTION

Should Permanent Supportive Housing vs. No intervention or alternative intervention be used for Homeless or vulnerably housed populations?	
POPULATION:	Homeless or vulnerably housed populations
INTERVENTION:	Permanent Supportive Housing
COMPARISON:	No intervention or alternative intervention
MAIN OUTCOMES:	Housing Stability, Mental Health, Substance Use, Quality of Life, Income, Employment
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health Systems
BACKGROUND:	Permanent supportive housing (PSH) provides affordable housing matched with ongoing, appropriate services to tenants. PSH has two essential components: (1) provision of non-time-limited housing, and (2) the provision of an array of voluntary supportive services. This model of housing does not require sobriety or treatment for mental illness prior to accessing housing. Supports are offered in the form of Assertive Community Treatment (ACT) teams or Intensive Case Management (ICM), dependent on the severity of the needs of the individual. PSH may be offered as congregate, single-site housing or as scattered-site housing. Access to housing is often facilitated by the provision of rent supplements.
CONFLICT OF INTERESTS:	None

ASSESSMENT

Problem		
Is the problem a priority?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>It is estimated that 235,000 Canadians experience homelessness each year, and 35 000 Canadians are without shelter on any given night. Across Canada there are approximately 15,467 permanent shelter beds, and in 2009 an average of 14,400 were occupied. The occupancy rates at shelters have increased from 82% of beds being full in 2005, to 92.4% of beds being full in 2014. The duration of stays beyond 30 days have also increased, from 9.1% in 2005 to 12% in 2014. On average, for every one hundred people in the shelter system, there are 20 people who are unsheltered. Additionally, there may be as many as 50,000 “hidden homeless” Canadians on a given night.</p> <p>Since the 1990s, federal housing investments have declined by nearly one-third making housing unaffordable for a large segment of the Canadian population. It is especially difficult for homeless persons struggling with mental illness and/or substance use to obtain and subsequently maintain stable housing.</p>	<p>Panel members requested additional details regarding the cost of homelessness:</p> <p>As of 2013, homelessness cost the Canadian economy \$7.05 billion annually (up from \$4.5-6 billion in 2007). This includes provision of emergency shelters and community supports, but also accounts for the increased costs of emergency services (including fire, police and EMS), health care, the criminal justice system etc.</p> <p>Ref: Gaetz et al., 2013. The State of Homelessness in Canada. https://www.homelesshub.ca/SOHC2013</p>

		<p>Additionally, average annual costs per homeless person in Vancouver, Winnipeg, Toronto, Montréal and Moncton were \$53 144 (95% CI \$46 297-\$60 095), \$45 565 (95% CI \$41 039-\$50 412), \$58 972 (95% CI \$52 237-\$66 085), \$56 406 (95% CI \$50 654-\$62 456) and \$29 610 (95% CI \$24 995-\$34 480)</p> <p>Ref: Latimer et al., 2017. Costs of services for homeless people with mental illness in 5 Canadian cities: a large prospective follow-up study. CMAJ Open.</p> <p>One panel member noted that incarcerated individuals need support once released. Hidden homeless may be larger than we think if we consider this group once released. Individuals may enter into the cycle of homelessness.</p> <p>One panel member noted that lots of work being done right matching depending on needs and preferences. PSH is one type of intervention, but not the only one. Services need to be tailored to client needs.</p>
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Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Trivial ○ Small ● Moderate ○ Large ○ Varies ○ Don't know 	<p>Our systematic review identified 30 publications comparing permanent supportive housing programs with a mental health intervention component (ACT or ICM) to treatment as usual (TAU). The majority of these publications come from the Canadian At Home/Chez Soi trial conducted in five Canadian cities and the Pathways to Housing Program from New York, USA. In these publications, the term “Housing First (HF)” is used synonymously to “Permanent Supportive Housing”.</p> <p><u>DESIRABLE EFFECTS (BENEFITS):</u></p>	

SUMMARY OF EVIDENCE:

1. **Housing stability:** Several trials across Canada and the United States have demonstrated that permanent supportive housing (PSH) gets people into housing more quickly, increases the number of people who maintain stable housing at 2 years and increases the total number of days housed.
2. **Mental health:** No trials showed a significant improvement in mental health symptoms compared to treatment as usual. Two studies suggest that the treatment-as-usual groups may improve more than PSH participants.
3. **Substance use:** No trials showed a significant improvement in substance use compared to treatment-as-usual.
4. **Quality of life:** The At Home/Chez Soi trial shows small improvements in quality of life. Youth receiving PSH saw larger improvements in the first 6 months, which diminished over time.
5. **Hospitalization:** The majority of trials report no effect of PSH on hospitalization outcomes (number of ED visits, percentage of participants hospitalized). However, one trial suggests that PSH participants spend less time hospitalized.
6. **Employment:** One trial found no effect of PSH on job tenure, hours of work per week or hourly wage compared to treatment-as-usual. PSH participants may have increased odds of employment, but this depends on severity of participant needs.
7. **Income:** One trial found no effect on income outcomes.

Outcome 1: Housing Stability

Sub-Outcome: Number of days until housed

One randomized control trial comparing a Housing First program that offers scattered-site housing with ICM versus treatment as usual in adults who are homeless with problematic substance use in Ottawa, measured the number of days for participants to be housed using the Residential timeline Followback Calendar, and found the HF clients moved into their first housing more quickly than the comparison group [HF: M=104.59 (SD 157.47), TAU: M=173.32 (SD 185.82); MD=-68.73; 95% CI [-125.38,-12.08]; p=0.02] (Cherner 2017).

Sub-Outcome: Percentage of participants in stable housing at 24 months

The At Home/Chez Soi trial measured the number and percentage of participants in stable housing for the entire study period using the Residential Time-Line Follow-Back Inventory. At the final interview, 74% of the Housing First +ACT participants and 41% of the TAU participants were in stable housing [OR=4.10; 95% CI [2.98, 5.63]; Z=8.69; p<0.0001, RR=1.80; 95% CI [1.56, 2.08]; Z=8.17; p<0.0001] (Aubry 2016). [GRADE Certainty of evidence: Moderate]

Sub-Outcome: Total number of days housed at 24 months

The At Home / Chez Soi trial (HF+ACT) measured the total number of days housed at the final interview (21 or 24 months) using the Residential Time-Line Follow-Back Inventory. Housing First participants had 280.74 days (SD 278.92) housed versus 115.33 days (SD 191.43) for TAU participants [AAD=161.8; 95% CI [82.5,241.1]; p<0.01] (Aubry 2016). **[GRADE Certainty of evidence: Moderate]**

- *Sub-analysis for youth:* In an analysis adjusting for study city and ethno-racial and Aboriginal status, HF youth were stably housed a mean of 437 of 645 days for which data were available compared with TAU youth who were stably housed a mean of 189 of 582 days for which data were available, resulting in an adjusted mean difference of 34% (95% CI, 24%-45%; P<.001) (Kozloff 2016).

Sub-Outcome: Percentage of days stably housed over 18-24 months

One trial (HF+ACT/ICM) measured the mean proportion of time spent in stable housing over the 24 months period using the Residential Time-Line Follow-Back Inventory. For individuals with high needs receiving HF+ACT, this percentage was 71% for the Housing First participants and 29% of TAU participants (Adjusted absolute difference [AAD] = 42%; 95% CI [38%-45%; p<0.01] (Aubry 2016). For individuals with moderate needs receiving HF+ICM, the intervention significantly increased the percentage of days stably housed over the study period compared to TAU (SMD 0.61, 95%CI 0.50 to 0.73) (Stergiopoulos 2015). A second trial found that the Intervention group reported more time stably housed compared to the control group. No further information was reported by the authors (Tsemberis 2004). **[GRADE Certainty of evidence: Moderate]**

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured the percentage of time housed in the previous six months over 18 months using the Residential Timeline Followback Calendar. During the study period, the number of days spent in stable housing significantly increased [F3,3,261=9.96, p<0.01], and participants in the intervention group spent significantly more days in stable housing in the past six months [F1,87=15.65, p<0.01]. However, the improvement in residential stability over time did not differ between groups, as the test for the within-subject group×time interaction effect was not significant [F3,3,261=1.74, p=0.17] (Hwang 2011).

Outcome 2: Mental Health

Sub-Outcome: Severity of psychiatric symptoms using the Colorado Symptom Index (CSI) at 24 months

Housing First + ACT participants scored 32.57 (SD 11.79) on this scale, compared to TAU participants' score of 31.49 (SD 12.54); MD=1.08; 95% CI [-0.46, 2.62]; t=1.36; p=0.17. There was a small group difference favouring TAU at the final follow-up (ASMD=0.17; 95% CI [0.05, 0.30; p=0.01] (Aubry 2016). For individuals with moderate needs receiving HF+ICM, mean change from baseline did not differ significantly between intervention and usual care groups [Difference in mean change from baseline=0.57; 95% CI [-0.88,2.01]; p=0.44] (Stergiopoulos 2015). A second trial conducted a repeated-measures analysis and showed no significant differences between groups by time condition [F4,137=0.348, p=0.85] (Tsemberis 2004). **[GRADE Certainty of evidence: Moderate]**

- *Sub-analysis for youth:* There were no significant differences between both groups at 6 months [Mean difference from baseline=0.3; 95% CI [-4.00, 4.59]; p=0.89], or 24 months [Mean difference from baseline= -0.05; 95% CI [-5.10, 5.00]; p=0.98] (Kozloff 2016).

Sub-Outcome: Self-reported mental health status using the SF-36 Mental composite score at 18 months

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' self-reported mental health status using the Short Form (SF-36)

Mental Composite Score over 18 months. Repeated-measures analyses showed no significant within-subject effects for the group×time interaction with respect to SF-36 mental health summary scores [F3,3,261=0.40; p=0.74] (Hwang 2011).

Sub-Outcome: Self-reported mental health status using the SF-12 at 24 months

One randomized control trial comparing a Housing First program that offers scattered-site housing with ICM versus treatment as usual in adults who are homeless with problematic substance use in Ottawa, measured participants' self-reported mental health status using the Short Form (SF-12) Mental Composite Score MCS at 24 months. Mental health of the comparison group improved from baseline to 24 months [d=-0.75; 95% CI [-1.11,-0.39]; p<0.001]. However, the mental health of the HF group remained stable over time. The comparison group had better mental health functioning than the clients at the 24-month interview [d=-0.49; 95% CI [-0.85,-0.12]; p<0.01] (Cherner 2017).

Outcome 3: Substance use

Sub-Outcome: Substance use related problems in the past month using the GAIN-SS scale at 24 months

One 24 month follow-up of HF+ACT measured substance use related problems in the past month using the GAIN-SS scale. Both groups reported similar improvements over time [At final interview: Housing First M=1.47 (SD 1.78), TAU M=1.31 (SD 1.73); pooled decrease in mean symptom count= 30%; MD=0.16; 95% CI [-0.06, 0.38]; t=1.40; p=0.16] (Aubry 2016). For individuals receiving HF+ICM, There were no statistically significant differences between groups at 24 months [Ratio of Rate Ratio=0.94; 95%CI [0.79,1.12]; p=0.50] (Stergiopoulos 2015).

- *Sub-analysis for youth:* There were no significant differences between groups at 6 months [Mean difference from baseline=1.18; 95% CI [0.85, 1.66]; p=0.33], or 24 months [Mean difference from baseline=0.84; 95% CI [0.51,1.38]; p=0.49] (Kozloff 2016)

Sub-Outcome: Substance use rate using the 6-Month Followback Calendar at 24 months

One randomized control trial measured substance use rate using the 6-Month Followback Calendar over 24 months. Repeated-measures analyses showed no significant differences between groups by time condition [F4,136=0.98, p=0.42] (Tsemberis 2004).

Sub-Outcome: Drug use in the past six months using DAST-10 composite score

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' use of drugs in the past 6 months over 18 months using the Drug Abuse Screening Tool (DAST-10). Repeated-measures analyses showed no significant within-subject effects for the group×time interaction [F3,3,261=0.57; p=0.61] (Hwang 2011).

Sub-Outcome: Alcohol use rate using the 6-Month Followback Calendar at 24 months

One randomized control trial measured alcohol use rate using the 6-Month Followback Calendar over 24 months. Repeated-measures analyses showed no significant differences use between groups by time condition [F4,136=1.1, p=0.35] (Tsemberis 2004).

Sub-Outcome: Alcohol use in the past 6 months using AUDIT composite score

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' use of alcohol in the past 6 months using the Alcohol Use Disorders Identification Test (AUDIT) composite score over 18 months. Repeated-measures analyses showed no significant within-subject effects for the group×time interaction [F3,3,261=2.07; p=0.11] (Hwang 2011).

Outcome 4: Quality of Life

Sub-Outcome: Participants' quality of life using Lehman's Quality of Life Interview (QOLI-20)

A moderate to large effect in improvements of quality of life over time was present for the two groups (HF+ACT vs TAU) (pooled SMD=0.76). Nonetheless, Housing First + ACT participants improved more rapidly in the first year, and had higher average scores over the study period [ASMD=0.15; 95% CI [0.04, 0.24]; p<0.01]. However, this gap was subsequently narrowed over time [HF: M=89.38 (SD 22.45), TAU: M=87.16 (SD 22.57); ASMD at final interview=0.05; 95% CI [-0.08, 0.18]; p=0.43] (Aubry 2016). For individuals with moderate needs receiving HF+ICM, there was a statistically significant difference favouring the intervention group at 24 months [Difference in mean change from baseline=4.37; 95% CI [1.60, 7.14]; p=0.002] (Stergiopoulos 2015). **[GRADE Certainty of evidence: Low]**

- *Sub-analysis for youth:* There was an improvement at 6 months relative to usual care [Mean difference from baseline= 9.30; 95% CI [1.35, 17.24]; p=0.02]. However, this improvement did not result in significant difference from treatment as usual in the overall treatment group by time analysis [p=0.17] (Kozloff 2016).

One randomized control trial comparing a Housing First program that offers scattered-site housing with ICM versus treatment as usual in adults who are homeless with problematic substance use in Ottawa, measured participants' quality of life using Lehman's Quality of Life Index (QOLI-20) total score. Both groups had an improvement in total score of quality of life from baseline to 24 months [clients d=-0.33, 95% CI [-0.64, -0.01], p<.01; comparison d=-0.89, 95% CI [-1.24,-0.53], p<.001]. However, the comparison group reported higher quality of life at 24 months than the clients [d=-0.38, 95% CI [-0.74, -0.02], p<.05] (Cherner 2017).

One quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' quality of life using Lehman's Quality of Life Index (QOL-20) over 18 months. Repeated-measures analyses showed a significant improvement in the Lehman Brief Quality of Life satisfaction with living situation score in the intervention group compared with the usual care group [time, F3,3,261=47.68, p<0.01; group×time, F3,3,261=14.60, p<0.01]. Significant improvements over time were also observed for the Lehman Brief general life satisfaction score [F3,3,261=3.61, p=0.02], satisfaction with finances score [F3,3,261=6.98, p<0.01], and satisfaction with safety score [F3,3,261=14.03, p<0.01]; however, these improvements occurred independently of assigned housing group (Hwang 2011).

Outcome 5: Hospitalization

Sub-Outcome: Number of Emergency Department visits

One trial (HF+ACT) measured the number of Emergency Department visits over 24 months. Both groups (HF+ACT vs TAU) reported similar decreases in the number of emergency department visits (pooled decrease= 53%). There was an initial greater decrease in emergency department visits for Housing First participants [At 6 months; incidence rate ratio IRR=0.68; 95% CI [0.52, 0.90]; p=0.007]. However, this difference for the entire study period fell short

of significance threshold [IRR=0.80; 95% CI [0.65, 1.00]; p=0.05] (Aubry 2016). For individuals receiving HF+ICM, there was a statistically significant difference favouring the intervention group compared to TAU at 6 months [Ratio of Rate Ratio=0.55; 95% CI [0.39,0.77]; p=0.001]. This difference, however, was not significant at 24 months [Ratio of rate ratio=0.73; 95% CI [0.49,1.07]; p=0.11] (Stergiopoulos 2015).

- Sub-analysis for youth: no statistically significant difference between groups at 6 month [Mean difference from baseline=0.65; 95% CI [0.31, 1.39]; p=0.27], or 24 months [Mean difference from baseline=0.81; 95% CI [0.39, 1.70]; p=0.58] (Kozloff 2016).

One randomized control trial comparing a housing program offering transitional housing after hospitalization discharge, followed by placement in long-term housing and ICM on site versus Treatment As usual in homeless adults with chronic medical illness in Chicago, measured the mean number of emergency department visits over 18 months, and found no statistically significant difference between groups [2.61 visits/ person/ year vs 3.77 visits /person/ year; MD=-1.2; 95% CI [-2.4,0.03]; p=0.06]. Thus, for every 100 homeless adults offered the intervention, the expected benefits over the next year would be 116; 95% CI [-3 to 235] fewer emergency department visits. However, when assessing outcomes at all hospitals using zero-inflated negative binomial models adjusted for all baseline variables, the intervention group had lower rates of emergency department visits compared to the usual care group [rate reductions of 24%; 95% CI [3,40]; p=0.03] (Sadowski 2009).

Sub-Outcome: Percentage of participants hospitalized

One trial (HF+ICM vs TAU) measured the percentage of participants with at least 1 hospitalization during the 24-month follow-up period, and found no statistically significant difference between groups [28.9% vs 25.6%; OR=1.18; 95% CI [0.90,1.53]; Z=1.23, p=0.22, RR=1.12; 95% CI [0.93,1.36]; Z=1.22; p=0.22] (Stergiopoulos 2015).

Sub-Outcome: Percentage of time hospitalized

One randomized control trial measured the percentage of time hospitalized using the 6-month Residential Timeline Followback Calendar. Repeated measures ANOVA results show that there was a significant effect of programme assignment on time hospitalized, with the control group spending significantly more time in hospitals than the experimental group overall at 24 months [F1, 195=7.4, p<0.01] (Gulcur 2003).

Sub-Outcome: Rate of hospitalization

One randomized control trial measured the rate of hospitalization using the 6-month Residential Timeline Followback Calendar. while the experimental and control groups recruited from the hospitals showed the greatest rate of decline in hospitalization as compared to the experimental and control groups recruited from the streets, the decline was slightly greater for the control sub-sample. There were no significant differences remaining at 24 months between the experimental and control group recruited from the hospitals [MD=0.055; p=0.94] (Gulcur 2003).

Sub-Outcome: Mean number of hospitalization per person

One randomized control trial comparing a housing program offering transitional housing after hospitalization discharge, followed by placement in long-term housing and ICM on site versus Treatment As usual in homeless adults with chronic medical illness in Chicago, measured the mean number of hospitalization per person over 18 months, and found no statistically significant difference between groups [1.93 hospitalization/ person/ year vs 2.43 hospitalization/ person/ year; MD=-0.5; 95% CI [-1.2,0.2]; p=0.16]. Thus, for every 100 homeless adults offered the intervention, the expected benefits over the next year would be 49; 95% CI [-20 to 119] fewer hospitalizations. However, when assessing outcomes at all hospitals using zero-inflated negative binomial models adjusted for all baseline variables, the intervention group had lower rates of hospitalizations compared to the usual care group [rate reductions of 29%; 95% CI [10,44]; p=0.005] (Sadowski 2009).

Outcome 6: Employment

Sub-outcome: Job tenure in days

One randomized control trial measured job tenure in days at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [Intervention Median=85; IQR [38-197], control Median=119; IQR [60-258]; $t=-1.13$, $df=331$; $p=0.256$], or moderate needs (HF+ICM vs TAU) participants [Intervention Median=83; IQR [36-203], control Median=94; IQR [41-170]; $t=-0.87$; $df=417$; $p=0.38$] (Poremski 2016).

Sub-outcome: Hours of work per week

One randomized control trial measured the number of hours of work per week at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [Intervention M=22.8 (SD 14.9), Control M=27.1 (SD 20.7); MD=-4.30; $\beta=1.33$; $p=0.48$], or moderate needs (HF+ICM vs TAU) participants [Intervention M=23.0 (SD 16.4), control M=26.5 (SD 15.5); MD=-3.50; $\beta=-2.19$; $p=0.09$] (Poremski 2016).

Sub-outcome: Hourly wage

One randomized control trial measured the hourly wage of employed participants at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [Intervention M=12.30 (SD 3.89), Control M=13.20 (SD 7.12); MD=-0.90, $t=-1.43$; $p=0.13$], or moderate needs (HF+ICM vs TAU) participants [Intervention M=13.20 (SD 6.39), Control M=13.66 (SD 7.01); MD=-0.46; $t=-0.76$; $p=0.446$] (Poremski 2016).

Outcome 7: Income

Sub-outcome: Percentage of participants with monthly income from different sources

One randomized control trial measured the percentage of participants with monthly income from different sources at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [96% vs 93%; OR=1.97; 95% CI [1.05,3.69]; Z=2.13; $p=0.03$, RR=1.03; 95% CI [1.00,1.06]; Z=2.14; $p=0.03$], or moderate needs (HF+ICM vs TAU) participants [95% vs 94%; OR=1.15; 95% CI [0.67,1.97]; Z=0.52; $p=0.59$, RR=1.00; 95% CI [0.97,1.03]; Z=0.51; $p=0.60$] (Poremski 2016).

Sub-outcome: Median income

One randomized control trial measured the median income during the last month in Canadian Dollars, and found no statistically significant difference between groups for participants with high needs (HF+ACT vs TAU) [Intervention Median=881; IQR [590-975], control Median=890; IQR [594,986]; Marginal mean difference in monthly income=34.24; 95% CI [-10.24,78.71]; $p=0.131$], or moderate needs (HF+ICM vs TAU) [Intervention Median=873; IQR [589-1000], control Median=890; IQR [571-969]; Marginal mean difference in monthly income=8.19; 95% CI [-26.31,42.69]; $p=0.642$] (Poremski 2016).

UNDESIRABLE EFFECTS (HARMS):

1. No evidence from RCTs reported outcomes with worse results among individuals receiving permanent supportive housing interventions.
2. Qualitative research highlights that social isolation has been reported by Housing First tenants (Magwood et al., in progress).
3. Additionally, 15-20% of Housing First recipients will experience multiple evictions and do not succeed in ending their homelessness.

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large ○ Moderate ● Small ○ Trivial ○ Varies ○ Don't know 	<p>Our systematic review identified 30 publications comparing permanent supportive housing programs with a mental health intervention component (ACT or ICM) to treatment as usual (TAU). The majority of these publications come from the Canadian At Home/Chez Soi trial conducted in five Canadian cities and the Pathways to Housing Program from New York, USA. In these publications, the term “Housing First (HF)” is used synonymously to “Permanent Supportive Housing”.</p> <p>DESIRABLE EFFECTS (BENEFITS):</p> <div style="border: 1px solid black; padding: 10px; background-color: #e6f2ff;"> <p>SUMMARY OF EVIDENCE:</p> <ol style="list-style-type: none"> 1. Housing stability: Several trials across Canada and the United States have demonstrated that permanent supportive housing (PSH) gets people into housing more quickly, increases the number of people who maintain stable housing at 2 years and increases the total number of days housed. 2. Mental health: No trials showed a significant improvement in mental health symptoms compared to treatment as usual. Two studies suggest that the treatment-as-usual groups may improve more than PSH participants. 3. Substance use: No trials showed a significant improvement in substance use compared to treatment-as-usual. 4. Quality of life: The At Home/Chez Soi trial shows small improvements in quality of life. Youth receiving PSH saw larger improvements in the first 6 months, which diminished over time. 5. Hospitalization: The majority of trials report no effect of PSH on hospitalization outcomes (number of ED visits, percentage of participants hospitalized). However, one trial suggests that PSH participants spend less time hospitalized. 6. Employment: One trial found no effect of PSH on job tenure, hours of work per week or hourly wage compared to treatment-as-usual. PSH participants may have increased odds of employment, but this depends on severity of participant needs. 7. Income: One trial found no effect on income outcomes. </div>	

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Sub-Outcome: Percentage of participants in stable housing at 24 months

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Sub-Outcome: Total number of days housed at 24 months

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Outcome 2: Mental Health

Sub-Outcome: Severity of psychiatric symptoms using the Colorado Symptom Index (CSI) at 24 months

Housing First + ACT participants scored 32.57 (SD 11.79) on this scale, compared to TAU participants' score of 31.49 (SD 12.54); MD=1.08; 95% CI [-0.46, 2.62]; t=1.36; p=0.17. There was a small group difference favouring TAU at the final follow-up (ASMD=0.17; 95% CI [0.05, 0.30; p=0.01] (Aubry 2016). For individuals with moderate needs receiving HF+ICM, mean change from baseline did not differ significantly between intervention and usual care groups [Difference in mean change from baseline=0.57; 95% CI [-0.88,2.01]; p=0.44] (Stergiopoulos 2015). A second trial conducted a repeated-measures analysis and showed no significant differences between groups by time condition [F4,137=0.348, p=0.85] (Tsemberis 2004). [**GRADE Certainty of evidence: Moderate**]

- *Sub-analysis for youth:* There were no significant differences between both groups at 6 months [Mean difference from baseline=0.3; 95% CI [-4.00, 4.59]; p=0.89], or 24 months [Mean difference from baseline= -0.05; 95% CI [-5.10, 5.00]; p=0.98] (Kozloff 2016).

Sub-Outcome: Self-reported mental health status using the SF-36 Mental composite score at 18 months

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' self-reported mental health status using the Short Form (SF-36) Mental Composite Score over 18 months. Repeated-measures analyses showed no significant within-subject effects for the group×time interaction with respect to SF-36 mental health summary scores [F3,3,261=0.40; p=0.74] (Hwang 2011).

Sub-Outcome: Self-reported mental health status using the SF-12 at 24 months

One randomized control trial comparing a Housing First program that offers scattered-site housing with ICM versus treatment as usual in adults who are homeless with problematic substance use in Ottawa, measured participants' self-reported mental health status using the Short Form (SF-12) Mental Composite Score MCS at 24 months. Mental health of the comparison group improved from baseline to 24 months [d=-0.75; 95% CI [-1.11,-0.39]; p<0.001]. However, the mental health of the HF group remained stable over time. The comparison group had better mental health functioning than the clients at the 24-month interview [d=-0.49; 95% CI [-0.85,-0.12]; p<0.01] (Cherner 2017).

Outcome 3: Substance use

Sub-Outcome: Substance use related problems in the past month using the GAIN-SS scale at 24 months

One 24 month follow-up of HF+ACT measured substance use related problems in the past month using the GAIN-SS scale. Both groups reported similar improvements over time [At final interview: Housing First M=1.47 (SD 1.78), TAU M=1.31 (SD 1.73); pooled decrease in mean symptom count= 30%; MD=0.16; 95% CI [-0.06, 0.38]; t=1.40; p=0.16] (Aubry 2016). For individuals receiving HF+ICM, There were no statistically significant differences between groups at 24 months [Ratio of Rate Ratio=0.94; 95%CI [0.79,1.12]; p=0.50] (Stergiopoulos 2015).

- *Sub-analysis for youth:* There were no significant differences between groups at 6 months [Mean difference from baseline=1.18; 95% CI [0.85, 1.66]; p=0.33], or 24 months [Mean difference from baseline=0.84; 95% CI [0.51,1.38]; p=0.49] (Kozloff 2016)

Sub-Outcome: Substance use rate using the 6-Month Followback Calendar at 24 months

One randomized control trial measured substance use rate using the 6-Month Followback Calendar over 24 months. Repeated-measures analyses showed no significant differences between groups by time condition [F4,136=0.98, p=0.42] (Tsemberis 2004).

Sub-Outcome: Drug use in the past six months using DAST-10 composite score

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' use of drugs in the past 6 months over 18 months using the Drug Abuse Screening Tool (DAST-10). Repeated-measures analyses showed no significant within-subject effects for the group×time interaction [F3,3,261=0.57; p=0.61] (Hwang 2011).

Sub-Outcome: Alcohol use rate using the 6-Month Followback Calendar at 24 months

One randomized control trial measured alcohol use rate using the 6-Month Followback Calendar over 24 months. Repeated-measures analyses showed no significant differences use between groups by time condition [F4,136=1.1, p=0.35] (Tsemberis 2004).

Sub-Outcome: Alcohol use in the past 6 months using AUDIT composite score

One Quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' use of alcohol in the past 6 months using the Alcohol Use Disorders Identification Test (AUDIT) composite score over 18 months. Repeated-measures analyses showed no significant within-subject effects for the group×time interaction [F3,3,261=2.07; p=0.11] (Hwang 2011).

Outcome 4: Quality of Life

Sub-Outcome: Participants' quality of life using Lehman's Quality of Life Interview (QOLI-20)

A moderate to large effect in improvements of quality of life over time was present for the two groups (HF+ACT vs TAU) (pooled SMD=0.76). Nonetheless, Housing First + ACT participants improved more rapidly in the first year, and had higher average scores over the study period [ASMD=0.15; 95% CI [0.04, 0.24]; p<0.01]. However, this gap was subsequently narrowed over time [HF: M=89.38 (SD 22.45), TAU: M=87.16 (SD 22.57); ASMD at final interview=0.05; 95% CI [-0.08, 0.18]; p=0.43] (Aubry 2016). For individuals with moderate needs receiving HF+ICM, there was a statistically significant difference favouring the intervention group at 24 months [Difference in mean change from baseline=4.37; 95% CI [1.60, 7.14]; p=0.002] (Stergiopoulos 2015). **[GRADE Certainty of evidence: Low]**

- *Sub-analysis for youth:* There was an improvement at 6 months relative to usual care [Mean difference from baseline= 9.30; 95% CI [1.35, 17.24]; p=0.02]. However, this improvement did not result in significant difference from treatment as usual in the overall treatment group by time analysis [p=0.17] (Kozloff 2016).

One randomized control trial comparing a Housing First program that offers scattered-site housing with ICM versus treatment as usual in adults who are homeless with problematic substance use in Ottawa, measured participants' quality of life using Lehman's Quality of Life Index (QOLI-20) total score. Both groups had an improvement in total score of quality of life from baseline to 24 months [clients d=-0.33, 95% CI [-0.64, -0.01], p<.01; comparison d=-0.89, 95% CI [-1.24,-0.53], p<.001]. However, the comparison group reported higher quality of life at 24 months than the clients [d=-0.38, 95% CI [-0.74, -0.02],

p<.05] (Cherner 2017).

One quasi-experimental trial comparing homeless or vulnerably housed participants enrolled in a newly opened permanent supportive housing in Toronto versus those who were waitlisted for the same program measured participants' quality of life using Lehman's Quality of Life Index (QOL-20) over 18 months. Repeated-measures analyses showed a significant improvement in the Lehman Brief Quality of Life satisfaction with living situation score in the intervention group compared with the usual care group [time, $F_{3,3,261}=47.68$, $p<0.01$; group \times time, $F_{3,3,261}=14.60$, $p<0.01$]. Significant improvements over time were also observed for the Lehman Brief general life satisfaction score [$F_{3,3,261}=3.61$, $p=0.02$], satisfaction with finances score [$F_{3,3,261}=6.98$, $p<0.01$], and satisfaction with safety score [$F_{3,3,261}=14.03$, $p<0.01$]; however, these improvements occurred independently of assigned housing group (Hwang 2011).

Outcome 5: Hospitalization

Sub-Outcome: Number of Emergency Department visits

One trial (HF+ACT) measured the number of Emergency Department visits over 24 months. Both groups (HF+ACT vs TAU) reported similar decreases in the number of emergency department visits (pooled decrease= 53%). There was an initial greater decrease in emergency department visits for Housing First participants [At 6 months; incidence rate ratio IRR=0.68; 95% CI [0.52, 0.90]; $p=0.007$]. However, this difference for the entire study period fell short of significance threshold [IRR=0.80; 95% CI [0.65, 1.00]; $p=0.05$] (Aubry 2016). For individuals receiving HF+ICM, there was a statistically significant difference favouring the intervention group compared to TAU at 6 months [Ratio of Rate Ratio=0.55; 95% CI [0.39,0.77]; $p=0.001$]. This difference, however, was not significant at 24 months [Ratio of rate ratio=0.73; 95% CI [0.49,1.07]; $p=0.11$] (Stergiopoulos 2015).

- Sub-analysis for youth: no statistically significant difference between groups at 6 month [Mean difference from baseline=0.65; 95% CI [0.31, 1.39]; $p=0.27$], or 24 months [Mean difference from baseline=0.81; 95% CI [0.39, 1.70]; $p=0.58$] (Kozloff 2016).

One randomized control trial comparing a housing program offering transitional housing after hospitalization discharge, followed by placement in long-term housing and ICM on site versus Treatment As usual in homeless adults with chronic medical illness in Chicago, measured the mean number of emergency department visits over 18 months, and found no statistically significant difference between groups [2.61 visits/ person/ year vs 3.77 visits /person/ year; MD=-1.2; 95% CI [-2.4,0.03]; $p=0.06$]. Thus, for every 100 homeless adults offered the intervention, the expected benefits over the next year would be 116; 95% CI [-3 to 235] fewer emergency department visits. However, when assessing outcomes at all hospitals using zero-inflated negative binomial models adjusted for all baseline variables, the intervention group had lower rates of emergency department visits compared to the usual care group [rate reductions of 24%; 95% CI [3,40]; $p=0.03$] (Sadowski 2009).

Sub-Outcome: Percentage of participants hospitalized

One trial (HF+ICM vs TAU) measured the percentage of participants with at least 1 hospitalization during the 24-month follow-up period, and found no statistically significant difference between groups [28.9% vs 25.6%; OR=1.18; 95% CI [0.90,1.53]; $Z=1.23$, $p=0.22$, RR=1.12; 95% CI [0.93,1.36]; $Z=1.22$; $p=0.22$] (Stergiopoulos 2015).

Sub-Outcome: Percentage of time hospitalized

One randomized control trial measured the percentage of time hospitalized using the 6-month Residential Timeline Followback Calendar. Repeated measures ANOVA results show that there was a significant effect of programme assignment on time hospitalized, with the control group spending significantly more time in hospitals than the experimental group overall at 24 months [$F_{1, 195}=7.4$, $p<0.01$] (Gulcur 2003).

Sub-Outcome: Rate of hospitalization

One randomized control trial measured the rate of hospitalization using the 6-month Residential Timeline Followback Calendar. While the experimental and control groups recruited from the hospitals showed the greatest rate of decline in hospitalization as compared to the experimental and control groups recruited from the streets, the decline was slightly greater for the control sub-sample. There were no significant differences remaining at 24 months between the experimental and control group recruited from the hospitals [MD=0.055; p=0.94] (Gulcur 2003).

Sub-Outcome: Mean number of hospitalization per person

One randomized control trial comparing a housing program offering transitional housing after hospitalization discharge, followed by placement in long-term housing and ICM on site versus Treatment As Usual in homeless adults with chronic medical illness in Chicago, measured the mean number of hospitalization per person over 18 months, and found no statistically significant difference between groups [1.93 hospitalization/ person/ year vs 2.43 hospitalization/ person/ year; MD=-0.5; 95% CI [-1.2,0.2]; p=0.16]. Thus, for every 100 homeless adults offered the intervention, the expected benefits over the next year would be 49; 95% CI [-20 to 119] fewer hospitalizations. However, when assessing outcomes at all hospitals using zero-inflated negative binomial models adjusted for all baseline variables, the intervention group had lower rates of hospitalizations compared to the usual care group [rate reductions of 29%; 95% CI [10,44]; p=0.005] (Sadowski 2009).

Outcome 6: Employment

Sub-outcome: Job tenure in days

One randomized control trial measured job tenure in days at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [Intervention Median=85; IQR [38-197], control Median=119; IQR [60-258]; t=-1.13, df=331; p=0.256], or moderate needs (HF+ICM vs TAU) participants [Intervention Median=83; IQR [36-203], control Median=94; IQR [41-170]; t=-0.87; df=417; p=0.38] (Poremski 2016).

Sub-outcome: Hours of work per week

One randomized control trial measured the number of hours of work per week at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [Intervention M=22.8 (SD 14.9), Control M=27.1 (SD 20.7); MD=-4.30; β =1.33; p=0.48], or moderate needs (HF+ICM vs TAU) participants [Intervention M=23.0 (SD 16.4), control M=26.5 (SD 15.5); MD=-3.50; β =-2.19; p=0.09] (Poremski 2016).

Sub-outcome: Hourly wage

One randomized control trial measured the hourly wage of employed participants at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [Intervention M=12.30 (SD 3.89), Control M=13.20 (SD 7.12); MD=-0.90, t=-1.43; p=0.13], or moderate needs (HF+ICM vs TAU) participants [Intervention M=13.20 (SD 6.39), Control M=13.66 (SD 7.01); MD=-0.46; t=-0.76; p=0.446] (Poremski 2016).

Outcome 7: Income

	<p><i>Sub-outcome: Percentage of participants with monthly income from different sources</i></p> <p>One randomized control trial measured the percentage of participants with monthly income from different sources at 24 months, and found no statistically significant difference between groups for high needs (HF+ACT vs TAU) [96% vs 93%; OR=1.97; 95% CI [1.05,3.69]; Z=2.13; p=0.03, RR=1.03; 95% CI [1.00,1.06]; Z=2.14; p=0.03], or moderate needs (HF+ICM vs TAU) participants [95% vs 94%; OR=1.15; 95% CI [0.67,1.97]; Z=0.52; p=0.59, RR=1.00; 95% CI [0.97,1.03]; Z=0.51; p=0.60] (Poremski 2016).</p> <p><i>Sub-outcome: Median income</i></p> <p>One randomized control trial measured the median income during the last month in Canadian Dollars, and found no statistically significant difference between groups for participants with high needs (HF+ACT vs TAU) [Intervention Median=881; IQR [590-975], control Median=890; IQR [594,986]; Marginal mean difference in monthly income=34.24; 95% CI [-10.24,78.71]; p=0.131], or moderate needs (HF+ICM vs TAU) [Intervention Median=873; IQR [589-1000], control Median=890; IQR [571-969]; Marginal mean difference in monthly income=8.19; 95% CI [-26.31,42.69]; p=0.642] (Poremski 2016).</p> <p>UNDESIRABLE EFFECTS (HARMS):</p> <ol style="list-style-type: none"> 1. No evidence from RCTs reported outcomes with worse results among individuals receiving permanent supportive housing interventions. 2. Qualitative research highlights that social isolation has been reported by Housing First tenants (Magwood et al., in progress). 3. Additionally, 15-20% of Housing First recipients will experience multiple evictions and do not succeed in ending their homelessness. 	
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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Very low <input checked="" type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High <input type="radio"/> No included studies 	<p>We evaluated certainty of evidence for <u>critical</u> patient important outcomes: Housing stability, mental health and quality of life.</p>	<p>One panel member noted that QoL is not always well measured on an objective scale. People often return to their baseline QoL after changes made to their life.</p>

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	HF+ ACT/ ICM	UC	Relative (95% CI)	Absolute (95% CI)		
Outcome: Housing Stability												
Percentage of participants in stable housing at 24 months (Aubry 2016; HF+ACT) (follow up: 24 months)												
1	randomized trials	serious	not serious	not serious	not serious	none	273/369 (74%, CI 69%-78%)	138/337 (41%, CI 35%-46%)	OR 4.10 (2.98 to 5.63) RR 1.81 (1.58 to 2.08)	330 more per 1,000 (from 264 more to 387 more)	⊕⊕⊕○ MODERATE	CRITICAL
Total number of days housed at 24 months (Aubry 2016; HF+ACT) (follow up: 24 months)												
1	randomized trials	serious	not serious	not serious	not serious	none	411 (280.74 days, SD278.92)	369 (115.33 days, SD191.43)	-	AAD 161.8 more days (82.5 more to 241.1 more)	⊕⊕⊕○ MODERATE	CRITICAL
Percentage of days stably housed over 24 months (Stergiopoulos 2015; Aubry 2016; Tsemberis 2004)												
2	randomized trials	serious	not serious	not serious	not serious	none	At Home/ Chez Sol: 1158 Pathways: Data unavailable	At Home/ Chez Sol: 1198 Pathways: Data unavailable	At Home/Chez Sol: High needs participants (HF+ACT): Adjusted absolute difference [AAD] = 42%; 95% CI [38%-45%]; p<0.01 (Aubry 2016). Moderate needs participants (HF+ICM): Adjusted mean difference: Site A, 33.0% [95% CI, 26.2% to 39.8%]; Site B, 49.5% [95% CI, 41.1% to 58.0%]; Site C, 35.6% [95% CI, 29.4% to 41.8%]; and Site D, 45.3% [95% CI, 38.2% to 52.6%]; (Stergiopoulos 2015). Pathways: HF+ACT reported more time stably housed than the control group. No further information was reported by the authors (Tsemberis 2004).	⊕⊕⊕○ MODERATE	CRITICAL	
Outcome: Mental health												
Severity of psychiatric symptoms using the total score of the Colorado Symptom Index (CSI) (Stergiopoulos 2015; Aubry 2016) (follow up: 24 months)												
1	randomized trials	serious	not serious	not serious	not serious	none	1158	1198	High needs participants (HF+ACT): ASMD= 17, CI= 05- 30, p= 01). (Aubry 2016) Moderate needs participants (HF+ICM): Difference in mean changes from baseline: 0.57 (-0.88 to 2.01) (Stergiopoulos 2015)	⊕⊕⊕○ MODERATE	CRITICAL	
Outcome: Quality of Life												
Quality of life using Lehman's Quality of Life Interview (QOLI-20) (Stergiopoulos 2015; Aubry 2016) (follow up: 24 months)												
1	randomized trials	serious	serious	not serious	not serious	none	1158	1198	High needs participants (HF+ACT): ASMD at final interview=0.05; 95% CI [-0.08, 0.18]; p=0.43 Moderate needs participants (HF+ICM): Difference in mean change from baseline=4.37; 95% CI [1.60, 7.14]; p=0.002	⊕⊕○○ LOW	CRITICAL	
Explanations												
a. High risk of performance bias (blinding of participants and personnel), and high risk of detection bias (blinding of outcome assessment)												
b. Inconsistent findings between high needs and moderate needs participants.												

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. The topics were identified from a literature review and then modified and prioritized using a 3 phase Delphi process. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified: mental health and addiction care, facilitating access to housing, facilitating access to income support, and care coordination (See table below)</p>	<p>The panelists requested additional details regarding Delphi prioritization:</p> <p>Both groups prioritized, in the order of importance: facilitating access to housing,</p>

variability ● Probably no important uncertainty or variability ○ No important uncertainty or variability	<table border="1"> <thead> <tr> <th>Priority</th> <th>Persons with Lived Experience</th> <th>Practitioners</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Facilitating access to Housing</td> <td>Facilitating access to Housing</td> </tr> <tr> <td>2</td> <td>Mental Health and Addiction Care/Trauma</td> <td>Mental Health and Addiction Care/Trauma</td> </tr> <tr> <td>3</td> <td>Care coordination/Case management</td> <td>Care coordination/Case management</td> </tr> <tr> <td>4</td> <td>Facilitating access to adequate income</td> <td>Chronic disease management</td> </tr> <tr> <td>5</td> <td>Chronic disease management</td> <td>End-of-life care</td> </tr> <tr> <td>6</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> <td>Facilitating access to adequate income</td> </tr> <tr> <td>7</td> <td>End-of-life care</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> </tr> <tr> <td>8</td> <td>Nutrition and Dietary support</td> <td>Nutrition and Dietary support</td> </tr> </tbody> </table>		Priority	Persons with Lived Experience	Practitioners	1	Facilitating access to Housing	Facilitating access to Housing	2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma	3	Care coordination/Case management	Care coordination/Case management	4	Facilitating access to adequate income	Chronic disease management	5	Chronic disease management	End-of-life care	6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income	7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases	8	Nutrition and Dietary support	Nutrition and Dietary support	mental health and addiction care, and care coordination /case management. There were few important differences in ranking between the two groups of participants. The first difference was that health professionals ranked chronic disease management as the fourth priority while PLE ranked facilitating access to adequate income as their fourth priority. (Shoemaker et al., Submitted Lancet Public Health 2019)
	Priority	Persons with Lived Experience	Practitioners																											
1	Facilitating access to Housing	Facilitating access to Housing																												
2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma																												
3	Care coordination/Case management	Care coordination/Case management																												
4	Facilitating access to adequate income	Chronic disease management																												
5	Chronic disease management	End-of-life care																												
6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income																												
7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases																												
8	Nutrition and Dietary support	Nutrition and Dietary support																												
<p>Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important outcomes. There was some variability in how much people valued the main outcomes. Housing, mental health, and quality of life were all considered critical outcomes. Substance use, hospitalization income and employment were considered important but not critical. Community integration and self efficacy were thought to be critical for participant success, but not critical for decision making on whether or not to implement permanent supportive housing.</p>																														

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention 	<p>Long term (24 month) data shows significant improvements in housing stability. Evidence of effects on subjective quality of life is mixed, with small effects found in some studies. Evidence shows no or limited effects on mental health, substance use, hospitalization, employment or income.</p> <p>There was no RCT evidence for substantial harms.</p> <p>The balance probably favours the intervention.</p>	

<ul style="list-style-type: none"> ○ Varies ○ Don't know 		
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Resources required

How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ● Large costs ○ Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know 	<p>We found 12 studies assessing the cost and net cost of housing interventions. Evidence regarding resource requirements is mixed, with the majority of the studies (n=7) shows that the housing interventions was associated with increased cost to the payers and the cost of the interventions was only partially offset by savings in medical and social costs as a result of the intervention. Five cost studies revealed that the housing interventions saved the payers money; however, these studies were based on a pre-post design therefore subject to selection bias.</p>	<p>Panelists requested additional per-person costs of permanent supportive housing and a non-housed comparator:</p> <p>For the highest-need users, the housing-first model costs \$22,257, while the cost for those with more moderate needs is \$14,177 per year, according to the At Home/ Chez Soi research.</p> <p>Additionally, average annual costs per homeless person in Vancouver, Winnipeg, Toronto, Montréal and Moncton were \$53 144 (95% CI \$46 297-\$60 095), \$45 565 (95% CI \$41 039-\$50 412), \$58 972 (95% CI \$52 237-\$66 085), \$56 406 (95% CI \$50 654-\$62 456) and \$29 610 (95% CI \$24 995-\$34 480)</p> <p>Ref: Latimer et al., 2017. Costs of services for homeless people with mental illness in 5 Canadian cities: a large prospective follow-up study. CMAJ Open.</p>

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
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<ul style="list-style-type: none"> ● Very low ○ Low ○ Moderate ○ High ○ No included studies 	<p>There is very low certainty in the estimates of resource requirement, associated costs, and the cost-effectiveness of housing interventions due to variations in the perspective of analysis, data source and analytical methods. Two Canadian cost studies were identified, and both were conducted from a societal perspective. These studies showed that societal cost savings of the housing first intervention partially outweighed its costs (96% for a combination of housing first intervention with ACT and 34% for a supporting housing with ICM services). Moreover, studies that reported cost and net cost estimates were subject to selection bias and unmeasured confounders because they were based on pre-post or observational studies.</p>	<p>One panel member suggested that for many high system users, cost will remain substantive even while in stable housing.</p>
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Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ○ Favors the intervention ● Varies ○ No included studies 	<p>We identified one cost-utility analyses that was based on data from the Housing and Health Study of rental assistance for homeless and unstably housed persons living with HIV in Baltimore, Chicago and Los Angeles, the published literature, and assumptions. The study suggested that the provision of housing services was associated with an incremental cost-effectiveness ratio (ICER) of \$62,493 per one quality-adjusted life year (QALY) gained. A threshold analysis showed that the ICER would be less than \$100,000 per QALY gained if the number of HIV transmissions averted to HIV seronegative partners of HIV seropositive clients was lower than 0.01054.</p> <p>Existing economic evidence suggests that the housing intervention was associated with higher costs and improved QALYs; however, the methodological quality of the cost-utility analysis was poor. The authors did not justify why data sources used to inform the effectiveness and health utility estimates were sufficient. Limited sensitivity analyses were performed to assess the robustness of study findings.</p>	

Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know 	<p>No RCTs provided evidence on health equity. However, stable permanent housing can lead to access to community primary health care, social services, and participation in the community. This likely favours health equity over long term.</p>	<p>While no evidence was incorporated, the panel judged that equity would be probably increased.</p>

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No 	<p>We conducted a qualitative systematic review (Magwood et al., in progress) and assessed confidence in key findings using GRADE CERQual. We identified</p>	<p>The panel felt that people that have to leave</p>

<ul style="list-style-type: none"><input type="radio"/> Probably no<input checked="" type="radio"/> Probably yes<input type="radio"/> Yes<input type="radio"/> Varies<input type="radio"/> Don't know	<p>three key findings relevant to permanent supportive housing interventions.</p>	<p>their social networks on the street would be less accepting of PSH.</p> <p>One panel member noted that there was high acceptability among At Home, Chez Soi initiative participants.</p> <p>The panel also noted that In one province, there was a lot of push back politically, which changed with an election.</p>
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Review Finding	CERQual Assessment of Confidence in the Evidence	Explanation of CERQual Assessment	Studies Contributing to the Review Finding
<p>Individuals participating in housing programs initially felt socially isolated, but found that support from peers and staff allowed them to develop altruism towards their peers. The key relationships identified were among staff, peers, friends, family, cultural traditions, and the community.</p> <p>Youth and women programs especially found that peer support helped develop relationships and enhanced commitment to seek treatment.</p> <p>Illustrative quote: <i>"I got somebody that's there to help me, that's supportive to me, that's like a friend to me, I can always call them [staffs] and talk to them anytime of the day ... She never mistreated me, talked about my business to other people".</i> (Quinn et al., 2015)</p>	Moderate confidence	Moderate concerns were about the generalizability of certain subgroups of people across the homeless population and the variability in interventions administered	Alhusen et al., 2017 Aviles et al., 2004 Collins et al., 2012 Davis et al., 2012 Ferguson et al., 2008. Gultekin et al., 2014. Holtschneider et al., 2017 Jost et al., 2011 Kozloff et al., 2013 Macnaughton, 2016 Macneil et al., 2011 Mitchell et al., 2017 Patterson et al., 2015 Stewart et al., 2010 Thompson et al., 2006 Wright et al., 2006 Yamin et al., 2014
<p>Stable housing and service programmes create a sense of safety, security and stability for homeless individuals, who often face hardships in securing a safe place to sleep. Women-specific programmes create safe spaces for women to engage with each other in an environment free from violence and trauma. Such programs promote empowerment, self-efficacy and self-esteem.</p> <p>Illustrative quote: <i>"... when you have a roof it just doesn't matter, the rest doesn't matter, because you are in a safe place. [...] the most important thing was ... that you were away from what you feared and ... the life of ... where you don't have to watch your back all the time"</i> (McMaster et al., 2017)</p>	Low confidence	While the majority of studies were consistent in reporting feelings of security, safety, and stability, one study contradicted this finding. Other concerns were about the generalizability of certain subgroups of people across the homeless population.	Aviles et al., 2004 Farquhar et al., 2014 Holtschneider et al, 2016 Jost et al, 2011 MacNeil et al., 2011 Magee et al., 2008 MacMaster et al., 2017 McNaughton et al., 2016 Mitchell et al., 2017 Patterson et al., 2015 Perreault et al., 2016 Taylor et al., 2007 Yamin et al., 2011
<p>People who are homeless or vulnerably housed often felt that the housing options available to them conflicted with their personal needs.</p> <p>Youth expressed interest in congregate housing models, as these promote companionship, a sense of community, and a sense of family with others in similar circumstances.</p> <p>Women prioritized the safety of their</p>	Low confidence	Moderate concerns surrounding research design and small sample sizes. Additionally, studies often focused on narrow population groups, limiting their generalizability to all homeless populations.	Archard et al., 2015 Aviles et al., 2004 Collins et al., 2012 Holtschneider et al., 2016 Macnaughton, 2016 Patterson et al., 2015 Ploeg, et al., 2008 Quinn et al., 2015 Thompson et al., 2006

Feasibility Is the intervention feasible to implement?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know 	<p>At Home / Chez Soi: At Home/Chez Soi demonstrated that HF can be implemented in Canada and successfully adapted to local contexts. Each of the five At Home/Chez Soi sites operated within a unique local context that influenced both the experience of the TAU group as well as the way the HF intervention was implemented. This included varying population characteristics (rural, ethnoracial, drug use, aboriginal), housing contexts (vacancy rates, rental costs, wait lists for social housing), and service contexts (availability of ACT/ICM teams). The sites maintained high fidelity to the housing first model (Goering et al., 2014)</p> <p>Rural Canada: There is a high level of interest in Housing First in rural communities in Canada, though notable challenges to implementation were identified: lack of funding for implementation, lack of local clinical expertise, insufficient housing stock for scattered-site approaches, and inability to reach efficiencies of scale due to low client numbers. Nevertheless, a number of innovative rural Housing First implementations exist which leverage existing community resources to deliver case management, housing location, rent supports and permanent housing. These have also taken on a regional implementation approach leveraging available resources across rural communities (Waegemakers Schiff and Turner, 2014)</p> <p>References:</p> <p>Paula Goering, Scott Veldhuizen, Aimee Watson, Carol Adair, Brianna Kopp, Eric Latimer, Geoff Nelson, Eric MacNaughton, David Streiner & Tim Aubry (2014). National At Home/Chez Soi Final Report. Calgary, AB: Mental Health Commission of Canada. Retrieved from: http://www.mentalhealthcommission.ca</p> <p>Jeannette Waegemakers Schiff and Alina Turner (2014). Housing First in Rural Canada: Rural Homelessness and Housing First Feasibility Across 22 Canadian Communities. University of Calgary. Calgary, AB. https://homelesshub.ca/sites/default/files/Rural_Homelessness_in_Canada_2014.pdf</p>	<p>One panel member noted that many things have happened since the At Home Chez Soi study on housing costs that will make supportive housing more challenging.</p>

SUMMARY OF JUDGEMENTS

PROBLEM	JUDGEMENT						
	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the	Probably favors the intervention	Favors the intervention	Varies	Don't know

	JUDGEMENT						
			comparison				
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention <input type="radio"/>	Conditional recommendation against the intervention <input type="radio"/>	Conditional recommendation for either the intervention or the comparison <input type="radio"/>	Conditional recommendation for the intervention <input type="radio"/>	Strong recommendation for the intervention <input checked="" type="radio"/>
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CONCLUSIONS

Recommendation

Identify, during history and physical examination, homelessness or housing vulnerability such as experiences of family discord and or adverse childhood experiences, unemployment, severe poverty, major mental illness or recent alcohol/substance use.

Refer homeless or vulnerably housed individuals to local housing coordinator/ case manager (i.e. 211 in Ontario) for immediate housing plan and/or link to permanent supportive housing at coordinated assessment system.

Justification

Permanent Supportive Housing shows significant improvements in housing stability over 24 months. Housing stability is associated with social determinants of health, a sense of personal safety and links to health services.

Subgroup considerations

Indigenous, women, youth and migrant populations may all require socially and culturally tailored housing programs.

Implementation considerations

Will require partnership with the Canadian National Housing Strategy, Reaching Home.

Sample questions to identify people's housing status:

Q1) Where did you sleep last night? Q2) How long have you stayed in the place you stayed last night? Q3) Where were you staying prior to the place you stayed last night? Q4) Is there violence or conflict in the place you were staying last night? Q5) Is your health or safety at risk in the place you were staying last night? (Ref: The United States Interagency Council on Homelessness, 2017)

Advocacy Statements:

- Practitioners should be prepared to accept homeless, vulnerably housed, or PLE patients into their medical practice.
- Practitioners should advocate for affordable housing within their community.

Monitoring and evaluation

The proportion homeless men, women and youth who receive permanent supportive housing for greater than 24 months.
Quality assurance indicator development and monitoring for permanent supportive housing program referrals, uptakes and longer-term outcomes.

Research priorities

To limit the number of hours or days a person spends homeless to 24-48 hours to mitigate any of the health and social harms associated with homelessness.

The panel also prioritized evaluation of health equity considerations and outcomes relating to permanent supportive housing.

Longer term research was also prioritized by the guideline panel, including follow-up beyond the period of two years.

QUESTION

Should Assertive community treatment ACT vs. no intervention or alternative intervention be used for homeless and vulnerably housed populations?

POPULATION:	homeless and vulnerably housed populations
INTERVENTION:	Assertive community treatment ACT
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	<ul style="list-style-type: none"> • Housing stability • Mental Health • Substance use • Quality of life • Income • Employment
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health Systems
BACKGROUND:	<p>ACT is a team-based case management intervention which provides intensive, comprehensive treatment, rehabilitation and support services for people with serious mental illness and complex health and social needs (Marshall and Lockwood, 1998).</p> <p>ACT differs conceptually and empirically from traditional case management approaches because it provides a holistic approach to services which includes but not limited to helping with medications, housing, finances and everyday problems in living (Bond et al., 2001).</p> <p>ACT teams are committed to promote continuity of care by providing services 24 hours everyday. Teams usually consists of 12 staff members including case managers and a full-time psychiatrist (Lehman 1997).</p> <p>Case managers in this model have a caseload of around 10-12 patients. Hence ACT models are related to higher costs compared to standard services (Morse 2006).</p>
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem		
Is the problem a priority?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>In 2018, almost 9.4 million Canadians live in housing below national standards (PHAC, 2018). Furthermore, between 150 000 and 300 000 Canadians experience homelessness each year (Fazel et al. 2014), with approximately 35 000 Canadians without shelter on any given night (Gaetz et al. 2016). Youth (16-24 years) make up 20% of the Canadian homeless population, with 60% of homeless youth experiencing more violence/ victimization than the general population (Gaetz et al. 2016). Whereas women make up approximately 27.3% of Canada's homeless population, a significant contributor to hidden homelessness (Gaetz et al. 2016). Moreover, people with mental illness make up approximately 30-35% of the homeless or vulnerably housed population, with 20-25% of those experiencing homelessness suffer from concurrent severe mental illness and addictions (To et al. 2016).</p>	

	<p>Migrants experience disparities in access/utilization of health/social care services with an increased risk of substance use, infectious diseases, mental illness, homicides and suicide risk (Kaur et al., 2018; Beijeret 2012). The magnitude of visible or hidden homelessness among migrants is mostly unknown/unavailable to inform public health intervention (Kaur et al., 2018).</p> <p>ACT can be effective in underserved people with mental illness and complex support needs.</p>	
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Desirable Effects
How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Trivial ● Small ○ Moderate ○ Large ○ Varies ○ Don't know 	<p>Our systematic review identified 10 publications examining multiple assertive community treatment models; five studies across 6 publications comparing assertive community treatment (ACT) to usual services (Clark 2000, Fletcher 2008, Lehman 1997, Morse 1992, Morse 2006, Morse 2008), two studies comparing Assertive Community Treatment (ACT) to standard case management (SCM) (Essock 1998, Essock 2006), and one study comparing two Assertive Community Treatment (ACT) groups to Brokered Case Management (BCM) (Morse 1997).</p> <p>Desirable Effects (BENEFITS):</p>	

SUMMARY OF EVIDENCE:

1. **Housing Stability:** Findings are mixed. Three trials report fewer days homeless and/or more time spent in stable housing. Two trials report no impact on episodes of homelessness or number of day homeless on streets/in shelters.
2. **Mental Health:** The majority of trials report no significant differences in psychiatric symptoms between ACT and control groups. A single trial reports that ACT participants had better clinical outcomes (psychiatric symptoms) than control participants
3. **Quality of Life:** Findings are mixed, with some trials reporting statistically significant improvements in quality of life, and others reporting no benefits at long-term.
4. **Substance Use:** No significant benefits were found for ACT compared to usual care on any of the substance use variables
5. **Hospitalization:** Findings are mixed. ACT does not reduce the number of participants hospitalized or number of participants with ER visits. ACT resulted in fewer mean number of ER visits and number of days hospitalized.
6. **Employment:** No studies reported on this outcome
7. **Income:** No significant benefits favouring ACT over usual services were found for any income variables

Outcome 1: Housing stability

Sub-Outcome: Number of participants who experienced at least one episode of homelessness

1 RCT comparing ACT to usual services over a 24 month follow up period reported no statistically significant difference between groups on number of participants with at least one episode of homelessness (OR 1.25, 95%CI 0.53 to 2.92) (Clark 2000).

Sub-Outcome: Number of days homeless on the street

1 RCT compared ACT to usual services for a 12-month period. The difference in days homeless on streets approached statistical significance for the ACT group (MD -14.2, 95%CI -28.75 to 0.35, p=0.058) (Lehman 1997).

Sub-Outcome: Number of days homeless in shelters

One RCT compared ACT to usual services for a 12-month period. During the follow-up year, no statistically significant difference between groups was found (MD-6.2, 95%CI -35.03 to 22.63, p=0.67) (Lehman 1997).

Sub-Outcome: Number of days homeless

1 RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. ACT clients (M=2.89 SD 8.56) were less likely to be homeless at 12 months than those in the outpatient program (M=5.77 SD 11.00), who were less likely to be homeless than those in the drop-in program (M=11.00 SD 14.13) (p<0.01) (Morse 1992).

Sub-Outcome: Number of participants reporting living in stable housing for entire previous month

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual care. At 30-month follow-up, 34% of the usual care group, 24% of the ACTO group, and 27% of the IACT group report stable housing for the entire month. (Fletcher 2008).

Sub-Outcome: Mean number of days in stable housing in the previous month

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. At 3 months, the means of number of days stably housed were ACTO 3.09 (SD7.48), IACT 3.67(SD7.46) and control 3.14(SD7.59). At 30 months, the means were ACTO 13.55 (SD13.45), IACT 15.99 (SD12.49) and control 11.81 (SD14.25). The treatment contrast (ACTO & IACT vs. control) is significant and positive (P = .01). Both treatment groups enjoy a higher rate of stable housing than does the control group (Fletcher 2008).

1 RCT compared ACT only (ACTO) and integrated ACT (IACT) to usual care. At 6 months, the means of number of days in stable housing were ACTO 5.77 (SD 7.42), IACT 8.19 (SD9.68) and control 5.02 (SD8.62). At 24 months, the means were ACTO 17.78 (SD12.68), IACT 18.29 (SD12.12) and control 12.59 (SD13.27). Clients in both the ACTO and IACT conditions had significantly more days in stable housing than Control clients (p=0.03). (Morse 2006).

In one follow up study of Morse 2006, a quasi-experimental trial compares ACTO, IACT and standard care to a new integrated assertive community treatment (NIACT). At 18-month follow up, NIACT participants had a mean number of days stably housed of 14.31 (SD14.25). Clients in NIACT, IACT, and ACTO reported significantly more days in stable housing at 18 months than did the control clients (Morse 2008).

1 RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. At 18 month follow up, the means of number of days in stable housing were ACT 23.70 (SD11.42), ACT + community workers 18.98(SD 13.89) and BCM 16.02(SD14.77). A significant treatment group effect was found (p<0.032) (Morse 1997).

Outcome 2: Mental health

Sub-Outcome: Psychiatric symptoms using the Brief Psychiatric Rating Scale (BPRS)

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. Psychiatric symptoms were measured using mean scores of the BPRS. At 3 months, mean scores were [ACTO 2.05 (SD0.51), IACT 1.92 (SD0.50) and control 2.00(0.58)]. At 30 months, mean scores were [ACTO 1.85 (SD0.77),

IACT 1.83 (SD0.76) and control 1.83 (SD0.62)]. While all groups saw improvement in symptoms over time, there were no significant differences between treatment groups ($p>0.1$) (Fletcher 2008).

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. At 6 months, mean scores were [ACTO 2.01 (SD0.44), IACT 1.94 (SD0.42), and control 1.98 (SD0.58)]. At 24 months, mean scores were [ACTO 1.88(SD0.54), IACT 1.66(SD0.46), and control 1.86(SD0.60)]. There were no between-group differences ($p=0.10$) (Morse 2006).

In one follow up study of Morse 2006, a quasi-experimental trial compared psychiatric symptoms of previously published ACTO, IACT and standard care data to a new integrated assertive community treatment (NIACT). At 18-month follow up, NIACT participants had a mean BPRS score of 2.14(SD0.54). Treatment condition had no effect on psychiatric symptoms ($p=0.19$) (Morse 2008)

1 RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. Significant treatment group effects were noted for two scales of the BPRS-thought disorder ($p<.023$) and activity level ($p<0.03$). A marginally significant treatment group effect ($p<.065$) was also noted on the withdrawal-elevated mood scale. No significant treatment group differences were found on the anxiety-depression scale, the hostility-suspicion scale, or the self-esteem scale (Morse 1997).

Sub-Outcome: Psychiatric symptoms using the Colorado Symptom Index (CSI)

1 RCT compared ACT to usual services for a 12-month period. Psychiatric symptoms were assessed using the CSI scale. At all three follow up points, ACT participants had better clinical outcomes than control participants [At 2 months: ACT 4.10 (SEM0.10), control 3.61 (SEM0.10) ($p=0.001$)] and [At 12 months: ACT 4.12 (SEM0.11), control 3.77 (SEM0.11) ($p=0.03$)] (Lehman 1997).

Sub-Outcome: Psychiatric symptoms using the Brief Symptom Inventory (BSI)

1 RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. Psychiatric symptoms were assessed using the BSI scale. At 12-month follow up, mean scores were [ACT 0.95 (SD0.76), drop-in centre 0.92 (SD0.84), and outpatient 0.89 (SD0.65)] (Morse 1992).

Sub-Outcome: Psychiatric symptoms using the Expanded Brief Psychiatric Rating Scale (Expanded-BPRS)

1 RCT comparing ACT to standard case management services assessed psychiatric symptoms over a three-year study period. Treatment groups did not differ with respect to severity of psychiatric symptoms [no further details provided] (Essock 2008).

Sub-Outcome: Psychiatric symptoms using the SCL-90-R

One RCT comparing ACT to standard case management services used the SCL-90-R to assess psychiatric symptomatology over 18 months. There were no significant group x time interactions [no further details provided]. (Essock 1998).

Outcome 3: Quality of life

Sub-Outcome: Quality of life using Lehman's Quality of Life Interview (QOLI)

1 RCT compared ACT to usual services for a 12-month period. There were no between-group differences on the objective quality of life variables. ACT participants were more satisfied than the comparison group in their general wellbeing (MD=0.53, p=0.02), their neighbourhoods (MD=0.76, p=0.001), and their health (MD=0.48, p=0.006). There were no between- group differences on satisfaction with safety, family relations, social relations, or finances [data not reported] (Lehman 1997).

1 RCT comparing ACT to standard case management services reported that the mean difference in general life satisfaction over 18 months were [ACT 0.73, SCM -0.01; p<.05]. By 18 months, the difference between ACT and SCM clients on the components of quality of life measured by the QOLI all favored the ACT condition, with a difference of one-half point or less, and three components reaches statistical significance (personal safety, p<0.05; leisure activities, p<0.001; contact with friends, p<0.05) (Essock 1998).

One RCT comparing ACT to standard case management services found quality of life over a 3-year study period did not differ between treatment groups [no data provided](Essock 2008).

Outcome 4: Substance use

Sub-Outcome: Alcohol abuse measured with an author-developed scale

1 RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. At 12 months, the average monthly alcohol consumption was [ACT average of 2.83 (SD9.11) ounces of alcohol per week, drop in: 0.50(SD1.08), and outpatient: 0.95 (SD1.98)]. There were no significant improvements in alcohol consumption across time (p=0.781) (Morse 1992).

Sub-Outcome: Substance use measured with an author-developed scale

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. At three months, the mean substance abuse ratings were [ACTO 2.91 (SD1.20), IACT 2.98 (SD1.07), and control 3.08 (SD1.06)]. At 30 months, ratings were [ACTO 2.58 (SD1.11), IACT 2.73 (SD 1.25), and control 2.44 (1.20)]. All groups improved over time, however there were no significant differences between treatment groups (Fletcher 2008).

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT). At six months, the substance use ratings were [ACTO 2.98 (SD1.31), IACT 3.15 (SD1.09), and control 2.78 (SD1.18)]. At 24 months, ratings were [ACTO 2.70 (SD1.28), IACT 2.76(SD1.11), and control 2.62(1.15)]. There was no significant difference between treatment groups (p=0.72) (Morse 2006).

In one follow up study of Morse 2006, a quasi-experimental trial compared psychiatric symptoms of ACTO, IACT , standard care data, and a new integrated assertive community treatment (NIACT). At 18-month follow up, clients in the NIACT condition reduced their frequency of drug use more than clients in the IACT and ACTO conditions. There were no significant treatment effects on the other substance use variables. (Morse 2008).

Sub-Outcome: Alcohol use measured with the Alcohol Use Scale (AUS)

1 RCT comparing ACT to SCM at two urban sites assessed substance abuse over the three- year study period. Among clients with an alcohol use disorder at baseline, groups did not differ over time with respect to researchers' average AUS ratings, although all clients improved. However, groups differed significantly over time with regard to self-reported days of drinking; the assertive community treatment group showed initial gains that eroded slightly and the standard clinical case management group showed a pattern of more steady gains [no further details provided] (Essock 2008).

Sub-Outcome: Drug use measured with the Drug Use Scale (DUS)

One RCT comparing ACT to SCM at two urban sites assessed substance abuse over the three- year study period. Among clients with drug use disorder at baseline, a greater difference between groups over time favoring ACT was seen at site 2 but not at site 1. Groups did not differ in self-reported days of drug use, and reported days of use declined by about one-third overall. [No further details available] (Essock 2008).

Sub-Outcome: Substance use measured with the Substance Abuse Treatment Scale (SATS)

1 RCT comparing ACT to SCM at two urban sites assessed substance abuse over the three- year study period using SATS rating. Even though there were differences in improvements between groups in different sites, the two treatment groups did not differ by the end of the study [no further details provided] (Essock 2008).

Sub-Outcome: Substance use measured with the Addiction Severity Index (ASI)

1 RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. No significant treatment group differences were found on any of the five substance abuse variables of the Addiction Severity Index (Morse 1997).

Outcome 5: Hospitalization

Sub-Outcome: Number of participants hospitalized

One RCT comparing ACT to usual services over a 24 month follow up period. By the end of the study (24 months), 46% (n =52/114) of the ACT clients had experienced hospitalization, compared to 40% (n =20/49) in usual care; this difference was not statistically significant (OR1.22, 95%CI 0.62 to 2.4) (Clarke 2000).

Sub-Outcome: Number of participants the visited the emergency room

One RCT comparing ACT to usual services over a 24 month follow up period. By the end of the study (24 months), 35% (n =40/114) for ACT clients had visited the ER, versus 31% (n =15/49) for usual care; this difference was not statistically significant (OR 1.23, 95%CI 0.6 to 2.51) (Clarke 2000).

Sub-Outcome: Mean number of emergency department visits

One RCT compared ACT to usual services for a 12-month period. The ACT program subjects accumulated significantly fewer emergency department visits

over the course of the trial; ACT mean 0.8 visits (SEM0.3) versus comparison mean 2.0 visits (SEM0.3), $p=0.009$ (Lehman 1997).

Sub-Outcome: Number of days hospitalized

One RCT comparing ACT to standard case management services measured hospital utilization. The difference in hospital utilization by ACT versus SCM clients over the entire 18 months was marginally significant ($p=.078$). For months 6 to 12, mean number of days hospitalized was [SCM of 25.8 (SD=57.1), ACT 17.2 (SD=46.9); $p<.05$] (Essock 1998).

One RCT comparing ACT to standard case management services measured number of days hospitalized for the entire 3-year study period. Compared with the ACT group, the SCM group averaged significantly more days in hospital (mean 41, SD 60; compared with 32, SD91 for the ACT group) (Essock 2006).

Outcome 6: Employment

No studies comparing assertive community treatment (ACT) to usual services, standard case management, or broker case management reported on this outcome.

Outcome 7: Income

Sub-Outcome: Monthly income

One RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. Clients were asked to report their monthly income (no details on sources). At 12-month follow-up, means of monthly income were [ACT \$498 (SD897), drop-in \$377 (SD400), and outpatient: \$430 (SD938)] (Morse 1992).

One RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. Clients were asked to estimate their monthly earnings from multiple. At 18-month follow up, means for monthly income were [ACT only \$523.57 (SD244.37), ACT +community workers 508.23(SD215.41), and BCM 506.21 (SD496.68)]. There were no significant treatment group effects (Morse 1997).

Undesirable effects (HARMS):

- Available RCT literature did report on harms or adverse outcomes related to this intervention.
- Qualitative literature suggests that the transient nature of support workers negatively impacts continuity of care or participants' ability to seek or utilize services (Archard et al., 2015; Holtschneider et al., 2016; Macnaughton et al., 2016).

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT

RESEARCH EVIDENCE

ADDITIONAL CONSIDERATIONS

- Large
- Moderate
- Small
- Trivial
- Varies
- Don't know

Our systematic review identified 10 publications examining multiple assertive community treatment models; five studies across 6 publications comparing assertive community treatment (ACT) to usual services (Clark 2000, Fletcher 2008, Lehman 1997, Morse 1992, Morse 2006, Morse 2008), two studies comparing Assertive Community Treatment (ACT) to standard case management (SCM) (Essock 1998, Essock 2006), and one study comparing two Assertive Community Treatment (ACT) groups to Brokered Case Management (BCM) (Morse 1997).

Desirable Effects (BENEFITS):

SUMMARY OF EVIDENCE:

1. **Housing Stability:** Findings are mixed. Three trials report fewer days homeless and/or more time spent in stable housing. Two trials report no impact on episodes of homelessness or number of day homeless on streets/in shelters.
2. **Mental Health:** The majority of trials report no significant differences in psychiatric symptoms between ACT and control groups. A single trial reports that ACT participants had better clinical outcomes (psychiatric symptoms) than control participants
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6. **Employment:** No studies reported on this outcome
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Outcome 1: Housing stability

Sub-Outcome: Number of participants who experienced at least one episode of homelessness

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Sub-Outcome: Number of days homeless on the street

1 RCT compared ACT to usual services for a 12-month period. The difference in days homeless on streets approached statistical significance for the ACT group (MD -14.2, 95%CI -28.75 to 0.35, p=0.058) (Lehman 1997).

Sub-Outcome: Number of days homeless in shelters

One RCT compared ACT to usual services for a 12-month period. During the follow-up year, no statistically significant difference between groups was found (MD-6.2, 95%CI -35.03 to 22.63, p=0.67) (Lehman 1997).

Sub-Outcome: Number of days homeless

1 RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. ACT clients (M=2.89 SD 8.56) were less likely to be homeless at 12 months than those in the outpatient program (M=5.77 SD 11.00), who were less likely to be homeless than those in the drop-in program (M=11.00 SD 14.13) (p<0.01) (Morse 1992).

Sub-Outcome: Number of participants reporting living in stable housing for entire previous month

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual care. At 30-month follow-up, 34% of the usual care group, 24% of the ACTO group, and 27% of the IACT group report stable housing for the entire month. (Fletcher 2008).

Sub-Outcome: Mean number of days in stable housing in the previous month

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. At 3 months, the means of number of days stably housed were ACTO 3.09 (SD7.48), IACT 3.67(SD7.46) and control 3.14(SD7.59). At 30 months, the means were ACTO 13.55 (SD13.45), IACT 15.99 (SD12.49) and control 11.81 (SD14.25). The treatment contrast (ACTO & IACT vs. control) is significant and positive (P = .01). Both treatment groups enjoy a higher rate of stable housing than does the control group (Fletcher 2008).

1 RCT compared ACT only (ACTO) and integrated ACT (IACT) to usual care. At 6 months, the means of number of days in stable housing were ACTO 5.77 (SD 7.42), IACT 8.19 (SD9.68) and control 5.02 (SD8.62). At 24 months, the means were ACTO 17.78 (SD12.68), IACT 18.29 (SD12.12) and control 12.59 (SD13.27). Clients in both the ACTO and IACT conditions had significantly more days in stable housing than Control clients (p=0.03). (Morse 2006).

In one follow up study of Morse 2006, a quasi-experimental trial compares ACTO, IACT and standard care to a new integrated assertive community treatment (NIACT). At 18-month follow up, NIACT participants had a mean number of days stably housed of 14.31 (SD14.25). Clients in NIACT, IACT, and ACTO reported significantly more days in stable housing at 18 months than did the control clients (Morse 2008).

1 RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. At 18 month follow up, the means of number of days in stable housing were ACT 23.70 (SD11.42), ACT + community workers 18.98(SD 13.89) and BCM 16.02(SD14.77). A significant treatment group effect was found (p<0.032) (Morse 1997).

Outcome 2: Mental health

Sub-Outcome: Psychiatric symptoms using the Brief Psychiatric Rating Scale (BPRS)

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. Psychiatric symptoms were measured using mean scores of the BPRS. At 3 months, mean scores were [ACTO 2.05 (SD0.51), IACT 1.92 (SD0.50) and control 2.00(0.58)]. At 30 months, mean scores were [ACTO 1.85 (SD0.77), IACT 1.83 (SD0.76) and control 1.83 (SD0.62)]. While all groups saw improvement in symptoms over time, there were no significant differences between treatment groups ($p>0.1$) (Fletcher 2008).

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. At 6 months, mean scores were [ACTO 2.01 (SD0.44), IACT 1.94 (SD0.42), and control 1.98 (SD0.58)]. At 24 months, mean scores were [ACTO 1.88(SD0.54), IACT 1.66(SD0.46), and control 1.86(SD0.60)]. There were no between-group differences ($p=0.10$) (Morse 2006).

In one follow up study of Morse 2006, a quasi-experimental trial compared psychiatric symptoms of previously published ACTO, IACT and standard care data to a new integrated assertive community treatment (NIACT). At 18-month follow up, NIACT participants had a mean BPRS score of 2.14(SD0.54). Treatment condition had no effect on psychiatric symptoms ($p=0.19$) (Morse 2008)

1 RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. Significant treatment group effects were noted for two scales of the BPRS-thought disorder ($p<.023$) and activity level ($p<0.03$). A marginally significant treatment group effect ($p<.065$) was also noted on the withdrawal-elevated mood scale. No significant treatment group differences were found on the anxiety-depression scale, the hostility-suspicion scale, or the self-esteem scale (Morse 1997).

Sub-Outcome: Psychiatric symptoms using the Colorado Symptom Index (CSI)

1 RCT compared ACT to usual services for a 12-month period. Psychiatric symptoms were assessed using the CSI scale. At all three follow up points, ACT participants had better clinical outcomes than control participants [At 2 months: ACT 4.10 (SEM0.10), control 3.61 (SEM0.10) ($p=0.001$)] and [At 12 months: ACT 4.12 (SEM0.11), control 3.77 (SEM0.11) ($p=0.03$)] (Lehman 1997).

Sub-Outcome: Psychiatric symptoms using the Brief Symptom Inventory (BSI)

1 RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. Psychiatric symptoms were assessed using the BSI scale. At 12-month follow up, mean scores were [ACT 0.95 (SD0.76), drop-in centre 0.92 (SD0.84), and outpatient 0.89 (SD0.65)] (Morse 1992).

Sub-Outcome: Psychiatric symptoms using the Expanded Brief Psychiatric Rating Scale (Expanded-BPRS)

1 RCT comparing ACT to standard case management services assessed psychiatric symptoms over a three-year study period. Treatment groups did not differ with respect to severity of psychiatric symptoms [no further details provided] (Essock 2008).

Sub-Outcome: Psychiatric symptoms using the SCL-90-R

One RCT comparing ACT to standard case management services used the SCL-90-R to assess psychiatric symptomatology over 18 months. There were no significant group x time interactions [no further details provided]. (Essock 1998).

Outcome 3: Quality of life

Sub-Outcome: Quality of life using Lehman's Quality of Life Interview (QOLI)

1 RCT compared ACT to usual services for a 12-month period. There were no between-group differences on the objective quality of life variables. ACT participants were more satisfied than the comparison group in their general wellbeing (MD=0.53, p=0.02), their neighbourhoods (MD=0.76, p=0.001), and their health (MD=0.48, p=0.006). There were no between- group differences on satisfaction with safety, family relations, social relations, or finances [data not reported] (Lehman 1997).

1 RCT comparing ACT to standard case management services reported that the mean difference in general life satisfaction over 18 months were [ACT 0.73, SCM -0.01; p<.05]. By 18 months, the difference between ACT and SCM clients on the components of quality of life measured by the QOLI all favored the ACT condition, with a difference of one-half point or less, and three components reaches statistical significance (personal safety, p<0.05; leisure activities, p<0.001; contact with friends, p<0.05) (Essock 1998).

One RCT comparing ACT to standard case management services found quality of life over a 3-year study period did not differ between treatment groups [no data provided](Essock 2008).

Outcome 4: Substance use

Sub-Outcome: Alcohol abuse measured with an author-developed scale

1 RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. At 12 months, the average monthly alcohol consumption was [ACT average of 2.83 (SD9.11) ounces of alcohol per week, drop in: 0.50(SD1.08), and outpatient: 0.95 (SD1.98)]. There were no significant improvements in alcohol consumption across time (p=0.781) (Morse 1992).

Sub-Outcome: Substance use measured with an author-developed scale

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT) to usual services. At three months, the mean substance abuse ratings were [ACTO 2.91 (SD1.20), IACT 2.98 (SD1.07), and control 3.08 (SD1.06)]. At 30 months, ratings were [ACTO 2.58 (SD1.11), IACT 2.73 (SD 1.25), and control 2.44 (1.20)]. All groups improved over time, however there were no significant differences between treatment groups (Fletcher 2008).

1 RCT compared both ACT only (ACTO) and integrated ACT (IACT). At six months, the substance use ratings were [ACTO 2.98 (SD1.31), IACT 3.15 (SD1.09), and control 2.78 (SD1.18)]. At 24 months, ratings were [ACTO 2.70 (SD1.28), IACT 2.76(SD1.11), and control 2.62(1.15)]. There was no significant difference between treatment groups (p=0.72) (Morse 2006).

In one follow up study of Morse 2006, a quasi-experimental trial compared psychiatric symptoms of ACTO, IACT, standard care data, and a new integrated assertive community treatment (NIACT). At 18-month follow up, clients in the NIACT condition reduced their frequency of drug use more than clients in the IACT and ACTO conditions. There were no significant treatment effects on the other substance use variables. (Morse 2008).

Sub-Outcome: Alcohol use measured with the Alcohol Use Scale (AUS)

1 RCT comparing ACT to SCM at two urban sites assessed substance abuse over the three- year study period. Among clients with an alcohol use disorder at baseline, groups did not differ over time with respect to researchers' average AUS ratings, although all clients improved. However, groups differed significantly over time with regard to self-reported days of drinking; the assertive community treatment group showed initial gains that eroded slightly and the standard clinical case management group showed a pattern of more steady gains [no further details provided] (Essock 2008).

Sub-Outcome: Drug use measured with the Drug Use Scale (DUS)

One RCT comparing ACT to SCM at two urban sites assessed substance abuse over the three- year study period. Among clients with drug use disorder at baseline, a greater difference between groups over time favoring ACT was seen at site 2 but not at site 1. Groups did not differ in self-reported days of drug use, and reported days of use declined by about one-third overall. [No further details available] (Essock 2008).

Sub-Outcome: Substance use measured with the Substance Abuse Treatment Scale (SATS)

1 RCT comparing ACT to SCM at two urban sites assessed substance abuse over the three- year study period using SATS rating. Even though there were differences in improvements between groups in different sites, the two treatment groups did not differ by the end of the study [no further details provided] (Essock 2008).

Sub-Outcome: Substance use measured with the Addiction Severity Index (ASI)

1 RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. No significant treatment group differences were found on any of the five substance abuse variables of the Addiction Severity Index (Morse 1997).

Outcome 5: Hospitalization

Sub-Outcome: Number of participants hospitalized

One RCT comparing ACT to usual services over a 24 month follow up period. By the end of the study (24 months), 46% (n =52/114) of the ACT clients had experienced hospitalization, compared to 40% (n =20/49) in usual care; this difference was not statistically significant (OR1.22, 95%CI 0.62 to 2.4) (Clarke 2000).

Sub-Outcome: Number of participants the visited the emergency room

One RCT comparing ACT to usual services over a 24 month follow up period. By the end of the study (24 months), 35% (n =40/114) for ACT clients had visited the ER, versus 31% (n =15/49) for usual care; this difference was not statistically significant (OR 1.23, 95%CI 0.6 to 2.51) (Clarke 2000).

Sub-Outcome: Mean number of emergency department visits

One RCT compared ACT to usual services for a 12-month period. The ACT program subjects accumulated significantly fewer emergency department visits over the course of the trial; ACT mean 0.8 visits (SEM0.3) versus comparison mean 2.0 visits (SEM0.3), p=0.009 (Lehman 1997).

Sub-Outcome: Number of days hospitalized

One RCT comparing ACT to standard case management services measured hospital utilization. The difference in hospital utilization by ACT versus SCM clients over the entire 18 months was marginally significant (p=.078). For months 6 to 12, mean number of days hospitalized was [SCM of 25.8 (SD=57.1), ACT 17.2 (SD=46.9); p<.05] (Essock 1998).

One RCT comparing ACT to standard case management services measured number of days hospitalized for the entire 3-year study period. Compared with the ACT group, the SCM group averaged significantly more days in hospital (mean 41, SD 60; compared with 32, SD91 for the ACT group) (Essock 2006).

Outcome 6: Employment

No studies comparing assertive community treatment (ACT) to usual services, standard case management, or broker case management reported on this outcome.

Outcome 7: Income

Sub-Outcome: Monthly income

One RCT compared ACT to usual services provided by a drop-in centre, and outpatient treatment provided by a mental health clinic. Clients were asked to report their monthly income (no details on sources). At 12-month follow-up, means of monthly income were [ACT \$498 (SD897), drop-in \$377 (SD400), and outpatient: \$430 (SD938)] (Morse 1992).

One RCT compared broker case management, assertive community treatment only, and assertive community treatment augmented by support from community workers. Clients were asked to estimate their monthly earnings from multiple. At 18-month follow up, means for monthly income were [ACT only \$523.57 (SD244.37), ACT +community workers 508.23(SD215.41), and BCM 506.21 (SD496.68)]. There were no significant treatment group effects (Morse 1997).

Undesirable effects (HARMS):

- Available RCT literature did report on harms or adverse outcomes related to this intervention.

	<ul style="list-style-type: none"> • Qualitative literature suggests that the transient nature of support workers negatively impacts continuity of care or participants' ability to seek or utilize services (Archard et al., 2015; Holtschneider et al., 2016; Macnaughton et al., 2016). 	
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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Very low ● Low ○ Moderate ○ High ○ No included studies 	<p>We evaluated certainty of evidence for select critical outcomes using GRADE evidence profiles: housing stability, mental health, quality of life.</p>	

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	ACT	usual care	Relative (95% CI)	Absolute (95% CI)		

Outcome: Housing stability

Number of days in stable housing in the previous month (Follow-up: 24 months) (Morse 2008)

1	randomised trials	serious *	not serious	not serious	serious *	none	54	49	-	MD 5.7 days more (0.59 more to 10.8 more)	⊕⊕ ○○ LOW	CRITICAL
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Number of days homeless in the previous month (Follow-up: 12 months) (Morse 1992)

1	randomised trials	serious *	not serious	not serious	serious *	none	52	62	-	MD 8.11 days fewer (12.32 fewer to 3.89 fewer)	⊕⊕ ○○ LOW	CRITICAL
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Outcome: Mental health

Psychiatric symptoms using the Brief Psychiatric Rating Scale (BPRS) (Follow-up: 24 months) (Morse 2008)

1	randomised trials	serious *	not serious	not serious	serious *	none	54	49	-	MD 0.03 higher (0.17 lower to 0.23 higher)	⊕⊕ ○○ LOW	CRITICAL
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Outcome: Quality of life

Overall quality of life using Lehman's QOLI- long term (Essock 1998)

1	randomised trials	serious *	not serious	not serious	serious *	none	By 18 months, the difference between ACT and SCM clients on the components of quality of life measured by the QOLI all favored the ACT condition, with a difference of one-half point or less, and three components reaches statistical significance			⊕⊕ ○○ LOW	CRITICAL
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Explanations

	<p>a. High risk of performance bias, unclear risk of selection and detection bias b. Small sample size</p>	
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Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS																											
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ● Probably no important uncertainty or variability ○ No important uncertainty or variability 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. The topics were identified from a literature review and then modified and prioritized using a 3 phase Delphi process. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified: mental health and addiction care, facilitating access to housing, facilitating access to income support, and care coordination (See table below)</p> <table border="1"> <thead> <tr> <th>Priority</th> <th>Persons with Lived Experience</th> <th>Practitioners</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Facilitating access to Housing</td> <td>Facilitating access to Housing</td> </tr> <tr> <td>2</td> <td>Mental Health and Addiction Care/Trauma</td> <td>Mental Health and Addiction Care/Trauma</td> </tr> <tr> <td>3</td> <td>Care coordination/Case management</td> <td>Care coordination/Case management</td> </tr> <tr> <td>4</td> <td>Facilitating access to adequate income</td> <td>Chronic disease management</td> </tr> <tr> <td>5</td> <td>Chronic disease management</td> <td>End-of-life care</td> </tr> <tr> <td>6</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> <td>Facilitating access to adequate income</td> </tr> <tr> <td>7</td> <td>End-of-life care</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> </tr> <tr> <td>8</td> <td>Nutrition and Dietary support</td> <td>Nutrition and Dietary support</td> </tr> </tbody> </table> <p>Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important outcomes. There was some variability in how much people valued the main outcomes. Housing stability, mental health and quality of life were consistently ranked as critical outcomes. Hospitalization, employment and income outcomes were considered important. Members discussed the importance of mortality, and through consensus determined it was not important for decision making.</p>	Priority	Persons with Lived Experience	Practitioners	1	Facilitating access to Housing	Facilitating access to Housing	2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma	3	Care coordination/Case management	Care coordination/Case management	4	Facilitating access to adequate income	Chronic disease management	5	Chronic disease management	End-of-life care	6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income	7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases	8	Nutrition and Dietary support	Nutrition and Dietary support	
Priority	Persons with Lived Experience	Practitioners																											
1	Facilitating access to Housing	Facilitating access to Housing																											
2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma																											
3	Care coordination/Case management	Care coordination/Case management																											
4	Facilitating access to adequate income	Chronic disease management																											
5	Chronic disease management	End-of-life care																											
6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income																											
7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases																											
8	Nutrition and Dietary support	Nutrition and Dietary support																											

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ○ Favors the intervention ○ Varies ● Don't know 	<p>While some trials suggest an additional improvement for participants receiving assertive case management to those with usual care in housing stability outcomes, scarce or trivial benefits were found in mental health, quality of life, substance use, hospitalization and income outcomes.</p> <p>No major harms were identified in the trial literature. However, factors such as poor linkage and loss to follow-up during intervention may limit intended outcomes.</p>	
Resources required		
How large are the resource requirements (costs)?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large costs ○ Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ● Don't know 	<p>We identified two cost-consequence studies. Wolff and colleagues (1997) suggested that ACT alone and ACT with community workers had comparable total costs but better client outcomes than brokered case management (i.e. more frequent contacts with case managers, better client satisfaction, and fewer psychiatric symptoms. Consistently, Morse et al (2006) showed that integrated ACT was associated with the lower costs but the ACT only program was related to the higher costs than the standard care. However, both ACT programs led to better satisfaction and more days in stable housing than standard care.</p>	<p>The panel suggested these cases are out of date and may not reflect modern ACT programming.</p>
Certainty of evidence of required resources		
What is the certainty of the evidence of resource requirements (costs)?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Very low ○ Low ● Moderate ○ High ○ No included studies 	<p>Two included studies provided mixed net cost estimates. The costs of ACT programs may depend on delivery methods (such as integrated vs. isolated program) and the perspectives of analysis (health care system vs. society).</p>	
Cost effectiveness		
Does the cost-effectiveness of the intervention favor the intervention or the comparison?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ No included studies 	<p>Four economic evaluation studies showed that the ACT interventions were associated with the lower costs and improved health outcomes (i.e. reduced substance abuse used, improved quality of life, greater community days, and greater number of stable housing) than standard care management and usual care. All identified studies were based on an experimental study (French et al) and RCTs (Essock et a., 1996; Wolf et al, 1997; Lehman et al, 1999; Clark et al, 2000). Small sample sizes may cause high statistical uncertainty and insignificant cost-effectiveness results.</p>	<p>One panel member noted that it depends on the prior service use of the individual. Cost-effectiveness favours the intervention for those with high usage; not for those with low or moderate usage.</p>
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Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know 	<p>ACT is an intervention reserved for individuals with chronically debilitating mental illnesses. It aims to improve their transition into stable housing and community living. ACT shows promise in improving health equity of people with lived homelessness experience.</p> <p>Equity considerations around sex, gender and diversity can increase the impact of ACT interventions for persons or families experiencing homelessness (Rich and Clark 2005; Rivas et al., 2015). Furthermore, ACT presents a unique opportunity to consider a migrant-specific approach, since service/support systems are not usually in place for migrant populations (Kaur et al. submitted).</p> <p>Understanding and applying a health equity lens to ACT interventions can positively influence opportunities for women, as well as reduce unfair health and social disparities among homeless and marginalized populations (Mathew & Mott et al. in progress).</p>	<p>One panel member noted that the mixed results referenced from the literature suggest there may be methodological problems in establishing true matched cohorts for comparison.</p>

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know 	<p>ACT is a patient-centred community-based alternative to services of mental hospitals delivered by a multidisciplinary team (Stein & Test 1980). Qualitative evidence revealed wide-ranging endorsement from stakeholders for team-based models with success engaging target population of adults with complex service needs (Stergiopoulos et al. 2018).</p> <p>We conducted a qualitative systematic review (Magwood et al., in progress) and assessed confidence in key findings using GRADE CERQual. We identified two key findings relevant to ACT.</p>	

Review Finding	CERQual Assessment of Confidence in the Evidence	Explanation of CERQual Assessment	Studies Contributing to the Review Finding
<p>Homeless men and women of all ages value being able to trust their service providers and others around them. They felt that once trust was established, a strong relationship could develop.</p> <p>Male youth had more difficulty than other groups</p>	<p>Moderate confidence</p>	<p>Moderate concerns surrounding methodological limitations such as limited justification of research design and analysis and small sample sizes.</p>	<p>Cormack et al., 2009 Ferguson et al., 2008 Jost et al., 2011 Patterson et al., 2015 Perreault et al., 2016 Ploeg et al., 2008 Poremski et al., 2016 Quinn et al., 2015 Stewart et al., 2010 Thompson et al., 2006 Taylor et al., 2007 Yamin et al., 2014</p>

	<p>to trust providers and access services.</p> <p>Illustrative quote: "<i>My employment specialist made trusting so easy. She was quick to try to build confidence and trust. I was hesitant at first, but she really put me at ease.</i>" (Poremski, 2016)</p>				
	<p>Homeless and vulnerably housed individuals appreciated the pivotal role caseworkers played in providing them with tools to promote their empowerment and their independence.</p> <p>Illustrative quote: "<i>Case managers, I think, are very important for this program to be successful... I don't think without a case manager, and having the follow up program, I don't think many people would be successful.</i>" (Farquhar, 2014)</p>	<p>Very low confidence</p>	<p>Major concerns were attributed to the coherence of the data, as two studies commented on the potential harms caused by caseworkers and service providers. Additionally, variation in sampled program participants may influence generalizability to homeless populations.</p>	<p>Davis et al., 2012 Holtschneider et al., 2017 Thompson et al., 2006 Quinn et al., 2015 Jost et al., 2011 Farquhar et al., 2014 McMaster et al., 2017 Mitchell et al., 2017</p>	

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes 	<p>While ACT programs can be found in many Canadian communities, they are seldom targeted at those people with serious mental illness who are experiencing chronic or episodic homelessness. Funded through health ministries, ACT programs focus primarily on mental health issues, not homelessness. As well, there is often limited client turnover in ACT programs making them difficult to provide access for new clients. Additionally, in many rural, remote or low resource settings, ACT teams are simply unavailable (Nelson & Aubry, 2018).</p>	<p>One panel member noted that feasibility may differ between rural and urban settings with difficulties to implement ACT consistently.</p>

<ul style="list-style-type: none"> ○ Varies ○ Don't know 	<p>Several trials commented on fidelity to the ACT model:</p> <ul style="list-style-type: none"> ● One trial reported that fidelity of the intervention for the two ACT teams was slightly lower than average fidelity scores in other states (Teague et al. 1998 in Clarke et al 2000) ● One trial reported that ACT teams were very faithful to the model and the two models of treatment were distinct from each other. Yet, one of the ACT teams spent less time in the community than ideal (Essock et al. 2006) ● One trial reported that ACT teams adhered closely to the model provided by program consultants with an addition of consumer advocates and family outreach workers ● Fidelity data in one trial suggests some diffusion in the implementation <p>Ref: Nelson, G., & Aubry, T. (2018). Assertive Community Treatment (ACT) and Housing First in Canada. Toronto: EENet, Ontario Housing First Regional Network Community of Interest</p>	
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SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know

JUDGEMENT							
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ●	Strong recommendation for the intervention ○
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CONCLUSIONS

Recommendation

1. Identify history of severe mental illness such as psychotic or mood and anxiety disorders
2. Refer to local community mental health programs, psychiatric services, or other local resources for assessment and linkage to assertive community treatment (ACT), where available. Otherwise, refer to comprehensive primary care with access to on site psychiatrist for assessment and connection to the most appropriate local resources.
3. Health care teams should refer to ACT homeless and vulnerably housed individuals with severe mental health and substance use problems and history of multiple hospitalizations to improve their housing stability, overall health, wellbeing and quality of life.

Interpreting the strength of the option:

- **Strong options** are those in which we are confident that the desirable effects of an intervention outweigh its undesirable effects (strong option for an intervention) or that the undesirable effects of an intervention outweigh its desirable effects (strong option against an intervention)
- **Strong options** imply that most individuals will be best served by the recommended course of action and that the recommendation can be adopted in practice or as policy in most situations
- **Conditional option** are those for which the desirable effects probably outweigh the undesirable effects (conditional option for an intervention) or undesirable effects probably outweigh the desirable effects (conditional option against an intervention), but appreciable uncertainty exists
- **Conditional option** results when the balance between desirable and undesirable effects is small, the quality of evidence is lower, or there is more variability in the values and preferences of patients. In cases where the balance of cost and benefits is ambiguous, key stakeholders differ about the acceptability or feasibility of implementation, and the effects on health equity are unclear are likely to result in a conditional option

Justification

Assertive community treatment shows promise in improving housing stability, hospitalization rates, and some domains of quality of life. It is acceptable by stakeholders and individuals with lived homelessness experience.

Subgroup considerations

Indigenous, women, youth and migrant populations may all require socially and culturally tailored ACT programs with less stringent criteria.

Implementation considerations

Referral to these services can be facilitated by mental health specialists, and other professionals familiar with local access points. Providers should familiarize themselves with clinic and other local resources to inform referrals (Referral to local agencies, 211 helpline)

ACT has specific eligibility criteria related to prior service use and/ or severity of mental illness

There are less resource intensive interventions for those who do not meet ACT criteria (ICM or FACT), and youth specific community mental health programs

ACT adopts a trauma informed strengths-based approach respectful of the capacity, skills, knowledge, connections and potential in individuals and communities. It is important that primary care providers maintain frequent contact with ACT teams to improve continuity and coordination of comprehensive services

Advocacy Statements:

Practitioners should advocate for access to and be willing to collaborate with other support teams to improve the housing stability, health, mental health and quality of life of homeless people. Practitioners should advocate for less stringent criteria to qualify for ACT treatment for people experiencing homelessness, and more access points to ACT.

Practitioners should advocate for combining housing with an interventions such as assertive community treatment (ACT).

Monitoring and evaluation

The percentage of homeless individuals (with gender-based analysis) receiving assertive community treatment ACT services who showed a significant decrease in mental health symptomatology after 24 months (2 years). Need to ensure appropriate matching of ACT/non-ACT cohorts with regards to severity and complexity of health issues for appropriate methods in non-randomized studies.

Research priorities

To decrease mental health symptoms and increase social and mental functioning to mitigate health and social harms associated with homelessness and mental illness. Additional literature including, large well-conducted studies.

QUESTION

Should Intensive case management (ICM) vs. no intervention or alternative intervention be used for homeless and vulnerably housed populations?

POPULATION:	homeless and vulnerably housed populations
INTERVENTION:	Intensive case management (ICM)
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	<ul style="list-style-type: none"> • Housing stability • Mental Health • Substance use • Quality of life • Income • Employment
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health systems
BACKGROUND:	<p>Intensive case management (ICM) is a case management approach that supports individuals with complex needs to improve their housing, health and social outcomes. The following are characteristics of ICM:</p> <ul style="list-style-type: none"> • One-on-one case manager to client relationship using a recovery-oriented approach. • The case manager brokers access to mainstream services that the client identifies as needed to attain his or her goals. • The case manager often accompanies clients to meetings and appointments in support of their goals/needs. • Case managers are available on a regular schedule; caseloads are often shared to assure coverage of 7 days per week/12 hours a day. • The staff to client ratio is generally 1 case manager per 20 clients. • The duration of the service is determined by the needs of the client, with the goal of transitioning to mainstream services as soon as possible.
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem		
Is the problem a priority?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes	<p>9.4 million Canadians live in housing which is below national standards, and many are homeless (PHAC, 2018). Furthermore, between 150 000 and 300 000 Canadians experience homelessness each year (Fazel et al. 2014), with approximately 35 000 Canadians without shelter on any given night (Gaetz et al. 2016). People with mental illness make up approximately 30-35% of the homeless or vulnerably housed population, with 20-25% of those experiencing</p>	

<ul style="list-style-type: none"> ● Yes ○ Varies ○ Don't know 	<p>homelessness suffer from concurrent severe mental illness and addictions (To et al. 2016)</p> <p>Evidence shows that homeless populations can benefit from person-centred and straightforward care with an integrated approach to community and social services (Coltman et al., 2015; Hwang & Burns, 2014; James, Hwang, & Quantz, 2005). Intensive Case Management (ICM) is a case management approach which helps individuals maintain stable housing, and achieve an optimum quality of life (Bender, Kapp & Hahn, 2011, Stergiopoulos et al., 2018).</p>	
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Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Trivial ○ Small ● Moderate ○ Large ○ Varies ○ Don't know 	<p>Our systematic review identified 17 publications on intensive case management interventions.</p> <p>Desirable effects (BENEFITS):</p> <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <p>SUMMARY OF EVIDENCE:</p> <ol style="list-style-type: none"> 1. Housing Stability: ICM reduces the number of days homeless, but findings on time spent in stable housing is mixed. 2. Mental Health: The majority of studies comparing ICM to usual care show no significant differences in improvement of psychological symptoms. One trial reported significantly greater reductions in anxiety, depression, and thought disturbances among ICM participants. 3. Quality of Life: Two trials report significant improvements in life satisfaction. One trial reports no significant difference in quality of life. 4. Substance Use: Findings are mixed. Participants improve their substance use patterns over time, but this difference is not always statistically significant compared to control groups. 5. Hospitalization: ICM participants have fewer visits to the emergency department, but do not have shorter hospital stays compared to control groups. 6. Employment: ICM has no impact on number of days of employment. 7. Income: ICM does not increase the income received from employment, however it does increase income received through public assistance. </div> <p>Outcome 1: Housing stability</p> <p><i>Sub-Outcome: Number of days homeless</i></p> <p>Pooled analysis of number of days homeless showed that long-term participation in ICM programs significantly reduced the number of days homeless</p>	<p>One panel member noted that most ICM services are loosely modelled after At Home/Chez Soi, and clients do not need to be 'treatment ready' to be housed. The studies cited only follow to 18 months and so we wouldn't see significant change in mental health or substance use within the limited time frame of these studies.</p>

(SMD -0.22, 95% CI -0.40,-0.03) (Cox 1998, Grace 2014, Toro 1997).
One trial reporting four-month outcomes (80% follow-up) reported past 30 days homeless (13.2 ICM vs. 10.2 UC). This difference was statistically significant at $p < 0.05$ (Rosenblum 2002).

Sub-Outcome: Number of days in stable housing

Pooled analysis of number of days in stable housing showed that participating in ICM programs did not significantly increase days in stable housing medium term (SMD 0.05; 95% CI -0.27,0.38; $p = 0.06$) or long term (SMD 0.02; 95% CI -0.17,0.20; $p = 0.27$) compared to usual services (Cox 1998, Grace 2014).

Sub-Outcome: Number of moves of residence

One non-randomized trial compared intensive case management for youth compared to usual services measured mean number of moves of residence at 12 and 24 months Both treatment groups significantly reduced their number of residential moves ($p = 0.0001$), however there were no significant differences between treatment groups at 12 months (ICM group mean 1.8(SD1.9); control group mean 2.2(SD1.9); MD -0.40, 95CCI -0.79 to -0.012, $p = 0.044$) or at 24 months (ICM group mean 1.3(SD1.5); control mean 1.6(SD1.8); MD -0.3, 95%CI -0.64 to 0.04, $p = 0.08$) (Grace 2004)

Sub-Outcome: Proportion of participants housed

One randomized control trial comparing ICM to UC found that at 6 months over twice as many ICM participants were housed ($n = 36$, 75%) compared to control participants ($n = 15$, 34.1%). Furthermore, Clients receiving case management were 5.8 times more likely than controls to be housed at follow-up (OR: 5.8, 95% CI 2.35,14.31) (Korr 1996)

Sub-Outcome: Number of days in better accommodation

One randomized controlled trial from the UK comparing ICM to a control group found that at a 14 month follow-up subjects in the case management group and the control group had a comparable mean of days in better accommodation with no significant difference (ICM $M = 44.3$, control $M = 32.3$; $p = 0.17$) (Marshall 1995).

Sub-Outcome: Housing stability measures

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads, found no significant differences on housing stability outcomes. Across groups, stable housing and literal homelessness showed significant improvement ($p < 0.05$) between baseline and 18-month follow-up (Stahler 1996).

Outcome 2: Mental health

Sub-Outcome: Psychiatric symptoms using the Manchester Scale

One randomized controlled trial from the UK comparing ICM to a control group assessed psychiatric symptoms using the Manchester scale and showed a non significant between-group difference (MD 0.75, 95%CI -1.0 to 2.5) at 14-month follow-up (Marshall 1995)

Sub-Outcome: Psychiatric symptoms using the Colorado Symptom Index (CSI)

One trial comparing an ICM-based intervention called "Choices" compared to a control showed that at 24-month follow up, the experimental subjects reported significantly greater reductions in anxiety, depression, and thought disturbances than did control group participants (P<0.001). Experimental subjects reported a mean change from baseline of -0.28 (SD 0.69) compare to a change of 0.04 (SD 0.72) in the control group (Shern 2000).

Sub-Outcome: Psychology symptoms using the SCL-90-R

An ICM intervention for homeless persons was evaluated by random assignment of 202 cases. Full follow-up data at 6, 12 and 18 months were available for 98 cases. There were no significant difference in psychological symptoms measured with the SCL-90-R across time or groups (Toro 1997).

Sub-Outcome: Psychological symptoms using the Addiction Severity Index (ASI)

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads, found no significant differences on psychological status assessed using the Addiction Severity Index (ASI). Across groups, days experiencing psychological problems showed significant improvement (p<0.05) between baseline and 18-month follow-up (Stahler 1996).

Sub-Outcome: Behaviours using the REHAB scale

One randomized controlled trial from the UK comparing ICM to a control group used the REHAB standardized behaviour scale to measure the frequency of items of embarrassing or disruptive behaviour, such as violence, self harm, shouting and swearing, and sexual offensiveness (deviant behaviour); and lack of general skills (general behaviour). At 14 months follow-up, outcome was better for the case-management group on three of the five variables (REHAB general and deviant behaviour and mental state), but only deviant behaviour differed significantly between the two groups (MD 0.3, 95%CI 0.15 to 0.46) (Marshall 1995).

Sub-Outcome: Youth behavioural problems

1 RCT comparing Project Passage, an intensive case management program for youth, to regular case management measured self-reported behavioural problems with the Youth Self Report (YSR), depression using the Reynolds Adolescent Depression Scale (RADS) and antisocial behaviour with the Problem Behaviour Scale (PBS) at 3 months. There were no statistically significant differences between treatment groups on any measures of mental health (Cauce 1994).

Outcome 3: Quality of life

Sub-Outcome: Quality of life using Lehman's Quality of Life Interview (QOLI)

One randomized controlled trial from the UK comparing ICM to a control group assessed quality of life using the Quality of Life Interview. At 14-month follow up there was no improvement in QoL (MD 0.0, 95%CI -0.42 to 0.42) (Marshall 1995)

One trial comparing an ICM-based intervention called "Choices" compared to a control showed between-group differences in life satisfaction across 7 life areas. Individuals in the experimental condition reported consistently greater improvement in life satisfaction than their peers in the control group in 6 of the 7 life areas (Overall, p=0.001; Leisure, p=0.027; Financial, p=0.001; Safety, p=0.005; Health, p=0.006; Family, p=0.005; Social, p=0.56). In most areas, gains reported by individuals in the experimental group were substantial, often 0.5 standard deviation greater than changes reported by individuals in the control group (Shern 2000).

Sub-Outcome: Quality of life using the Life Domains scale (LDS)

1 RCT comparing Project Passage, an intensive case management program for youth, to regular case management measured quality of life measured with the Life Domains Scale (LDS) at 3 months and indicated increasing satisfaction for youths in Project Passage p < .10 (Cauce 1994).

Outcome 4: Substance use

Sub-Outcome: Alcohol use

One controlled trial reported on 30-day alcohol use at 6, 12 and 18-month follow ups using the ASI (Cox 1998). At 18-months, Mean 15.3(SD12.5) for the control group and 11.3(SD11.4) for the ICM group; repeated measures analysis favoured the ICM group (p=0.009).

Sub-Outcome: Alcohol drinking index

An ICM intervention for homeless persons was evaluated by random assignment of 202 cases. Full follow-up data at 6, 12 and 18 months were available for 98 cases. A drinking index was developed indicating the average number of drinks consumed daily over the course of the past year. There were no significant differences between groups across time (Toro 1997)

Sub-Outcome: Crack use

One trial reported four-month outcomes (80% follow-up) show that all study subjects, regardless of condition, reported past 30 day reductions in crack use (4.1 vs. 2.2 days). This difference was statistically significant at p<0.05. No further details were available from the authors (Rosenblum 2002).

Sub-Outcome: Substance use using the Addiction Severity Index (ASI)

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads, found no significant differences on substance use assessed using the Addiction Severity Index (ASI). Across groups, recent alcohol and cocaine use showed significant improvement (p<0.05) between baseline and 18-month follow-up (Stahler 1996).

Sub-Outcome: Substance use using the Personal Experience Screening Questionnaire (PESQ)

1 RCT comparing Project Passage, an intensive case management program for youth, to regular case management measured substance use with the Personal Experience Screening Questionnaire (PESQ) at 3 months and found no statistically significant differences between groups (Cauce 1994).

Outcome 5: Hospitalization

Sub-Outcome: Number of days in hospital

One randomized controlled trial from the UK comparing ICM to a control found no significant difference between the groups in terms of days in hospital, after adjustment for days in hospital during the baseline period (mean of observed days-expected days [control group]=5-3 ; mean of observed days-expected days [case-management]=5-6; p=0.1) (Marshall 1995).

Sub-Outcome: Emergency department visits

One trial reported four-month outcomes (80% follow-up) and effects for ICM, compared with the control conditions, were found for fewer hospital emergency rooms visits (26% vs. 45%). This difference was statistically significant at p<0.05. No additional details were available from the authors (Rosenblum 2002).

Outcome 6: Employment

Sub-Outcome: Number of days of work

One controlled trial measured “days of work in last 30 days”, measured at a 6, 12, and 18-month follow up. At 18 months, ICM participants worked on average 3.1 days (SD7.4) compared to control participants (Mean 2.5, SD6.3). Differences between groups were not significant (Cox 1998).

Sub-Outcome: Number of days paid for working

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads. Across groups, days paid for working showed significant improvement (p<0.05) between baseline and 18-month follow-up. There were no significant between-group difference (Stahler 1996).

Outcome 7: Income

Sub-Outcome: Income from employment

One trial comparing ICM to UC measured “income from employment in the last 30 days”. There were no significant differences between treatment groups; at 18 months ICM participants received a mean of \$81 (SD250) compared to control participants (Mean \$117, SD 360) (MD-36, 95%CI -128 to 56, p=0.43) (Cox 1998).

An ICM intervention for homeless persons was evaluated; there were no significant differences between groups for job income received in previous 6 months. At 18-month follow up, mean job income in the experimental group was \$485 (SD1905) and for the control \$920(SD2438) (MD -435, 95%CI -1275 to 405, p=0.31) (Toro 1997).

One non-randomized trial comparing intensive case management for youth to usual services measured annual income from employment at 12 and 24 months. At 12 months, ICM participants had an average annual income of 587 (SD 1170) compared to 895 (SD 2670) in the control group (MD -308, 95%CI -737 to 121, p=0.14). At 24 months, ICM participants had an average annual income from employment of 2562 (SD 10180) compared to 1392 (SD 4250) in the control group (MD 1170, 95%CI -388 to 2728, p=0.16). Both groups also increased their employment incomes over the course of the trial (p=0.002). This improvement was stronger for the ICM group participants than it was for control group participants, however this group/time effect was not statistically significant (p= .06) (Grace 2014).

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads found that both groups showed significant improvements on money from employment (p<0.05) with no significant between-group difference (Stahler 1996).

Sub-Outcome: Receipt of public income assistance

One trial reported four-month outcomes (80% follow-up) show effects for ICM, compared with the control conditions, were found for the receipt or maintenance of public assistance (e.g., Medical insurance [Medicaid] and Food Stamps) (72% vs. 50%). This difference was statistically significant at p<0.05. No further details were available from the authors (Rosenblum 2002).

Sub-Outcome: Income from public income assistance

One controlled trial assessed monthly public income at 6, 12 and 18-month follow up. There was a significant group effect, favouring the ICM group, over the 18-month follow up period (p=0.043). At 18 months, ICM participants received a mean of \$358 (SD 247) compared to control participants (Mean \$269, SD310) (MD 89, 95%CI 7.6 to 170.4, p=0.03) (Cox 1998).

An ICM intervention for homeless persons was evaluated by random assignment of 202 cases. Full follow-up data at 6, 12 and 18 months were available for 98 cases. For other income (public assistance and disability benefits) received in previous 6-months, experimental mean was \$1623 (SD 2139) compared to \$1254 (SD 1475) in the control group (MD 369, 95%CI -330 to 1068, p=0.31) (Toro 1997).

One non-randomized trial compared intensive case management for youth compared to usual services. Public income assistance (Centrelink) payments received by both groups of participants significantly increased over the trial (p=0.011). At 12 months, ICM participants had a mean annual income from public assistance of 7733 (SD 2690), and control participants received 7472 (SD 3000) (MD 261, 95%CI -322 to 844, p=0.38). At 24 months ICM participants received a mean of 7360 (SD 4300) and control participants received 7532 (SD 4900) (MD -172, 95%CI -1116 to 772, p=0.72). There were no significant differences between groups at either time point (Grace 2014).

Undesirable effects (HARMS):

Available literature did not report on the direct harms/ adverse effects of ICM.

- Evidence from grey literature showed that transient nature of support workers can negatively impact continuity of care or participants' ability to seek or utilize services (Holtschneider et al., 2016; Macnaughton et al., 2016). Caseworkers' maintenance of continuity of care is challenging

regarding coordination of different services and passing or sharing of responsibility with Peer/community supports (De Vet et al., 2017).

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large ○ Moderate ○ Small ● Trivial ○ Varies ○ Don't know 	<p>Our systematic review identified 17 publications on intensive case management interventions.</p> <p>Desirable effects (BENEFITS):</p> <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <p>SUMMARY OF EVIDENCE:</p> <ol style="list-style-type: none"> 1. Housing Stability: ICM reduces the number of days homeless, but findings on time spent in stable housing is mixed. 2. Mental Health: The majority of studies comparing ICM to usual care show no significant differences in improvement of psychological symptoms. One trial reported significantly greater reductions in anxiety, depression, and thought disturbances among ICM participants. 3. Quality of Life: Two trials report significant improvements in life satisfaction. One trial reports no significant difference in quality of life. 4. Substance Use: Findings are mixed. Participants improve their substance use patterns over time, but this difference is not always statistically significant compared to control groups. 5. Hospitalization: ICM participants have fewer visits to the emergency department, but do not have shorter hospital stays compared to control groups. 6. Employment: ICM has no impact on number of days of employment. 7. Income: ICM does not increase the income received from employment, however it does increase income received through public assistance. </div> <p>Outcome 1: Housing stability</p> <p><i>Sub-Outcome: Number of days homeless</i></p> <p>Pooled analysis of number of days homeless showed that long-term participation in ICM programs significantly reduced the number of days homeless (SMD -0.22, 95% CI -0.40,-0.03) (Cox 1998, Grace 2014, Toro 1997). One trial reporting four-month outcomes (80% follow-up) reported past 30 days homeless (13.2 ICM vs. 10.2 UC). This difference was statistically</p>	<p>One panel member noted that the challenge with Housing First and the ICM model is that it effectively ends homelessness, but not poverty.</p>

significant at $p < 0.05$ (Rosenblum 2002).

Sub-Outcome: Number of days in stable housing

Pooled analysis of number of days in stable housing showed that participating in ICM programs did not significantly increase days in stable housing medium term (SMD 0.05; 95% CI -0.27,0.38; $p=0.06$) or long term (SMD 0.02; 95% CI -0.17,0.20; $p=0.27$) compared to usual services (Cox 1998, Grace 2014).

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Sub-Outcome: Proportion of participants housed

One randomized control trial comparing ICM to UC found that at 6 months over twice as many ICM participants were housed ($n=36$, 75%) compared to control participants ($n=15$, 34.1%). Furthermore, Clients receiving case management were 5.8 times more likely than controls to be housed at follow-up (OR: 5.8, 95% CI 2.35,14.31) (Korr 1996)

Sub-Outcome: Number of days in better accommodation

One randomized controlled trial from the UK comparing ICM to a control group found that at a 14 month follow-up subjects in the case management group and the control group had a comparable mean of days in better accommodation with no significant difference (ICM $M=44.3$, control $M=32.3$; $p=0.17$) (Marshall 1995).

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Outcome 2: Mental health

Sub-Outcome: Psychiatric symptoms using the Manchester Scale

One randomized controlled trial from the UK comparing ICM to a control group assessed psychiatric symptoms using the Manchester scale and showed a non significant between-group difference (MD 0.75, 95%CI -1.0 to 2.5) at 14-month follow-up (Marshall 1995)

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One trial comparing an ICM-based intervention called "Choices" compared to a control showed that at 24-month follow up, the experimental subjects reported significantly greater reductions in anxiety, depression, and thought disturbances than did control group participants ($P < 0.001$). Experimental subjects reported a mean change from baseline of -0.28 (SD 0.69) compare to a change of 0.04 (SD 0.72) in the control group (Shern 2000).

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An ICM intervention for homeless persons was evaluated by random assignment of 202 cases. Full follow-up data at 6, 12 and 18 months were available for 98 cases. There were no significant difference in psychological symptoms measured with the SCL-90-R across time or groups (Toro 1997).

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Sub-Outcome: Behaviours using the REHAB scale

One randomized controlled trial from the UK comparing ICM to a control group used the REHAB standardized behaviour scale to measure the frequency of items of embarrassing or disruptive behaviour, such as violence, self harm, shouting and swearing, and sexual offensiveness (deviant behaviour); and lack of general skills (general behaviour). At 14 months follow-up, outcome was better for the case-management group on three of the five variables (REHAB general and deviant behaviour and mental state), but only deviant behaviour differed significantly between the two groups (MD 0.3 , 95%CI 0.15 to 0.46) (Marshall 1995).

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Outcome 3: Quality of life

Sub-Outcome: Quality of life using Lehman's Quality of Life Interview (QOLI)

One randomized controlled trial from the UK comparing ICM to a control group assessed quality of life using the Quality of Life Interview. At 14-month

follow up there was no improvement in QoL (MD 0.0, 95%CI -0.42 to 0.42) (Marshall 1995)
One trial comparing an ICM-based intervention called "Choices" compared to a control showed between-group differences in life satisfaction across 7 life areas. Individuals in the experimental condition reported consistently greater improvement in life satisfaction than their peers in the control group in 6 of the 7 life areas (Overall, p=0.001; Leisure, p=0.027; Financial, p=0.001; Safety, p=0.005; Health, p=0.006; Family, p=0.005; Social, p=0.56). In most areas, gains reported by individuals in the experimental group were substantial, often 0.5 standard deviation greater than changes reported by individuals in the control group (Shern 2000).

Sub-Outcome: Quality of life using the Life Domains scale (LDS)

1 RCT comparing Project Passage, an intensive case management program for youth, to regular case management measured quality of life measured with the Life Domains Scale (LDS) at 3 months and indicated increasing satisfaction for youths in Project Passage p < .10 (Cauce 1994).

Outcome 4: Substance use

Sub-Outcome: Alcohol use

One controlled trial reported on 30-day alcohol use at 6, 12 and 18-month follow ups using the ASI (Cox 1998). At 18-months, Mean 15.3(SD12.5) for the control group and 11.3(SD11.4) for the ICM group; repeated measures analysis favoured the ICM group (p=0.009).

Sub-Outcome: Alcohol drinking index

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1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads, found no significant differences on substance use assessed using the Addiction Severity Index (ASI). Across groups, recent alcohol and cocaine use showed significant improvement (p<0.05) between baseline and 18-month follow-up (Stahler 1996).

Sub-Outcome: Substance use using the Personal Experience Screening Questionnaire (PESQ)

1 RCT comparing Project Passage, an intensive case management program for youth, to regular case management measured substance use with the Personal Experience Screening Questionnaire (PESQ) at 3 months and found no statistically significant differences between groups (Cauce 1994).

Outcome 5: Hospitalization

Sub-Outcome: Number of days in hospital

One randomized controlled trial from the UK comparing ICM to a control found no significant difference between the groups in terms of days in hospital, after adjustment for days in hospital during the baseline period (mean of observed days-expected days [control group]=5-3 ; mean of observed days-expected days [case-management]=5-6; p=0.1) (Marshall 1995).

Sub-Outcome: Emergency department visits

One trial reported four-month outcomes (80% follow-up) and effects for ICM, compared with the control conditions, were found for fewer hospital emergency rooms visits (26% vs. 45%). This difference was statistically significant at p<0.05. No additional details were available from the authors (Rosenblum 2002).

Outcome 6: Employment

Sub-Outcome: Number of days of work

One controlled trial measured “days of work in last 30 days”, measured at a 6, 12, and 18-month follow up. At 18 months, ICM participants worked on average 3.1 days (SD7.4) compared to control participants (Mean 2.5, SD6.3). Differences between groups were not significant (Cox 1998).

Sub-Outcome: Number of days paid for working

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads. Across groups, days paid for working showed significant improvement (p<0.05) between baseline and 18-month follow-up. There were no significant between-group difference (Stahler 1996).

Outcome 7: Income

Sub-Outcome: Income from employment

One trial comparing ICM to UC measured “income from employment in the last 30 days”. There were no significant differences between treatment groups; at 18 months ICM participants received a mean of \$81 (SD250) compared to control participants (Mean \$117, SD 360) (MD-36, 95%CI -128 to 56, p=0.43) (Cox 1998).

An ICM intervention for homeless persons was evaluated; there were no significant differences between groups for job income received in previous 6 months. At 18-month follow up, mean job income in the experimental group was \$485 (SD1905) and for the control \$920(SD2438) (MD -435, 95%CI -1275 to 405, p=0.31) (Toro 1997).

One non-randomized trial comparing intensive case management for youth to usual services measured annual income from employment at 12 and 24 months. At 12 months, ICM participants had an average annual income of 587 (SD 1170) compared to 895 (SD 2670) in the control group (MD -308, 95%CI -737 to 121, p=0.14). At 24 months, ICM participants had an average annual income from employment of 2562 (SD 10180) compared to 1392 (SD 4250) in the control group (MD 1170, 95%CI -388 to 2728, p=0.16). Both groups also increased their employment incomes over the course of the trial (p=0.002). This improvement was stronger for the ICM group participants than it was for control group participants, however this group/time effect was not statistically significant (p= .06) (Grace 2014).

1 RCT comparing a 9-month shelter-based intensive case management program staffed primarily by peer counselors versus regular shelter services provided by city-staffed case managers who typically had very large caseloads found that both groups showed significant improvements on money from employment (p<0.05) with no significant between-group difference (Stahler 1996).

Sub-Outcome: Receipt of public income assistance

One trial reported four-month outcomes (80% follow-up) show effects for ICM, compared with the control conditions, were found for the receipt or maintenance of public assistance (e.g., Medical insurance [Medicaid] and Food Stamps) (72% vs. 50%). This difference was statistically significant at p<0.05. No further details were available from the authors (Rosenblum 2002).

Sub-Outcome: Income from public income assistance

One controlled trial assessed monthly public income at 6, 12 and 18-month follow up. There was a significant group effect, favouring the ICM group, over the 18-month follow up period (p=0.043). At 18 months, ICM participants received a mean of \$358 (SD 247) compared to control participants (Mean \$269, SD310) (MD 89, 95%CI 7.6 to 170.4, p=0.03) (Cox 1998).

An ICM intervention for homeless persons was evaluated by random assignment of 202 cases. Full follow-up data at 6, 12 and 18 months were available for 98 cases. For other income (public assistance and disability benefits) received in previous 6-months, experimental mean was \$1623 (SD 2139) compared to \$1254 (SD 1475) in the control group (MD 369, 95%CI -330 to 1068, p=0.31) (Toro 1997).

One non-randomized trial compared intensive case management for youth compared to usual services. Public income assistance (Centrelink) payments received by both groups of participants significantly increased over the trial (p=0.011). At 12 months, ICM participants had a mean annual income from public assistance of 7733 (SD 2690), and control participants received 7472 (SD 3000) (MD 261, 95%CI -322 to 844, p=0.38). At 24 months ICM participants received a mean of 7360 (SD 4300) and control participants received 7532 (SD 4900) (MD -172, 95%CI -1116 to 772, p=0.72). There were no significant differences between groups at either time point (Grace 2014).

Undesirable effects (HARMS):

Available literature did not report on the direct harms/ adverse effects of ICM.

- Evidence from grey literature showed that transient nature of support workers can negatively impact continuity of care or participants' ability to seek or utilize services (Holtschneider et al., 2016; Macnaughton et al., 2016). Caseworkers' maintenance of continuity of care is challenging regarding coordination of different services and passing or sharing of responsibility with Peer/community supports (De Vet et al., 2017).

Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS																																																																																								
<ul style="list-style-type: none"> ○ Very low ● Low ○ Moderate ○ High ○ No included studies 	<p>We evaluated certainty of evidence for select critical outcomes using GRADE evidence profiles: housing stability, mental health, quality of life.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #2c5e8c; color: white;"> <th colspan="7">Certainty assessment</th> <th colspan="2">No of patients</th> <th colspan="2">Effect</th> <th rowspan="2">Certainty</th> <th rowspan="2">Importance</th> </tr> <tr style="background-color: #2c5e8c; color: white;"> <th>No of studies</th> <th>Study design</th> <th>Risk of bias</th> <th>Inconsistency</th> <th>Indirectness</th> <th>Imprecision</th> <th>Other considerations</th> <th>ICM</th> <th>TAU</th> <th>Relative (95% CI)</th> <th>Absolute (95% CI)</th> </tr> </thead> </table> <p style="color: red; margin-top: 10px;">Outcome: Housing stability</p> <p>Number of days homeless (Follow-up: 13+ months) (Cox 1998, Grace 2014, Toro 1997)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;">3</td> <td style="width: 10%;">randomised trials</td> <td style="width: 5%;">very serious^a</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">none</td> <td style="width: 5%;">358</td> <td style="width: 5%;">308</td> <td style="width: 10%;">-</td> <td style="width: 15%;">SMD 0.22 fewer (0.4 fewer to 0.03 fewer)</td> <td style="width: 5%;">⊕⊕○ ○ LOW</td> <td style="width: 5%;">CRITICAL</td> </tr> </table> <p style="color: red; margin-top: 10px;">Outcome: Mental health</p> <p>Proportion of participants housed (Follow-up: 6 months) (Korr 1996)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;">1</td> <td style="width: 10%;">randomised trials</td> <td style="width: 5%;">serious^b</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">serious^c</td> <td style="width: 5%;">none</td> <td style="width: 5%;">36/48 (75.0%)</td> <td style="width: 5%;">15/44 (34.1%)</td> <td style="width: 10%;">OR 5.80 (2.35 to 14.31)</td> <td style="width: 15%;">409 more per 1,000 (from 208 more to 540 more)</td> <td style="width: 5%;">⊕⊕○ ○ LOW</td> <td style="width: 5%;">CRITICAL</td> </tr> </table> <p style="color: red; 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margin-top: 10px;">Outcome: Quality of life</p> <p>Life satisfaction in 7 life areas using Lehman's QOLI (Follow-up: 24 months) (Sherin 2000)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 5%;">1</td> <td style="width: 10%;">randomised trials</td> <td style="width: 5%;">serious^f</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">not serious</td> <td style="width: 5%;">serious^e</td> <td style="width: 5%;">none</td> <td style="width: 5%;">91</td> <td style="width: 5%;">77</td> <td style="width: 10%;">Individuals in the experimental condition reported consistently greater improvement in life satisfaction than their peers in the control group in 6 of the 7 life areas (Overall, p=0.001; Leisure, p=0.027; Financial, p=0.001; Safety, p=0.005; Health, p=0.006; Family, p=0.005; Social, p=0.56).</td> <td style="width: 15%;">⊕⊕○ ○ LOW</td> <td style="width: 5%;">CRITICAL</td> </tr> </table> <p style="margin-top: 10px;">CI: Confidence interval; SMD: Standardised mean difference; OR: Odds ratio; MD: Mean difference</p>	Certainty assessment							No of patients		Effect		Certainty	Importance	No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	ICM	TAU	Relative (95% CI)	Absolute (95% CI)	3	randomised trials	very serious ^a	not serious	not serious	not serious	none	358	308	-	SMD 0.22 fewer (0.4 fewer to 0.03 fewer)	⊕⊕○ ○ LOW	CRITICAL	1	randomised trials	serious ^b	not serious	not serious	serious ^c	none	36/48 (75.0%)	15/44 (34.1%)	OR 5.80 (2.35 to 14.31)	409 more per 1,000 (from 208 more to 540 more)	⊕⊕○ ○ LOW	CRITICAL	1	randomised trials	serious ^d	not serious	not serious	serious ^e	none	40	40	-	MD 0.75 higher (1 lower to 2.5 higher)	⊕⊕○ ○ LOW	CRITICAL	1	randomised trials	serious ^d	not serious	not serious	serious ^e	none	40	40	-	MD 0 (0.42 lower to 0.42 higher)	⊕⊕○ ○ LOW	CRITICAL	1	randomised trials	serious ^f	not serious	not serious	serious ^e	none	91	77	Individuals in the experimental condition reported consistently greater improvement in life satisfaction than their peers in the control group in 6 of the 7 life areas (Overall, p=0.001; 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	<p>Explanations</p> <p>a. Two trials with unclear selection bias and one trial with high risk for selection bias (non randomised). Two trials with unclear detection bias, one trial with high risk of detection bias. Two studies with high risk of attrition bias.</p> <p>b. Unclear risk of selection bias, high risk of performance bias, unclear risk of detection bias, and high risk of attrition bias</p> <p>c. Small sample size, <100 events, wide confidence interval</p> <p>d. Unclear risk of selection bias (allocation concealment), detection bias, and attrition bias. High risk of performance bias</p> <p>e. Small sample size (<300)</p> <p>f. Unclear risk of selection and detection bias, high risk of performance bias</p>	
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Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS																																				
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ● Probably no important uncertainty or variability ○ No important uncertainty or variability 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. The topics were identified from a literature review and then modified and prioritized using a 3 phase Delphi process. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified: mental health and addiction care, facilitating access to housing, facilitating access to income support, and care coordination (See table below)</p> <hr/> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 40%;">Priority</th> <th style="width: 30%;">Persons with Lived Experience</th> <th style="width: 20%;">Practitioners</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>Facilitating access to Housing</td> <td>Facilitating access to Housing</td> </tr> <tr> <td>2</td> <td></td> <td>Mental Health and Addiction Care/Trauma</td> <td>Mental Health and Addiction Care/Trauma</td> </tr> <tr> <td>3</td> <td></td> <td>Care coordination/Case management</td> <td>Care coordination/Case management</td> </tr> <tr> <td>4</td> <td></td> <td>Facilitating access to adequate income</td> <td>Chronic disease management</td> </tr> <tr> <td>5</td> <td></td> <td>Chronic disease management</td> <td>End-of-life care</td> </tr> <tr> <td>6</td> <td></td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> <td>Facilitating access to adequate income</td> </tr> <tr> <td>7</td> <td></td> <td>End-of-life care</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> </tr> <tr> <td>8</td> <td></td> <td>Nutrition and Dietary support</td> <td>Nutrition and Dietary support</td> </tr> </tbody> </table>		Priority	Persons with Lived Experience	Practitioners	1		Facilitating access to Housing	Facilitating access to Housing	2		Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma	3		Care coordination/Case management	Care coordination/Case management	4		Facilitating access to adequate income	Chronic disease management	5		Chronic disease management	End-of-life care	6		HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income	7		End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases	8		Nutrition and Dietary support	Nutrition and Dietary support	
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	<p>Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important outcomes. There was some variability in how much people valued the main outcomes. Housing stability, mental health and quality of life were consistently ranked as critical outcomes. Hospitalization, employment and income outcomes were considered important. Members discussed the importance of mortality, and through consensus determined it was not important for decision making.</p>	
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Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ● Favors the intervention ○ Varies ○ Don't know 	<p>Evidence indicates that ICM has a protective effect on the odds of homelessness by reducing the number of days homeless or spent in the streets, residential moves, alcohol use and emergency room visits. RCT evidence did not identify any substantial harms.</p>	

Resources required

How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large costs ○ Moderate costs ○ Negligible costs and savings ● Moderate savings ○ Large savings ○ Varies ○ Don't know 	<p>We identified two studies which included ICM as part of a complex intervention. The first study compared the cost-effectiveness of: 1) the Housing and Urban Development (HUD) and the US Department of Veterans Affairs (VA) Supporting Housing (HUD-VASH) with voucher (rent subsidies) and ICM; 2) Case management only; and 3) standard VA care that included short-term broker case management as provided by the VA's Health Care for Homeless Veterans outreach workers. (Rosenheck et al, 2003). The total societal costs were \$47,116, \$44,416, and \$40,916 for the HUD-VASH with voucher and ICM, care management only and standard care, respectively. The study showed that the annual total costs for HUD-VASH with income assistance and ICM were \$2,067 greater than those in the standard care group and that ICM only was associated with additional cost of \$1,167 compared to the standard care.</p> <p>Another study comparing the societal costs of Scattered-site housing with ICM and usual care in Canada (Stergiopoulos et al, 2015). The study reported that the average total costs of supporting housing with ICM was \$14,177 per year. The cost of ICM teams accounted for 50% of the intervention costs (i.e. \$7,005 per year).</p>	<p>One panel member noted that there is a challenge comparing Canadian to US contexts. In Canada, the cost of the investment in HF (ICM) can help both offset and redirect health system use into more appropriate resources. E.g., shifting annual shelter costs toward housing or ER use to more appropriate care. One panel member noted that the costs should be compared to other interventions currently being funded/provided. For example the cost of a person to stay in emergency shelter is higher than ICM supports when housed.</p>

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
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<ul style="list-style-type: none"> ○ Very low ○ Low ○ Moderate ○ High ● No included studies 	<p>No included studies.</p>	
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Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ No included studies 	<p>The cost-effectiveness evidence showed that HUD-VASH with income assistance and ICM clients had greater costs but fewer days homeless than the standard care and the case management only groups. Each additional day housed among HUD-VASH with income assistance and ICM clients led to additional costs of \$58 (95% CI: \$4, \$111) from the perspective of VA, \$50 (95% CI: -\$17, \$117) from the perspective of health care system, and \$45 (95% CI: -\$19, -\$108) from a societal perspective. Probabilities that the housing intervention with income assistance is cost-effective depended on the values that payers were willing to pay for a day of housing. However, it is unclear whether the HUD-VASH with income assistance and ICM intervention is cost-effective because the willingness to pay value for one fewer homeless day is unknown.</p> <p>The cost analysis did not report uncertainty in the cost estimates.</p>	

Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ○ Probably increased ● Increased ○ Varies ○ Don't know 	<p>ICM plays a focal role in coordinating needed services from mental health and social-support structures and services in response to the clients' varied and changing needs, improving access and reducing health inequities in homeless/ vulnerably housed populations. ICM offers an effective bridge in the transition from homelessness to stable housing and improves retention in health services in youths (Kaur et al., 2018).</p> <p>Understanding and applying a health equity lens to ICM may reduce avoidable and unfair health and social disparities experienced by the subpopulation of homeless, migrant youth (Mathew & Mott et al.).</p>	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS												
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know 	<p>Evidence from qualitative literature suggests that ICM will be acceptable to youth and adults experiencing homelessness due to its strengths-based approaches (Pattoni 2012).</p> <p>Generally, youth in particular value the need for stability, continuity and commitment by support workers. Youth view their case managers as a decisive factor contributing to their ability to access services by providing support, acceptance, connections to peer support and teaching them skills such as money management (Aviles et al., 2004; Farquhar et al., 2014).</p> <p>We conducted a qualitative systematic review (Magwood et al., in progress) and assessed confidence in key findings using GRADE CERQual. We identified two key findings relevant to ICM:</p> <table border="1"> <thead> <tr> <th>Review Finding</th> <th>CERQual Assessment of Confidence in the Evidence</th> <th>Explanation of CERQual Assessment</th> <th>Studies Contributing to the Review Finding</th> </tr> </thead> <tbody> <tr> <td> <p>Homeless men and women of all ages value being able to trust their service providers and others around them. They felt that once trust was established, a strong relationship could develop.</p> <p>Male youth had more difficulty than other groups to trust providers and access services.</p> <p>Illustrative quote: "My employment specialist made trusting so easy. She was quick to try to build confidence and trust. I was hesitant at first, but she really put me at ease." (Poremski, 2016)</p> </td> <td>Moderate confidence</td> <td>Moderate concerns surrounding methodological limitations such as limited justification of research design and analysis and small sample sizes.</td> <td>Cormack et al., 2009 Ferguson et al., 2008 Jost et al., 2011 Patterson et al., 2015 Perreault et al., 2016 Ploeg et al., 2008 Poremski et al., 2016 Quinn et al., 2015 Stewart et al., 2010 Thompson et al., 2006 Taylor et al., 2007 Yamin et al., 2014</td> </tr> <tr> <td> <p>Homeless and vulnerably housed individuals appreciated the pivotal role caseworkers played in providing them with tools to promote their empowerment and their independence.</p> <p>Illustrative quote: "Case managers, I think, are very important for this program to be successful... I don't think without a case manager, and having the follow up program, I don't think many people would be successful." (Farquhar, 2014)</p> </td> <td>Very low confidence</td> <td>Major concerns were attributed to the coherence of the data, as two studies commented on the potential harms caused by caseworkers and service providers. Additionally, variation in sampled program participants may influence generalizability to homeless populations.</td> <td>Davis et al., 2012 Holtschneider et al., 2017 Thompson et al., 2006 Quinn et al., 2015 Jost et al., 2011 Farquhar et al., 2014 McMaster et al., 2017 Mitchell et al., 2017</td> </tr> </tbody> </table>	Review Finding	CERQual Assessment of Confidence in the Evidence	Explanation of CERQual Assessment	Studies Contributing to the Review Finding	<p>Homeless men and women of all ages value being able to trust their service providers and others around them. They felt that once trust was established, a strong relationship could develop.</p> <p>Male youth had more difficulty than other groups to trust providers and access services.</p> <p>Illustrative quote: "My employment specialist made trusting so easy. She was quick to try to build confidence and trust. I was hesitant at first, but she really put me at ease." (Poremski, 2016)</p>	Moderate confidence	Moderate concerns surrounding methodological limitations such as limited justification of research design and analysis and small sample sizes.	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Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no 	<p>ICM is frequently implemented as a stand-alone intervention or as a part of permanent supportive housing interventions (for example, Housing First). Evidence from research indicates that ICM will be feasible to implement if ICM is delivered with high fidelity to the model.</p>	

- Probably yes
- Yes
- Varies
- Don't know

SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ●	Strong recommendation for the intervention ○
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CONCLUSIONS

Recommendation

1. Identify history of severe mental illness such as psychotic or mood and anxiety disorders
2. Refer to local community mental health programs, psychiatric services, or other local resources for assessment and linkage to intensive case management (ICM), where available. Otherwise, refer to comprehensive primary care with access to on site psychiatrist for assessment and connection to the most appropriate local resources
3. Health care teams should identify and refer ICM to homeless and vulnerably housed persons with chronic dependent substance use, concurrent disorders or moderate to severe mental illness that do not meet ACT criteria, to improve housing stability, individual well-being and social networks.

Justification

ICM reduces the odds of homelessness and improves substance use and quality of life. No major harms of ICM have been identified from RCT evidence

Subgroup considerations

Women, youth, indigenous and migrant populations may require tailored and culturally appropriate services.

Implementation considerations

Referral to these services can be facilitated by mental health specialists, and other professionals familiar with local access points. Providers should familiarize themselves with clinic and other local resources to inform referrals (Referral to local agencies, 211 helpline)

ICM adopts a trauma informed strengths-based approach respectful of the capacity, skills, knowledge, connections and potential in individuals and communities. It is important that primary care providers maintain frequent contact with ICM teams to improve continuity and coordination of comprehensive services

Implementation considerations include:

- Points of access are limited

- Criteria or qualification for referral to ICM treatment
- Use of peer support, interdisciplinary teams and experienced service providers
- Broad partnerships and collaboration among various service sectors.
- Training and team building activities.

Advocacy Statements:

- Practitioners should advocate for access to and be willing to collaborate with other support teams to improve the housing stability, health, mental health and quality of life of homeless people .
- Practitioners should advocate for less stringent criteria to qualify for ICM or ACT treatment for people experiencing homelessness, and more access points to ICM and ACT .
- Practitioners should advocate for combining housing with interventions such as assertive community treatment (ACT) or intensive case management (ICM).

Monitoring and evaluation

Maintaining fidelity to the ICM model.

Research priorities

Integration of peers with lived experience of homelessness into ICM teams.

Additional research that addresses societal impacts and costs of homelessness, not simply health impacts, for ICM would be helpful.

QUESTION

Should Critical time intervention (CTI) vs. no intervention or alternative intervention be used for homeless and vulnerably housed populations?

POPULATION:	homeless and vulnerably housed populations
INTERVENTION:	Critical time intervention (CTI)
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	<ul style="list-style-type: none"> • Housing stability • Mental Health • Substance use • Quality of life • Income • Employment
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health systems
BACKGROUND:	<p>Critical time intervention (CTI) is a time-limited, strengths-based case management intervention designed to support vulnerable people during transitions in their lives. It comprises of three phases:</p> <p><u>Phase 1: Transition</u> - Provide support & begin to connect client to people and agencies that will assume the primary role of support (make home visits, meet with existing supports, introduce client to new supports, etc)</p> <p><u>Phase 2: Try-out</u> - Monitor and strengthen support network and client's skills. (Observe operation of support network, Mediate conflicts between client and caregivers, Help modify network as necessary, Encourage client to take more responsibility)</p> <p><u>Phase 3: Transfer of care</u> - Terminate CTI services with support network safely in place. (Step back to ensure that supports can function independently; Develop and begin to set in motion plan for long-term goals; Hold meeting with client and supports to mark final transfer of care; Meet with client for last time to review progress made)</p>
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem

Is the problem a priority?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
o No	In 2018, almost 9.4 million Canadians live in housing below national standards (PHAC, 2018). Furthermore, between 150 000 and 300 000 Canadians	

<ul style="list-style-type: none"> ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know 	<p>experience homelessness each year (Fazel et al. 2014), with approximately 35 000 Canadians without shelter on any given night (Gaetz et al. 2016). Moreover, people with mental illness make up approximately 30-35% of the homeless or vulnerably housed population, with 20-25% of those experiencing homelessness suffering from concurrent severe mental illness and addictions (To et al. 2016).</p> <p>Homelessness among the mentally ill has been attributed, in part, to discontinuity in mental health services (Susser 1997). Discontinuity often occurs when an individual is transferred from an institution or shelter to community living.</p>	
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Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Trivial ○ Small ● Moderate ○ Large ○ Varies ○ Don't know 	<p>Our systematic review identified three randomized controlled trials (n= 8 publications) comparing CTI to usual services and one trial (n= 2 publications) comparing Family Critical Time Intervention (FCTI) to usual services.</p> <p>The first randomized trial of the nine-month CTI model assessed its effectiveness in preventing homelessness among 96 men with serious mental disorder being placed into community housing from a large shelter in New York City between 1991-1996 (Susser 1997; Jones 1994; Jones 2003; Lennon 2005; Herman 2000). Following on the encouraging results of the first trial with men discharged from the shelter, a second randomized trial tested CTI with 150 previously homeless adults with serious mental illness following discharge from two psychiatric hospitals between 2001-2007 (Herman 2011; Tomita 2012). After noting positive outcomes in the US, a third trial was conducted among 183 adults transitioning from shelter to community living in the Netherlands between 2010-2012 (De Vet 2017). The FCTI trial combined housing and structured, time-limited case management to connect families leaving shelter with community services in Westchester County, NY, USA between 2001-2005 (Shinn 2015; Samuels 2015).</p> <p><u>DESIRABLE EFFECTS (BENEFITS):</u></p> <div style="border: 1px solid black; background-color: #D9E1F2; padding: 10px; margin-top: 10px;"> <p>SUMMARY OF EVIDENCE:</p> <ol style="list-style-type: none"> 1. Housing stability: CTI reduces number of homeless nights and the odds of homelessness. CTI participants are housed sooner than usual care participants, but do not spend more days rehoused. 2. Mental health: Adults demonstrate improvements in psychological symptoms. Findings for children are mixed. 3. Substance use: There were no significant effects on substance use compared to usual services. 4. Quality of life: There were no significant effects on quality of life compared to usual services. 5. Hospitalization: Findings are mixed, with some studies reporting fewer days hospitalized and lower rates of rehospitalization. Other studies suggest no impact on number of participants with hospital stays or length of stay. 6. Employment: No trials reported on employment outcomes. 7. Income: There were no effects on income outcomes. </div>	

Outcome 1: Housing Stability

Sub-outcome: Odds of homelessness

CTI was associated with a five-fold reduction in the odds of homelessness in the final 18 weeks of the study compared to usual care only (OR=0.23, 95% CI 0.06 to 0.90; P= 0.034). At 18-month follow-up, odds of homelessness were reduced by 67% in the CTI group compared to UC (OR 0.28, 95%CI 0.78 to 1.02), but this was not statistically significant (Herman 2011). **[GRADE Certainty of evidence: Moderate]**

Sub-outcome: Total number of homeless nights

CTI participants had significantly lower number of homeless nights (1812) compared to control group participants (2403 homeless nights) over the 18-month follow-up period - (P<0.001) (Herman, 2011).

Sub-Outcome: Average number of non-homeless nights

CTI participants averaged 508 non-homeless nights over 18 months, and usual care participants averaged 450 non-homeless nights, a difference of 58 nights (P < 0.01) (Jones 2003).

Sub-Outcome: Mean number of days rehoused

One RCT (De Vet 2017) assessed CTI vs UC at 6-month and 9-month follow-up. Groups did not significantly differ in the number of days rehoused at either follow-up point (6 months MD 7.48 95%CI -3.69 to 18.64; 9-months MD 0.16 95%CI -10.91 to 11.23). **[GRADE Certainty of evidence: Moderate]**

Sub-Outcome: Days until housed

One RCT (Samuels, 2015) compared mothers in 9-month FCTI plus housing to mothers who received homeless services-as-usual, including permanent housing. There was a quicker transition from shelter to housing for mothers in FCTI. Average number of days until FCTI families were rehoused was 91.25 (SD = 82.3), compared to 199.15 days (SD = 125.4) for the control group (MD -107.9 days 95%CI -136.2-79.6).

Sub-Outcome: Time spent in community housing

One RCT (Shinn 2015) comparing FCTI to usual services for homeless families. At 3 and 6 month follow ups, FCTI group spent significantly more time in community housing (43% and 91% compared to 8% and 45% for the usual services group). FCTI services ended at 9 months, and housing patterns for treatment and control groups converged afterwards e.g. 15 – 24 months.

Outcome 2: Mental Health

Sub-outcome: Mental health symptoms assessed with the Positive and Negative Symptom Scale (PANSS).

1 secondary analysis of an RCT (Herman, 2000) assessed psychiatric at baseline and 6 months. On the negative symptoms scale, the mean change in the CTI group was -2.6 compared with a mean change of +1.0 in the control group. On the positive symptoms scale, the mean change in the CTI group was -2.2 compared with a mean change of -2.7 in the control group. In the regression analyses controlling for baseline score for the 6-month outcomes, there was a significant group effect for negative symptoms only (p =.02).

Sub-Outcome: Global Severity Index – GSI

One Dutch RCT saw an improvement in psychological symptoms among CTI participants, measured as a Brief Symptom Inventory (BSI) Global Severity Index (MD -0.14, 95%CI -0.29 to 0.01) (De Vet 2017) [**GRADE Certainty of evidence: Moderate**]

Sub-Outcome: Child internalizing and externalizing behaviors using the Child Behavior Checklist and Youth Self-Report

Children (aged 1.5-5 years) assigned to FCTI experienced fewer internalizing behaviours than in the control group until 24 months, when both groups had similar levels. For externalizing behaviors, the group difference in T-score 6.2 (0.5 SD), favored FCTI group for both preschool children and adolescents 11-16 years. For youth (aged 11-16 years), externalizing behaviours declined in the FCTI group, but remained fairly constant in the control group (Shinn 2015).

Outcome 3: Quality of Life

Sub-Outcome: General quality of life measured with Lehman’s Brief Quality of Life Interview

At 9 months follow-up, improvements in quality of life were reported for individuals in the treatment group (CTI condition) compared to the control group. However, these were not statistically significant (MD 0.21, 95%CI -0.19 to 0.60) (De Vet 2017). [**GRADE Certainty of evidence: Moderate**]

Outcome 4: Substance use

Sub outcome: Cannabis use assessed with Addiction Severity Index (ASI).

One RCT (De Vet, 2017) compared CTI to usual services provided by a drop-in center, and outpatient treatment provided by a mental health clinic. CTI intervention group (over 9-month period) saw a reduction in cannabis use compared to control group, but this was not statistically significant (OR 0.89, 95%CI 0.26 to 3.05).

Sub outcome: Alcohol use assessed with Addiction Severity Index (ASI)

In the same RCT as above, a reduction in alcohol use was reported after 9-month for the CTI intervention, but this difference was not statistically significant (OR 0.71, 95%CI 0.24 to 2.09) (De Vet, 2017).

Outcome 5: Hospitalization

Sub outcome: Number of participants with hospital stays

One RCT (Jones, 1994) reported no significant difference (OR 1.35, 95%CI 0.43 to 4.24) in the number of hospital stays between CTI and control group. Men in the CTI group were slightly more likely to have hospital stays (17/28 for CTI versus 14/24 for control group).

Sub outcome: Total nights of hospitalization

Men in the CTI group were more likely to have more total nights of hospitalization compared to control group after an 18-month follow-up period (Jones, 1994). In another trial, the CTI group had 1183 total night of hospitalizations compared to 1508 hospitalizations in the control group. Proportion of hospitalization and frequency of rehospitalization nights were significantly higher for the control group than CTI group (Tomita 2012).

Sub-Outcome: Average length of hospital stays

One RCT (Jones, 1994) reported the impact of CTI on hospital stays in homeless men. The average length of stay was similar between groups, with 68.9 nights for the experimental group and 65.1 for the control group.

Sub Outcome: Odds of rehospitalization

Tomita (2012) reported that assignment to CTI was significantly associated with reduced odds of re-hospitalization: OR 0.11, 95%CI 0.01 to 0.96.

Outcome 6: Employment

No trials reported on employment outcomes.

Outcome 7: Income

Sub-outcome: Earned income

There were no significant differences between groups in monthly income: CTI participants earned a mean income of \$236 (SD \$635) compared to a mean of \$151 (SD\$245) by control participants (MD85, 95%CI -110.44 to 280.44, p=0.41) (Jones, 2003).

UNDESIRABLE EFFECTS (HARMS):

- Available RCT evidence did not report on the direct harms/adverse effects of CTI.
- CTI is a **short-term intervention** for people adjusting to a “critical time” of transition in their lives, thus, **transition period** between care/support groups and linkage with more permanent support groups or care can be a limitation (de Vet et al., 2017).

- CTI has a relatively **short follow-up** period which may undermine potential positive long-term effects.
- Transient nature of support workers has been reported to negatively impact continuity of care or participants' ability to seek or utilize services in other team based interventions (Holtzschneider et al., 2016; Macnaughton et al., 2016).

Undesirable Effects

How substantial are the undesirable anticipated effects?

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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS																																																																																																																																																																							
<ul style="list-style-type: none"> ○ Very low ○ Low ● Moderate ○ High ○ No included studies 	<p>We evaluated certainty of evidence for <u>critical</u> patient important outcomes: housing stability, mental health, quality of life.</p> <table border="1"> <thead> <tr> <th colspan="7">Certainty assessment</th> <th colspan="2">No of patients</th> <th colspan="2">Effect</th> <th rowspan="2">Certainty</th> <th rowspan="2">Importance</th> </tr> <tr> <th>No of studies</th> <th>Study design</th> <th>Risk of bias</th> <th>Inconsistency</th> <th>Indirectness</th> <th>Imprecision</th> <th>Other considerations</th> <th>CTI</th> <th>UC</th> <th>Relative (95% CI)</th> <th>Absolute (95% CI)</th> </tr> </thead> <tbody> <tr> <td colspan="13">Outcome: Housing Stability</td> </tr> <tr> <td colspan="13">Odds of homelessness at the end of the follow-up period (the final three six-week intervals) (follow up: 18 months) (Herman 2011)</td> </tr> <tr> <td>1</td> <td>randomized trials</td> <td>serious ·</td> <td>not serious</td> <td>not serious</td> <td>not serious</td> <td>none</td> <td>3/58 (5.2%)</td> <td>11/59 (18.6%)</td> <td>OR 0.22 (0.06 to 0.88)</td> <td>138 fewer per 1,000 (from 173 fewer to 19 fewer)</td> <td>⊕⊕⊕○ MODERATE</td> <td>CRITICAL</td> </tr> <tr> <td colspan="13">Mean number of days rehoused (follow up: 9 months) (De Vet 2017)</td> </tr> <tr> <td>1</td> <td>randomized trials</td> <td>serious ·</td> <td>not serious</td> <td>not serious</td> <td>not serious</td> <td>none</td> <td>80 (87.16 days (SD40.19))</td> <td>82 (95.45 days (SD53.27))</td> <td>-</td> <td>Adjusted MD 0.16 more days (10.91 fewer to 11.23 more)</td> <td>⊕⊕⊕○ MODERATE</td> <td>CRITICAL</td> </tr> <tr> <td colspan="13">Outcome: Mental Health</td> </tr> <tr> <td colspan="13">Psychological symptoms measured as BSI Global Severity Index (De Vet 2017) (follow up: 9 months)</td> </tr> <tr> <td>1</td> <td>randomized trials</td> <td>serious ·</td> <td>not serious</td> <td>not serious</td> <td>not serious</td> <td>none</td> <td>85 (0.44 (SD 0.44))</td> <td>77 (0.57 (SD 0.62))</td> <td>-</td> <td>Adjusted MD 0.14 lower (0.29 lower to 0.01 higher)</td> <td>⊕⊕⊕○ MODERATE</td> <td>CRITICAL</td> </tr> <tr> <td colspan="13">Outcome: Quality of Life</td> </tr> <tr> <td colspan="13">Quality of life using Lehman's Brief Quality of Life Interview (De Vet 2017) (follow up: 9 months)</td> </tr> <tr> <td>1</td> <td>randomized trials</td> <td>serious ·</td> <td>not serious</td> <td>not serious</td> <td>not serious</td> <td>none</td> <td>90 (5.26 (SD 1.27))</td> <td>83 (5.08 (SD 1.32))</td> <td>-</td> <td>Adjusted MD 0.21 higher (0.19 lower to 0.60 higher)</td> <td>⊕⊕⊕○ MODERATE</td> <td>CRITICAL</td> </tr> </tbody> </table> <p>CI: Confidence interval; OR: Odds ratio; MD: Mean difference</p> <p>Explanations</p> <ol style="list-style-type: none"> a. High risk of selection bias and blinding of participants and personnel b. High risk of blinding of participants and personnel (performance bias), and high risk of blinding of outcome assessment (detection) 	Certainty assessment							No of patients		Effect		Certainty	Importance	No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CTI	UC	Relative (95% CI)	Absolute (95% CI)	Outcome: Housing Stability													Odds of homelessness at the end of the follow-up period (the final three six-week intervals) (follow up: 18 months) (Herman 2011)													1	randomized trials	serious ·	not serious	not serious	not serious	none	3/58 (5.2%)	11/59 (18.6%)	OR 0.22 (0.06 to 0.88)	138 fewer per 1,000 (from 173 fewer to 19 fewer)	⊕⊕⊕○ MODERATE	CRITICAL	Mean number of days rehoused (follow up: 9 months) (De Vet 2017)													1	randomized trials	serious ·	not serious	not serious	not serious	none	80 (87.16 days (SD40.19))	82 (95.45 days (SD53.27))	-	Adjusted MD 0.16 more days (10.91 fewer to 11.23 more)	⊕⊕⊕○ MODERATE	CRITICAL	Outcome: Mental Health													Psychological symptoms measured as BSI Global Severity Index (De Vet 2017) (follow up: 9 months)													1	randomized trials	serious ·	not serious	not serious	not serious	none	85 (0.44 (SD 0.44))	77 (0.57 (SD 0.62))	-	Adjusted MD 0.14 lower (0.29 lower to 0.01 higher)	⊕⊕⊕○ MODERATE	CRITICAL	Outcome: Quality of Life													Quality of life using Lehman's Brief Quality of Life Interview (De Vet 2017) (follow up: 9 months)													1	randomized trials	serious ·	not serious	not serious	not serious	none	90 (5.26 (SD 1.27))	83 (5.08 (SD 1.32))	-	Adjusted MD 0.21 higher (0.19 lower to 0.60 higher)	⊕⊕⊕○ MODERATE	CRITICAL	
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Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ● Probably no important uncertainty or variability ○ No important uncertainty or variability 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. The topics were identified from a literature review and then modified and prioritized using a 3 phase Delphi process. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified: mental health and addiction care, facilitating access to housing, facilitating access to income support, and care coordination (See table below)</p>	

Priority	Persons with Lived Experience	Practitioners
1	Facilitating access to Housing	Facilitating access to Housing
2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma
3	Care coordination/Case management	Care coordination/Case management
4	Facilitating access to adequate income	Chronic disease management
5	Chronic disease management	End-of-life care
6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income
7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases
8	Nutrition and Dietary support	Nutrition and Dietary support

Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important outcomes. There was some variability in how much people valued the main outcomes. Housing stability, mental health and quality of life were consistently ranked as critical outcomes. Hospitalization, employment and income outcomes were considered important. Members discussed the importance of mortality, and through consensus determined it was not important for decision making.

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ● Favors the intervention ○ Varies ○ Don't know 	<p>CTI has a substantial protective effect on both homelessness and rehospitalization; an impact which persists up to nine months after the intervention ended. CTI may reduce psychological symptoms. There is no impact on quality of life or earned income.</p> <p>There is no evidence for substantial harms, however limited follow up and poor linkage after intervention may limit intended outcomes.</p>	<p>The panel judged that the impact is large on critical outcomes of homelessness and rehospitalization with no evidence for substantial harms and so favours the intervention.</p>

Resources required

How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none">○ Large costs○ Moderate costs○ Negligible costs and savings● Moderate savings○ Large savings○ Varies○ Don't know	Jones et al (2003) conducted a cost-effectiveness analysis and reported that the total costs of CTI were not significantly different from the usual services provided to men with severe mental illness enrolled in a men's shelter in New York City (\$52,574 vs. \$51,749). The main cost drivers for both interventions were supported housing, public transfers and criminal justice costs.	

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none">○ Very low○ Low○ Moderate○ High● No included studies	Jones et al (2003) performed limited sensitivity analyses. A statistical analysis did not adjust for repeated nature of follow-up data. The cost and cost-effectiveness findings were robust to an approach used to handle missing data and the change in a non-homeless night definition.	

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
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<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ No included studies 	<p>Jones et al (2003) suggested that the CTI was associated with comparable costs (\$52,574 vs. \$51,749) but greater non-homeless nights (508 vs. 450 nights) compared to the usual services provided to men with severe mental illness. If the society is willing to pay for \$152 per one non-homeless night, the CTI would be considered a cost-effectiveness intervention compared to the usual care services.</p>	
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Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know 	<p>CTI offers an opportunity to improve health equity – it improves the health and social outcomes for vulnerable populations during transitions from shelters/institutions to housing and supports continuity of care in these situations. CTI presents a unique opportunity for migrant populations in shelters, hence an effective bridge towards transitioning from homelessness to stable housing (Kaur et al., in progress). Understanding and applying a health equity lens to CTI can reduce avoidable health and social disparities among homeless and marginalised populations (Mathew & Mott et al., in progress).</p>	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know 	<p>CTI uses a structured, strengths-based approach that values the capacity, skills, knowledge, connections and potential in individuals and communities during transitions (Pattoni, 2012). Research evidence suggests that homeless/vulnerably housed men and migrants would have more sustainable success if they are connected to long-term supports from community resources (Herman 2007).</p> <p>We conducted a qualitative systematic review (Magwood et al., in progress) and assessed confidence in key findings using GRADE CERQual. We identified two key findings relevant to critical time interventions.</p>	<p>The panel judged that this intervention is probably acceptable to people experiencing homelessness and their health care providers. This is probably also acceptable to policy-makers.</p>

Review Finding	CERQual Assessment of Confidence in the Evidence	Explanation of CERQual Assessment	Studies Contributing to the Review Finding
<p>Homeless men and women of all ages value being able to trust their service providers and others around them. They felt that once trust was established, a strong relationship could develop.</p> <p>Male youth had more difficulty than other groups to trust providers and access services.</p> <p>Illustrative quote: "My employment specialist made trusting so easy. She was quick to try to build confidence and trust. I was hesitant at first, but she really put me at ease." (Poremski, 2016)</p>	Moderate confidence	Moderate concerns surrounding methodological limitations such as limited justification of research design and analysis and small sample sizes.	Cormack et al., 2009 Ferguson et al., 2008 Jost et al., 2011 Patterson et al., 2015 Perreault et al., 2016 Ploeg et al., 2008 Poremski et al., 2016 Quinn et al., 2015 Stewart et al., 2010 Thompson et al., 2006 Taylor et al., 2007 Yamin et al., 2014
<p>Homeless and vulnerably housed individuals appreciated the pivotal role caseworkers played in providing them with tools to promote their empowerment and their independence.</p> <p>Illustrative quote: "Case managers, I think, are very important for this program to be successful... I don't think without a case manager, and having the follow up program, I don't think many people would be successful." (Farquhar, 2014)</p>	Very low confidence	Major concerns were attributed to the coherence of the data, as two studies commented on the potential harms caused by caseworkers and service providers. Additionally, variation in sampled program participants may influence generalizability to homeless populations.	Davis et al., 2012 Holtschneider et al., 2017 Thompson et al., 2006 Quinn et al., 2015 Jost et al., 2011 Farquhar et al., 2014 McMaster et al., 2017 Mitchell et al., 2017

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>Several well designed studies have tested the effectiveness of CTI for homeless populations. Several pilot studies are also testing CTI for other transitional periods, such as men and women being discharged from prisons, and with young adults leaving residential treatment facilities. Trials are being conducted in North America, Europe and South America, suggesting robustness of the model across different contexts. To respond to growing interest, the model development team has recently developed fidelity guidelines as well as a partnership to deliver individualized training and implementation support to interested providers. The CTI model relies heavily on mobilizing and coordinating existing housing, services and supports in the community. It stands to reason, therefore, that its effectiveness will be significantly mediated by the availability and quality of these resources.</p>	

SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know

	JUDGEMENT						
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ●	Strong recommendation for the intervention ○
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CONCLUSIONS

Recommendation

1. Identify history of severe mental illness such as psychotic or mood and anxiety disorders

2. Refer to local community mental health programs, psychiatric services, or other local resources for assessment and linkage to assertive community treatment (ACT), intensive case management (ICM), or critical time interventions (CTIs) where available. Otherwise, refer to comprehensive primary care with access to on site psychiatrist for assessment and connection to the most appropriate local resources.

3. Health providers should refer recently discharged homeless persons to CTI where available, to improve housing stability, social networks in communities, mental health and overall wellbeing. Otherwise they should provide intensive support following discharge from hospital and at times of transition from shelter to housing.

Interpreting the strength of the option:

- **Strong options** are those in which we are confident that the desirable effects of an intervention outweigh its undesirable effects (strong option for an intervention) or that the undesirable effects of an intervention outweigh its desirable effects (strong option against an intervention)
- **Strong options** imply that most individuals will be best served by the recommended course of action and that the recommendation can be adopted in practice or as policy in most situations
- **Conditional option** are those for which the desirable effects probably outweigh the undesirable effects (conditional option for an intervention) or undesirable effects probably outweigh the desirable effects (conditional option against an intervention), but appreciable uncertainty exists
- **Conditional option** results when the balance between desirable and undesirable effects is small, the quality of evidence is lower, or there is more variability in the values and preferences of patients. In cases where the balance of cost and benefits is ambiguous, key stakeholders differ about the acceptability or feasibility of implementation, and the effects on health equity are unclear are likely to result in a conditional option

Justification

CTI has a substantial protective effect on both homelessness and rehospitalization; an impact which persists up to nine months after the intervention ends. It provides emotional and practical support during the critical time of transition, and was found to reduce symptoms of PTSD, unmet care needs, and improve social networks and well-being

Subgroup considerations

Individuals with varying levels of mental health needs may require different intensities of support.

Implementation considerations

Referral to these services can be facilitated by mental health specialists, and other professionals familiar with local access points. Providers should familiarize themselves with clinic and other local resources to inform referrals.

CTI should adopt a trauma informed strengths-based approach respectful of the capacity, skills, knowledge, connections and potential in individuals and communities. It is important that primary care providers maintain frequent contact with CTI teams to improve continuity and coordination of comprehensive services.

The panel noted that implementation will vary by jurisdiction depending on what interventions are currently used.

Advocacy Statement: Practitioners should advocate for access to and be willing to collaborate with other support teams to improve the housing stability, health, mental health and quality of life of homeless people .

Monitoring and evaluation

Time until housed, time spent stably housed. Long term outcomes past 9 months.

Research priorities

More trials are needed to assess effectiveness of CTI on quality of life, employment and income outcomes. Mor evidence needed on the effectiveness of Family CTI for mothers, children and families. There is a need for data past 9 months of follow-up.

QUESTION

Should Pharmacologic interventions for opioid use disorders vs. no intervention or alternative intervention be used for homeless and vulnerably housed populations?

POPULATION:	homeless and vulnerably housed populations
INTERVENTION:	Pharmacologic interventions for opioid use disorders
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	
BACKGROUND:	
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem

Is the problem a priority?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>150,000-300,000 Canadians experience homelessness every year; 35,000 on any given night. Homelessness is associated with opioid use and opioid use disorder (OUD). Canada is currently experiencing an opioid overdose epidemic associated with decreased life expectancy for Canadians. People with lived experience and other stakeholders alike have called for an increase in opioid agonist treatment (OAT) availability as part of a coordinated multi-pronged overdose prevention response. Pharmacologic options such as methadone and buprenorphine (with or without naloxone) are effective treatments for OUD as demonstrated in a number of general population studies, however less is known about the impact of pharmacologic OUD treatment for homeless and vulnerable housed populations.</p>	<p>One panel member noted that it seems evident that an individual with an identified health problem should be offered treatment.</p>

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Trivial <input type="radio"/> Small <input type="radio"/> Moderate <input checked="" type="radio"/> Large <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>We conducted an overview of systematic reviews to identify evidence on pharmacological interventions for opioid use disorder (OUD). We included 21 systematic reviews, capturing the results of 327 RCTs and observational studies. The majority of the findings come from the general population.</p> <p><u>DESIRABLE EFFECTS (BENEFITS)</u></p>	<p>One panel member noted that the evidence is consistent, and consistently positive but there is a lack of evidence on functional improvement or quality of life.</p>

SUMMARY OF EVIDENCE

1. **Mortality:** All-cause and overdose mortality reduced when taking methadone or buprenorphine. No difference between methadone and non-pharmacological approaches. No differences for naltrexone implants vs TAU, LAAM vs methadone or heroin (diacetylmorphine) vs methadone.
2. **Morbidity (including mental health):** Reduced risk for HIV and HCV infection. Some pharmacological agents may improve psychological morbidity. Adverse events reported for all agents, with fewer occurring in methadone groups.
3. **Substance use:** Methadone and buprenorphine associated with reduced illicit opioid use.
4. **Access to care:** Buprenorphine expanded access to treatment for patients unlikely to enroll in methadone clinics and facilitated earlier access for recent initiates to opioid use.
5. **Retention in treatment:** The relative superiority of one pharmacological agent over another on retention outcomes remains unclear, however methadone better than non-pharmacological interventions for retention.

Outcome 1: Mortality

Methadone and buprenorphine

One review (Sordo 2017) reported pooled all cause mortality rates of 36.1 and 11.3 per 1000 person years out and in methadone maintenance therapy (rate ratio 3.20, 95%CI 2.65 to 3.86) and reduced to 9.5 and 4.3 out and in buprenorphine maintenance therapy (rate ratio 2.20, 95%CI 1.34 to 3.61). Overdose mortality evolved similarly, with pooled overdose mortality rates of 12.7 and 2.6 per 1000 person years out and in methadone maintenance therapy and 4.6 and 1.4 out and in buprenorphine maintenance therapy (Sordo 2017)

Overall mortality rate on methadone and buprenorphine 8.84 deaths per 1000 person-years with no significant differences between groups; rate lower if on OAT for longer than seven days (Gibson 2008; Bahji 2018) Buprenorphine associated with fewer adverse events than methadone (Thomas 2004). No statistically significant mortality difference between methadone and nonpharmacologic approaches (RR=0.48, Mattick 2009)

Other pharmacological interventions

No statistically significant mortality difference between naltrexone implant and treatment as usual (RR=0.93, Larney 2014). Six deaths across 10 studies (N=1441) of levo- α -acetylmethadol (LAAM) vs methadone, 5 in LAAM arm (RR=2.28, p=0.2, Clark 2002). 2 suicides with diacetyl morphine (heroin) vs 1 with methadone, unrelated to treatment; 1 death in each group unrelated to treatment; and no deaths with either group (Hartnoll 1980, van den Brink 2003, Perneger 1998)

Outcome 2: Morbidity (including mental health)

HCV and HIV infection

Pharmacological interventions for opioid use disorder reduce the risk of HCV acquisition (risk ratio 0.50, 95%CI 0.40-0.63) (Platt 2017) and HIV infection (no meta-analysis performed due to high risk of bias and study heterogeneity) (Gowing 2011)

Mental health

Both methadone and buprenorphine improved social functioning, physical health, and psychological morbidity equally (Mattick 2002, Standiford Helm 2008). Buprenorphine + naltrexone associated with greater reduction in irritability, depression, tiredness, psychosomatic symptoms, and craving scores than naltrexone only (Gerra, Standifform Helm 2008). Sustained release naltrexone did not improve depression scores or severity of drug use scores (Lobmaier 2008)

Behaviours

Methadone / buprenorphine maintenance associated with reduction in proportion of people who inject drugs reporting multiple sex partners or exchanges of sex for drugs / money, but little effect on condom use (Gowing 2011)

Emergency department use

No opioid overdose requiring ED treatment or admission during 6 month follow up (Hulse 2009, Larney 2014, Krupitsky 2012, Bahji 2018)

Serious adverse events

- Seven serious adverse events due to LAAM (non-fatal overdose, dosing errors, non-drug related, Ritter 2003, Bahji 2018)
- 10 overdoses and 6 seizures with diacetylmorphine vs none with methadone (Oviedo-Joekes 2009, Bahji 2018)
- 11 overdoses with diacetylmorphine vs 3 with methadone (<0.05, Oviedo-Jokes 2016, Bahji 2018)
- 11 severe adverse events with injected heroin vs 7 with methadone (N=174, Ferri 2006)
- 14 severe adverse events with injected heroin vs 11 with methadone (N=375, Ferri 2006)
- No statistically significant difference in adverse events between naltrexone implant, oral naltrexone (RR=2.14), or placebo (RR=2.67, Larney 2014)
- Self-reported overdose for 3 naltrexone vs 4 TAU participants (RR0.23, NS, Kunoe 2009, Larney 2014)

Outcome 3: Substance use

Buprenorphine and methadone

High dose buprenorphine more effective than placebo in suppressing illicit opioid use as measured by urinalysis (2 studies, N=729, SMD -1.17); low and

medium dose no different to placebo (Mattick 2014). At adequate doses, buprenorphine and methadone show similar reduction in illicit opioid use (Thomas 2004). Among pregnant women, methadone and buprenorphine associated with similar rates of positive tests for cocaine, benzodiazepines, and marijuana (2 studies, Jones 2012); and methadone associated with fewer illicit opioid urine samples than buprenorphine in pregnant women (Fischer, Jones 2012)

Methadone more effective than nonpharmacologic approaches for self-reported / urine evidence of heroin use (6 studies, RR=0.66, Mattick 2009). Methadone reduced injection or other drug use, needle sharing, multiple sexual partners, unprotected sex, and drug-related crime (Qian 2008, Peng 2007, Karki 2016)

Other pharmacological interventions

No difference between LAAM and methadone for illicit heroin use (Bahji 2018). LAAM associated with more abstinence than methadone (5 studies, N=983, RR=0.81, p=0.0003, Clark 2002)

Diacetyl morphine (heroin) reduces illicit drug use or other illegal activity more than methadone (p=0.004, Oviedo-Jokes 2016, Bahji 2018). No difference in illicit opiate use between methadone and heroin (N=96, RR=1.10, Ferri 2006)

Oral naltrexone no better than placebo in reducing illicit opioid use (OR=0.85, Kirchmayer 2002). Naltrexone implants suppressed opioid use more than oral naltrexone (RR=0.57) and placebo (RR=0.57, Larney 2014). Naltrexone implant equivalent to methadone for suppressing opioid use (SMD=-0.33, Larney 2014) Self-reported drug problem severity similar for LAAM, buprenorphine, and methadone (Johnson, Standiford Helm 2008)

Outcome 4: Access to care

A review on office-based buprenorphine treatment found that it expanded access to treatment for patients who may not enroll in methadone clinics, and facilitated earlier access to treatment for patients who have more recently initiated opioid use (Standiford 2008); however there does not appear to be any effect on retention whether buprenorphine is dosed under supervised or unsupervised settings (RR 0.99, 95% CI 0.88-1.12) (Saulle 2017).

Outcome 5: Retention in treatment

Findings on retention in treatment are mixed:

- Methadone more effective than nonpharmacologic approaches in retaining patients in treatment (4 studies, N=750, RR=4.44, Mattick 2009)
- No significant difference in treatment completion for pregnant women on methadone or buprenorphine (Fischer, Jones 2012)
- Heroin associated with higher retention than methadone (3 studies, p<0.00, RR=2.82, Oviedo-Jokes 2009, Bahji 2018)
- No difference in treatment cessation between LAAM and methadone (Bahji 2018)
- LAAM associated with more cessation than methadone (11 studies, N=1473, RR=1.36, p=0.001, Clark 2002)
- Naltrexone no different than placebo for treatment completion (OR=0.78, Kirchmayer 2002)
- Naltrexone implants had higher treatment retention than placebo (RR=3.20) and oral naltrexone (RR=3.38, Larney 2014, similar to Krupitsky 2012, Bahji 2018, Lobmaier 2008)

	<p>UNDESIRABLE EFFECTS (HARMS)</p> <ol style="list-style-type: none"> 1. Frequently reported side effects included headache (31%), insomnia (26%), pain (25%), opioid withdrawal (24%), and infection (22%, Ling 1998, Standiford 2008) 2. Adverse events, including overdose, reported for all agents. However, overdose rates likely lower in treatment than out of treatment. 3. No reviews reported an increase in substance use or other morbidities for participants in treatment. 	
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Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large ○ Moderate ● Small ○ Trivial ○ Varies ○ Don't know 	<p>We conducted an overview of systematic reviews to identify evidence on pharmacological interventions for opioid use disorder (OUD). We included 21 systematic reviews, capturing the results of 327 RCTs and observational studies. The majority of the findings come from the general population.</p> <p>DESIRABLE EFFECTS (BENEFITS)</p> <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <p>SUMMARY OF EVIDENCE</p> <ol style="list-style-type: none"> 1. Mortality: All-cause and overdose mortality reduced when taking methadone or buprenorphine. No difference between methadone and non-pharmacological approaches. No differences for naltrexone implants sv TAU, LAAM vs methadone or heroin (diacetylmorphine) vs methadone. 2. Morbidity (including mental health): Reduced risk for HIV and HCV infection. Some pharmacological agents may improve psychological morbidity. Adverse events reported for all agents, with fewer occurring in methadone groups. 3. Substance use: Methadone and buprenorphine associated with reduced illicit opioid use. 4. Access to care: Buprenorphine expanded access to treatment for patients unlikely to enroll in methadone clinics and facilitated earlier access for recent initiates to opioid use. 5. Retention in treatment: The relative superiority of one pharmacological agent over another on retention outcomes remains unclear, however methadone better than non-pharmacological interventions for retention. </div> <p>Outcome 1: Mortality</p> <p><i>Methadone and buprenorphine</i></p>	<p>One panel member noted that reported side effects are not differentiated according to the substance prescribed.</p> <p>Another panel noted that although the adverse events can be substantial (overdose), it is important to note that the rates of overdose are much higher out of treatment.</p>

One review (Sordo 2017) reported pooled all cause mortality rates of 36.1 and 11.3 per 1000 person years out and in methadone maintenance therapy (rate ratio 3.20, 95%CI 2.65 to 3.86) and reduced to 9.5 and 4.3 out and in buprenorphine maintenance therapy (rate ratio 2.20, 95%CI 1.34 to 3.61). Overdose mortality evolved similarly, with pooled overdose mortality rates of 12.7 and 2.6 per 1000 person years out and in methadone maintenance therapy and 4.6 and 1.4 out and in buprenorphine maintenance therapy (Sordo 2017)

Overall mortality rate on methadone and buprenorphine 8.84 deaths per 1000 person-years with no significant differences between groups; rate lower if on OAT for longer than seven days (Gibson 2008; Bahji 2018) Buprenorphine associated with fewer adverse events than methadone (Thomas 2004). No statistically significant mortality difference between methadone and nonpharmacologic approaches (RR=0.48, Mattick 2009)

Other pharmacological interventions

No statistically significant mortality difference between naltrexone implant and treatment as usual (RR=0.93, Larney 2014). Six deaths across 10 studies (N=1441) of levo- α -acetylmethadol (LAAM) vs methadone, 5 in LAAM arm (RR=2.28, p=0.2, Clark 2002). 2 suicides with diacetyl morphine (heroin) vs 1 with methadone, unrelated to treatment; 1 death in each group unrelated to treatment; and no deaths with either group (Hartnoll 1980, van den Brink 2003, Perneger 1998)

Outcome 2: Morbidity (including mental health)

HCV and HIV infection

Pharmacological interventions for opioid use disorder reduce the risk of HCV acquisition (risk ratio 0.50, 95%CI 0.40-0.63) (Platt 2017) and HIV infection (no meta-analysis performed due to high risk of bias and study heterogeneity) (Gowing 2011)

Mental health

Both methadone and buprenorphine improved social functioning, physical health, and psychological morbidity equally (Mattick 2002, Standiford Helm 2008). Buprenorphine + naltrexone associated with greater reduction in irritability, depression, tiredness, psychosomatic symptoms, and craving scores than naltrexone only (Gerra, Standiford Helm 2008). Sustained release naltrexone did not improve depression scores or severity of drug use scores (Lobmaier 2008)

Behaviours

Methadone / buprenorphine maintenance associated with reduction in proportion of people who inject drugs reporting multiple sex partners or exchanges of sex for drugs / money, but little effect on condom use (Gowing 2011)

Emergency department use

No opioid overdose requiring ED treatment or admission during 6 month follow up (Hulse 2009, Larney 2014, Krupitsky 2012, Bahji 2018)

Serious adverse events

- Seven serious adverse events due to LAAM (non-fatal overdose, dosing errors, non-drug related, Ritter 2003, Bahji 2018)
- 10 overdoses and 6 seizures with diacetylmorphine vs none with methadone (Oviedo-Joekes 2009, Bahji 2018)
- 11 overdoses with diacetylmorphine vs 3 with methadone (<0.05, Oviedo-Jokes 2016, Bahji 2018)
- 11 severe adverse events with injected heroin vs 7 with methadone (N=174, Ferri 2006)
- 14 severe adverse events with injected heroin vs 11 with methadone (N=375, Ferri 2006)
- No statistically significant difference in adverse events between naltrexone implant, oral naltrexone (RR=2.14), or placebo (RR=2.67, Larney 2014)
- Self-reported overdose for 3 naltrexone vs 4 TAU participants (RR0.23, NS, Kunoe 2009, Larney 2014)

Outcome 3: Substance use

Buprenorphine and methadone

High dose buprenorphine more effective than placebo in suppressing illicit opioid use as measured by urinalysis (2 studies, N=729, SMD -1.17); low and medium dose no different to placebo (Mattick 2014). At adequate doses, buprenorphine and methadone show similar reduction in illicit opioid use (Thomas 2004). Among pregnant women, methadone and buprenorphine associated with similar rates of positive tests for cocaine, benzodiazepines, and marijuana (2 studies, Jones 2012); and methadone associated with fewer illicit opioid urine samples than buprenorphine in pregnant women (Fischer, Jones 2012)

Methadone more effective than nonpharmacologic approaches for self-reported / urine evidence of heroin use (6 studies, RR=0.66, Mattick 2009). Methadone reduced injection or other drug use, needle sharing, multiple sexual partners, unprotected sex, and drug-related crime (Qian 2008, Peng 2007, Karki 2016)

Other pharmacological interventions

No difference between LAAM and methadone for illicit heroin use (Bahji 2018). LAAM associated with more abstinence than methadone (5 studies, N=983, RR=0.81, p=0.0003, Clark 2002)

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Outcome 4: Access to care

A review on office-based buprenorphine treatment found that it expanded access to treatment for patients who may not enroll in methadone clinics, and

	<p>facilitated earlier access to treatment for patients who have more recently initiated opioid use (Standiford 2008); however there does not appear to be any effect on retention whether buprenorphine is dosed under supervised or unsupervised settings (RR 0.99, 95% CI 0.88-1.12) (Saulle 2017).</p> <p>Outcome 5: Retention in treatment</p> <p>Findings on retention in treatment are mixed:</p> <ul style="list-style-type: none"> • Methadone more effective than nonpharmacologic approaches in retaining patients in treatment (4 studies, N=750, RR=4.44, Mattick 2009) • No significant difference in treatment completion for pregnant women on methadone or buprenorphine (Fischer, Jones 2012) • Heroin associated with higher retention than methadone (3 studies, p<0.00, RR=2.82, Oviedo-Jokes 2009, Bahji 2018) • No difference in treatment cessation between LAAM and methadone (Bahji 2018) • LAAM associated with more cessation than methadone (11 studies, N=1473, RR=1.36, p=0.001, Clark 2002) • Naltrexone no different than placebo for treatment completion (OR=0.78, Kirchmayer 2002) • Naltrexone implants had higher treatment retention than placebo (RR=3.20) and oral naltrexone (RR=3.38, Larney 2014, similar to Krupitsky 2012, Bahji 2018, Lobmaier 2008) <p>UNDESIRABLE EFFECTS (HARMS)</p> <ol style="list-style-type: none"> 1. Frequently reported side effects included headache (31%), insomnia (26%), pain (25%), opioid withdrawal (24%), and infection (22%, Ling 1998, Standiford 2008) 2. Adverse events, including overdose, reported for all agents. However, overdose rates likely lower in treatment than out of treatment. 3. No reviews reported an increase in substance use or other morbidities for participants in treatment. 	
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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ● Very low ○ Low ○ Moderate ○ High ○ No included studies 	<p>We evaluated certainty of evidence for <u>critical</u> patient important outcomes: Substance use, morbidity (including mental health) and mortality.</p>	

Certainty assessment							Summary of Findings	Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Outcome: Mortality									
All-cause mortality in and out of MMT (Source systematic review: Sordo, 2017, 16 cohort studies)									
16	Observational studies	Serious ^a	Serious ^b	Not serious	Not serious	None	Pooled all cause mortality rates were 11.3 and 36.1 per 1000 person years in and out of methadone treatment (unadjusted out-to-in rate ratio 3.20, 95% confidence interval 2.65 to 3.86)	⊕○○○ VERY LOW	CRITICAL
Overdose mortality in and out of MMT (Source systematic review: Sordo, 2017, 11 cohort studies)									
11	Observational studies	Serious ^a	Serious ^c	Not serious	Not serious	None	Pooled overdose mortality rates were 2.6 and 12.7 per 1000 person years in and out of methadone treatment (unadjusted out-to-in rate ratio 4.80, 2.90 to 7.96)	⊕○○○ VERY LOW	CRITICAL
All-cause mortality in and out of BMT (Source systematic review: Sordo, 2017, 3 cohort studies)									
3	Observational studies	Serious ^a	Not serious	Not serious	Not serious	Publication bias ^d	Pooled all cause mortality rates were 4.3 and 9.5 in and out of buprenorphine treatment (unadjusted out-to-in rate ratio 2.20, 1.34 to 3.61)	⊕○○○ VERY LOW	CRITICAL
Overdose mortality in and out of BMT (Source systematic review: Sordo, 2017, 1 cohort study)									
1	Observational studies	Not serious	Not serious	Not serious	Not serious	None	In the single buprenorphine cohort there were 1.4 and 4.6 fatal overdoses per 1000 person years in and out of treatment	⊕⊕○○ LOW	CRITICAL

Outcome: Morbidity

Hepatitis C (HCV) acquisition (Source systematic review: Platt, 2017, 12 cohort studies)

12	Observational studies	Serious ^e	Not serious	Not serious	Not serious	Large magnitude of effect ^f	OST reduces the risk of HCV acquisition by 50% (risk ratio (RR) 0.50, 95% confidence interval (CI) 0.40 to 0.63, I2 = 0%, 12 studies across all regions, N = 6361),	⊕⊕○○ LOW	CRITICAL
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Psychological Morbidity (Source systematic review: Standiford Helm 2008, 1 RCT Mattick 2003)

1	Randomised trials	Not serious	Not serious	Not serious	Serious ^g	None	There were significant overall improvements, but no difference between groups, in psychological morbidity (GHQ and <u>SCL90R</u>) [No further data reported].	⊕○○○ VERY LOW	CRITICAL
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Outcome: Substance use

Reduction in illicit opioid use (Source review: Mattick 2014, 4 RCTs)

4	Randomised trials	Not serious	Not serious	Not serious	Not serious	None	High-dose buprenorphine (≥ 16 mg) was more effective than placebo in suppressing illicit opioid use measured by <u>urinalysis</u> in the trials (3 studies, 729 participants, SMD -1.17; 95% CI -1.85 to -0.49) Notably, low-dose, (2 studies, 487 participants, SMD 0.10; 95% CI -0.80 to 1.01), and medium-dose, (2 studies, 463 participants, SMD -0.08; 95% CI -0.78 to 0.62) buprenorphine did not suppress illicit opioid use measured by <u>urinalysis</u> better than placebo.	⊕⊕⊕⊕ HIGH	CRITICAL
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Explanations

- Several studies of low quality resulting from confounding bias and differential loss to follow up.
- All cause mortality rates varied widely across the 16 methadone cohorts (overall I2=98%, P<0.001), although rates were consistently higher out of treatment than in treatment
- There was moderate heterogeneity between studies in mortality rates in treatment (I2=66%, P=0.001) and strong heterogeneity in rates out of treatment (I2=97%, P<0.001), with significantly higher rates out of treatment among methadone patients in specialist services than in primary care
- There was some evidence of small study effects on all cause mortality (P=0.05), with higher rates in small cohorts that mostly enrolled opioid injectors who were positive for HIV
- Downgraded one level due to overall moderate risk of bias in 2 studies, overall serious risk of bias in 6 studies, 2 studies at overall critical risk of bias in 2 studies; not enough information to make judgment in 2 studies.
- Upgraded one level due to large magnitude of the effect: RR: 0.5.

7. Imprecision downgraded due to lack of data reported. No measures reported, no effect estimates available

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS																											
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ● Probably no important uncertainty or variability ○ No important uncertainty or variability 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified (See table below)</p> <table border="1"> <thead> <tr> <th>Priority</th> <th>Persons with Lived Experience</th> <th>Practitioners</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Facilitating access to Housing</td> <td>Facilitating access to Housing</td> </tr> <tr> <td>2</td> <td>Mental Health and Addiction Care/Trauma</td> <td>Mental Health and Addiction Care/Trauma</td> </tr> <tr> <td>3</td> <td>Care coordination/Case management</td> <td>Care coordination/Case management</td> </tr> <tr> <td>4</td> <td>Facilitating access to adequate income</td> <td>Chronic disease management</td> </tr> <tr> <td>5</td> <td>Chronic disease management</td> <td>End-of-life care</td> </tr> <tr> <td>6</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> <td>Facilitating access to adequate income</td> </tr> <tr> <td>7</td> <td>End-of-life care</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> </tr> <tr> <td>8</td> <td>Nutrition and Dietary support</td> <td>Nutrition and Dietary support</td> </tr> </tbody> </table> <p>Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important</p>	Priority	Persons with Lived Experience	Practitioners	1	Facilitating access to Housing	Facilitating access to Housing	2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma	3	Care coordination/Case management	Care coordination/Case management	4	Facilitating access to adequate income	Chronic disease management	5	Chronic disease management	End-of-life care	6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income	7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases	8	Nutrition and Dietary support	Nutrition and Dietary support	
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	outcomes. Substance use, mortality and mental health were considered critical, with some variability in rankings between providers and persons with lived experience. Access to care and retention in treatment were considered important, with one individual suggesting access as critically important.	
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Balance of effects
Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ● Favors the intervention ○ Varies ○ Don't know 	<p>Net benefit depends on the specific pharmacologic agent.</p> <p>Methadone and buprenorphine demonstrate favourable effects on all-cause and overdose-specific mortality, non-fatal overdose, BBI acquisition, risk behaviours, substance use, mental health, and treatment retention compared to TAU. Buprenorphine is associated with fewer adverse effects. The most common adverse effects are not serious.</p> <p>Oral naltrexone demonstrates little demonstrable benefit compared to placebo. Naltrexone implants effectively suppress substance use and improve treatment retention, however this formulation is not available in Canada.</p> <p>Diacetyl morphine (heroin) is equivalent or better than methadone in reducing substance use and criminal involvement, and has a higher treatment retention, however it is associated with more serious adverse events.</p> <p>LAAM appears effective across a number of parameters but is not available in Canada owing to association with increased mortality (QT prolongation ie).</p>	<p>One panel member noted that these conclusions are too broad for the actual outcomes studied and there is no evidence offered on changes in quality of life or function.</p>

Resources required
How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large costs ○ Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ● Don't know 	<p>Our systematic review did not identify any eligible studies on resource requirements of pharmacological interventions for opioid use disorder <u>specific for homeless or vulnerably housed populations</u>.</p>	<p>The panel felt that there would be resource requirements for drug and health care appointments for pharmacologic interventions, however, that the costs of opioid-use disorder are quite substantial at present. The panel noted that the costs may be higher for people experiencing homelessness due to need to support OAT with outreach workers or other approaches.</p> <p>Overall the panel judged that it did not know the resources required for pharmacological interventions for opioid-use disorder this population.</p>

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Very low ○ Low ○ Moderate ○ High ● No included studies 	<p>No included studies.</p>	<p>The panel noted that there are an increasing number of pharmacies providing OAT, which indicates a profit margin either for the OAT alone or for additional primary care, HCV or HIV medications. Financial and physical access may have costs, however, especially the former for people on low income.</p>

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ No included studies 	<p>Our systematic review did not identify any eligible studies on cost effectiveness of pharmacological interventions for opioid use disorder <u>specific for homeless or vulnerably housed populations</u>. However, reviews in the general population provide the following:</p> <p>Simoens et al. (2006) conducted what they referred to as a “comprehensive review” of cost effectiveness and cost-benefit literature from 1995 to 2005, and then they carried out a meta analysis using 12 qualifying studies. A compilation of point estimates across these studies found that incremental cost effectiveness ratios for opioid maintenance of various types ranged from \$3,451 to \$9,103 (1996 USD) per additional QALY. Evidence regarding methadone versus buprenorphine was summarized as “equivocal”. Only four studies were noted to consider full societal perspectives (e.g., crime, health cost, patient costs such as transport, and QALYs). Simoens and colleagues also noted that economic analysis so far has: “...<i>failed to identify the sub-groups of subjects and the conditions under which community maintenance for opiate dependence has the highest economic value.</i> (p. 38)”</p> <p>Different approaches to modelling, different time horizons, comparators and perspective, country of origin, source of preference weights and effectiveness data used creates challenges in generalizing to the Canadian context.</p> <p>Ref: Simoens, S., et al. Pharmaco-economics of community maintenance for opiate dependence: A review of evidence and methodology. Drug Alcohol Depend, 2006</p>	

Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ○ Probably increased ● Increased ○ Varies 	<p>Because people experiencing homelessness are disproportionately affected by OUD, ensuring access to effective pharmacologic treatments stands to have a larger impact on this group than the general population. Traditionally, however, people with concurrent homelessness and OUD have experienced a number of structural barriers in accessing OAT (including ability to afford medication and/or dispensing fees). The impact of pharmacologic treatment for OUD on health equity for homeless populations depends significantly on the removal or reduction of as many access barriers as possible.</p>	

<input type="radio"/> Don't know		
<h3>Acceptability</h3> <p>Is the intervention acceptable to key stakeholders?</p>		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input checked="" type="radio"/> Probably yes <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>People experiencing homelessness value trust and safety; the established link between prescriber continuity and better treatment outcomes suggests that patients in a long term relationship with a trusted care provider will be more accepting of pharmacologic treatment of OUD. Where neither methadone nor buprenorphine are tolerable or acceptable to patients, potentially more acceptable treatments are emerging (heroin, injectable hydromorphone) that are informed by the grassroots-driven harm reduction movement. This may reflect homeless population need for a sense of autonomy vs perception of external control. OAT is widely accepted by public health, clinical, and social service organizations and is the standard of care for OUD. Although older narratives of OAT as “substituting one addiction for another” persist, public perception is increasingly in support of OAT as an effective means to address Canada’s overdose crisis.</p>	<p>One panel member noted that OAT has become mainstream, especially with national treatment guidelines and the increased availability of buprenorphine/naloxone.</p>
<h3>Feasibility</h3> <p>Is the intervention feasible to implement?</p>		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>Many clinicians serving homeless and precariously housed populations are already prescribing pharmacologic treatments for OUD. For others, lack of clinician education, comfort, and mentorship are barriers to implementation. Inadequate specialist and multidisciplinary team support may introduce additional barriers. Methadone prescribing is restricted in all Canadian provinces; conversely, fewer restrictions exist for buprenorphine in most provinces in an effort to facilitate implementation.</p>	<p>The panel noted that implementation to date in many settings is evidence that the intervention is feasible to implement.</p>

SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know

	JUDGEMENT						
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ●	Strong recommendation for the intervention ○
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CONCLUSIONS

Recommendation

1. Identify, during history or physical examination, opioid use disorder.
2. Ensure access within primary care or via an addiction specialist to opioid agonist therapy (OAT), potentially in collaboration with public health or community health centre CHC for linkage to pharmacological interventions.

Justification

Balance in favour of desirable effects, and health equity impact. Available evidence is indirect, i.e. no studies specific to homeless and vulnerably housed populations (only some studies specified housing demographics).

Subgroup considerations

The panel judged that priority for pharmacological interventions for opioid use disorder should be considered for pregnant women and individuals with concurrent mental illness.

Implementation considerations

Close collaboration required between primary and specialty care providers, educators, health system, and professional associations to optimize access. Will require provider mentorship, training, and access to strong multidisciplinary teams / resources. Methadone prescribing is restricted in all Canadian provinces; fewer restrictions exist for buprenorphine in most provinces. Consider population-specific access barriers and strategies to reduce these barriers for Homeless and Vulnerably Housed populations.

The panel also noted that removing co-pays from pharmacy dispensing is necessary in many settings to decreasing the financial barrier of pharmacological interventions.

The panel also noted that care should be provided by multidisciplinary teams.

Monitoring and evaluation

The panel noted that quality indicators are important to consider for healthcare providers providing OAT.

Additionally population outcomes including morbidity and mortality due to substance use are important to monitor.

Research priorities

OAT research specific to a) Homeless and Vulnerably Housed populations and b) Housing outcomes is lacking and should be prioritized. Further research on promising emerging therapies, such as supervised heroin and injectable hydromorphone, is also needed to address the substantial number of people with OUD for whom methadone and buprenorphine are poorly tolerated or otherwise unacceptable.

QUESTION

Should Supervised consumption facilities vs. no intervention or alternative intervention be used for homeless and vulnerably housed populations?

POPULATION:	Homeless and vulnerably housed populations
INTERVENTION:	Supervised consumption facilities
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	Mortality, morbidity (including mental health), substance use, access to care, retention in treatment.
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health systems
BACKGROUND:	<p>Substance use and substance use disorders are more prevalent among homeless and vulnerably housed populations than among the general population. Homelessness is associated with higher risk consumption, and subsequent health sequelae such as BBI acquisition and overdose. Canada is currently experiencing an opioid overdose epidemic associated with decreased life expectancy for Canadians. People with lived experience and other stakeholders alike have called for an increase in harm reduction availability--including supervised consumption facilities (SCFs)--as part of a coordinated multi-pronged overdose prevention response.</p> <p>Supervised consumption facilities are defined as legally sanctioned facilities where people who consume drugs can inject pre-obtained drugs under medical supervision and are frequently used as a safe space for people experiencing homelessness and those who are vulnerably housed and use substances.</p>
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem

Is the problem a priority?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>150,000-300,000 Canadians experience homelessness every year; 35,000 on any given night. Homelessness is associated with higher risk consumption, and subsequent health sequelae such as blood borne infection acquisition and overdose. Canada is currently experiencing an opioid overdose epidemic associated with decreased life expectancy for Canadians. People with lived experience and other stakeholders alike have called for an increase in harm reduction availability--including supervised consumption facilities (SCFs)--as part of a coordinated multi-pronged overdose prevention response. SCFs can mitigate overdose risk, reduce the transmission of HIV and viral hepatitis, and provide a low threshold pathway to addiction treatment and social supports.</p>	

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> Trivial <input type="radio"/> Small <input type="radio"/> Moderate	<p>We conducted an overview of systematic reviews to identify evidence on supervised consumption facilities. We included two systematic reviews, capturing the results of 90 observational studies. The majority of the findings come from Vancouver, Canada and Sydney, Australia.</p>	<p>One panel member noted that the effects of SCF appear to require additional services, such as access</p>

- Large
- Varies
- Don't know

DESIRABLE EFFECTS (BENEFITS)

SUMMARY OF EVIDENCE

1. **Mortality:** SCFs lead to a decrease in lethal overdoses, with little-to-no deaths reported during study periods.
2. **Morbidity (including mental health):** No reviews reported on mental health. One review suggests that SCFs prevent incident HIV and HCV infections, but the exact number of cases averted depends on varying mathematical model assumptions.
3. **Substance use:** SCFs do not demonstrate cessation in injection drug use, but do decrease syringe sharing, syringe reuse and public injection.
4. **Access to care:** SCF attendance was associated with an increase in referrals to an addiction treatment center, but not treatment uptake. SCFs may be associated with initiation of methadone maintenance therapy.
5. **Retention in treatment:** SCF use not associated with treatment uptake. Proportion of homelessness for daily users of SCF in Vancouver jumped to 22% when compared to non-daily users at 4%.

Outcome 1: Mortality

Sub-outcome: Lethal overdoses in SCF proximity

In Vancouver, Canada, one study (Marshall et al., 2011) reported that SCFs led to a 35% decrease in the number of lethal overdoses within 500 metres of the SCF (from 253.8 to 165.1 deaths per 100,000 person-years ($p = 0.048$), compared to 9% in the rest of the city (reviews: Kennedy 2017; Potier 2014)

Sub-outcome: Lethal overdoses avoided each year

Over a four-year period, an SCF avoided 1004 overdoses, including 453 life-threatening overdoses, suggesting that between 2 and 12 cases of lethal overdose might have been avoided each year (Milloy et al, 2008b, Kennedy 2017; Potier 2014). This is an agreement with the study conducted by Hedrich (2014), which estimated at least 10 deaths are prevented by SCFs in Germany each year (Hedrich 2004; Kennedy 2017)

Sub-outcome: Deaths during study period

In one study, there were 336 reported overdoses within the SCF over a four year period, and no deaths (Kerr et al 2006b). In another, over a 17 month period, there were 409 overdoses and no deaths (Van Beek 2004; Potier 2014). Frequent SCF use was positively associated with experiencing a non-fatal overdose within the SCF (AOR = 6.1; 95% CI 4.3–8.6).

to detox, rehab and OAT, in order to have a greater impact.

Another panel member noted that it is important to discuss what services are offered at these safe injection sites and how they can be used to increase rates in treatment uptake or safe housing.

Sub-outcome: Emergency department presentations

An SCF led to a 35% decrease in opioid poisoning ED presentations ($p < 0.001$, NCHECR 2007)

Outcome 2: Morbidity (including mental health)

No reviews reported on mental health outcomes.

Sub-outcome: HIV cases averted

A mathematical simulation estimates that 1191 incident HIV cases were averted over 10 years (Bayoumi and Zaric, 2008; Kennedy 2017). Another mathematical model estimated that the SCF prevents 22 incident HIV infections per year (Andresen and Jozaghi 2012; Kennedy 2017)

Sub-outcome: HCV cases averted

A mathematical simulation estimates that 54 incident HCV cases were averted over 10 years (Bayoumi and Zaric, 2008; Kennedy 2017)

Outcome 3: Substance use

Sub-outcome: Injection drug use cessation and relapse

A pre-post study undertaken in Vancouver (Kerr, 2006) found no substantial changes in rates of resuming injection drug use (17 to 20%) or stopping injection drug use (17 vs. 15%).

Sub-outcome: IDU initiation

Among the entire population of SCF users in Vancouver ($n = \sim 5000$), the estimated number who may have initiated injection drug use inside the SCF since the SIF opened was 5 (95% CI 2–12), which is comparatively lower than the expected rate of initiation into injection drug use among local street-involved youth during a similar follow-up period (100 initiations; 95% CI 81–122) (NCHECR 2007; Kennedy, 2017).

Sub-outcome: Syringe sharing and syringe reuse

Studies conducted in Vancouver and Sydney showed that the regular use of SCFs was associated with decreased syringe sharing (aOR = 0.30, 95%CI = [0.11–0.82]) (Kerr et al., 2005c) and syringe reuse (aOR = 2.04, 95%CI = [1.38–3.01]) (Stoltz et al., 2007b) (Potier 2014)

Bravo (2009) reports that SCF use was associated with not borrowing used syringes (AOR = 3.3; 95% CI 1.4–7.7) and was not significantly associated with not sharing injection equipment (AOR = 1.1; 95% CI 0.5–2.2) (Bravo 2009; Kennedy 2017).

Sub-outcome: Public injection

Studies conducted in Vancouver and Sydney showed that the regular use of SCFs was associated with decreased public-space injection (aOR = 2.79, 95%CI = [1.93–3.87]) (Stoltz et al., 2007b) (Potier 2014)

SCF opening in Vancouver was associated with reductions in the number of people injecting in public (mean daily # 2.4 (95% confidence interval [CI] 1.9–3.0) after vs. 4.3 (95% CI 3.5–5.4) before SCF opening) (Wood et al., 2004; Kennedy 2017).

McKnight (2007) suggests that factors associated with public injection in Vancouver include homelessness (aOR = 3.1, 95%CI = [1.46-6.58]) (McKnight 2007; Potier 2014).

Outcome 4: Access to care

Sub-outcome: Methadone Maintenance Therapy initiation and cessation

A pre-post study undertaken in Vancouver (Kerr, 2006) found no substantial changes in rates starting methadone maintenance therapy (11 vs. 7%), or stopping methadone maintenance therapy (13 vs. 11%) (Kerr 2006; Kennedy 2017)

SCF attendance was associated with a global increase in diverse types of dependence care, i.e., referral to an addiction treatment center, initiation of a detoxification program (OR = 1.32, 95%CI = [1.11–1.58]; p = 0.002 (Wood et al., 2007), and initiation of methadone maintenance therapy (aHR = 1.57, 95%CI = [1.02–2.40] (Potier 2014)

Sub-outcome: referral to treatment

A study in Sydney found that frequent SCF use was positively associated with referral to addiction treatment, although analyses with addiction treatment uptake as the outcome produced null results (Kimber et al., 2008; Kennedy 2017).

Being advised to seek treatment for a medical condition by SCF staff in Denmark, where 40% of individuals were described as unstably housed, was associated with an increased likelihood of receiving treatment (51.3 vs. 25.7%, p = 0.003)(Toth 2016; Kennedy 2017). A cohort study of SCF users in Vancouver found that those referred to hospital by SCF nurses were more likely to access the emergency department [females (AOR = 4.48; 95% CI 2.76–7.30) and males (AOR = 2.97; 95% CI 1.93–4.57)] (Lloyd-Smith et al., 2012; Kennedy 2012).

Sub-outcome: Receipt of treatment

In the Vancouver SCF 54% of individuals under study were homeless, approximately 27% of individuals received care, 65% of whom attended the SCF specifically for the purpose of accessing care (Lloyd-Smith 2009; Potier 2014). Factors associated with receiving care included female gender (aOR = 1.87, 95%CI = [1.32–2.64]) and unstable housing (aOR = 1.39, 95%CI = [1.02–1.88]) (Lloyd-smith 2009; Potier 2014).

Sub-outcome: Obstacles to access to care

	<p>On average, 21% of individuals in Vancouver wanted but were unable to access dependence treatment. The main obstacle in access was the waiting list, however homelessness was significantly associated with this inability (OR = 1.47, 95%CI = [1.09–1.98]) (Milloy 2010; Potier 2014).</p> <p><u>Outcome 5: Retention in treatment</u></p> <p><i>Sub-outcome: Treatment uptake</i></p> <p>In Sydney, frequent SCF use, where 11.6% of attendees were unstably housed, was positively associated with drug treatment referral (AHR = 1.6; 95% CI 1.2–2.2) but was not significantly associated with drug treatment referral uptake (AOR = 0.8; 95% CI 0.4–2.0) (Kimber 2008; Kennedy 2017)</p> <p><i>Sub-outcome: SCF use</i></p> <p>Those who initiated SCF use in Vancouver were significantly more likely to be homeless (OR 5.24, CI 1.99-13.71), and the proportion of homelessness for daily users of SCF in Vancouver jumped to 22% when compared to non-daily users at 4% homelessness (Stoltz et al 2007a ; Potier 2014), which was similarly reported in Wood (2005) (OR = 1.7, 95%CI = [1.2–2.7]) and Wood (2006c) 9OR= 2.39, 95%CI = [1.57–3.63]) (Potier 2014)</p> <p><u>UNDESIRABLE EFFECTS (HARMS)</u></p> <ul style="list-style-type: none"> • SCF clients report problems related to injection e.g. injury, infection, thrombosis (Salmon 2009), however these are harms of injection and not of the SCF itself • Unstable housing associated with infection (aOR=1.49, Lloyd-Smith 2008) • Homelessness significantly associated with inability to access care (treatment) from SCF • Frequent SCF use was positively associated with experiencing a non-fatal overdose within the SCF (AOR = 6.1; 95% CI 4.3–8.6) (van Beek, 2004) 	
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Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large ○ Moderate ● Small ○ Trivial ○ Varies ○ Don't know 	<p>We conducted an overview of systematic reviews to identify evidence on supervised consumption facilities. We included two systematic reviews, capturing the results of 90 observational studies. The majority of the findings come from Vancouver, Canada and Sydney, Australia.</p> <p><u>DESIRABLE EFFECTS (BENEFITS)</u></p>	<p>Panel members noted that harms are minimal, especially when compared to active use of drugs on the street and that the undesirable effects are related to injection and homelessness, not specifically to SCFs.</p>

SUMMARY OF EVIDENCE

1. **Mortality:** SCFs lead to a decrease in lethal overdoses, with little-to-no deaths reported during study periods.
2. **Morbidity (including mental health):** No reviews reported on mental health. One review suggests that SCFs prevent incident HIV and HCV infections, but the exact number of cases averted depends on varying mathematical model assumptions.
3. **Substance use:** SCFs do not demonstrate cessation in injection drug use, but do decrease syringe sharing, syringe reuse and public injection.
4. **Access to care:** SCF attendance was associated with an increase in referrals to an addiction treatment center, but not treatment uptake. SCFs may be associated with initiation of methadone maintenance therapy.
5. **Retention in treatment:** SCF use not associated with treatment uptake. Proportion of homelessness for daily users of SCF in Vancouver jumped to 22% when compared to non-daily users at 4%.

Outcome 1: Mortality

Sub-outcome: Lethal overdoses in SCF proximity

In Vancouver, Canada, one study (Marshall et al., 2011) reported that SCFs led to a 35% decrease in the number of lethal overdoses within 500 metres of the SCF (from 253.8 to 165.1 deaths per 100,000 person-years ($p = 0.048$), compared to 9% in the rest of the city (reviews: Kennedy 2017; Potier 2014)

Sub-outcome: Lethal overdoses avoided each year

Over a four-year period, an SCF avoided 1004 overdoses, including 453 life-threatening overdoses, suggesting that between 2 and 12 cases of lethal overdose might have been avoided each year (Milloy et al, 2008b, Kennedy 2017; Potier 2014). This is an agreement with the study conducted by Hedrich (2014), which estimated at least 10 deaths are prevented by SCFs in Germany each year (Hedrich 2004; Kennedy 2017)

Sub-outcome: Deaths during study period

In one study, there were 336 reported overdoses within the SCF over a four year period, and no deaths (Kerr et al 2006b). In another, over a 17 month period, there were 409 overdoses and no deaths (Van Beek 2004; Potier 2014). Frequent SCF use was positively associated with experiencing a non-fatal overdose within the SCF (AOR = 6.1; 95% CI 4.3–8.6).

Sub-outcome: Emergency department presentations

An SCF led to a 35% decrease in opioid poisoning ED presentations ($p < 0.001$, NCHECR 2007)

Outcome 2: Morbidity (including mental health)

No reviews reported on mental health outcomes.

Sub-outcome: HIV cases averted

A mathematical simulation estimates that 1191 incident HIV cases were averted over 10 years (Bayoumi and Zaric, 2008; Kennedy 2017). Another mathematical model estimated that the SCF prevents 22 incident HIV infections per year (Andresen and Jozaghi 2012; Kennedy 2017)

Sub-outcome: HCV cases averted

A mathematical simulation estimates that 54 incident HCV cases were averted over 10 years (Bayoumi and Zaric, 2008; Kennedy 2017)

Outcome 3: Substance use

Sub-outcome: Injection drug use cessation and relapse

A pre-post study undertaken in Vancouver (Kerr, 2006) found no substantial changes in rates of resuming injection drug use (17 to 20%) or stopping injection drug use (17 vs. 15%).

Sub-outcome: IDU initiation

Among the entire population of SCF users in Vancouver ($n = \sim 5000$), the estimated number who may have initiated injection drug use inside the SCF since the SIF opened was 5 (95% CI 2–12), which is comparatively lower than the expected rate of initiation into injection drug use among local street-involved youth during a similar follow-up period (100 initiations; 95% CI 81–122) (NCHECR 2007; Kennedy, 2017).

Sub-outcome: Syringe sharing and syringe reuse

Studies conducted in Vancouver and Sydney showed that the regular use of SCFs was associated with decreased syringe sharing (aOR = 0.30, 95%CI = [0.11–0.82]) (Kerr et al., 2005c) and syringe reuse (aOR = 2.04, 95%CI = [1.38–3.01]) (Stoltz et al., 2007b) (Potier 2014)

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Sub-outcome: Public injection

Studies conducted in Vancouver and Sydney showed that the regular use of SCFs was associated with decreased public-space injection (aOR = 2.79, 95%CI = [1.93–3.87]) (Stoltz et al., 2007b) (Potier 2014)
SCF opening in Vancouver was associated with reductions in the number of people injecting in public (mean daily # 2.4 (95% confidence interval [CI] 1.9–3.0) after vs. 4.3 (95% CI 3.5–5.4) before SCF opening) (Wood et al., 2004; Kennedy 2017).

McKnight (2007) suggests that factors associated with public injection in Vancouver include homelessness (aOR = 3.1, 95%CI = [1.46-6.58]) (McKnight 2007; Potier 2014).

Outcome 4: Access to care

Sub-outcome: Methadone Maintenance Therapy initiation and cessation

A pre-post study undertaken in Vancouver (Kerr, 2006) found no substantial changes in rates starting methadone maintenance therapy (11 vs. 7%), or stopping methadone maintenance therapy (13 vs. 11%) (Kerr 2006; Kennedy 2017)

SCF attendance was associated with a global increase in diverse types of dependence care, i.e., referral to an addiction treatment center, initiation of a detoxification program (OR = 1.32, 95%CI = [1.11–1.58]; p = 0.002 (Wood et al., 2007), and initiation of methadone maintenance therapy (aHR = 1.57, 95%CI = [1.02–2.40]) (Potier 2014)

Sub-outcome: referral to treatment

A study in Sydney found that frequent SCF use was positively associated with referral to addiction treatment, although analyses with addiction treatment uptake as the outcome produced null results (Kimber et al., 2008; Kennedy 2017).

Being advised to seek treatment for a medical condition by SCF staff in Denmark, where 40% of individuals were described as unstably housed, was associated with an increased likelihood of receiving treatment (51.3 vs. 25.7%, p = 0.003)(Toth 2016; Kennedy 2017). A cohort study of SCF users in Vancouver found that those referred to hospital by SCF nurses were more likely to access the emergency department [females (AOR = 4.48; 95% CI 2.76–7.30) and males (AOR = 2.97; 95% CI 1.93–4.57)] (Lloyd-Smith et al., 2012; Kennedy 2012).

Sub-outcome: Receipt of treatment

In the Vancouver SCF 54% of individuals under study were homeless, approximately 27% of individuals received care, 65% of whom attended the SCF specifically for the purpose of accessing care (Lloyd-Smith 2009; Potier 2014). Factors associated with receiving care included female gender (aOR = 1.87, 95%CI = [1.32–2.64]) and unstable housing (aOR = 1.39, 95%CI = [1.02–1.88]) (Lloyd-smith 2009; Potier 2014).

Sub-outcome: Obstacles to access to care

On average, 21% of individuals in Vancouver wanted but were unable to access dependence treatment. The main obstacle in access was the waiting list, however homelessness was significantly associated with this inability (OR = 1.47, 95%CI = [1.09–1.98]) (Milloy 2010; Potier 2014).

	<p><u>Outcome 5: Retention in treatment</u></p> <p><i>Sub-outcome: Treatment uptake</i></p> <p>In Sydney, frequent SCF use, where 11.6% of attendees were unstably housed, was positively associated with drug treatment referral (AHR = 1.6; 95% CI 1.2–2.2) but was not significantly associated with drug treatment referral uptake (AOR = 0.8; 95% CI 0.4–2.0) (Kimber 2008; Kennedy 2017)</p> <p><i>Sub-outcome: SCF use</i></p> <p>Those who initiated SCF use in Vancouver were significantly more likely to be homeless (OR 5.24, CI 1.99–13.71), and the proportion of homelessness for daily users of SCF in Vancouver jumped to 22% when compared to non-daily users at 4% homelessness (Stoltz et al 2007a ; Potier 2014), which was similarly reported in Wood (2005) (OR = 1.7, 95%CI = [1.2–2.7]) and Wood (2006c) 9OR= 2.39, 95%CI = [1.57–3.63]) (Potier 2014)</p> <p><u>UNDESIRABLE EFFECTS (HARMS)</u></p> <ul style="list-style-type: none"> • SCF clients report problems related to injection e.g. injury, infection, thrombosis (Salmon 2009), however these are harms of injection and not of the SCF itself • Unstable housing associated with infection (aOR=1.49, Lloyd-Smith 2008) • Homelessness significantly associated with inability to access care (treatment) from SCF • Frequent SCF use was positively associated with experiencing a non-fatal overdose within the SCF (AOR = 6.1; 95% CI 4.3–8.6) (van Beek, 2004) 	
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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ● Very low ○ Low ○ Moderate ○ High ○ No included studies 	<p>We evaluated certainty of evidence for <u>critical</u> patient important outcomes: Substance use, morbidity (including mental health) and mortality. No reviews provided evidence on mental health outcomes.</p>	

Certainty assessment							Summary of Findings	Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations			
Outcome: Mortality									
Lethal overdoses in SCF proximity (Marshall, 2011) ▼									
1	Observational studies	Not serious	Not serious	Not serious	Not serious	None	35% decrease in the number of lethal overdoses within 500 metres of the SCF (from 253.8 (187.3 to 320.3) to 165.1 (108.8 to 221.4) deaths per 100,000 person-years (RD 88.7 (1.6 to 175.8) per 100 000 person years; p = 0.048), compared to the rest of the city: 9.3%, from 7.6 (6.2 to 9.0) to 6.9 (5.5 to 8.4) deaths per 100 000 person-years (p=0.490).	⊕⊕○ ○ LOW	CRITICAL
Lethal overdoses avoided each year (Milloy 2008, Hedrich 2004)									
2	Observational studies	Not serious	Not serious	Serious ^a	Not serious	None	In Vancouver, the SCF avoided 1004 overdoses over 4 years, including 453 life-threatening overdoses, suggesting that between 2 and 12 cases of lethal overdose might have been avoided each year. A study from Germany estimate that at least 10 deaths are prevented by SCF each year.	⊕○○○ ○ VERY LOW	CRITICAL

Deaths during study period (Kerr 2006, van Beek 2004)									
2	Observational studies	Not serious	Not serious	Not serious	Not serious	None	There were 336 reported overdoses within the SCF over a four year period, and no deaths. In another study, over a 17 month period, there were 409 overdoses and no deaths.	⊕⊕○ ○ LOW	CRITICAL
Outcome: Morbidity									
HIV cases averted (Andresen & Jozaghi 2012; Bayoumi & Zaric 2008)									
2	Observational studies	Not serious	Serious	Serious ^a	Not serious	None	A mathematical simulation estimates that 1191 incident HIV cases were averted over 10 years. Another mathematical model estimated that the SCF prevents 22 incident HIV infections per year.	⊕○○○ ○ VERY LOW	CRITICAL
HCV cases averted (Bayoumi & Zaric 2008)									
1	Observational studies	Not serious	Not serious	Serious ^a	Not serious	None	A mathematical simulation estimates that 54 incident HCV cases were averted over 10 years	⊕○○○ ○ VERY LOW	CRITICAL
Outcome: Substance use									
Injection drug use initiation (NCHECR 2007)									
1	Observational studies	Not serious	Not serious	Not serious	Not serious	None	Among the entire population of SCF users in Vancouver (n = ~ 5000), the estimated number who may have initiated injection drug use inside the SCF since the SIF opened was 5 (95% CI 2–12), which is comparatively lower than the expected rate of initiation into injection drug use among local street-involved youth during a similar follow-up period (100 initiations; 95% CI 81–122)	⊕⊕○ ○ LOW	CRITICAL

Explanations

a. Mathematical simulations providing indirect evidence

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Important uncertainty	We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably	

or variability
 ○ Possibly important uncertainty or variability
 ● Probably no important uncertainty or variability
 ○ No important uncertainty or variability

housed people. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified (See table below)

Priority	Persons with Lived Experience	Practitioners
1	Facilitating access to Housing	Facilitating access to Housing
2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma
3	Care coordination/Case management	Care coordination/Case management
4	Facilitating access to adequate income	Chronic disease management
5	Chronic disease management	End-of-life care
6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income
7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases
8	Nutrition and Dietary support	Nutrition and Dietary support

Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important outcomes. Substance use, mortality and mental health were considered critical, with some variability in rankings between providers and persons with lived experience. Access to care and retention in treatment were considered important, with one individual suggesting access as critically important.

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT

RESEARCH EVIDENCE

ADDITIONAL CONSIDERATIONS

<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ Don't know 	<p>Evidence of benefit is strongest for reduced mortality (from overdose), morbidity (averted cases of BBIs), and substance use risk behaviours (syringe reuse and public injection). Users of SCFs experience injection-related harms, but this is a function of the injection behaviour itself. No evidence of harm associated directly with SCFs.</p>	<p>One panel member noted that the balance of effects are significant, but limited in scope based on existing evidence.</p>
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Resources required

How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large costs ○ Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ● Don't know 	<p>Our systematic review did not identify any eligible studies on resource requirements of SCFs.</p>	<p>One panel member noted that there would be costs associated with setting up and operating the SCFs, but one would assume there would be savings related to reduced overdoses, ambulance calls, ER visits, decreased infection (HIV, HCV), etc. that would offset the cost.</p> <p>One panel member noted that costs can be deferred with co-location with other wrap around services required by the population.</p>

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Very low ○ Low ○ Moderate ○ High ● No included studies 	<p>No included studies.</p>	

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ No included studies 	<p>We identified two systematic reviews which reported on the cost-effectiveness of SCFs (Potier 2014; Kennedy 2017):</p> <p>“A total of six studies have evaluated the cost-effectiveness of SCFs, all of which were conducted in Vancouver. Five studies examined the economic impacts of Insite and found it to be cost-effective. For example, a simulation study estimated that the SCF provides an excess of \$CAD 6 million per year (due to averted overdose deaths and incident HIV cases) after considering the facility’s annual operating costs. Others have provided more conservative estimates, including a study estimating that the prevention of incident HIV cases and overdose deaths by the SCF provides an excess of \$CAD 200,000–400,000 per year. Additionally, a recent study of the cost-effectiveness of an unsanctioned peer-run SCF found that the facility saved an annual average of \$CAD 1.8 million due to the prevention of incident cases of hepatitis C (HCV) infection” (Kennedy, 2017).</p>	<p>One panel member noted that cost avoidance is a common approach to justify services to marginalized populations and hopefully it will translate in time to more appropriate service design that increases access and comfort.</p>
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Equity
What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know 	<p>Homelessness is associated with infection and public injection, and although unstable housing may negatively impact the magnitude of SCFs’ effect, the direction of the effect remains beneficial. SCFs facilitate access to medical treatment for homeless participants and women in particular. SCFs provide low-threshold low-stigma services, without a requirement of abstinence, that may otherwise be out of reach for homeless and precariously housed people who use substances.</p> <p>Evidence from grey literature reports that most SCFs, including the Vancouver Insite, do not permit assisted injection to take place on the premises. This is problematic for people who require injecting assistance - often women who receive assistance from male partners, people with disabilities, people who are experiencing withdrawal, or people who are already intoxicated (Ontario HIV Treatment Network; 2014)</p> <p>Ref: Rapid Response Service. Rapid Response: What is the effectiveness of supervised injection services? Toronto, ON: Ontario HIV Treatment Network; May 2014.</p>	<p>One panel member noted one potential concern is which population will seek out SCF to use drugs, will it be the most marginalized or those for whom it is convenient to use?</p>

Acceptability
Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know 	<p>People experiencing homelessness value trust and safety (Magwood et al., in progress); SCFs provide added safety and are typically perceived as trustworthy by clients (Potier 2014). Further, harm reduction is a grassroots movement that espouses the principle of co-design of interventions with people who use drugs. SCFs were developed by people who use drugs and frontline clinicians. As such, SCFs are highly acceptable to these stakeholder groups, and increasingly among other public health, clinical, social service, and policing organizations. Public perception is mixed.</p>	<p>One panel member noted that although central, clients are not the only key stakeholders when one is seeking support for these services. Defining and recruiting stakeholders is an important part of acceptability in establishing SCFs.</p>

Feasibility
Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ○ Probably yes 	<p>Criminalization of many consumed drugs remains a barrier to implementation of SCFs. SCF implementation requires extensive local public consultation, federal exemption, and collaboration between all three levels of government in order to coordinate funding, ancillary services, etc. However, given the current public health impact of unsupervised consumption, many Canadian governments—federal, provincial, and municipal—have created overdose</p>	<p>One panel member noted that implementation of SCFs has become more feasible over time and the</p>

<ul style="list-style-type: none"> ● Yes ○ Varies ○ Don't know 	<p>response strategies along with funding specifically earmarked for SCFs in order to support implementation of newer sites. When SCFs are opened, they are frequently located in areas easily accessible by large homeless and vulnerably housed populations.</p>	<p>panel judged it is now feasible.</p>
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SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ●	Strong recommendation for the intervention ○
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CONCLUSIONS

Recommendation

1. Identify, during history or physical examination, problematic substance use including alcohol or other drugs
2. Refer to local addiction and harm reduction/prevention services (e.g. Supervised consumption facilities) via appropriate local resources such as public health or community health centre/CLSC for linkage

Justification

Lethal overdoses decreased or eliminated across several studies. Studies consistently report decreased syringe sharing, researchers estimate significant harm reduction. Improved access to healthcare and referrals, but not always uptake of program/treatment

Harms (ex: bruising, abscess, sepsis) associated with injection drug use occurred – but this is a function of injection drug use itself

Subgroup considerations

Appropriate intervention for a sub-population of substance users who inject drugs.
The panel noted an additional sub-group requiring special consideration includes individuals who require assistance with injecting themselves.

Implementation considerations

As part of a care continuum that includes comprehensive and trauma informed substance use and treatment as well as harm reduction strategies, practitioners serving homeless, vulnerably housed or PLE patients should be aware of the closest SCF locations and ensure that their patients who use substances are aware of these facilities.

Practitioners need to identify needs and goals of the individual person and then to refer to the most appropriate service.

Incorporate training and expertise in substance use treatment for primary care. Consider other approaches to substance use to improve access to care and build trust.

Practitioners may benefit from continuing medical education training related to substance use, opioids, and supervised consumption facilities.

Advocacy Statement: Where SCFs are not accessible by their patients, practitioners serving homeless and PLE and vulnerably housed patients should advocate for and be willing to collaborate with other stakeholders for implementation of SCFs.

Monitoring and evaluation

Monitoring key outcomes including overdoses, infections.

Additional monitoring of uptake and access of SCF services, as well as ancillary primary health care and mental health and addictions services are also important.

Research priorities

SCF research specific to a) Homeless and Vulnerably Housed populations and b) Housing and Mental Health outcomes is lacking and should be prioritized. The panel also noted a need to further research the population of people who use drugs who need help to inject.

QUESTION

Should Standard case management interventions vs. no intervention or alternative intervention be used for homeless and vulnerably housed populations?

POPULATION:	homeless and vulnerably housed populations
INTERVENTION:	Standard case management interventions
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	<ul style="list-style-type: none"> • Housing stability • Mental Health • Substance use • Quality of life • Income • Employment
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health systems
BACKGROUND:	
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem

Is the problem a priority?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know	<p>It is estimated that 235,000 Canadians experience homelessness each year, and 35 000 Canadians are without shelter on any given night. Coordinated care is one of the pillars of a robust, equitable primary care system (Starfield). Substantial research demonstrating that people who are homeless benefit from receiving tailored, person-centred care within interprofessional teams with an integrated approach to community and social services (Coltman et al., 2015; Hwang & Burns, 2014; James, Hwang, & Quantz, 2005). However, people who are homeless or vulnerably housed may struggle to access such care (Rosenblack). Case management could help overcome these barriers.</p>	<p>One panel member noted that current systems are difficult to navigate in the absence of mental illness/addiction. In the context of concurrent disorders, individuals require care coordination for trained professionals to successfully find stable housing and engage in ongoing care.</p>

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

- Trivial
- Small
- Moderate
- Large
- Varies
- Don't know

Our systematic review identified 11 publications on the effectiveness of case management interventions.

DESIRABLE EFFECTS (BENEFITS):

SUMMARY OF EVIDENCE:

1. **Housing stability:** One trial suggests that case managed clients have lower levels of homelessness, however three additional trials indicate no significant impacts on housing status.
2. **Mental health:** There were no significant effects on overall mental health status or psychological symptoms. Findings on depression remain unclear. One trial reports significant harms of hostility among case-managed clients.
3. **Substance use:** Evidence on substance use is mixed, with the majority of studies suggesting no differences between case-managed and comparison groups. Two studies suggest less consumption of alcohol and/or drugs, but these effects are small or diminish over time.
4. **Quality of life:** While quality of life tended to favour case management, there were no significant differences when compared to usual care groups.
5. **Hospitalization:** Case management patients had fewer ED visits than usual care patients, regardless of prior ED use.
6. **Employment:** Case management may reduce employment problems, but has no effect on employment status.
7. **Income:** One trial suggest that case management leads to lower levels of lack of social security income and unmet financial needs.

Outcome 1: Housing Stability

Sub-outcome: Homelessness

1 RCT comparing comprehensive case management program versus standard care in frequent users of the emergency department found that case management patients evidenced lower levels of homelessness [P<.01] in a repeated measure analysis over 24 months (Shumway 2008). However, at 24 months the odds of homelessness were not significantly different between the two groups.

Sub-outcome: Housing status

In one quasi-experimental trial comparing case managed outreach advocacy and health centre advocacy to usual care, more of those receiving case management (health centre 59%; outreach 70%) had positive housing outcomes, but the differences were not statistically significant when compared to

One panel member noted that though some of the outcomes from the intervention favoured the intervention, many lacked statistical significance. In the areas of hospitalizations and income (QOL) the desirable effects would be moderate. In other areas (employment, substance use) the desirable effects maybe less (no statistical significance).

control (50%) (Graham-Jones 2004).

One RCT of case management among women with alcohol use disorder found no significant improvement in housing location or housing stability indicators (Upshur 2015). In another trial comparing a case manager trained to be the depression care manager and usual shelter services (Weinreb 2016) found that, at 6-month follow-up, both groups had similar situations in terms of housing with more than half of women still in shelters (intervention: 66% vs usual care: 70%).

Outcome 2: Mental Health

Sub-outcome: Psychological symptoms

1 RCT comparing a nurse-led case managed HIV program versus standard care found that there was no statistically significant difference in psychological symptoms between the case managers and the standard care groups. Case managed participants were more likely to have high levels of hostility at follow-up compared to those in the standard care group (Nyamathi 2001).

1 RCT comparing comprehensive case management program versus standard measured psychiatric symptoms using the Brief Symptom Inventory (BSI) and found no statistically significant difference between groups (Shumway 2008).

Sub-outcome: Depression

In one trial, there were no differences on mental health status, but it found a statistically significant decrease in the proportion of intervention participants meeting criteria for depression at 3-months, 32% vs 56%; ($P < .05$) (Upshur 2015).

At the 6-month follow-up of another trial, 73.3% of women in the intervention group had been prescribed an antidepressant medication compared to 5.9% of women in the usual care group ($P \leq .001$) (Weinreb 2016).

Outcome 3: Substance use

Sub-outcome: Alcohol consumption

Three trials report reductions in alcohol use. In Upshur (2015), both groups had dramatic reductions in alcohol consumption ($p < 0.001$), but there was no statistical difference between them. Both groups had a substantial proportion of women who were abstinent from alcohol, with no group differences. In a second trial, compared with usual care patients, case management patients evidenced lower levels of problem alcohol use [$X^2(1) = 4.25, P = .04$] (Shumway 2008). One trial compared a case-managed residential care program compared to a 21-day hospital program with referral to community services (Conrad 1998). On the Alcohol Composite Scale, both groups improved significantly than their baseline scores and maintained that improvement during the entire 24-month observation period. The experimental group experienced less overall alcohol abuse during the 2 years, but the effects tended to decrease with time.

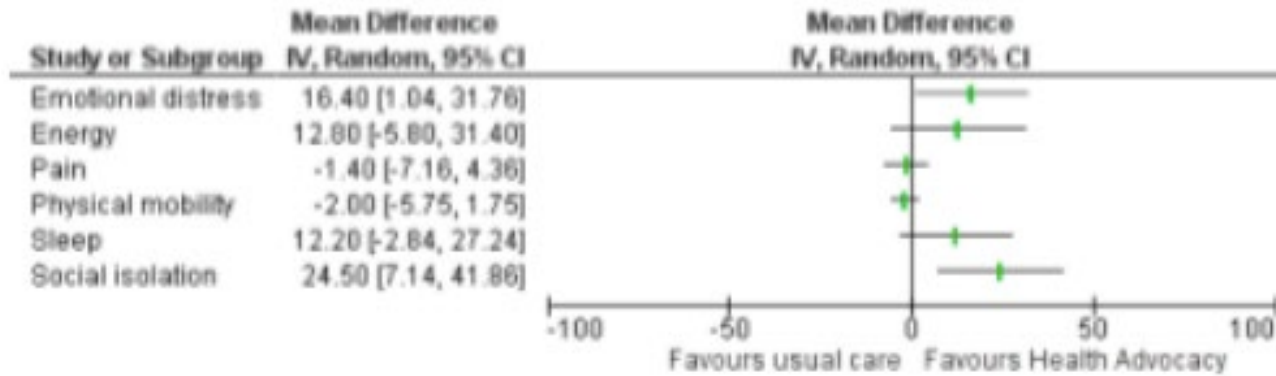
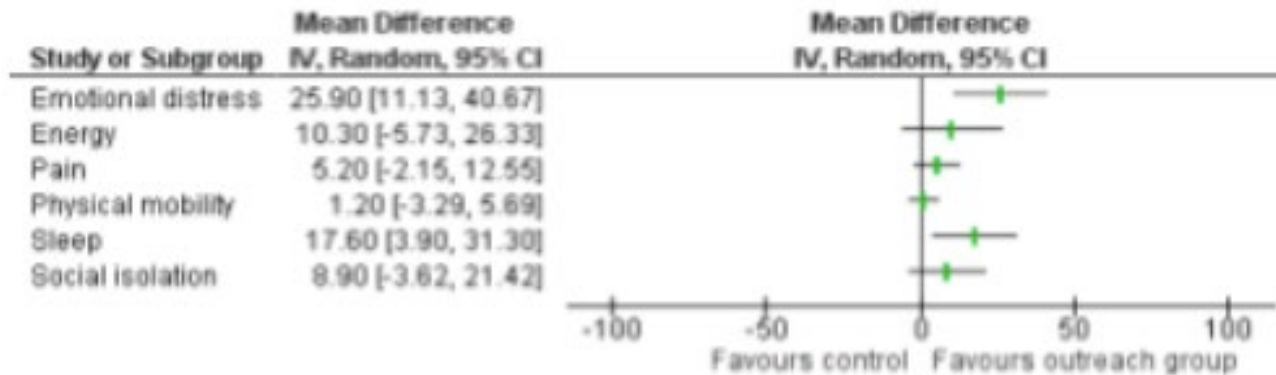
Sub-outcome: Drug use

In one trial (Nyamathi 2001), there was no difference in use of injection drugs between case managed and usual care groups. However, in another trial there was a statistically significantly higher number of days of drug use present in the intervention group at 6-months ($P < .01$) (Upshur 2015). 1 RCT found case management decreased reported average days of alcohol and drug consumption by a modest, but significant 2.5 days ($t = -2.01$; $p < 0.05$) (Sosin 1995).

In a fourth study, a decrease of drug use was observed among all study participants. Almost half (49.4 %) of the case managed participants reported having used marijuana during the 12-month observation period, compared to 45.7 % of the UC group. For stimulant use, which included crack, cocaine, or any amphetamine-type stimulants, 46.4 % of the case managed participants reported having used this drug during the 12-month observation period, compared to 51.1 % of the UC group. Far fewer participants reported use of heroin during the study period: 7.2 % of the case managed and 12.9 % of the UC group. No significant differences were detected on any of reported drug use among these three groups of subjects. (Nyamathi 2016)

Outcome 4: Quality of life

One trial comparing two models of case management to usual care reported on quality of life. While quality of life trends favoured the case management groups (see Figure), results were insignificant. Another RCT (Nyamathi 2001) reported no additional benefits favouring the case management group on life satisfaction scales.



Forest Plot illustrating mean changes in the Nottingham Health profile subscore for two case management groups compared to usual care from baseline to 3 months

Outcome 5: Hospitalization

Case management patients had fewer ED visits than usual care patients [P<.01]. Patients with higher levels of prior ED use (12 or more visits) continued to use the ED more than those with lower levels of prior use (5-11) visits [P<.01], and ED use decreased over time for all patients [P<.01]. However, no statistically significant interaction effects were observed, suggesting that case management is similarly effective for patients with higher and lower levels of prior use (Shumway 2008).

Outcome 6: Employment

One trial reports that case management and comparison groups experienced fewer employment problems with time, and that these effects were

	<p>significantly better for the case managed group over 2 years (Conrad 1998).</p> <p>Two additional studies report no difference in employment status between case-managed and usual care groups at 6 (Weinreb 2016) or 12 months (Nyamathi 2016). The majority of participants remained unemployed or completely dependent on welfare benefits (Nyamathi 2016).</p> <p><u>Outcome 7: Income</u></p> <p>One trial measured the lack of social security income support. Compared with usual care patients, case management patients evidenced lower levels of lack of social security income [P<.01] and unmet financial needs [p=0.04] (Shumway 2008).</p> <p><u>UNDESIRABLE EFFECTS (HARMS)</u></p> <ol style="list-style-type: none"> 1. In several studies, any improvements seen tended to wane (or reverse) over time 2. In one study (Nyamathi 2001) participants in a nurse-led case management program showed lower psychological well-being scores and higher levels of hostility at 6 months 3. We did not find evidence of creating dependency on case managers, despite theoretical concerns. 	
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Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large ○ Moderate ● Small ○ Trivial ○ Varies ○ Don't know 	<p>Our systematic review identified 11 publications on the effectiveness of case management interventions.</p> <p><u>DESIRABLE EFFECTS (BENEFITS):</u></p>	<p>One panel member noted that it would be interesting to know how long the case management intervention was supported (is that why the improvements tended to wane (or reverse) with time. Lower psychological well-being scores and increased hostility would be a moderate undesirable effects (harms), though this was found in only one study. Other studies show a trend towards decreased depression and increased treatment.</p> <p>Another panel member noted that it is challenging to understand how to interpret and the significance that the finding that case managed groups demonstrated higher levels of hostility at follow-up compared to standard care group.</p>

SUMMARY OF EVIDENCE:

1. **Housing stability:** One trial suggests that case managed clients have lower levels of homelessness, however three additional trials indicate no significant impacts on housing status.
2. **Mental health:** There were no significant effects on overall mental health status or psychological symptoms. Findings on depression remain unclear. One trial reports significant harms of hostility among case-managed clients.
3. **Substance use:** Evidence on substance use is mixed, with the majority of studies suggesting no differences between case-managed and comparison groups. Two studies suggest less consumption of alcohol and/or drugs, but these effects are small or diminish over time.
4. **Quality of life:** While quality of life tended to favour case management, there were no significant differences when compared to usual care groups.
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Sub-outcome: Homelessness

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Sub-outcome: Housing status

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Sub-outcome: Psychological symptoms

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At the 6-month follow-up of another trial, 73.3% of women in the intervention group had been prescribed an antidepressant medication compared to 5.9% of women in the usual care group ($P \leq .001$) (Weinreb 2016).

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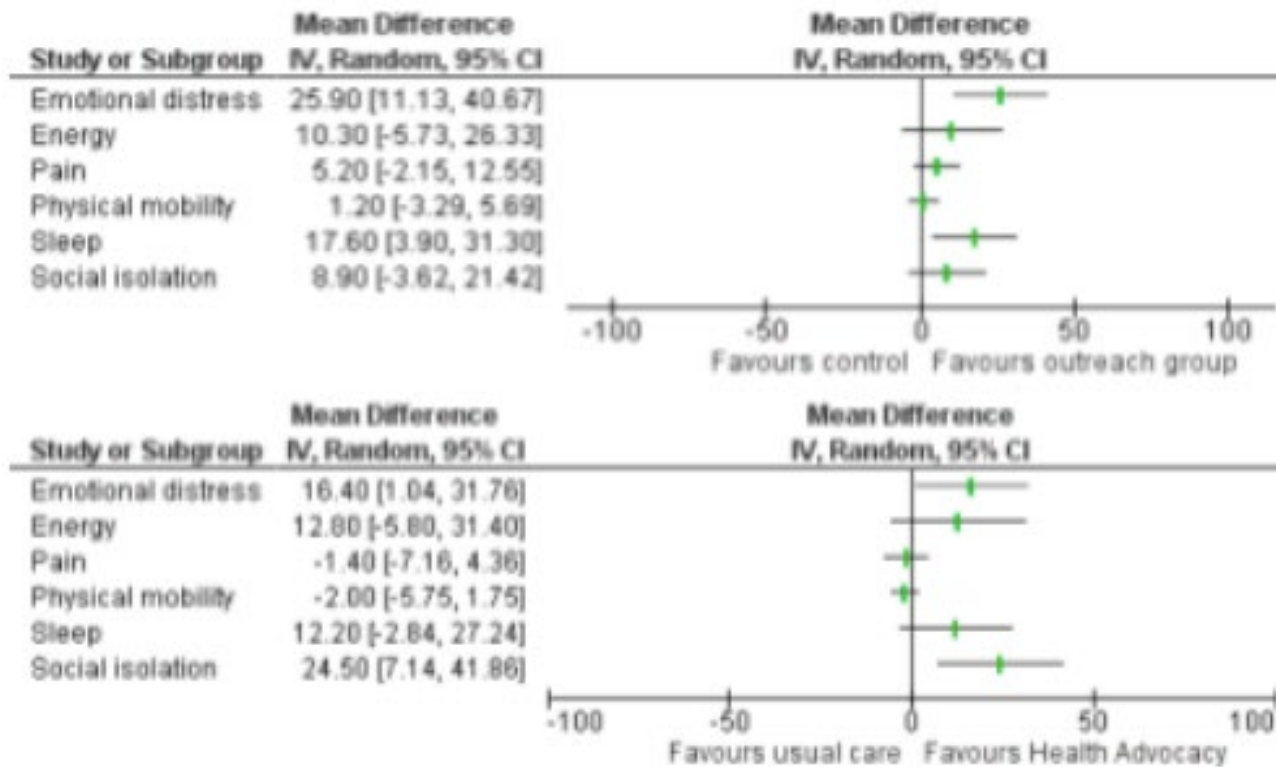
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Outcome 4: Quality of life

One trial comparing two models of case management to usual care reported on quality of life. While quality of life trends favoured the case management groups (see Figure), results were insignificant. Another RCT (Nyamathi 2001) reported no additional benefits favouring the case management group on life satisfaction scales.



Forest Plot illustrating mean changes in the Nottingham Health profile subscore for two case management groups compared to usual care from baseline to 3 months

	<p><u>Outcome 5: Hospitalization</u></p> <p>Case management patients had fewer ED visits than usual care patients [P<.01]. Patients with higher levels of prior ED use (12 or more visits) continued to use the ED more than those with lower levels of prior use (5-11) visits [P<.01], and ED use decreased over time for all patients [P<.01]. However, no statistically significant interaction effects were observed, suggesting that case management is similarly effective for patients with higher and lower levels of prior use (Shumway 2008).</p> <p><u>Outcome 6: Employment</u></p> <p>One trial reports that case management and comparison groups experienced fewer employment problems with time, and that these effects were significantly better for the case managed group over 2 years (Conrad 1998).</p> <p>Two additional studies report no difference in employment status between case-managed and usual care groups at 6 (Weinreb 2016) or 12 months (Nyamathi 2016). The majority of participants remained unemployed or completely dependent on welfare benefits (Nyamathi 2016).</p> <p><u>Outcome 7: Income</u></p> <p>One trial measured the lack of social security income support. Compared with usual care patients, case management patients evidenced lower levels of lack of social security income [P<.01] and unmet financial needs [p=0.04] (Shumway 2008).</p> <p><u>UNDESIRABLE EFFECTS (HARMS)</u></p> <ol style="list-style-type: none"> 1. In several studies, any improvements seen tended to wane (or reverse) over time 2. In one study (Nyamathi 2001) participants in a nurse-led case management program showed lower psychological well-being scores and higher levels of hostility at 6 months 3. We did not find evidence of creating dependency on case managers, despite theoretical concerns. 	
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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
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- Very low
- Low
- Moderate
- High
- No included studies

We evaluated certainty of evidence for critical patient important outcomes: Quality of life, housing stability and employment.

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Case Management	Comparison	Relative (95% CI)	Absolute (95% CI)		
Outcome: Housing Stability												
Percentage of participants homeless (Shumway 2008) (follow up: 24 months)												
1	Randomized trials	serious	not serious	not serious	Serious	none	38/141 (27.0%)	21/85 (24.7%)	OR 1.12 (0.61 to 2.08)	26 more per 1,000 (from 101 fewer to 177 more)	⊕⊕○○ LOW	CRITICAL
Outcome: Quality of life												
Change in overall life fulfillment using the Life Fulfilment Scale (LFS) (Graham-Jones 2004) (follow-up: 3 months)												
1	Observational studies	serious	not serious	not serious	Serious	none	75 (Health Centre: 22; Outreach: 53)	42	Control: 0.3 +/- 23.6 Health Centre: 13.3 +/- 18.8 Outreach: 16.9 +/- 20.5 Analysis of variance (P < 0.001): significantly more improvement (Bonferroni-corrected P < 0.05) in the outreach advocacy group compared with the control group		⊕○○○ VERY LOW	CRITICAL
Outcome: Employment												
Employment problems (Conrad 1998) (follow-up: 24 months)												
1	Randomized trials	Serious	Not serious	Not serious	Serious	none	178	180	Both groups experienced fewer employment problems with time. The experimental group effects were significantly better during the entire 2-year period (p=0.04), [no further data]		⊕⊕○○ LOW	CRITICAL
Employment status "currently employed" (Weinreb 2016) (follow-up: 6 months)												
1	Randomized trials	Serious	Not serious	Not serious	Serious	none	7/21 (33.3%)	2/13 (15.4%)	OR 2.75 (0.47 to 15.96)	179 more per 1,000 (from 75 fewer to 590 more)	⊕⊕○○ LOW	CRITICAL
Employment status "part time or full time" (Nyamathi 2016) (follow-up: 12 months)												
1	Randomized trials	Serious	Not serious	Not serious	Serious	none	53/166 (31.9%)	63/186 (33.9%)	OR 0.92 (0.59 to 1.43)	18 fewer per 1,000 (from 107 fewer to 84 more)	⊕⊕○○ LOW	CRITICAL

Explanations

1. High risk of performance bias, and unclear risk of detection bias
2. Too few events (<300)
3. Too few participants (<400)
4. Unclear risk of selection bias and detection bias, high risk for performance bias.
5. Point estimates and confidence intervals not provided
6. High risk of performance bias and reporting bias

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ● Probably no important 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. The topics were identified from a literature review and then modified and prioritized using a 3 phase Delphi process. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified: mental health and addiction care, facilitating access to housing, facilitating access to income support, and care coordination (See table below).</p>	

uncertainty or variability <input type="radio"/> No important uncertainty or variability	<table border="1"> <thead> <tr> <th>Priority</th> <th>Persons with Lived Experience</th> <th>Practitioners</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Facilitating access to Housing</td> <td>Facilitating access to Housing</td> </tr> <tr> <td>2</td> <td>Mental Health and Addiction Care/Trauma</td> <td>Mental Health and Addiction Care/Trauma</td> </tr> <tr> <td>3</td> <td>Care coordination/Case management</td> <td>Care coordination/Case management</td> </tr> <tr> <td>4</td> <td>Facilitating access to adequate income</td> <td>Chronic disease management</td> </tr> <tr> <td>5</td> <td>Chronic disease management</td> <td>End-of-life care</td> </tr> <tr> <td>6</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> <td>Facilitating access to adequate income</td> </tr> <tr> <td>7</td> <td>End-of-life care</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> </tr> <tr> <td>8</td> <td>Nutrition and Dietary support</td> <td>Nutrition and Dietary support</td> </tr> </tbody> </table>	Priority	Persons with Lived Experience	Practitioners	1	Facilitating access to Housing	Facilitating access to Housing	2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma	3	Care coordination/Case management	Care coordination/Case management	4	Facilitating access to adequate income	Chronic disease management	5	Chronic disease management	End-of-life care	6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income	7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases	8	Nutrition and Dietary support	Nutrition and Dietary support	
	Priority	Persons with Lived Experience	Practitioners																										
1	Facilitating access to Housing	Facilitating access to Housing																											
2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma																											
3	Care coordination/Case management	Care coordination/Case management																											
4	Facilitating access to adequate income	Chronic disease management																											
5	Chronic disease management	End-of-life care																											
6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income																											
7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases																											
8	Nutrition and Dietary support	Nutrition and Dietary support																											
<p>Our research team, expert Working Group members and Community Scholars with lived experience of homelessness also voted on patient-important outcomes. Quality of life and social outcomes, including access to housing and employment, were rated as critical. Mental health, substance use and hospitalization outcomes were considered important.</p>																													

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> Favors the comparison <input type="radio"/> Probably favors the comparison <input checked="" type="radio"/> Does not favor either the intervention or the comparison <input type="radio"/> Probably favors the intervention <input type="radio"/> Favors the intervention <input type="radio"/> Varies <input type="radio"/> Don't know	<p>Despite only small or moderate measured improvements, case management has shown trivial to small benefits for process and outcome measures that are of most importance to people who are homeless/vulnerably housed – however this may not always include improved housing stability. There were limited significant harms identified.</p>	<p>One panel member noted that there is no clear evidence to suggest whether this intervention is favourable.</p> <p>Another panel member noted that the evidence demonstrated some evidence slightly favouring the intervention, though this was not statistically significant.</p>

Resources required

How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none">○ Large costs○ Moderate costs○ Negligible costs and savings○ Moderate savings○ Large savings○ Varies● Don't know	<p>We identified seven studies addressing resources requirement and the cost-effectiveness of standard case management. These studies provided mixed findings depending on a study design and the type of comparators. SCM was found to have numerically higher costs than usual or standard care (Shumway et al, 2008; Nyamathi et al, 2016), assertive community treatment (ACT) (Clark et al, 1998; Essock et al, 1998) and an intermediate peer coaching (Nyamathi et al, 2016) but lower costs compared to Housing and Urban Development and the US Department of Veterans Affairs Supported Housing (HUD-VASH) program with housing vouchers and intensive case management (Rosenheck et al, 2003). Okin et al (2000) reported that case management led to a cost-savings to a hospital. On the contrary, Wolf et al (1997) suggested that there was no different in total costs of ACT alone, ACT with community workers and broker case management.</p>	

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none">○ Very low○ Low○ Moderate○ High● No included studies	<p>There is high uncertainty in the evidence on resource requirements and cost-effectiveness of SCM. Resource requirements and cost-effectiveness depend on the type of comparators and data sources used to inform a cost/cost-effectiveness study.</p>	

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
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<ul style="list-style-type: none"> ○ Favors the comparison ● Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ○ Favors the intervention ○ Varies ○ No included studies 	<p>SCM led to the lower costs and improved some health and social outcomes among homeless persons with mental illness compared to standard care (Rosenheck et al, 2003). However, SCM was less economically attractive when compared to ACT as it was more expensive and associated with more days in unstable housing (Essock et al, 1998) and poorer quality of life (Clark et al, 1998).</p>	
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Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know 	<p>No RCTs provided evidence on health equity outcomes. However, standard case management likely improves access and uptake of services for disadvantaged populations, for example, women and families. Additionally, many studies focused on sub-populations of vulnerable groups (severe mental illness, women, people with substance use disorders, those recently incarcerated).</p>	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know 	<p>We conducted a qualitative systematic review (Magwood et al., in progress) and assessed confidence in key findings using GRADE CERQual. We identified five key findings relevant to standard case management interventions.</p>	<p>One panel member noted the importance of stability of staff and peer groups - particularly with women and youth.</p>

Review Finding	CERQual Assessment of Confidence in the Evidence	Explanation of CERQual Assessment	Studies Contributing to the Review Finding
<p>Individuals participating in housing programs initially felt socially isolated, but found that support from peers and staff allowed them to develop altruism towards their peers. The key relationships identified were among staff, peers, friends, family, cultural traditions, and the community.</p> <p>Youth and women programs especially found that peer support helped develop relationships and enhanced commitment to seek treatment.</p> <p>Illustrative quote: "I got somebody that's there to help me, that's supportive to me, that's like a friend to me, I can always call them [staffs] and talk to them anytime of the day ... She never mistreated me, talked about my business to other people". (Quinn et al., 2015)</p>	Moderate confidence	Moderate concerns were about the generalizability of certain subgroups of people across the homeless population and the variability in interventions administered	Alhusen et al., 2017 Aviles et al., 2004 Collins et al., 2012 Davis et al., 2012 Ferguson et al., 2008. Gultekin et al., 2014. Holtschneider et al., 2017 Jost et al., 2011 Kozloff et al., 2013 Macnaughton, 2016 Macnell et al., 2011 Mitchell et al., 2017 Patterson et al., 2015 Stewart et al., 2010 Thompson et al., 2006 Wright et al., 2006 Yamin et al., 2014
<p>Homeless men and women of all ages value being able to trust their service providers and others around them. They felt that once trust was established, a strong relationship could develop.</p> <p>Male youth had more difficulty than other groups to trust providers and access services.</p> <p>Illustrative quote: "My employment specialist made trusting so easy. She was quick to try to build confidence and trust. I was hesitant at first, but she really put me at ease." (Poremski, 2016)</p>	Moderate confidence	Moderate concerns surrounding methodological limitations such as limited justification of research design and analysis and small sample sizes.	Cormack et al., 2009 Ferguson et al., 2008 Jost et al., 2011 Patterson et al., 2015 Perreault et al., 2016 Ploeg et al., 2008 Poremski et al., 2016 Quinn et al., 2015 Stewart et al., 2010 Thompson et al., 2006 Taylor et al., 2007 Yamin et al., 2014
<p>Many homeless individuals indicated challenges in maintaining adequate health when there were high turnover rates of service providers resulting in the discontinuity of care.</p> <p>The transient nature of worker support inhibited progress towards homeless persons' goals and was detrimental to their ability to seek out and utilize services.</p> <p>Youth in particular highlighted the need for stability, continuity and commitment by support workers.</p> <p>Illustrative quote: "My problem is they don't have people that's there on a regular basis. Like when I was brought in I had this one case manager, I was comfortable with her, and then I turn around and she's leaving. ... I need consistency". (Quinn et al., 2015)</p>	Low confidence	Moderate concerns were raised with regards to the generalizability of study findings due to the focus on specific subgroups (ie. HIV+ mothers). While the key findings were generally well supported, one article provided limited supporting evidence	Archard et al., 2015 Aviles et al., 2004 Davis et al., 2012 Ferguson et al., 2008 Gultekin et al., 2014 Holtschneider et al., 2016 Jost et al., 2011 Macnaughton et al., 2016 Patterson et al., 2013 Perreault et al., 2016 Ploeg, 2008 Quinn et al., 2015 Thompson et al., 2006
<p>Mental health problems are exacerbated by the intergenerational cycle of violence and poverty experienced by vulnerably housed individuals.</p> <p>Youth feel particularly stigmatized for admitting to mental health issues, leading to an expectation of failure and low self-worth. As participants gain insights into their mental illness, they gain a sense of control over their own lives.</p> <p>Illustrative quote: "It's difficult for me to ask for help. . . . I don't want to tell people that I have mental health issues or that I have a substance abuse problem. . . . They're gonna think that I'm dirty, they're gonna think I'm a prostitute, they're gonna think that I use dirty needles." (Kozloff et al., 2013)</p>	Very low confidence	Moderate concerns around methodological limitations, such as limited justification of the research design and analysis, and some studies did not consider ethical issues. Additionally, certain subgroups were emphasized, challenging the applicability of results to the larger public, and some studies did not have supporting evidence for the key findings	Alhusen et al., 2017 Aviles et al., 2004 Chartuvedl et al., 2016 Cormack et al., 2009 Holtschneider et al., 2017 Kozloff et al., 2013 Lorelle et al., 2015 McNaughton et al., 2016 Patterson et al., 2013 Poremski et al., 2016 Quinn et al., 2015 Patterson et al., 2015 Gultekin et al., 2014 Taylor et al., 2007 Stewart et al., 2010 Thompson et al., 2006 McMaster et al., 2017
<p>Homeless and vulnerably housed individuals appreciated the pivotal role caseworkers played in providing them with tools to promote their empowerment and their independence.</p> <p>Illustrative quote: "Case managers, I think, are very important for this program to be successful... I don't think without a case manager, and having the follow up program, I don't think many people would be successful." (Farquhar, 2014)</p>	Very low confidence	Major concerns were attributed to the coherence of the data, as two studies commented on the potential harms caused by caseworkers and service providers. Additionally, variation in sampled program participants may influence generalizability to homeless populations.	Davis et al., 2012 Holtschneider et al., 2017 Thompson et al., 2006 Quinn et al., 2015 Jost et al., 2011 Faruqar et al., 2014 McMaster et al., 2017 Mitchell et al., 2017

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input checked="" type="radio"/> Probably yes <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>Outcomes of case management tend to focus on specific subpopulations of individuals experiencing homelessness (e.g. those with co-occurring disorders, severe mental illness, chronically homeless, and frequent users), making comparisons across studies challenging. However, given the widespread implementation and availability of case management programs, case management interventions appear feasible. Specific models of case management may vary in terms of feasibility or accessibility. Case management in a heterogenous term and it is unclear to what extent fidelity can be achieved in community settings (Lukersmith et al., 2016).</p>	<p>One panel member noted that the feasibility would vary depending on location and existing programs.</p> <p>Another panel member noted that</p>

		the fact that it is routinely used in many settings, provides evidence that it is likely feasible to implement.
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SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ●	Strong recommendation for the intervention ○
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CONCLUSIONS

Recommendation

1. Identify, during history or physical examination, individuals with multiple needs.
2. People with multiple needs should receive person-specific (individualized) standard case management (also known as care coordination). If patient not yet integrated into comprehensive primary care, consider initiating connection within community programs, primary care teams with social workers, or local and context-specific resource.

Justification

A homeless or vulnerably housed individual with multiple morbidity or complex needs and possibly with major mental illness may benefit from care coordination activities by a case manager to enhance the delivery of care and access to resources for appropriate treatment.

Subgroup considerations

Tailored programs may be required for certain subpopulations (e.g. those with co-occurring disorders, severe mental illness, chronically homeless, and frequent healthcare users)

Implementation considerations

Providers should familiarize themselves with clinic and other local resources to inform referral patterns (team-based case management, referral to local agencies, 211 helpline).

Continuity of case manager may build a climate of trust and safety within the coordination and uptake of interventions.

Focusing on tailored interventions may limit reach of case management rather than extending more broadly to primary care populations of people who are homeless, vulnerably housed, or with lived experience- There may be a need to refine case management programs to tailor for sub-populations and there may be a role for a consistent primary care practitioner.

Advocacy Statement: Practitioners should be prepared to advocate for resource allocation to support case management interventions.

Monitoring and evaluation

The panel suggests monitoring the fidelity of this intervention to program models, retention of clients in case management, and alignment with client needs.

Due to uncertainty around outcomes, the panel recommended monitoring desirable and undesirable outcomes related to this intervention.

Research priorities

Equity-oriented outcomes; further research on who delivers case management (ex: peer) [for whom, by whom, and in what setting?]

The panel suggests more research into standard case management, where a signal of harm was identified in the nurse-led management study.

The panel also suggests more comparative research with other interventions, including assertive community treatment.

QUESTION

Should direct or indirect income assistance vs. no intervention or alternative intervention be used for homeless or vulnerably housed populations?

POPULATION:	homeless or vulnerably housed populations
INTERVENTION:	direct or indirect income assistance
COMPARISON:	no intervention or alternative intervention
MAIN OUTCOMES:	<ul style="list-style-type: none"> • Housing stability • Mental Health • Substance use • Quality of life • Income • Employment
SETTING:	Primary care settings in high income countries
PERSPECTIVE:	Health systems
BACKGROUND:	<p>Income assistance is an intervention that helps low-income individuals reduce financial strain. Several models of income assistance exist; some focus on providing direct income or reducing cost of essential needs, whereas others emphasize employment and financial literacy (indirect income assistance).</p> <p>Direct income assistance consists of benefits and programs offered by individuals or institutions that increase income with the goal of improving socioeconomic status. Some examples include: government assistance (i.e. income supplement program), charity donation or panhandling, provision of cheques, tax-benefits or cash transfers.</p> <p>Indirect income assistance includes benefits or programs that improve access to basic living necessities. Examples of specific interventions include the provision of food, daycare, employment assistance, and fuel or rent supplements. This intervention is focused on addressing critical social determinants of health that a person would otherwise be paying for out of their basic income.</p>
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem		
Is the problem a priority?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies	<p>Inadequate income and employment are well-documented as contributing factors of homelessness. With about 30,000 people across Canada who are homeless every day, effective, long-term solutions towards homelessness are a priority. The limited financial resources of homeless persons reduces housing, education, and employment options, as well as access to healthcare, and health status. Despite eligibility for government social assistance, disability income, or other benefits, however, many cannot access them. In a survey of 85 homeless people with disabilities living in Toronto, 100% of study participants were eligible for the ODSP, but 0% were receiving benefits (Street Health, 2006). Moreover, 32% of participants had previously applied</p>	

○ Don't know	for ODSP benefits but had been denied them despite the fact that 96% of the participants had more than one serious health condition (Street Health, 2006).	
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Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Trivial ○ Small ○ Moderate ● Large ○ Varies ○ Don't know 	<p>Our systematic review identified 10 publications examining multiple income assistance programs; four randomized control trials (Rosenheck et al. 2003, Hurlburt et al. 1996, Wolitski et al. 2009, Forchuk et al. 2008), three follow-ups comparing rental assistance programs with or without case management to customary housing and/or case management services (O'connell et al. 2012, Cheng et al. 2007, Hurlburt et al. 1996), one trial comparing income supplements and financial education to usual services (Booshehri et al. 2017), and two trials comparing employment support or work therapy interventions to usual services (Kashner et al. 2002, Poremski et al. 2015).</p> <p><u>DESIRABLE EFFECTS (BENEFITS):</u></p> <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <p>SUMMARY OF EVIDENCE:</p> <ol style="list-style-type: none"> 1. Housing stability: Compensated work therapy, rental assistance and housing vouchers all significantly reduced episodes of homelessness and improved housing stability. 2. Mental health: No income interventions showed an effect on mental health. 3. Substance use: Findings on substance use are mixed. Provision of housing vouchers did not impact substance use over 3 years, however compensated work therapy showed immediate reductions in drug and alcohol use problems, and the number of substance use-related physical symptoms. These immediate differences tended to decline with time. 4. Quality of life: A single trial reported on quality of life. No statistically significant effects were found on the overall score, finances, health, and social relations scores. Provision of housing vouchers resulted in higher family relations score and satisfaction and quality of housing compared to standard care. 5. Hospitalization: One trial reports reduced emergency department visits and time spent hospitalized, but this reduction was not significantly different than the comparator group. 6. Employment: Individual Placement and Support (IPS) may improve employment rates during periods of good fidelity only. Financial empowerment education and provision of housing vouchers had no effects on employment outcomes. 7. Income: Financial empowerment education and Individual Placement and Support (IPS) had no effect on hourly wages. Provision of housing vouchers had no effect on monthly income. </div> <p><u>Outcome 1: Housing stability</u> <i>Sub-Outcome: Number of homelessness episodes</i></p>	<p>One panel member noted: Interventions that provide financial assistance directly to people (e.g. Basic Income Pilot, Housing Benefit) have demonstrated success. Trusteeship/financial management programs have been less successful because the issue isn't that people don't know how to spend their money, it's that they don't have enough of it to makes ends meet and an educational program will not solve that issue.</p>

1 RCT comparing Compensated Work Therapy (CWT) versus control services measured the number of homelessness episodes during the 1 year follow up period and found that patients in the CWT group were 10% as likely to report an episode of homelessness as their control counterparts ($\beta=0.1$; 95% CI 0.1,0.3; $p=0.001$) (Kashner 2002). [**GRADE Certainty of evidence: Low**]

Sub-Outcome: Number of days spent homeless

1 RCT compared the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual. Repeated-measures mixed-effects analysis shows that veterans assigned to HUD-VASH group had 36.2% fewer days homeless than the standard treatment group (13.1 vs 20.5 days) ($t=3.56$, $p<.001$) (Rosenheck 2003). [**GRADE Certainty of Evidence: Low**]

Sub-Outcome: Number of days stably housed

1 RCT compared the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual. Repeated measures mixed-effects analysis shows that veterans assigned to the HUD-VASH group had 25% more days in an apartment, room, or house than the standard care group (59.4 vs 47.6 days) ($t=4.88$; $p<.001$). Differences were significant across time for the first 2 years but attenuated in year 3 (Rosenheck 2003). [**GRADE Certainty of Evidence: Low**]

Sub-Outcome: Housing status

1 study compared assistance in finding affordable housing and in paying first and last month of rent versus usual care. All individuals in the intervention group attained independent housing prior to, or within 2 days of discharge from hospital and maintained housing when interviewed at the 3- and 6-month period. All but one individual in the control group did not attain housing and remained homeless at the 3- and 6- month period ($P<0.001$). The results of this pilot study were so dramatic that randomizing to the control group stopped and plans began to routinely implement the intervention (Forchuk 2008).

1 RCT compared a group receiving immediate rental assistance with case management versus a comparison group receiving customary housing services with case management. There were significant improvements over time in housing status in both conditions, with a significantly greater improvement in the intervention condition than in the comparison condition [$P<.0001$]. (Wolitski 2009).

Sub-Outcome: Housing consistency

1 RCT and one follow-up comparing participants receiving section 8 vouchers with case management to those not receiving them found that section 8 clients were only 1.21 times more likely to achieve some type of consistent housing than non-Section 8 clients. No differences in the time required to achieve housing consistency were observed among the experimental conditions. Within the group of clients achieving stable living arrangements, those with access to Section 8 housing were 7.56 (95% CI: 3.49 15.33) times more likely to follow a stable independent housing pattern than those without access to Section 8 housing (Hurlburt 1996).

Outcome 2: Mental health

Sub-Outcome: Depression symptoms using the 10-item CES-D scale

1 RCT compared a group receiving immediate rental assistance with case management versus comparison group receiving customary housing services with case management. There were significant improvements for depression [Baseline; Treatment M=13.6, Comparison M=13.9, 6 months; Treatment M=11.0, Comparison M=12.1, 12 months; Treatment M=11.0, comparison M=11.1, 18 months; Treatment M=10.7, comparison M=10.8; Time F=35.85, P<.0001] and an earlier improvement in this measure for the intervention group. However, levels of depression were comparable for both conditions at 18 months (Wolitski 2009).

1 RCT comparing financial empowerment education and matched savings accounts (Partial Intervention) versus control services; and found no statistically significant changes in depressive symptoms at 9 months (9.46 vs 9.55), 12 months (9.97 vs 11.55) or 15 months (11.36 vs 12.83) for the partial intervention group compared to the control group (Group p-value = 0.4098) (Booshehri 2017).

Sub-Outcome: Mental health status using the SF-36

1 RCT compared a group receiving immediate rental assistance with case management versus comparison group receiving customary housing services with case management. There were significant improvements for general mental health [Baseline; Treatment M=38.0, Comparison M=37.6, 6 months; Treatment M=43.8, Comparison M=42.1, 12 months; Treatment M=43.0, comparison M=42.4, 18 months; Treatment M=44.0, comparison M=43.2; Time F=40.55, P<.0001] (Wolitski 2009).

1 RCT comparing Compensated Work Therapy (CWT) versus control services and found no statistically significant difference between groups over the study period (β =-5.80; 95% CI -10.95,-0.65; p=0.03) (Kashner 2002).

Sub-Outcome: Psychiatric status using Global Brief Symptom Inventory (BSI)

1 RCT comparing Compensated Work Therapy (CWT) versus control services found no statistically significant difference between groups over the study period (β =0.02; 95% CI -0.18,0.23; p=0.83) (Kashner 2002).

Sub-Outcome: Psychiatric symptoms using the Addiction Severity Index (ASI)

1 RCT comparing Compensated Work Therapy (CWT) versus control services found no statistically significant difference between groups over the study period (β =-0.02; 95% CI -0.07,0.04; p=0.54) (Kashner 2002).

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual found no statistically significant difference between groups at 3 years. No further details are available from the authors (Rosenheck 2003).

Sub-Outcome: Psychiatric distress using Brief Symptom Index (BSI)

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual and found no statistically significant difference between groups over 3 years. No further details are available from the authors (Rosenheck 2003).

Outcome 3: Quality of life

Sub-Outcome: Quality of life using Lehman's Quality of Life Interview

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual found no statistically significant differences between groups in the overall score, finances, health, and social relations scores. HUD-VASH group had a higher family relations score than standard care [4.49 vs 4.25; P=.04]. In terms of housing quality of life, HUD-VASH group reported greater subjective satisfaction with housing than the standard care group (P<.001), and among those who were housed, experienced fewer housing problems (P<.001). Those who were housed also experienced higher housing quality than the standard care group (P=.01) (Rosenheck 2003). **[GRADE Certainty of Evidence: Low]**

Outcome 4: Substance use

Sub-Outcome: Alcohol and drug use using the Alcohol Index Score (ASI)

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual found no statistically significant difference between groups in alcohol and drug use over 3 years. Additionally, there were no differences in expenditures on substances or drinking to intoxication. No further details available from the authors (Rosenheck 2003). Another trial comparing Compensated Work Therapy (CWT) versus control services reported that patients who received CWT experienced immediate reductions in drug (-44.7%±12.8%; p<0.001) and alcohol (-45.4%±9.4%; p<0.001) use problems, and the number of substance use-related physical symptoms (-64.4%±8.0%; p<0.001). These immediate differences tended to decline with time (Kashner, 2002)

Outcome 5: Hospitalizations

Sub-Outcome: Percentage of participants with one or more emergency department visits

1 RCT compared a group receiving immediate rental assistance with case management versus comparison group receiving customary housing services with case management. There was a significant reduction in the percentage of participants with one or more emergency department visits with no significant differential changes between conditions [Baseline; Treatment M=42.0, Comparison M=43.1, 6 months; Treatment M=30.3, Comparison M=34.6, 12 months; Treatment M=30.9, comparison M=32.0, 18 months; Treatment M=28.6, comparison M=27.1; Time F=8.95, P<.0001] (Wolitski 2009).

Sub-Outcome: Percentage of time hospitalized

1 RCT compared a group receiving immediate rental assistance with case management versus customary housing services with case management. There was a significant reduction in this measure, with no significant differential changes between conditions [Baseline; Treatment M=1.10, Comparison M=0.85, 6 months; Treatment M=0.32, Comparison M=0.26, 12 months; Treatment M=0.39, comparison M=0.55, 18 months; Treatment M=0.35, comparison M=0.50; Time F=3.53, P=.0142] (Wolitski 2009).

Outcome 6: Employment

Sub-Outcome: Odds of obtaining competitive employment

1 RCT comparing Individual Placement and Support (IPS) offering “employment specialists” versus the control condition where participants were free to seek employment by any means of their choice, measured odds of being in competitive employment during an 8 months period of good fidelity and found that participants in the IPS group had a 2.4 greater chance of obtaining employment, compared with participants receiving usual services (OR=2.41; 95% CI 1.13,5.15; p=0.02). Extending the time period from the point of randomization to the final data-collection point and including a measure of fidelity as a covariate did produce a different result; a non-significant odds ratio for IPS of 1 (OR 1.01, p=0.96, 95% CI= 0.59, 1.73). Neither the period of fair fidelity, nor the period of poor fidelity was associated with statistically significantly reduced odds of obtaining employment (0.70, p = 0.34, 95 %CI 0.34–1.45; 0.67, p = 0.18, 95 %CI 0.38–1.20, respectively). (Poremski 2015).

Sub-Outcome: Percentage of participants in competitive employment

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, found that 34% (15/44) of participants in the IPS group obtained a competitive job during the eight-month observation period of good fidelity compared with 22% (9/41) in the control group ($X^2(1) = 1.05$; $p = 0.16$). Over the entire study, 52% of IPS and 44% of control participants obtained competitive employment ($X^2 = 0.74$; $p=0.46$) (Poremski 2015).

Sub-Outcome: Competitive employment tenure

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, measured the median period of job tenure among participants who obtained competitive employment, and found no statistically significant differences between groups during the study period ($P=0.99$) (Poremski 2015).

Sub-Outcome: Hours per week of competitive employment

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, measured weekly hours worked in competitive employment, and found no statistically significant difference between group during the study period ($P= .98$) (Poremski 2015)

Sub-Outcome: Self-reported employment status

1 RCT compared financial empowerment education and matched savings accounts (Partial Intervention) versus control services; The partial intervention group reported no statistically significant changes in employment over the study period, whereas the control group experienced statistically significant increases in employment in every follow-up period (9 month $P=0.0068$, 12 months $P<0.0001$). In particular, employment increased by 26% by month 15 ($P=0.0384$) (Booshehri 2017).

Sub-Outcome: Number of days of work in the past month

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual and found no statistically significant difference between groups across 3 years. No further data available from the authors (Rosenheck 2003).

Sub-Outcome: Employment Index Subscore of the Addiction Severity Index (ASI)

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual measured the Employment Index subscore of the Addiction Severity Scale (ASI) across three years, and found no statistically significant difference between groups. No further details available from the authors (Rosenheck 2003).

Outcome 7: Income

Sub-Outcome: Economic hardship using the U.S Household Food Security Survey Module (HFSSM), an energy security survey, and housing security survey

1 RCT comparing financial empowerment education and matched savings accounts (Partial Intervention) versus control services; The Cumulative hardship index scores ranged from 0 to 6, with food, housing, and energy. Neither the partial intervention nor the control group reported statistically significant changes in hardship throughout the study period (Booshehri 2017).

Sub-Outcome: Self-reported hourly earnings

1 RCT compared financial empowerment education and matched savings accounts (Partial Intervention) versus control services; Neither the partial intervention nor the control group reported any statistically significant changes in hourly earnings over 15 months (p=0.0793). No further details reported (Booshehri 2017).

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, measured wages paid per hour for competitive employment, and found no statistically significant difference between groups during the study period (P=.42) IPS participants were paid a mean wage of \$13.42, median of \$12.00 (IQR \$10.00-\$15.25) and control participants were paid a mean wage of \$12.81, median \$12.00 (IQR \$10.00-\$14.50) (Poremski 2015). **[GRADE Certainty of evidence: Low]**

Sub-Outcome: Monthly income

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual and found no statistically significant difference between groups across three years. No further details available from the authors (Rosenheck 2003).

Undesirable effects (HARMS):

Our systematic review did not identify any major harms associated with income assistance interventions. Available RCT literature did not show worse outcomes with income interventions.

A grey literature search (T. Abdalla, July 2018) identified 3 potential harms of income interventions
This search did not reveal substantial evidence for major harms.

1. Income support may be a disincentive for young/adolescent recipients to complete formal education. According to the MINCOME study, such payments can be an incentive to young people to leave the family unit, as they hold out the promise of independence (Forget, 2011)
2. There is a risk for violence/theft for those who do not have stable shelter and institutions to safely secure their money, however these are

	<p>harms associated with shelter living and not the income intervention itself.</p> <p>3. If rent supplements are fixed to a prescribed housing unit or program, individuals may not have a choice about housing location in relation to work, schools, or existing support networks.</p>	
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Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large ○ Moderate ● Small ○ Trivial ○ Varies ○ Don't know 	<p>Our systematic review identified 10 publications examining multiple income assistance programs; four randomized control trials (Rosenheck et al. 2003, Hurlburt et al. 1996, Wolitski et al. 2009, Forchuk et al. 2008), three follow-ups comparing rental assistance programs with or without case management to customary housing and/or case management services (O'connell et al. 2012, Cheng et al. 2007, Hurlburt et al. 1996), one trial comparing income supplements and financial education to usual services (Booshehri et al. 2017), and two trials comparing employment support or work therapy interventions to usual services (Kashner et al. 2002, Poremski et al. 2015).</p> <p><u>DESIRABLE EFFECTS (BENEFITS):</u></p> <div style="border: 1px solid black; background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p>SUMMARY OF EVIDENCE:</p> <ol style="list-style-type: none"> 1. Housing stability: Compensated work therapy, rental assistance and housing vouchers all significantly reduced episodes of homelessness and improved housing stability. 2. Mental health: No income interventions showed an effect on mental health. 3. Substance use: Findings on substance use are mixed. Provision of housing vouchers did not impact substance use over 3 years, however compensated work therapy showed immediate reductions in drug and alcohol use problems, and the number of substance use-related physical symptoms. These immediate differences tended to decline with time. 4. Quality of life: A single trial reported on quality of life. No statistically significant effects were found on the overall score, finances, health, and social relations scores. Provision of housing vouchers resulted in higher family relations score and satisfaction and quality of housing compared to standard care. 5. Hospitalization: One trial reports reduced emergency department visits and time spent hospitalized, but this reduction was not significantly different than the comparator group. 6. Employment: Individual Placement and Support (IPS) may improve employment rates during periods of good fidelity only. Financial empowerment education and provision of housing vouchers had no effects on employment outcomes. 7. Income: Financial empowerment education and Individual Placement and Support (IPS) had no effect on hourly wages. Provision of housing vouchers had no effect on monthly income. </div>	

Outcome 1: Housing stability

Sub-Outcome: Number of homelessness episodes

1 RCT comparing Compensated Work Therapy (CWT) versus control services measured the number of homelessness episodes during the 1 year follow up period and found that patients in the CWT group were 10% as likely to report an episode of homelessness as their control counterparts ($\beta=0.1$; 95% CI 0.1,0.3; $p=0.001$) (Kashner 2002). [**GRADE Certainty of evidence: Low**]

Sub-Outcome: Number of days spent homeless

1 RCT compared the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual. Repeated-measures mixed-effects analysis shows that veterans assigned to HUD-VASH group had 36.2% fewer days homeless than the standard treatment group (13.1 vs 20.5 days) ($t=3.56$, $p<.001$) (Rosenheck 2003). [**GRADE Certainty of Evidence: Low**]

Sub-Outcome: Number of days stably housed

1 RCT compared the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual. Repeated measures mixed-effects analysis shows that veterans assigned to the HUD-VASH group had 25% more days in an apartment, room, or house than the standard care group (59.4 vs 47.6 days) ($t=4.88$; $p<.001$). Differences were significant across time for the first 2 years but attenuated in year 3 (Rosenheck 2003). [**GRADE Certainty of Evidence: Low**]

Sub-Outcome: Housing status

1 study compared assistance in finding affordable housing and in paying first and last month of rent versus usual care. All individuals in the intervention group attained independent housing prior to, or within 2 days of discharge from hospital and maintained housing when interviewed at the 3- and 6-month period. All but one individual in the control group did not attain housing and remained homeless at the 3- and 6- month period ($P<0.001$). The results of this pilot study were so dramatic that randomizing to the control group stopped and plans began to routinely implement the intervention (Forchuk 2008).

1 RCT compared a group receiving immediate rental assistance with case management versus a comparison group receiving customary housing services with case management. There were significant improvements over time in housing status in both conditions, with a significantly greater improvement in the intervention condition than in the comparison condition [$P<.0001$]. (Wolitski 2009).

Sub-Outcome: Housing consistency

1 RCT and one follow-up comparing participants receiving section 8 vouchers with case management to those not receiving them found that section 8 clients were only 1.21 times more likely to achieve some type of consistent housing than non-Section 8 clients. No differences in the time required to achieve housing consistency were observed among the experimental conditions. Within the group of clients achieving stable living arrangements, those with access to Section 8 housing were 7.56 (95% CI: 3.49 15.33) times more likely to follow a stable independent housing pattern than those without access to Section 8 housing (Hurlburt 1996).

Outcome 2: Mental health

Sub-Outcome: Depression symptoms using the 10-item CES-D scale

1 RCT compared a group receiving immediate rental assistance with case management versus comparison group receiving customary housing services with case management. There were significant improvements for depression [Baseline; Treatment M=13.6, Comparison M=13.9, 6 months; Treatment M=11.0, Comparison M=12.1, 12 months; Treatment M=11.0, comparison M=11.1, 18 months; Treatment M=10.7, comparison M=10.8; Time F=35.85, P<.0001] and an earlier improvement in this measure for the intervention group. However, levels of depression were comparable for both conditions at 18 months (Wolitski 2009).

1 RCT comparing financial empowerment education and matched savings accounts (Partial Intervention) versus control services; and found no statistically significant changes in depressive symptoms at 9 months (9.46 vs 9.55), 12 months (9.97 vs 11.55) or 15 months (11.36 vs 12.83) for the partial intervention group compared to the control group (Group p-value = 0.4098) (Booshehri 2017).

Sub-Outcome: Mental health status using the SF-36

1 RCT compared a group receiving immediate rental assistance with case management versus comparison group receiving customary housing services with case management. There were significant improvements for general mental health [Baseline; Treatment M=38.0, Comparison M=37.6, 6 months; Treatment M=43.8, Comparison M=42.1, 12 months; Treatment M=43.0, comparison M=42.4, 18 months; Treatment M=44.0, comparison M=43.2; Time F=40.55, P<.0001] (Wolitski 2009).

1 RCT comparing Compensated Work Therapy (CWT) versus control services and found no statistically significant difference between groups over the study period (β =-5.80; 95% CI -10.95,-0.65; p=0.03) (Kashner 2002).

Sub-Outcome: Psychiatric status using Global Brief Symptom Inventory (BSI)

1 RCT comparing Compensated Work Therapy (CWT) versus control services found no statistically significant difference between groups over the study period (β =0.02; 95% CI -0.18,0.23; p=0.83) (Kashner 2002).

Sub-Outcome: Psychiatric symptoms using the Addiction Severity Index (ASI)

1 RCT comparing Compensated Work Therapy (CWT) versus control services found no statistically significant difference between groups over the study period (β =-0.02; 95% CI -0.07,0.04; p=0.54) (Kashner 2002).

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual found no statistically significant difference between groups at 3 years. No further details are available from the authors (Rosenheck 2003).

Sub-Outcome: Psychiatric distress using Brief Symptom Index (BSI)

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual and found no statistically significant difference between groups over 3 years. No further details are available from the authors (Rosenheck 2003).

Outcome 3: Quality of life

Sub-Outcome: Quality of life using Lehman's Quality of Life Interview

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual found no statistically significant differences between groups in the overall score, finances, health, and social relations scores. HUD-VASH group had a higher family relations score than standard care [4.49 vs 4.25; P=.04]. In terms of housing quality of life, HUD-VASH group reported greater subjective satisfaction with housing than the standard care group (P<.001), and among those who were housed, experienced fewer housing problems (P<.001). Those who were housed also experienced higher housing quality than the standard care group (P=.01) (Rosenheck 2003). **[GRADE Certainty of Evidence: Low]**

Outcome 4: Substance use

Sub-Outcome: Alcohol and drug use using the Alcohol Index Score (ASI)

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual found no statistically significant difference between groups in alcohol and drug use over 3 years. Additionally, there were no differences in expenditures on substances or drinking to intoxication. No further details available from the authors (Rosenheck 2003). Another trial comparing Compensated Work Therapy (CWT) versus control services reported that patients who received CWT experienced immediate reductions in drug (-44.7%±12.8%; p<0.001) and alcohol (-45.4%±9.4%; p<0.001) use problems, and the number of substance use-related physical symptoms (-64.4%±8.0%; p<0.001). These immediate differences tended to decline with time (Kashner, 2002)

Outcome 5: Hospitalizations

Sub-Outcome: Percentage of participants with one or more emergency department visits

1 RCT compared a group receiving immediate rental assistance with case management versus comparison group receiving customary housing services with case management. There was a significant reduction in the percentage of participants with one or more emergency department visits with no significant differential changes between conditions [Baseline; Treatment M=42.0, Comparison M=43.1, 6 months; Treatment M=30.3, Comparison M=34.6, 12 months; Treatment M=30.9, comparison M=32.0, 18 months; Treatment M=28.6, comparison M=27.1; Time F=8.95, P<.0001] (Wolitski 2009).

Sub-Outcome: Percentage of time hospitalized

1 RCT compared a group receiving immediate rental assistance with case management versus customary housing services with case management. There was a significant reduction in this measure, with no significant differential changes between conditions [Baseline; Treatment M=1.10, Comparison M=0.85, 6 months; Treatment M=0.32, Comparison M=0.26, 12 months; Treatment M=0.39, comparison M=0.55, 18 months; Treatment M=0.35, comparison M=0.50; Time F=3.53, P=.0142] (Wolitski 2009).

Outcome 6: Employment

Sub-Outcome: Odds of obtaining competitive employment

1 RCT comparing Individual Placement and Support (IPS) offering “employment specialists” versus the control condition where participants were free to seek employment by any means of their choice, measured odds of being in competitive employment during an 8 months period of good fidelity and found that participants in the IPS group had a 2.4 greater chance of obtaining employment, compared with participants receiving usual services (OR=2.41; 95% CI 1.13,5.15; p=0.02). Extending the time period from the point of randomization to the final data-collection point and including a measure of fidelity as a covariate did produce a different result; a non-significant odds ratio for IPS of 1 (OR 1.01, p=0.96, 95% CI= 0.59, 1.73). Neither the period of fair fidelity, nor the period of poor fidelity was associated with statistically significantly reduced odds of obtaining employment (0.70, p = 0.34, 95 %CI 0.34–1.45; 0.67, p = 0.18, 95 %CI 0.38–1.20, respectively). (Poremski 2015).

Sub-Outcome: Percentage of participants in competitive employment

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, found that 34% (15/44) of participants in the IPS group obtained a competitive job during the eight-month observation period of good fidelity compared with 22% (9/41) in the control group ($X^2(1) = 1.05$; p = 0.16). Over the entire study, 52% of IPS and 44% of control participants obtained competitive employment ($X^2 = 0.74$; p=0.46) (Poremski 2015).

Sub-Outcome: Competitive employment tenure

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, measured the median period of job tenure among participants who obtained competitive employment, and found no statistically significant differences between groups during the study period (P=0.99) (Poremski 2015).

Sub-Outcome: Hours per week of competitive employment

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, measured weekly hours worked in competitive employment, and found no statistically significant difference between group during the study period (P= .98) (Poremski 2015)

Sub-Outcome: Self-reported employment status

1 RCT compared financial empowerment education and matched savings accounts (Partial Intervention) versus control services; The partial intervention group reported no statistically significant changes in employment over the study period, whereas the control group experienced statistically significant increases in employment in every follow-up period (9 month P=0.0068, 12 months P<0.0001). In particular, employment increased by 26% by month 15 (P=0.0384) (Boossehri 2017).

Sub-Outcome: Number of days of work in the past month

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual and found no statistically significant difference between groups across 3 years. No further data available from the authors (Rosenheck 2003).

Sub-Outcome: Employment Index Subscore of the Addiction Severity Index (ASI)

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual measured the Employment Index subscore of the Addiction Severity Scale (ASI) across three years, and found no statistically significant difference between groups. No further details available from the authors (Rosenheck 2003).

Outcome 7: Income

Sub-Outcome: Economic hardship using the U.S Household Food Security Survey Module (HFSSM), an energy security survey, and housing security survey

1 RCT comparing financial empowerment education and matched savings accounts (Partial Intervention) versus control services; The Cumulative hardship index scores ranged from 0 to 6, with food, housing, and energy. Neither the partial intervention nor the control group reported statistically significant changes in hardship throughout the study period (Booshehri 2017).

Sub-Outcome: Self-reported hourly earnings

1 RCT compared financial empowerment education and matched savings accounts (Partial Intervention) versus control services; Neither the partial intervention nor the control group reported any statistically significant changes in hourly earnings over 15 months ($p=0.0793$). No further details reported (Booshehri 2017).

1 RCT comparing Individual Placement and Support (IPS) offering employment specialists versus the control condition where participants were free to seek employment by any means of their choice, measured wages paid per hour for competitive employment, and found no statistically significant difference between groups during the study period ($P=.42$) IPS participants were paid a mean wage of \$13.42, median of \$12.00 (IQR \$10.00-\$15.25) and control participants were paid a mean wage of \$12.81, median \$12.00 (IQR \$10.00-\$14.50) (Poremski 2015). **[GRADE Certainty of evidence: Low]**

Sub-Outcome: Monthly income

1 RCT comparing the HUD-VA supported housing program in which HUD Section 8 housing vouchers were paired with ICM versus Treatment As Usual and found no statistically significant difference between groups across three years. No further details available from the authors (Rosenheck 2003).

Undesirable effects (HARMS):

Our systematic review did not identify any major harms associated with income assistance interventions. Available RCT literature did not show worse outcomes with income interventions.

A grey literature search (T. Abdalla, July 2018) identified 3 potential harms of income interventions
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	<ol style="list-style-type: none"> 1. Income support may be a disincentive for young/adolescent recipients to complete formal education. According to the MINCOME study, such payments can be an incentive to young people to leave the family unit, as they hold out the promise of independence (Forget, 2011) 2. There is a risk for violence/theft for those who do not have stable shelter and institutions to safely secure their money, however these are harms associated with shelter living and not the income intervention itself. 3. If rent supplements are fixed to a prescribed housing unit or program, individuals may not have a choice about housing location in relation to work, schools, or existing support networks. 	
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Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Very low <input checked="" type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High <input type="radio"/> No included studies 	<p>We evaluated certainty of evidence for <u>critical</u> patient important outcomes: Housing stability, quality of life and income.</p>	

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Comparison	Relative (95% CI)	Absolute (95% CI)		
Outcome: Housing stability												
Number of homeless episodes (Compensated Work Therapy (CWT) versus control services; Kashner 2002)												
1	randomised trials	Serious	Not serious	Not serious	Serious	None	Not reported	Not reported	OR 0.10 (0.1 to 0.3)	-	⊕⊕○○ LOW	CRITICAL
Number of days spent homeless (HUD Section 8 housing vouchers paired with ICM versus Treatment As Usual; Rosenheck 2003)												
1	randomised trials	Serious	Not serious	Not serious	Serious	none	182 (13.5 days)	188 (20.45 days)	-	38.2% fewer days (p<0.001)	⊕⊕○○ LOW	CRITICAL
Number of days stably housed (HUD Section 8 housing vouchers paired with ICM versus Treatment As Usual; Rosenheck 2003)												
1	randomised trials	Serious	Not serious	Not serious	Serious	none	182 (59.39 days)	188 (47.60 days)	-	25% more days (p<0.001)	⊕⊕○○ LOW	CRITICAL
Outcome: Quality of Life												
Overall score - Quality of life using Lehman's Quality of Life Interview (HUD Section 8 housing vouchers paired with ICM versus Treatment As Usual; Rosenheck 2003)												
1	randomised trials	Serious	Not serious	Not serious	Serious	none	182 (score 4.31)	188 (score 4.18)	-	Not reported (p=0.28)	⊕⊕○○ LOW	CRITICAL
Outcome: Income												
Self-reported hourly earnings (Individual Placement and Support (IPS) versus the control condition; Poremski 2015)												
1	randomised trials	Serious	Serious	Not serious	Not serious	none	44	41	IPS participants were paid a mean wage of \$13.42, median of \$12.00 (IQR \$10.00-\$15.25) and control participants were paid a mean wage of \$12.81, median \$12.00 (IQR \$10.00-\$14.50) (p=0.42)		⊕⊕○○ LOW	CRITICAL

CI: Confidence interval; OR: Odds ratio;

Explanations

- High risk of performance bias (blinding of participants and personnel), and high risk of detection bias (blinding of outcome assessment)
- Number of events at follow up not reported. Number needed to treat cannot be calculated.
- Large effect, however consistent evidence from at least 2 studies required for upgrade
- High risk of performance bias (blinding of participants and personnel) and high risk of attrition bias (incomplete outcome data)
- Measure of variance and confidence intervals not reported. No further data available from the authors.
- Inconsistent findings during periods of good, fair and poor intervention fidelity. Data in evidence profile represents entire study period.

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS																											
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ● Probably no important uncertainty or variability ○ No important uncertainty or variability 	<p>We used a modified Delphi consensus process to prioritize topics requiring evidence-based guidelines and affecting the health of homeless and vulnerably housed people. The topics were identified from a literature review and then modified and prioritized using a 3 phase Delphi process. Eighty-four practitioners and seventy-six persons with lived homeless experience from across Canada participated in the Delphi consensus process. Four priority topics were identified: mental health and addiction care, facilitating access to housing, facilitating access to income support, and care coordination (See table below)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 45%; text-align: left;">Priority Persons with Lived Experience</th> <th style="width: 45%; text-align: left;">Practitioners</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Facilitating access to Housing</td> <td>Facilitating access to Housing</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Mental Health and Addiction Care/Trauma</td> <td>Mental Health and Addiction Care/Trauma</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Care coordination/Case management</td> <td>Care coordination/Case management</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Facilitating access to adequate income</td> <td>Chronic disease management</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Chronic disease management</td> <td>End-of-life care</td> </tr> <tr> <td style="text-align: center;">6</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> <td>Facilitating access to adequate income</td> </tr> <tr> <td style="text-align: center;">7</td> <td>End-of-life care</td> <td>HIV, Hepatitis B/C, TB, other infectious diseases</td> </tr> <tr> <td style="text-align: center;">8</td> <td>Nutrition and Dietary support</td> <td>Nutrition and Dietary support</td> </tr> </tbody> </table> <p>Our research team, expert Working Group members and Community Scholars with lived experience of homelessness voted on patient-important outcomes. There was variability in how much people valued the main outcomes. Housing, quality of life and income were all ranked as critical outcomes. The group was mixed on the importance of physical and mental health, substance use and employment.</p>		Priority Persons with Lived Experience	Practitioners	1	Facilitating access to Housing	Facilitating access to Housing	2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma	3	Care coordination/Case management	Care coordination/Case management	4	Facilitating access to adequate income	Chronic disease management	5	Chronic disease management	End-of-life care	6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income	7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases	8	Nutrition and Dietary support	Nutrition and Dietary support	<p>The results of Delphi prioritization on values: Both focus groups prioritized, in the order of importance: facilitating access to housing, mental health and addiction care, and care coordination /case management. There were few important differences in ranking between the two groups of participants. The first difference was that health professionals ranked chronic disease management as the fourth priority while PLE ranked facilitating access to adequate income as their fourth priority. (Shoemaker et al., Submitted Lancet Public Health 2019)</p>
	Priority Persons with Lived Experience	Practitioners																											
1	Facilitating access to Housing	Facilitating access to Housing																											
2	Mental Health and Addiction Care/Trauma	Mental Health and Addiction Care/Trauma																											
3	Care coordination/Case management	Care coordination/Case management																											
4	Facilitating access to adequate income	Chronic disease management																											
5	Chronic disease management	End-of-life care																											
6	HIV, Hepatitis B/C, TB, other infectious diseases	Facilitating access to adequate income																											
7	End-of-life care	HIV, Hepatitis B/C, TB, other infectious diseases																											
8	Nutrition and Dietary support	Nutrition and Dietary support																											

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
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<ul style="list-style-type: none"> ○ Favors the comparison ● Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ○ Favors the intervention ○ Varies ○ Don't know 	<p>Income assistance appears in many complex interventions designs, but often not as a primary intervention. Interventions often focus on vulnerable transitions and provide small benefits for housing and employment. No major harms were identified in the trial literature or through grey literature searches.</p>	
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Resources required

How large are the resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Large costs ● Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know 	<p>We identified one study comparing the cost-effectiveness of: 1) the Housing and Urban Development (HUD) and the US Department of Veterans Affairs (VA) Supporting Housing (HUA-VASH) with voucher (rent subsidies) and intensive case management (ICM); 2) Case management only; and 3) standard VA care that included short-term broker case management as provided by the VA's Health Care for Homeless Veterans outreach workers. (Rosenheck et al, 2003). The study showed that the annual total costs for HUD-VASH with income assistance clients were \$2,067 greater than those in the standard care group.</p>	<p>One panel member noted that most interventions currently provide housing subsidies, what is really needed is funding to increase income for a better standard of living.</p>

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Very low ○ Low ○ Moderate ○ High ○ No included studies 	<p>Certainty is likely low. See the justification from a cost-effectiveness analysis section below</p>	

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ○ Favors the intervention ● Varies ○ No included studies 	<p>The cost-effectiveness evidence showed that HUD-VASH with income assistance clients had greater costs but fewer days homeless than the standard care and the case management only groups. Each additional day housed among HUD-VASH with income assistance and ICM clients led to additional costs of \$58 (95% CI: \$4, \$111) from the perspective of VA, \$50 (95% CI: -\$17, \$117) from the perspective of health care system, and \$45 (95% CI: -\$19, -\$108) from a societal perspective. Probabilities that the housing intervention with income assistance is cost-effective depended on the values that payers were willing to pay for a day of housing.</p> <p>However, it is unclear whether the HUD-VASH with income assistance and ICM intervention is cost-effective because the willingness to pay value for one fewer homeless day is unknown.</p> <p>The cost analysis did not report uncertainty in the cost estimates</p>	<p>One panel member suspected there would be different costs compared to the evidence presented in the Canadian context.</p>

Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Reduced ○ Probably reduced ○ Probably no impact ● Probably increased ○ Increased ○ Varies ○ Don't know 	<p>Qualitative literature suggests income can bring opportunities and thus may contribute to positive self-esteem and may play a role in reducing health inequity.</p>	<p>One panel member noted that social determinants of health reports demonstrate greater health equity associated with income levels.</p>

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know 	<p>We conducted a systematic review of qualitative studies examining the acceptability of interventions for homeless and vulnerably housed individuals. We did not identify any findings on the acceptability of income interventions. There exist minimal harms and general positive reports for the role of income in social determinants. Income may play a role in reducing health inequities.</p>	<p>One panel member noted that they believed that it was important to differentiate housing subsidies from an income-raising approach including guaranteed income or a living wage.</p>

Feasibility

Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ No ○ Probably no ● Probably yes 	<p>There currently does not exist a screening or alert approach reported in the literature for homeless-specific primary care, thus identification of individuals requiring income assistance remains a challenge. Income interventions are often used in an adjunct role for housing and employment programs, and appears feasible in these contexts. For clinical interventions, support from a care coordinator or social worker may improve success. Overall feasibility of</p>	<p>One panel member noted that this the feasibility of this intervention required more study. Most teams</p>

<ul style="list-style-type: none"> ○ Yes ○ Varies ○ Don't know 	<p>income assistance interventions may vary on context and whether there is an interdisciplinary team and intentional focus on health equity.</p>	<p>build in funding for rent support and repairs (plus moving and furniture costs). There have been very few if any studies that have combined housing first with true increases to income to move people out of poverty.</p>
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SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	Yes		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	Don't know
RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			No included studies
COST EFFECTIVENESS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	Favors the intervention	Varies	No included studies
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	Probably yes	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	Probably yes	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention <input type="radio"/>	Conditional recommendation against the intervention <input type="radio"/>	Conditional recommendation for either the intervention or the comparison <input type="radio"/>	Conditional recommendation for the intervention <input checked="" type="radio"/>	Strong recommendation for the intervention <input type="radio"/>
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CONCLUSIONS

Recommendation

1. Identify patients with income instability, housing insecurity and other social determinant of health such as disability, unemployment, or social exclusion
2. Assist all individuals with income instability to identify and access direct and indirect income support resources, such as social assistance programs, disability income support programs, tax benefits, financial advice agencies, or other income assistance resources.

Justification

Income assistance interventions show positive effects on housing stability, with no substantial harms. Income is likely to be acceptable to persons with lived experience of homelessness, and probably increases health equity.

Subgroup considerations

Individuals with mental health, substance use or co-morbid conditions may require additional support to maintain employment.

Implementation considerations

Practitioners should inform themselves of other social determinants of health resources such as 211 in Ontario

Practitioners may benefit from continuing medical education related to social determinants of health screening and advocacy action

Once their patient's income status is stabilized, practitioners should discuss employment interventions such as compensated work therapy (CWT) or employment specialist services as medium or long term considerations

Sample question to identify income instability: Do you ever have trouble making ends meet at the end of month?

Advocacy Statement: In future, practitioners should advocate for educational reform such as medical curriculum development and standardization on social accountability, advocacy, income security and community resources

Monitoring and evaluation

Quality assurance indicator/measure of fidelity for income assistance interventions.

Monitoring indicators including uptake of income assistance and adherence at follow-up for the implementation of this intervention.

Research priorities

Additional research needed for cost effectiveness and resource requirements.

Additional research regarding the measurement of health equity outcomes for this intervention were also identified.

Additional research on housing stability-related indicators for income interventions.

Future areas: practitioners should introduce social service prescribing, such as supporting tax filing to their frontline clinical care (Engage tax filing, other models of social prescribing. This is an emerging area of exploration (social service access and frontline clinical care)