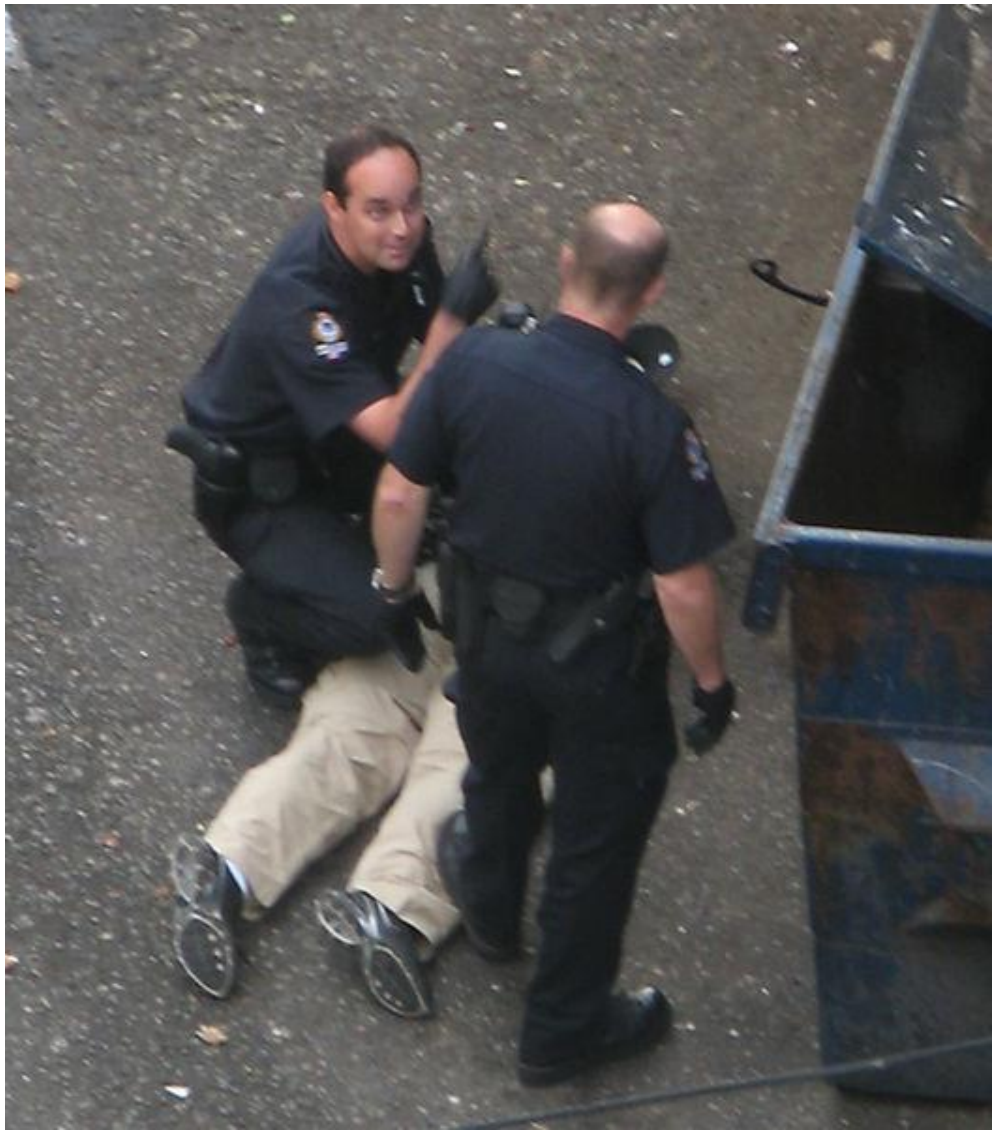
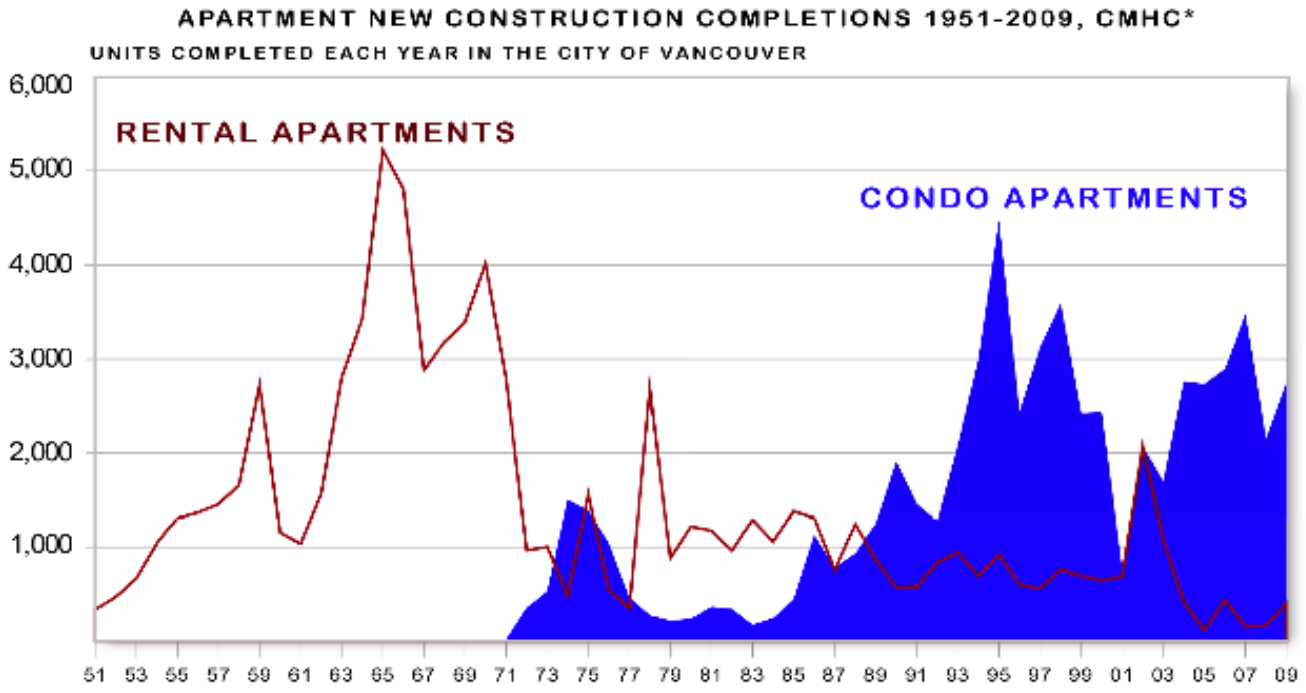
Mental Illness, Homelessness, and the Effectiveness of Housing First – The Relevance of Diagnosed Personality Disorders

Julian M Somers

October 25, 2016

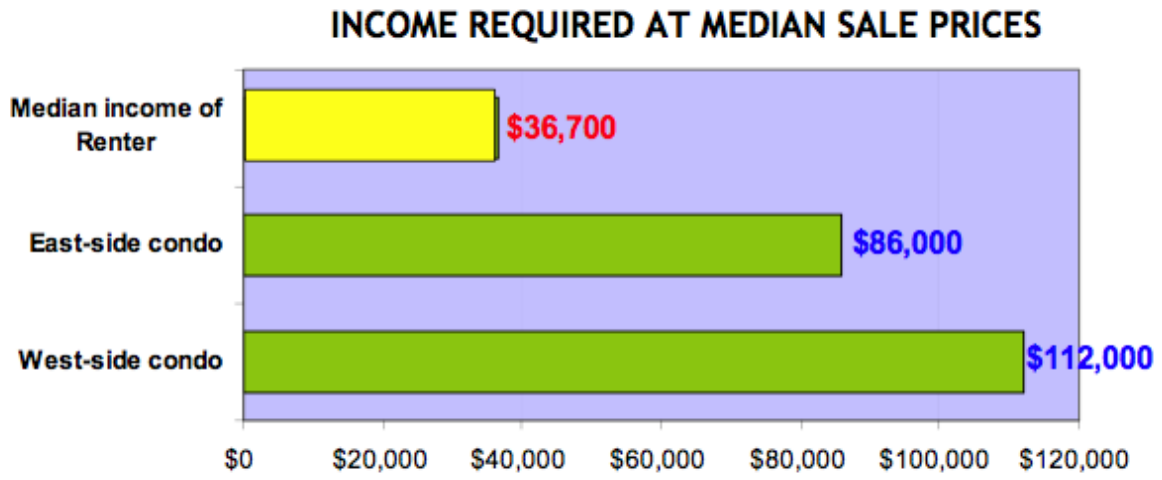


Transformation of Rental Supply



Income and Home Ownership

- Majority of renter households have incomes far below those required to purchase a Vancouver condo



Source: City of Vancouver, 2011

Housing and Support for Adults with Severe Addictions and/or Mental Illness in British Columbia

- Michelle Patterson
- Julian M Somers
- Karen McIntosh
- Alan Shiell
- Charles James Frankish

Somers et al. Trials 2013, 14:365
http://www.trialsjournal.com/content/14/1/365

TRIALS

RESEARCH Open Access

Vancouver At Home: pragmatic randomized trials investigating Housing First for homeless and mentally ill adults

Julian M Somers[1*], Michelle L Patterson[1], Akm Moniruzzaman[1], Lauren Currie[1], Stefanie N Rezansoff[1], Anita Palepu[2] and Karen Fryer[1]

Abstract

Background: Individuals with mental illnesses are overrepresented among the homeless. Housing First (HF) has been shown to promote positive outcomes in this population. However, key questions remain unresolved, including: how to match support services to client needs, the benefits of housing in scattered sites versus single congregate building, and the effectiveness of HF with individuals actively using substances. The present study aimed to recruit two samples of homeless mentally ill participants who differed in the complexity of their needs. Study details, including recruitment, randomization, and follow-up, are presented.

Methods: Eligibility was based on homeless status and current mental disorder. Participants were classified as either moderate needs (MN) or high needs (HN). Those with MN were randomized to HF with Intensive Case Management (HF-ICM) or usual care. Those with HN were randomized to HF with Assertive Community Treatment (HF-ACT), congregate housing with support, or usual care. Participants were interviewed every 3 months for 2 years. Separate consent was sought to access administrative data.

Results: Participants met eligibility for either MN (n = 200) or HN (n = 297) and were randomized accordingly. Both samples were primarily male and white. Compared to participants designated MN, HN participants had higher rates of hospitalization for psychiatric reasons prior to randomization, were younger at the time of recruitment, younger when first homeless, more likely to meet criteria for substance dependence, and less likely to have completed high school. Across all study arms, between 92% and 100% of participants were followed over 24 months post-randomization. Minimal significant differences were found between study arms following randomization. 438 participants (88%) provided consent to access administrative data.

Conclusion: The study successfully recruited participants meeting criteria for homelessness and current mental disorder. Both MN and HN groups had high rates of substance dependence, suicidality, and physical illness. Randomization resulted in no meaningful detectable differences between study arms.

Trial registration: Current Controlled Trials: ISRCTN57595077 (Vancouver at Home study: Housing First plus Assertive Community Treatment versus congregate housing plus supports versus treatment as usual) and ISRCTN66721740 (Vancouver At Home study: Housing First plus Intensive Case Management versus treatment as usual).

Keywords: Housing First, Homelessness, Mental illness, Concurrent disorders

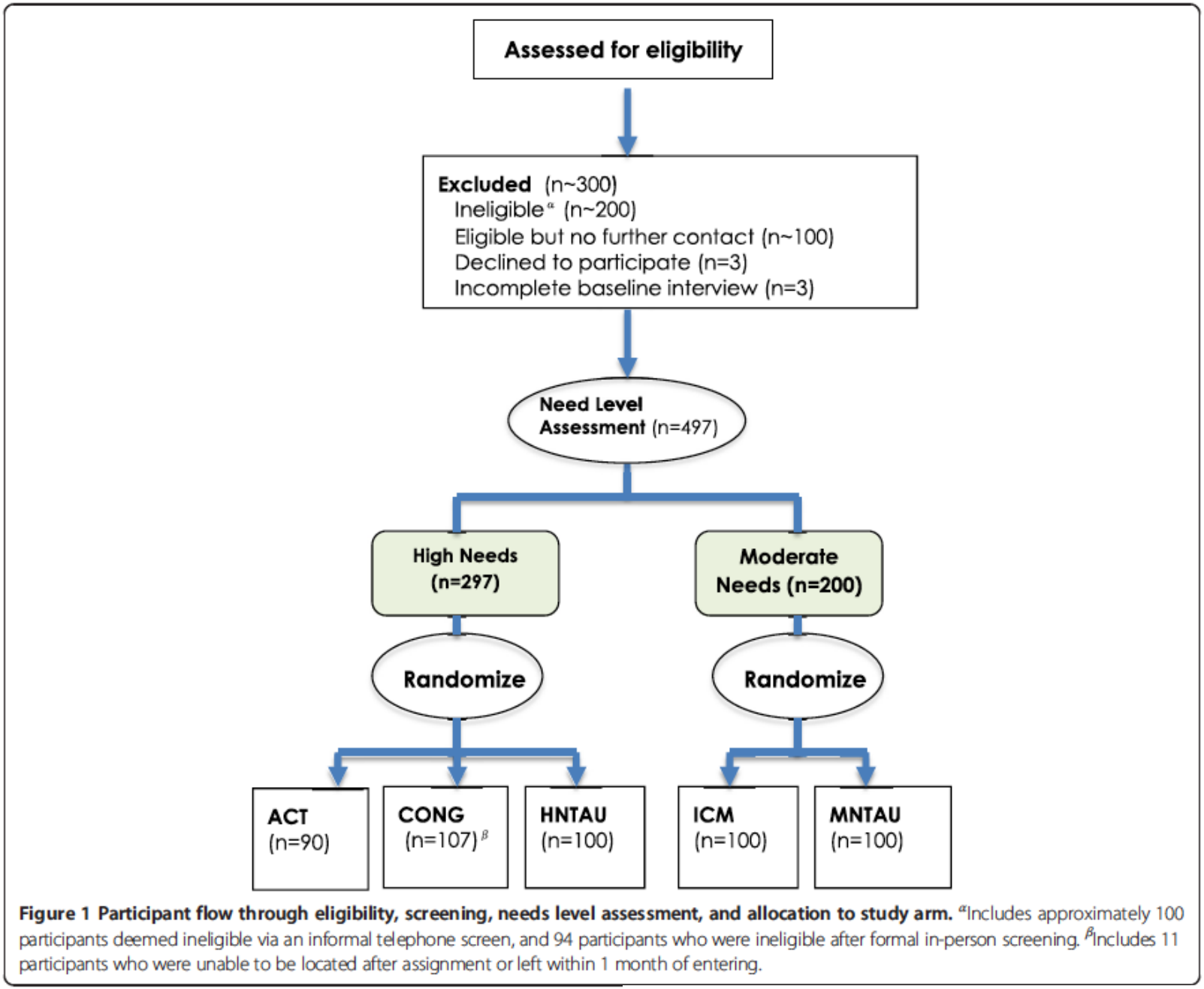


Figure 1 Participant flow through eligibility, screening, needs level assessment, and allocation to study arm. [α]Includes approximately 100 participants deemed ineligible via an informal telephone screen, and 94 participants who were ineligible after formal in-person screening. [β]Includes 11 participants who were unable to be located after assignment or left within 1 month of entering.

Epidemiology and Psychiatric Sciences, page 1 of 11.
doi:10.1017/S2045796015000347

ORIGINAL ARTICLE

The prevalence and geographic distribution of complex co-occurring disorders: a population study

J. M. Somers[1*], A. Moniruzzaman[1], S. N. Rezansoff[1], J. Brink[2] and A. Russolillo[1]

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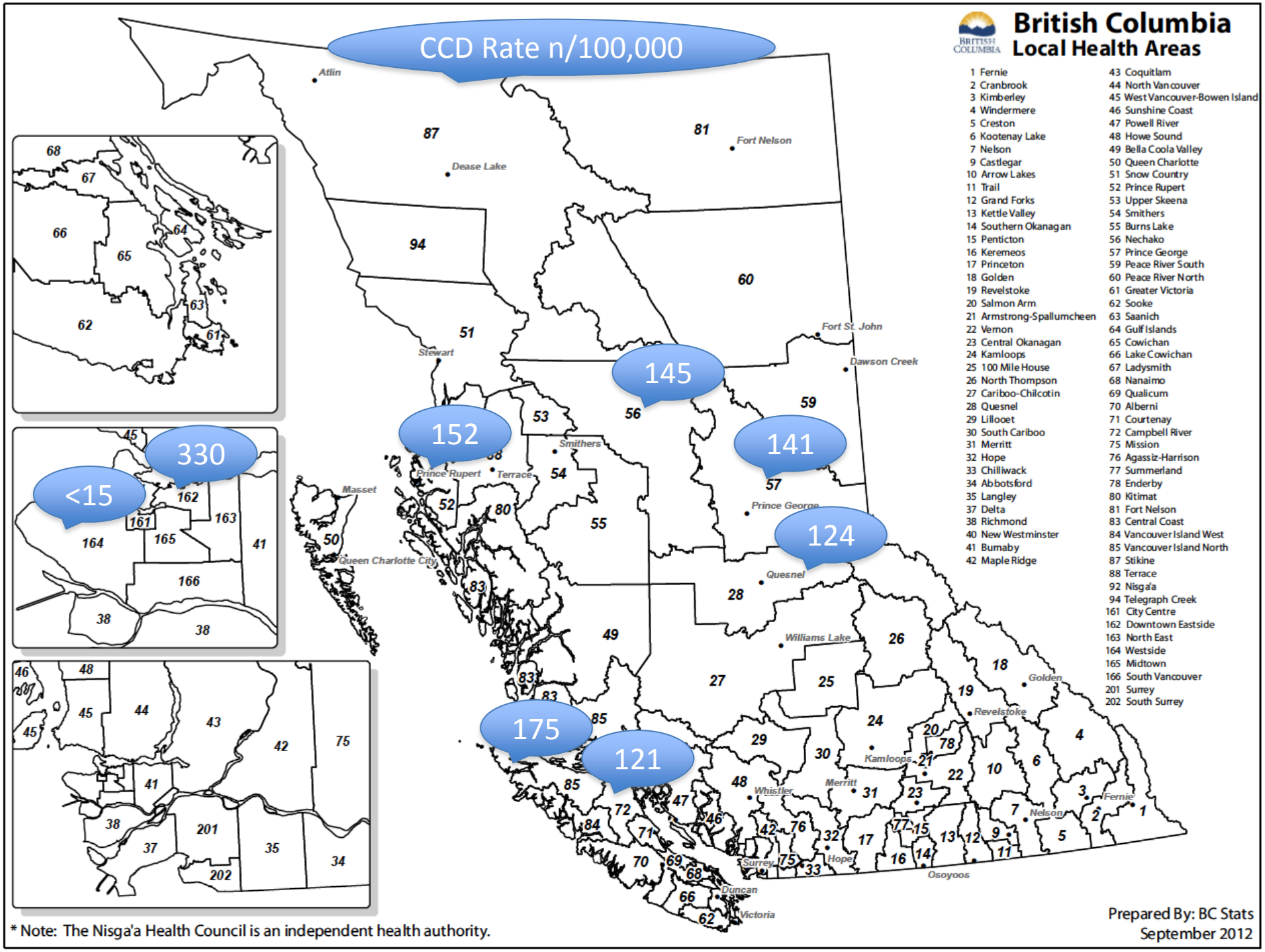
[2] *Department of Psychiatry, University of British Columbia, Vancouver, British Columbia, Canada*

Aims. A subset of people with co-occurring substance use and mental disorders require coordinated support from health, social welfare and justice agencies to achieve diversion from homelessness, criminal recidivism and further health and social harms. Integrated models of care are typically concentrated in large urban centres. The present study aimed to empirically measure the prevalence and distribution of complex co-occurring disorders (CCD) in a large geographic region that includes urban as well as rural and remote settings.

Geography of Complex Co-occurring Disorders

(1) At least one psychiatric hospitalisation (including substance-related admissions);
(2) *And* at least two MSP encounters involving diagnoses of mental disorders (excluding substance use disorders);
(3) *And* at least two MSP encounters involving diagnoses of substance use disorders;
(4) And at least two convictions (delivered by any Provincial Court);
(5) *And* at least $5000 (CAD) in shelter payments.



* Note: The Nisga'a Health Council is an independent health authority.

Prepared By: BC Stats
September 2012

Somers et al. Emerg Themes Epidemiol (2015) 12:17
DOI 10.1186/s12982-015-0040-9

Emerging Themes in Epidemiology

RESEARCH ARTICLE Open Access

High-frequency use of corrections, health, and social services, and association with mental illness and substance use

Julian M. Somers[1*], Stefanie N. Rezansoff[1], Akm Moniruzzaman[1] and Carmen Zabarauckas[2]

Results: From more than 14,000 offenders sentenced in Vancouver's Downtown Eastside, very High Frequency service users associated with community (n = 216) and custody (n = 107) sentences incurred average attributable public service costs of $168,000 and $247,000 respectively over a 5-year period of observation. Health-related costs for both groups were over $80,000 per person, primarily associated with hospital admissions. Across both groups, 99 % had been diagnosed with at least one mental disorder and over 80 % had co-occurring substance use and another mental disorder.

OPEN ACCESS Freely available online

PLOS ONE

Examining the Impact of Case Management in Vancouver's Downtown Community Court: A Quasi-Experimental Design

Julian M. Somers*, Akm Moniruzzaman, Stefanie N. Rezansoff, Michelle Patterson

Somers Research Group, Faculty of Health Sciences, Simon Fraser University, Burnaby, British Columbia, Canada

Abstract

Background: Problem solving courts (PSC) have been implemented internationally, with a common objective to prevent reoffending by addressing criminogenic needs and strengthening social determinants of health. There has been no empirical research on the effectiveness of community courts, which are a form of PSC designed to harness community resources and inter-disciplinary expertise to reduce recidivism in a geographic catchment area.

Method: We used the propensity score matching method to examine the effectiveness of Vancouver's Downtown Community Court (DCC). We focused on the subset of DCC participants who were identified as having the highest criminogenic risk and were assigned to a case management team (CMT). A comparison group was derived using one-to-one matching on a large array variables including static and dynamic criminogenic factors, geography, and time. Reductions in offences (one year pre minus one year post) were compared between CMT and comparison groups.

Results: Compared to other DCC offenders, those triaged to CMT (9.5% of the DCC population) had significantly higher levels of healthcare, social service use, and justice system involvement over the ten years prior to the index offence. Compared to matched offenders who received traditional court outcomes, those assigned to CMT (n = 249) exhibited significantly greater reductions in overall offending ($p<0.001$), primarily comprised of significant reductions in property offences ($p<0.001$).

Conclusions: Our findings indicate that CMT achieved significantly greater reductions in recidivism than traditional court among offenders with complex needs and high numbers of previous offences. Limitations of this research include a non-experimental design and one year follow up. Strengths include a robust matching process and extensive client level data spanning multiple sectors. Further research is needed to replicate the observed outcomes, to investigate the extension of community courts to settings with divergent offender needs and local resources, and to estimate potential cost avoidance attributable to this intervention.

Citation: Somers JM, Moniruzzaman A, Rezansoff SN, Patterson M (2014) Examining the Impact of Case Management in Vancouver's Downtown Community Court: A Quasi-Experimental Design. PLoS ONE 9(3): e90708. doi:10.1371/journal.pone.0090708

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Competing Interests: The authors have declared that no competing interests exist.

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Comparisons of socio-demographic, mental illness and other related characteristics between VAH participants with and without personality disorder (n=433)

Variable	Participants with PD (n = 134, 31%) Mean (SD) / n (%)	Participants without PD (n = 299, 69%) Mean (SD) / n (%)	P value
Demographics			
Gender			
Female	44 (39.3)	68 (60.7)	
Male	90 (28.4)	227 (71.6)	**0.032**
Age at randomization			
<25 years	11 (32.4)	23 (67.6)	
25-44 years	77 (31.8)	165 (68.2)	
44 plus years	46 (29.3)	111 (70.7)	0.853
Ethnicity			
Aboriginal	17 (24.3)	53 (75.7)	
White	80 (34)	155 (66)	
Other	37 (28.9)	91 (71.1)	0.252
Education			
Gd 8 or less	16 (23.5)	52 (76.5)	
Incomplete High School	54 (30.2)	125 (69.8)	
High School or Higher	64 (35.0)	119 (65.0)	0.205
Employment Status			
Unemployed	116 (29.1)	282 (70.9)	
Employed	7 (43.8)	9 (56.3)	
Other/student	11 (64.7)	6 (35.3)	**0.004**
Income in past month			
Less than $800	49 (24.7)	149 (75.3)	
$800 or higher	83 (36.2)	146 (63.8)	**0.010**
Marital status			
Single (never married)	88 (30)	205 (70)	
Other	45 (32.8)	92 (67.2)	0.557
Need level			
High Need	86 (33.7)	169 (66.3)	
Moderate Need	48 (27.0)	130 (73)	0.134
Housing first intervention			
Yes (CONG, ACT & ICM)	83 (32.3)	174 (67.7)	
None (TAU)	51 (29.0)	125 (71)	0.463

-Personality disorder was ascertained using ICD-9 code (three digit code, 301) from MSP billing data within a ten-years period preceding randomization.
-Out of 497 VAH participants, 433 provided consent access to administrative data and were linkable to health records.

Variable	Participants with PD (n = 134, 31%) Mean (SD) / n (%)	Participants without PD (n = 299, 69%) Mean (SD) / n (%)	P value
Age of first homelessness			
≥ 25 years	74 (31)	165 (69)	
<25 years	60 (31.6)	130 (68.4)	0.891
Lifetime homelessness			
12 months	49 (40.2)	73 (59.8)	
13-60 months	50 (28.1)	128 (71.9)	
60 months plus	34 (26.6)	94 (73.4)	**0.036**
Homelessness (longest episode)			
1 year or less	74 (34.3)	142 (65.7)	
1 year plus	60 (28.2)	153 (71.8)	0.174
Housing status at enrolment			
Absolutely homeless	107 (31.7)	231 (68.3)	
Precariously housed	27 (28.4)	68 (71.6)	0.547

Variable	Participants with PD (n = 134, 31%) Mean (SD) / n (%)	Participants without PD (n = 299, 69%) Mean (SD) / n (%)	P value
Mental disorders			
Hospitalized for mental illness over 6 months in past 5 years			
No	112 (28.8)	277 (71.2)	
Yes	22 (50.0)	22 (50.0)	**0.004**
Hospitalized for mental illness over 2 times in past 5 years			
No	41 (18.8)	177 (81.2)	
Yes	93 (43.3)	122 (56.7)	**<0.001**
Major Depressive Episode			
No	87 (33.9)	170 (66.1)	
Yes	47 (26.7)	129 (73.3)	0.114
Manic or Hypomanic Episode			
No	96 (27.6)	252 (72.4)	
Yes	38 (44.7)	47 (55.3)	**0.002**
PTSD			
No	99 (31)	220 (69)	
Yes	34 (30.1)	79 (69.9)	0.852
Panic Disorder			
No	108 (31.8)	232 (68.2)	
Yes	26 (28)	67 (72)	0.482
Mood Disorder with Psychotic Feature			
No	111 (30.7)	251 (69.3)	
Yes	23 (32.9)	47 (67.1)	0.716
Psychotic Disorder			
No	59 (28)	152 (72)	
Yes	75 (33.8)	147 (66.2)	0.190
Less severe cluster of mental disorders			
No	68 (34.3)	130 (65.7)	
Yes	66 (28.1)	169 (71.9)	0.160
Severe cluster of mental disorders			
No	27 (22.1)	95 (77.9)	
Yes	107 (34.4)	204 (65.6)	**0.013**
Alcohol dependence			
No	62 (34.3)	119 (65.7)	
Yes	72 (28.6)	180 (71.4)	0.701
Substance dependence			
No	104 (31.4)	227 (68.6)	
Yes	30 (29.4)	72 (70.6)	0.207
Colorado Symptom Index (CSI) Score[1]			
Mean (SD)	36.3 (12.1)	37.8 (12.6)	0.260

Variable	Participants with PD (n = 134, 31%) Mean (SD) / n (%)	Participants without PD (n = 299, 69%) Mean (SD) / n (%)	P value
Age of first alcohol use			
≥ 14 yrs	83 (36.2)	146 (63.8)	
≤ 13 yrs	46 (24.9)	139 (75.1)	**0.013**
Age of first drug use			
≥ 14 yrs	77 (31.6)	167 (68.4)	
≤ 13 yrs	48 (30.2)	111 (69.8)	0.722
Substance use including alcohol			
Less than daily/none	97 (32.3)	203 (67.7)	
Daily	37 (28.2)	94 (71.8)	0.399
Drug use (no alcohol)			
Less than daily/none	101 (32.3)	212 (67.7)	
Daily	33 (28.0)	85 (72.0)	0.390
Use of injection drugs			
No	114 (32.4)	238 (67.6)	
Yes	19 (25.0)	57 (75.0)	0.207

Currie et al. BMC Health Services Research 2014, 14:404
http://www.biomedcentral.com/1472-6963/14/404

BMC Health Services Research

RESEARCH ARTICLE Open Access

Examining the relationship between health-related need and the receipt of care by participants experiencing homelessness and mental illness

Lauren B Currie*, Michelle L Patterson, Akm Moniruzzaman, Lawrence C McCandless and Julian M Somers

Abstract

Background: People experiencing homelessness and mental illness face multiple barriers to care. The goal of this study was to examine the association between health service use and indicators of need among individuals experiencing homelessness and mental illness in Vancouver, Canada. We hypothesized that those with more severe mental illness would access greater levels of primary and specialist health services than those with less severe mental illness.

Methods: Participants met criteria for homelessness and current mental disorder using standardized criteria (n = 497). Interviews assessed current health status and involvement with a variety of health services including specialist, general practice, and emergency services. The 80th percentile was used to differentiate 'low health service use' and 'high health service use'. Using multivariate logistic regression analysis, we analyzed associations between predisposing, enabling and need-related factors with levels of primary and specialist health service use.

Results: Twenty-one percent of participants had high primary care use, and 12% had high use of specialist services. Factors significantly ($p \leq 0.05$) associated with high primary care use were: multiple physical illnesses [AOR 2.74 (1.12, 6.70]; poor general health [AOR 1.68 (1.01, 2.81)]; having a regular family physician [AOR 2.27 (1.27, 4.07)]; and negative social relationships [AOR 1.74 (1.01, 2.99)]. Conversely, having a more severe mental disorder (e.g. psychotic disorder) was significantly associated with lower odds of high service use [AOR 0.59 (0.35, 0.97)]. For specialist care, recent history of psychiatric hospitalization [AOR 2.53 (1.35, 4.75)] and major depressive episode [AOR 1.98 (1.11, 3.56)] were associated with high use, while having a blood borne infectious disease (i.e., HIV, HCV, HBV) was associated with lower odds of high service use.

Conclusions: Contrary to our hypotheses, we found that individuals with greater assessed need, including more severe mental disorders, and blood-borne infectious diseases had significantly lower odds of being high health service users than those with lower assessed needs. Our findings reveal an important gap between levels of need and service involvement for individuals who are both homeless and mentally ill and have implications for health service reform in relation to the unmet and complex needs of a marginalized sub-population. (Trial registration: ISRCTN57595077 and ISRCTN66721740).

Keywords: Homelessness, Health services, Unmet need, Mental illness

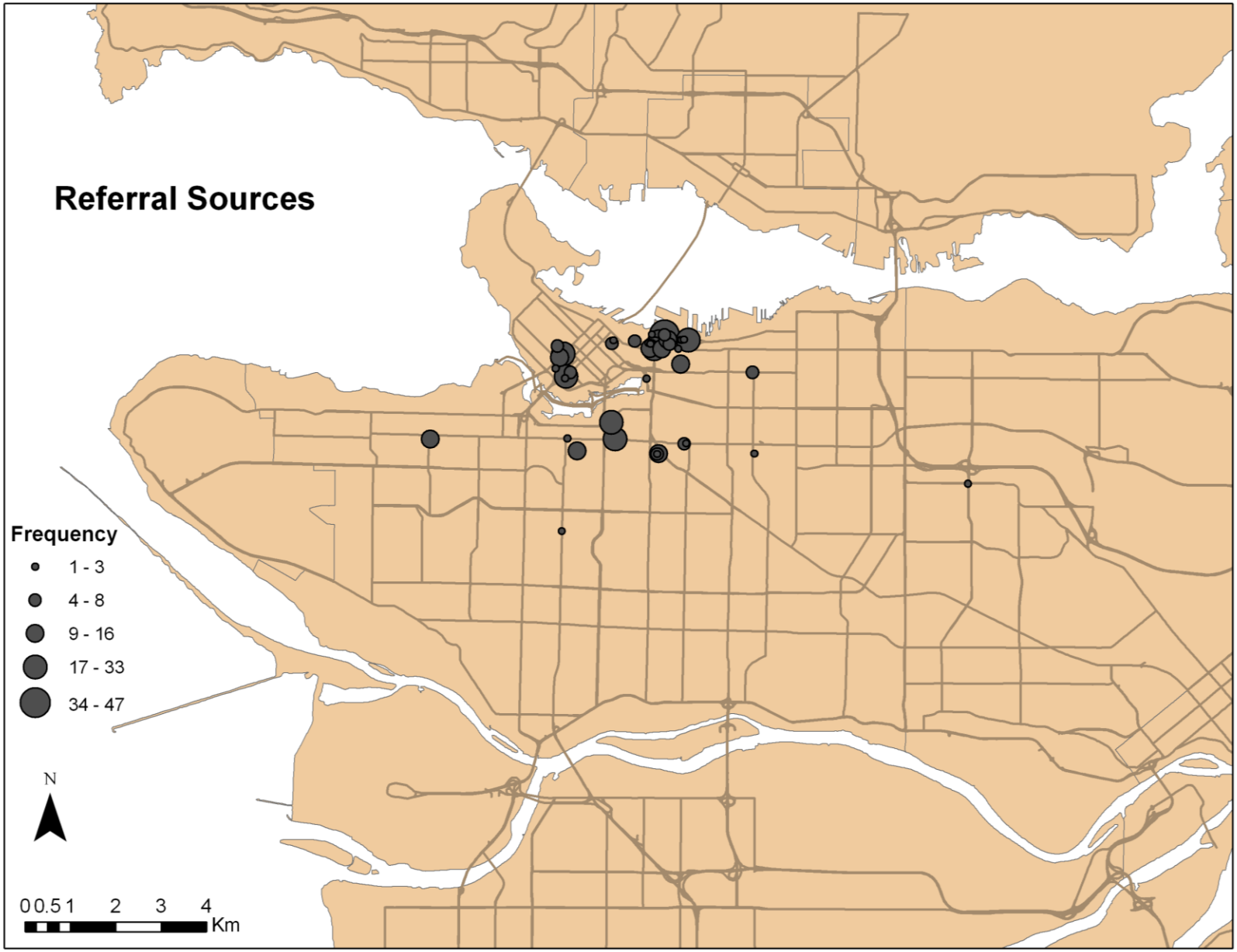
Types of Contact in Past 6 Months

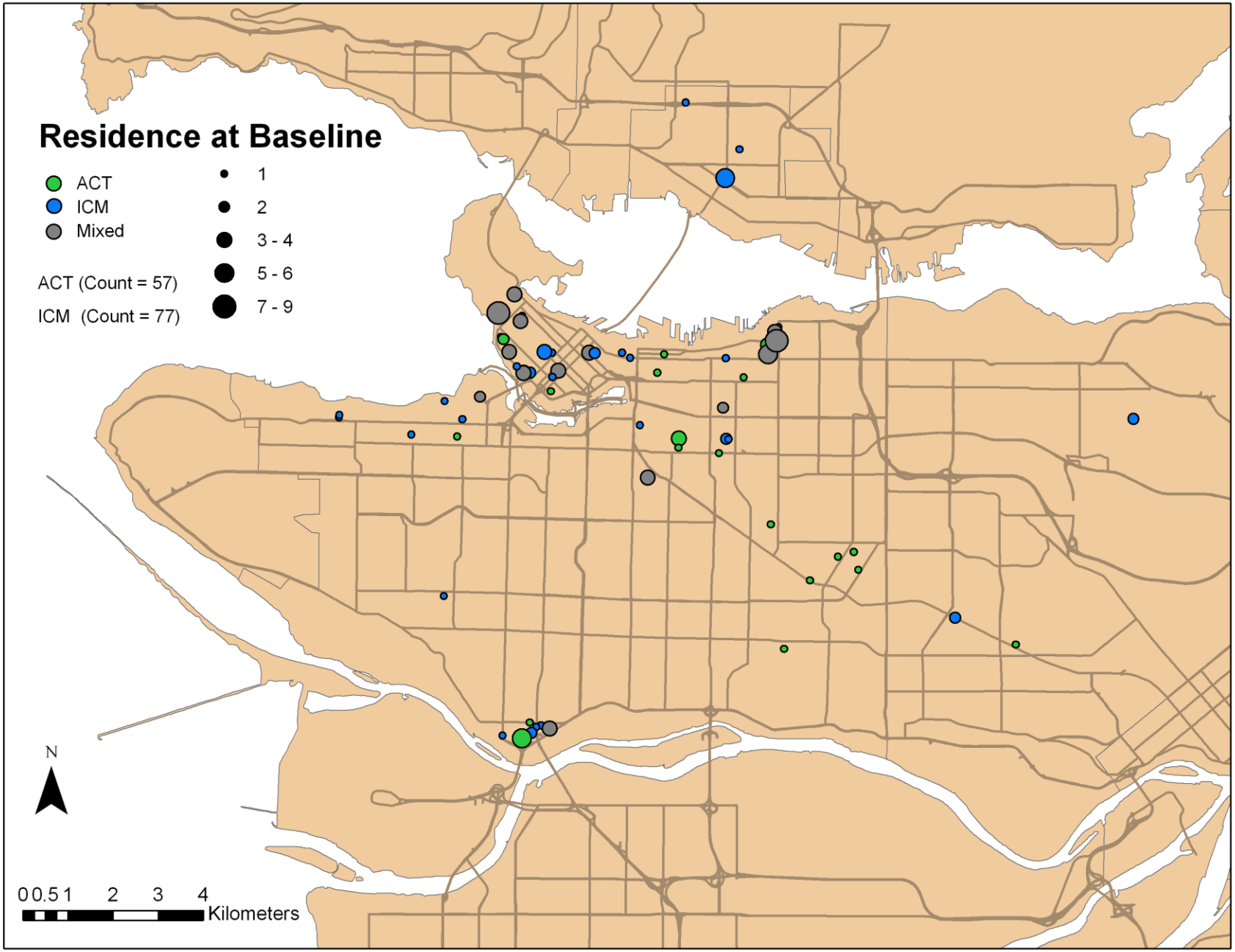
n (%)

Health, Social Justice Service Use Inventory (HSJSU)

Seen by a health/social service provider	389 (79)
Visited psychiatrist	134 (27)
Talked with a health/social service provider	112 (29)
Emergency room visit	281 (58)
Ambulance	195 (40)
Contacts with police (no arrest)	254 (52)
Held in a police cell (≤24 hours)	112 (23)
Arrested	173 (36)
Court appearance	174 (36)

Somers *et al. Trials* 2013, **14**:365
http://www.trialsjournal.com/content/14/1/365


Referral Sources
Frequency
1 - 3
4 - 8
9 - 16
17 - 33
34 - 47
N
0 0.5 1 2 3 4
Km


Residence at Baseline
ACT
ICM
Mixed
ACT (Count = 57)
ICM (Count = 77)
1
2
3 - 4
5 - 6
7 - 9
N
0 0.5 1 2 3 4
Kilometers

Housing First Improves Residential Stability in Homeless Adults With Concurrent Substance Dependence and Mental Disorders

Anita Palepu, MD, MPH, Michelle L. Patterson, PhD, Akm Moniruzzaman, PhD, C. James Frankish, PhD, and Julian Somers, PhD

Objectives. We examined the relationship between substance dependence and residential stability in homeless adults with current mental disorders 12 months after randomization to Housing First programs or treatment as usual (no housing or support through the study).

Methods. The Vancouver At Home study in Canada included 2 randomized controlled trials of Housing First interventions. Eligible participants met the criteria for homelessness or precarious housing, as well as a current mental disorder. Residential stability was defined as the number of days in stable residences 12 months after randomization. We used negative binomial regression modeling to examine the independent association between residential stability and substance dependence.

Results. We recruited 497 participants, and 58% (n = 288) met the criteria for substance dependence. We found no significant association between substance dependence and residential stability (adjusted incidence rate ratio = 0.97; 95% confidence interval = 0.69, 1.35) after adjusting for housing intervention, employment, sociodemographics, chronic health conditions, mental disorder severity, psychiatric symptoms, and lifetime duration of homelessness.

Conclusions. People with mental disorders might achieve similar levels of housing stability from Housing First regardless of whether they experience concurrent substance dependence. (*Am J Public Health*. Published online ahead of print October 22, 2013: e1–e7. doi:10.2105/AJPH.2013.301628)

The combination of homelessness, substance use, and mental illness is challenging for affected individuals and society to address. Estimates of the prevalence of substance use disorders among homeless populations vary between 29% and 75%.[1–4] Substance use among persons who are homeless has been associated with lower treatment retention,[5] higher rates of posttreatment relapse,[6] premature mortality,[7] and longer periods of homelessness.[8] Therefore, problematic substance use is a substantial barrier to existing homelessness[9] and contributes to social marginalization.[10–12]

In recent years, Housing First programs have demonstrated increased residential stability among those who are homeless and have a mental illness.[13,14] More recently, Housing First has been shown to be effective among homeless individuals with active substance use disorders.[4,15] However, it is unclear whether Housing First interventions are effective in the

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PLOS | ONE

Housing First Reduces Re-offending among Formerly Homeless Adults with Mental Disorders: Results of a Randomized Controlled Trial

Julian M. Somers[1]*, Stefanie N. Rezansoff[1], Akm Moniruzzaman[1], Anita Palepu[2], Michelle Patterson[1]

1 Faculty of Health Sciences, Simon Fraser University, Burnaby, British Columbia, Canada, **2** Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada

Abstract

Background: Homelessness and mental illness have a strong association with public disorder and criminality. Experimental evidence indicates that Housing First (HF) increases housing stability and perceived choice among those experiencing chronic homelessness and mental disorders. HF is also associated with lower residential costs than common alternative approaches. Few studies have examined the effect of HF on criminal behavior.

Methods: Individuals meeting criteria for homelessness and a current mental disorder were randomized to one of three conditions treatment as usual (reference); scattered site HF; and congregate HF. Administrative data concerning justice system events were linked in order to study prior histories of offending and to test the relationship between housing status and offending following randomization for up to two years.

Results: The majority of the sample (67%) was involved with the justice system, with a mean of 8.07 convictions per person in the ten years prior to recruitment. The most common category of crime was ''property offences'' (mean = 4.09). Following randomization, the scattered site HF condition was associated with significantly lower numbers of sentences than treatment as usual (Adjusted IRR = 0.29; 95% CI 0.12–0.72). Congregate HF was associated with a marginally significant reduction in sentences compared to treatment as usual (Adjusted IRR = 0.55; 95% CI: 0.26–1.14).

Conclusions: This study is the first randomized controlled trial to demonstrate benefits of HF among a homeless sample with mental illness in the domain of public safety and crime. Our sample was frequently involved with the justice system, with great personal and societal costs. Further implementation of HF is strongly indicated, particularly in the scattered site format. Research examining interdependencies between housing, health, and the justice system is indicated.

Trial registration: ISRCTN57595077

Open Access Research

BMJ open

Missed opportunities: childhood learning disabilities as early indicators of risk among homeless adults mental illness in Vancouver, British Columbia

Michelle Louise Patterson,[1] Akm Moniruzzaman,[1] Charles Jan
Julian M Somers[1]

To cite: Patterson ML, Moniruzzaman A, Frankish CJ, *et al.* Missed opportunities: childhood learning disabilities as early indicators of risk among

ABSTRACT
Objectives: It is well documented that early-learning problems and poor academic achievement adversely impact child development and a wide range of adult outcomes; however, these indicators have received scant attention among homeless adults. This study

ARTICLE SUMMARY
Article focus
- The relationship bet
disability (LD) in ch
adult homelessness

Patterson *et al. BMC Public Health* 2014, 1
http://www.biomedcentral.com/1471-245

RESEARCH ARTICLE

Setting the sta
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adults with me

Open Access Research

BMJ open

Trajectories of recovery among homeless adults with mental illness who participated in a randomised controlled trial of Housing First: a longitudinal, narrative analysis

Michelle L Patterson,[1] Stefanie Rezansoff,[2] Lauren Currie,[2] Julian M Somers[2]

To cite: Patterson ML, Rezansoff S, Currie L, *et al.* Trajectories of recovery

ABSTRACT
Objectives: This study used longitudinal, narrative

ARTICLE SUMMARY

Patterson *et al. BMC Psychiatry* (2015) 15:32
DOI 10.1186/s12888-015-0411-3

BMC Psychiatry

RESEARCH ARTICLE Open Access

History of foster care among homeless adults with mental illness in Vancouver, British Columbia: a precursor to trajectories of risk

Michelle L Patterson*, Akm Moniruzzaman and Julian M Somers

Mental Health and Substance Use
Vol. 5, No. 2, May 2012, 85–101

Journal of Urban Health: Bulletin of the New York Academy of Medicine, Vol. 90, No. 4
doi:10.1007/s11524-012-9775-6

Daily Substance Use and Mental Health Symptoms among a Cohort of Homeless Adults in Vancouver, British Columbia

Prolonged and persistent homelessness: multivari
in a cohort experiencing current homelessness and
in Vancouver, British Columbia

Addiction
SSA SOCIETY FOR THE STUDY OF ADDICTION
RESEARCH REPORT
doi:10.1111/add.13011

Changes in daily substance use among people experiencing homelessness and mental illness: 24-month outcomes following randomization to Housing First or usual care

Julian M. Somers[1], Akm Moniruzzaman[1] & Anita Palepu[2]

Somers Research Group, Faculty of Health Sciences, Simon Fraser University, Burnaby, BC, Canada[1] and School of Population and Public Health, University of British Columbia, Vancouver, BC, Canada[2]

Community Ment Health J (2014) 50:604–611
DOI 10.1007/s10597-013-9672-9

BRIEF REPORT

Community Participation and Belonging Among Formerly Homeless Adults with Mental Illness After 12 months of Housing First in Vancouver, British Columbia: A Randomized Controlled

Soc Psychiatry Psychiatr Epidemiol (2013) 48:1245–1259
DOI 10.1007/s00127-013-0719-6

ORIGINAL PAPER

Housing First improves subjective quality of life among homeless adults with mental illness: 12-month findings from a randomized controlled trial in Vancouver, British Columbia

Michelle Patterson · Akm Moniruzzaman · Anita Palepu · Denise Zabkiewicz · Charles J. Frankish · Michael Krausz · Julian M. Somers

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integration (Nemiroff et al. 2011; Wong and Solomon 2002). Social integration refers to engagement in social interactions and developing social networks. Psychological integration, also called sense of community (MacMillan and Chavis 1996), refers to feeling that one belongs to a larger collective and includes perceived emotional safety, mutual benefit, and trust. This multi-dimensional approach

International Journal of Housing Policy, 2014
Vol. 14, No. 1, 79–97, http://dx.doi.org/10.1080/14616718.2014.884881

Routledge
Taylor & Francis Group

Emergency department utilisation among formerly homeless adults with mental disorders after one year of Housing First interventions: a randomised controlled trial

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Faculty of Health Sciences, Simon Fraser University, Burnaby, Canada

Homeless individuals represent a disadvantaged and marginalised group who experience increased rates of physical illness as well as mental and substance use disorders. Compared to stably housed individuals, homeless adults with mental disorders use hospital emergency departments and other acute health care services at a higher frequency. Housing First integrates housing and support services in a client-centred model and has been shown to reduce acute health care among homeless populations. The present analysis is based on participants enrolled in the Vancouver At Home Study ($n = 297$) randomised to one of three intervention arms (Housing First in a 'congregate setting', in 'scattered site' [SS] apartments in the private rental market, or to 'treatment as usual' [TAU] where individuals continue to use existing services available to homeless adults with mental illness), and incorporates linked data from a regional database representing six urban emergency departments. Compared to TAU, significantly lower numbers of emergency visits were observed during the post-randomisation period in the SS group (adjusted rate ratio 0.55 [0.35,0.86]). Our results suggest that Housing First, particularly the SS model, produces significantly lower hospital emergency department visits among homeless adults with a mental disorder. These findings demonstrate the potential effectiveness of Housing First to reduce acute health care use among homeless individuals and have implications for future health and housing policy initiatives.

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BREAKING NEWS | VANCOUVERSUN.COM SERIOUSLY WESTCOAST SINCE 1912 THURSDAY, OCTOBER 24, 2013 | FINAL EDITION

Housing mentally ill is cost-effective: study

It costs little more than leaving them on the street, researcher says

LORI CULBERT
AND MATTHEW ROBINSON
VANCOUVER SUN

Providing homes to Vancouver's highest-needs mentally ill people costs about the same as leaving them on the street to rotate through shelters, emergency rooms and jail cells, according to a landmark national study.

The At Home study, which involved 2,200 hard-to-house people with mental illness in five Canadian cities, placed participants in housing and provided them with financial, medical and moral support. A new cost analysis shows, across the country, it was on average 11-per-cent more expensive to house the most needy study participants, compared to leaving them to rely on emergency services.

The cost breakdown for the Vancouver portion of the study, which involved 500 participants, has not yet been released to the public. But the lead investigator, Simon Fraser University Prof. Julian Somers, said in an interview that the cost to house and support the Vancouver high-needs group was almost identical to the cost of leaving them on the street. Somers believes Vancouver's better cost comparison outcome is due, in part, to the local participants facing tougher circumstances and using more emergency services before entering the study.

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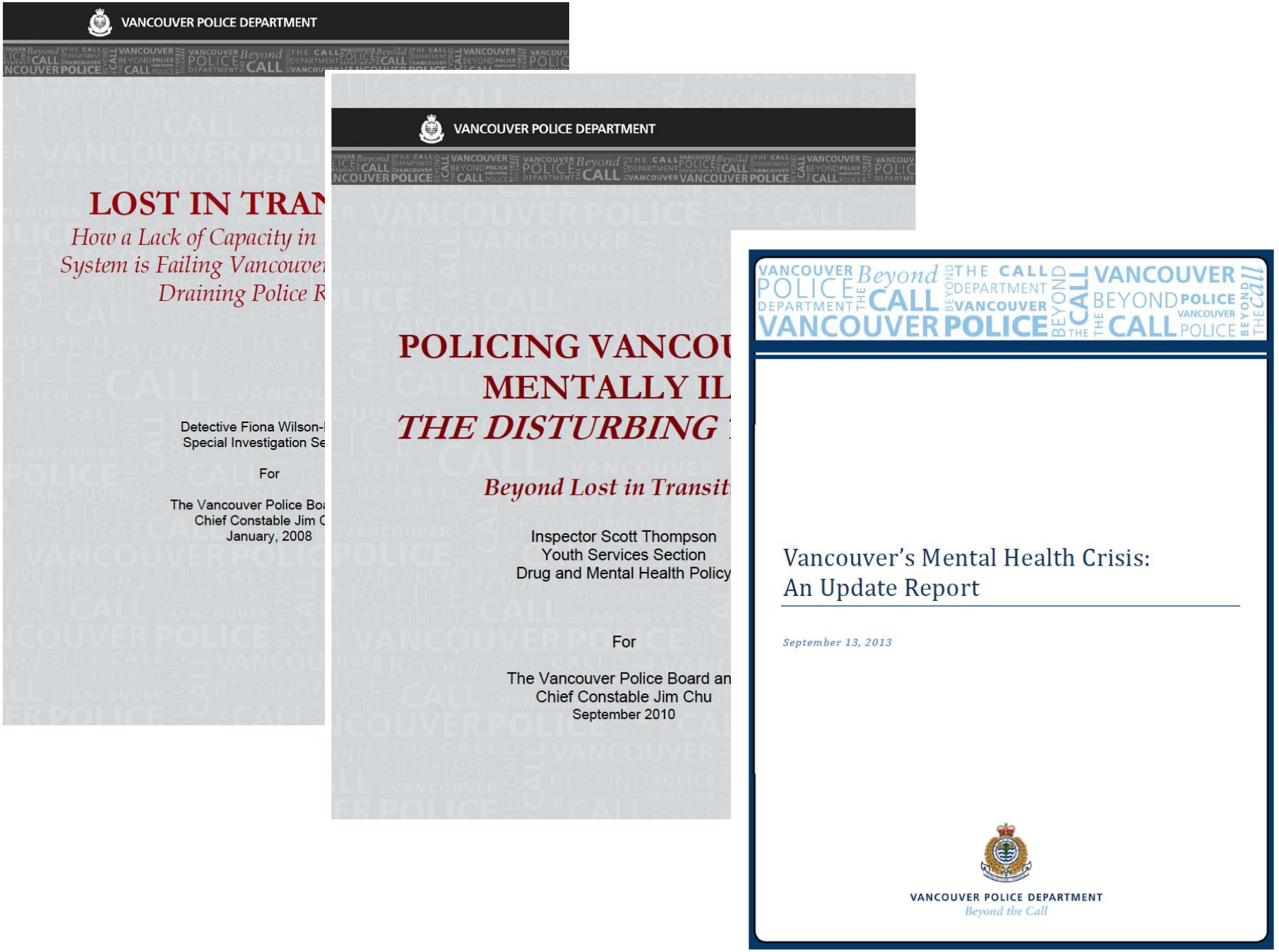
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Migration to the Downtown Eastside neighbourhood of Vancouver and changes in service use in a cohort of mentally ill homeless adults: a 10-year retrospective study

Julian M Somers, Akm Moniruzzaman, Stefanie N Rezansoff

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► Prepublication history and additional material is available. To view please visit the journal (http://dx.doi.org/10.1136/bmjopen-2015-009043).

ABSTRACT

Objectives: Little research has investigated the role of migration as a potential contributor to the spatial concentration of homeless people with complex health and social needs. In addition, little is known concerning the relationship between possible migration and changes in levels of service use over time. We hypothesised that homeless, mentally ill individuals living in a concentrated urban setting had migrated from elsewhere over a 10-year period, in association with significant increases in the use of public services.

Setting: Recruitment was concentrated in the Downtown Eastside neighbourhood of Vancouver, Canada.

Participants: Participants (n=433) met criteria for chronic homelessness and serious mental illness, and provided consent to access administrative data.

Methods: Linked administrative data were used to retrospectively examine geographic relocation as well as

Strengths and limitations of this study

- First investigation of geographic relocation among homeless mentally ill people over 10 years.
- Inclusion of comprehensive records of service use spanning health, justice and social welfare for each year studied.
- Demonstration that migration is associated with significant increases in service use.
- Cannot identify causal relationship between migration and service use.
- Limitations associated with use of administrative data (missing data, unmatched cases) apply.

Trial registration numbers: ISRCTN57595077 and ISRCTN66721740; Post-results.

Soc Psychiatry Psychiatr Epidemiol
DOI 10.1007/s00127-016-1259-7

ORIGINAL PAPER

Adherence to antipsychotic medication among homeless adults in Vancouver, Canada: a 15-year retrospective cohort study

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Abstract

Purpose The purpose of this study was to investigate the level of adherence to antipsychotic prescription medication in a well-defined homeless cohort over a 15-year period. We hypothesized that adherence would be well below the recommended threshold for clinical effectiveness (80 %), and that it would be strongly associated with modifiable risk factors in the social environment in which homeless people live.

Method Linked baseline data (including comprehensive population-level administrative prescription records) were examined in a subpopulation of participants from two pragmatic-randomized trials that investigated Housing First for homeless and mentally ill adults. Adherence to antipsychotic medication was operationalized using the medication possession ratio. Multivariable logistic regression was used to estimate effect sizes between socio-demographic, homelessness-related and illness factors, and medication possession ratio.

Results Among the 290 participants who met inclusion criteria for the current analysis, adherence to antipsychotic prescription was significantly associated with: history of psychiatric hospitalization; receipt of primary medical services; long-acting injectable antipsychotic formulations; and duration of homelessness. Mean medication possession ratio in the pre-randomization period was 0.41. Socio-demographic characteristics previously correlated with antipsychotic non-adherence were not significantly related to medication possession ratio.

Conclusions This is the first study to quantify the very low level of adherence to antipsychotic medication among homeless people over an extended observation period of 15 years. Each of the four factors found to be significantly associated with adherence presents opportunities for intervention. Strategies to end homelessness for this population may represent the greatest opportunity to improve adherence to antipsychotic medication.

Keywords Antipsychotic · Adherence · Homelessness · Medication possession ratio · Serious mental illness

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Housing First Improves Adherence to Antipsychotic Medication Among Formerly Homeless Adults With Schizophrenia: Results of a Randomized Controlled Trial

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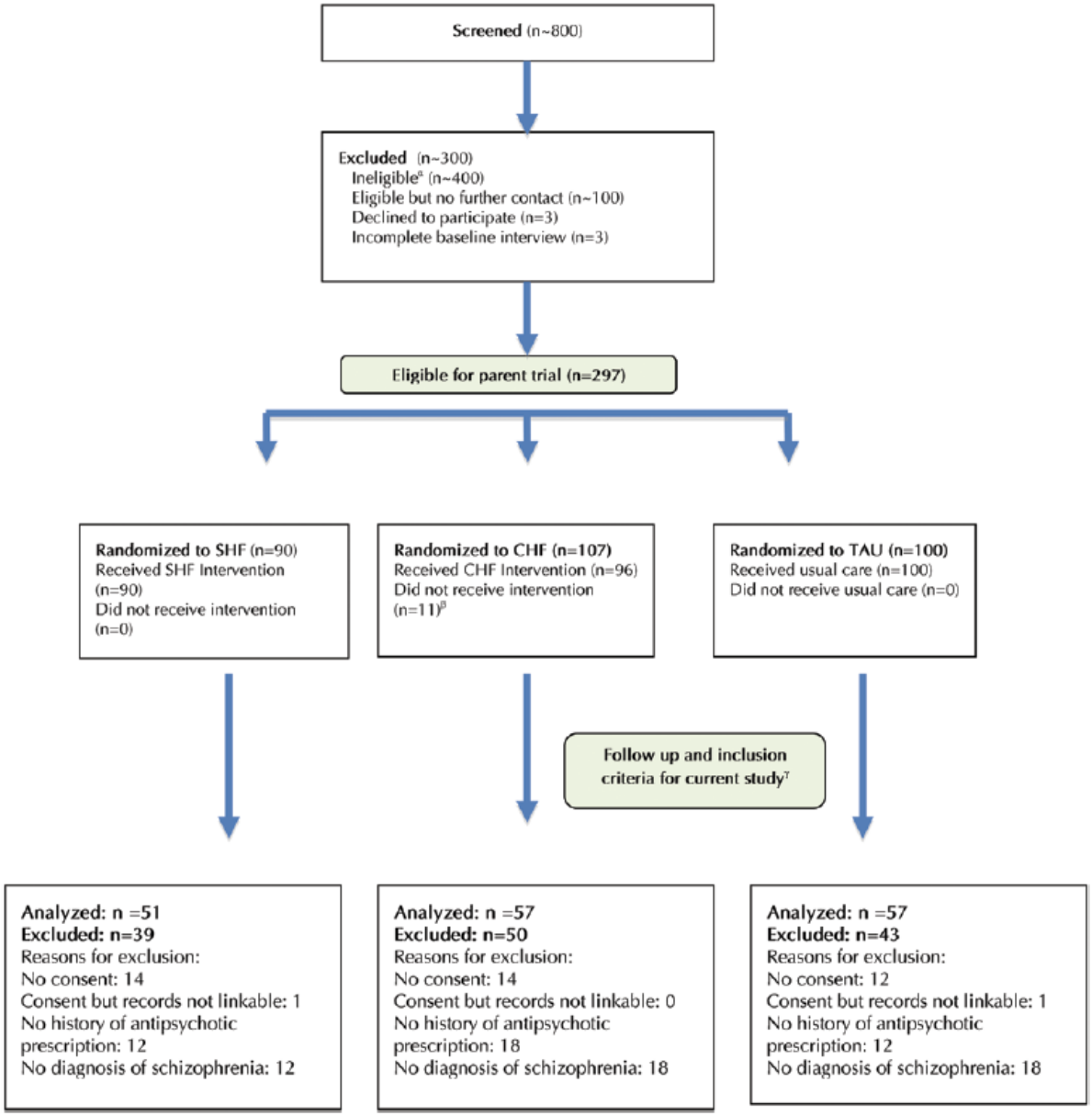
Screened (n~800)
Excluded (n~300)
Ineligible[6] (n~400)
Eligible but no further contact (n~100)
Declined to participate (n=3)
Incomplete baseline interview (n=3)
Eligible for parent trial (n=297)
Randomized to SHF (n=90)
Received SHF Intervention (n=90)
Did not receive intervention (n=0)
Randomized to CHF (n=107)
Received CHF Intervention (n=96)
Did not receive intervention (n=11)[8]
Randomized to TAU (n=100)
Received usual care (n=100)
Did not receive usual care (n=0)
Follow up and inclusion criteria for current study[7]
Analyzed: n =51
Excluded: n=39
Reasons for exclusion:
No consent: 14
Consent but records not linkable: 1
No history of antipsychotic prescription: 12
No diagnosis of schizophrenia: 12
Analyzed: n =57
Excluded: n=50
Reasons for exclusion:
No consent: 14
Consent but records not linkable: 0
No history of antipsychotic prescription: 18
No diagnosis of schizophrenia: 18
Analyzed: n =57
Excluded: n=43
Reasons for exclusion:
No consent: 12
Consent but records not linkable: 1
No history of antipsychotic prescription: 12
No diagnosis of schizophrenia: 18

Table 4. One-Way ANOVA Analysis Estimating Intervention Effects on Medication Possession Ratio in the Postrandomization Period ($n = 165$)

Study Arms	Medication Possession Ratio	*P* Value From ANOVA[a]	Intervention Effect	Adjusted *P* Value[b] for Pairwise Comparisons
	Mean (95% CI)		Mean (95% CI)	
Based on administrative health data in last 10 y[c]				
Participants with psychotic disorder ($n = 165$)				
Congregate site ($n = 57$)	0.61 (0.52, 0.69)	<.001	0.06 (−0.10, 0.21)	.643
Scattered site ($n = 51$)	0.78 (0.73, 0.84)		0.24 (0.10, 0.37)	<.001
Treatment as usual ($n = 57$)	0.55 (0.45, 0.65)		Reference	Reference
Based on MINI diagnosis				
Participants with psychotic disorder ($n = 154$)				
Congregate site ($n = 55$)	0.58 (0.48, 0.67)	<.001	0.04 (−0.12, 0.20)	.816
Scattered site ($n = 45$)	0.79 (0.73, 0.85)		0.25 (0.12, 0.39)	<.001
Treatment as usual ($n = 54$)	0.54 (0.44, 0.64)		Reference	Reference

Note: MINI, Mini-International Neuropsychiatric Interview.
[a]Because Levene's test for homogeneity of variance was significant ($P < .05$), the overall *P* value was based on Welch ANOVA test.
[b]Games-Howell test was used to adjust for family-wise errors between study arms.
[c]ICD-9 schizophrenic psychoses (codes 295.0–295.9).

Actual Housing status during post-randomization period by study arm (n=433)

	High Need (n=291)			Moderate Need (n=190)	
	CONG (n=93) N (%)	ACT (n=75) N (%)	HNTAU (n=82) N (%)	ICM (n=87) N (%)	MNTAU (n=81) N (%)
Raw number of days spent in stable residence during follow up[7] Mean (SD)	517.2 (194.3)	513.0 (194.1)	207.1 (212.5)	510.0 (214.0)	152.4 (177.1)
% of time spent in stable residence[8] Mean (SD)	74.8 (26.0)	75.2 (25.6)	29.4 (29.8)	74.0 (27.9)	23.1 (27.0)

ACT: Assertive Community Treatment; CONG: Congregate; ICM: Intensive Case Management; HNTAU: High Need Treatment As Usual; MNTAU: Moderate Need Treatment As Usual; SD: Standard Deviation

Actual Housing status during post-randomization period by study arm (n=433)

	Housing First-yes[11,12]			**Housing First-no**[13]		
	Overall n=255	PD–yes n=81	PD–no n=174	Overall n=163	PD–yes n=45	PD–no n=118
Raw number of days spent in stable residence during follow up[14] Mean (SD)	513.5 (200.4)	537.7 (174.9)	502.2 (210.8)	180.4 (197.1)	251.1 (226.1)	153.5 (178.7)
P value			0.160			**0.011**
% of time spent in stable residence Mean (SD)	74.7 (26.5)	77.6 (22.6)	73.3 (28.0)	26.3 (28.5)	35.3 (32.2)	22.8 (26.3)
P value			0.197			**0.023**


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