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Implementing a Health Screening Program for Persons Experiencing Homelessness: A Canadian  
Example

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### Abstract

The resource center clinic implemented a health-screening program for the population of people experiencing homelessness or precarious housing situations. One of the program intentions was to align service with BCMH and MCFD goals of increased accessibility, increased screening and preventative health care services, and increased integration of primary care and mental health and substance use services. The clinic hours are limited and available Wednesday mornings from 0830 until noon. On average 7 new patients were seen each month. The patient population was predominantly male, the average age was 45.6, and 50% were homeless. There was a high prevalence of prehypertension and prediabetes. Eighty five percent of patients had a positive screen for depression and this was higher than expected. Polysubstance use was more common for the patients as compared to use of alcohol only. The number of patients with positive HCV screening was within the expected range. Seventy nine percent of patients seen in the clinic for screening smoke cigarettes.

Patients with prediabetes and prehypertension require more frequent screening. Further assessment and intervention with regards to nicotine dependence is needed. For patients presenting with depression, the addition of group or online CBT could help improve outcomes. In order to improve the health outcomes for HCV positive patients it is important to develop links with clinics offering support and treatment for HCV. To improve the health of this population we need to increase the number of clinic hours and offer clinic time later in the day. Additionally, reducing barriers to screening such as offering non-fasting lab tests, using a one page tool that incorporates screening for depression, alcohol use and substance use, and having one key person completing the initial screening may increase consistency and patient participation.

Homelessness and the associated health issues are a significant problem in British Columbia. Innovative ways to reach and support the health needs of the homeless population are required as traditional methods have been largely ineffective. Establishing care partnerships is challenging because of limited health care resources and the stigma surrounding this population. Improving health access and outcomes for persons experiencing homelessness will decrease the financial burden placed on provincial health authorities by reducing Emergency Department (ED) visits and avoiding inpatient admissions. An overarching goal of this project in addressing the specific health needs of those experiencing homelessness is offering low barrier healthcare through a clinic linked with a housing first program. This model is possible through a partnership between Progressive Housing Society (PHS) and the Fraser Health Authority (FHA). The purpose of this practice improvement project is the development of an appropriate and relevant health-screening program that meets both the needs of the population and the provincial mandate and goals. Through the screening program patients are linked to appropriate treatment and services with a goal of early intervention and care planning.

### **Population**

Homelessness is a significant problem in Canada and there are at least 200,000 Canadians experiencing homelessness every year with an annual economic burden of seven billion dollars (Gaetz, Donaldson, Richter, & Gulliver, 2013). In British Columbia the largest homeless population is found in the metropolitan areas including Burnaby. Hundreds of Burnaby residents are affected by homelessness, as well as the associated health, social, and economic disparities. “Homelessness describes the situation of an individual or family without stable, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it” (The Canadian Homeless Research Network [CHRN], 2012). Furthermore, there is a range of housing

circumstances including unsheltered absolute homelessness, sometimes referred to as sleeping 'rough', emergency shelters, provisional or temporary housing, and precarious housing with risk of homelessness (CHRN, 2012). The homeless lifestyle promotes illness and poor health and the transient nature of the experience of homelessness leads to disjointed health care (Wise & Phillips, 2013). Social determinants of health are linked to a person's general living conditions and these factors exert a significant influence on health (Mikkonen & Raphael, 2010). There are several social determinants of health and those most closely aligned with homelessness are housing, unemployment, food insecurity, social exclusion, and access to health services. Basic physiological needs such as food and housing take priority over health concerns (Wise & Phillips, 2013). Poor housing quality leads to stress, poor coping, and adverse health outcomes and this positions housing as a basic requirement for health (Daiski, 2007; Mikkonen & Raphael, 2010).

### **Epidemiology**

A person who is homeless has a higher mortality rate than the general population (Hwang, Wilkins, Tjepkema, O'Campo, & Dunn, 2009; Morrison, 2009). Common health issues for people experiencing homelessness include diabetes, hypertension, hepatitis C, mental illness, and addiction. Many of these conditions are either preventable or could be effectively managed with the provision of routine primary health care (Savage, Gillespie, & Lindsell, 2008; Schanzer, Dominquez, Shrout, & Caton, 2007; Weber, Thompson, Schmiede, Peifer, & Ferrell, 2013). Mental illness and substance use disorders are reported to be significant in the homeless population and 54% of people experiencing homelessness reported addiction issues and 35% reported having a mental illness (Regional Steering Committee on Homelessness, [RSCH], 2012). According to Savage et al., (2008) people experiencing homelessness rely on the hospital

emergency department (ED) for their medical care needs because they do not have a primary care provider. According to the 2014 report from the British Columbia Ministry of Health (BCMH) people with severe mental health and/ or substance use disorders use a proportionally high percentage of expensive health care services such as Emergency Department (ED) and inpatient beds.

### **Review of the Literature**

A review of the literature explored current information related to health issues, screening and treatment, and care access for people experiencing homelessness. The first search was done with CINAHL and MEDLINE using the terms 'homeless', 'health', 'access', with the limits of English language, peer reviewed, adults (age 19+), and the years 2001-2014. This search yielded 52 articles. Another search was done specifically for screening of the common conditions using the terms 'screening', 'alcohol', 'diabetes', 'depression', 'hepatitis C', and 'hypertension', with the limits of English language, peer reviewed, adults (age 19+), and the years 2001-2014 yielded 30 articles. Following the data analysis, a final search was completed using key terms 'prediabetes', 'prehypertension', 'smoking', 'homeless', and 'treatment', with the same limits as above resulting in articles. A manual journal search and search of reference lists produced 18 articles. After eliminating duplicates and studies that did not meet inclusion criteria of adult, mental health and/or substance use, homeless, and health disparities, and screening, 36 articles were chosen for review. Three government websites, six professional organization websites, five practice guidelines, and one book were accessed for further information regarding policy, epidemiologic trends in the homeless population, current issues in practice, and clinical practice guidelines.

There is one national program in the United States called Health Care for the Homeless (HCH). HCH has done extensive work to modify clinical practice guidelines specifically for the unique need of this population and these were reviewed. The themes emerging from this literature review are, the health status of people experiencing homelessness, barriers to health care access, and health screening. Provincial policy and clinical practice guidelines specifically for the homeless population are included.

### **Health Status**

The relationship between poor health and homelessness is highly complex because the risk factors for homelessness are also risk factors for ill health (Frankish, Hwang, & Quantz, 2005). People experiencing homelessness tend to have a greater burden of health issues, require more intense treatment, and have higher rates of hospitalization as compared to the general population (BCMh, 2014; Daiski, 2007). Mortality rates of people experiencing homelessness are significantly greater than the general population (Cheung & Hwang, 2004). According to Frankish et al., (2005) men are between two and eight times more likely to die and homeless women are thirty-one times more likely to die than people who have stable housing.

Common health conditions within this population include diabetes, hypertension, hepatitis C, mental health issues, and substance use disorders (Frankish et al, 2005; Hwang et al., 2010; Savage et al., 2008; Schanzer et al., 2007; Weber et al., 2013). The prevalence of diabetes in Canada is estimated at 7.6% and is about equal for the homeless population and the general population (Greiver et al., 2014; Jones et al., 2009). However, poor glycaemic control has a prevalence of about 44% in the population of people experiencing homelessness as compared to 23% in the general population (Jones et al., 2009). Persons with diabetes have a significantly increased risk of cardiovascular disease estimated at 2-4 times more prevalent than those without

diabetes (Canadian Diabetes Association [CDA], 2013). Additionally, there is a higher incidence of stroke and peripheral vascular disease and the cardiovascular age of someone with diabetes is estimated to be 10 – 15 years in advance of their age and consequently their life expectancy is reduced (CDA, 2013). Diabetes and smoking is associated with poorer glycemic control, progression to end stage renal disease, triple the risk of myocardial infarction, and 30% increased risk for stroke (CDA, 2013). This is significant in the homeless population because of the high prevalence of tobacco use.

The prevalence of hypertension in the homeless population is at least twice that of the general Canadian population where the prevalence is 19% in those over the age of 20 with a further 20% having high normal blood pressure (Lindsay, Gorber, Joffres, Birtwhistle, McKay, & Cloutier, 2013). Risk factors for hypertension includes co-occurring diabetes, poor nutrition, high dietary sodium intake, smoking, abdominal obesity, substance abuse, physical inactivity, and family history (Canadian Hypertension Education Program [CHEP], 2014; HCH Clinicians Network, 2006). Heart disease is three times more prevalent and is the leading cause of death in older homeless population aged 45 – 64 (McCary & O'Connell, 2005).

Hepatitis C is one of the leading causes of death from liver disease. The prevalence of HCV is 10– 20 times higher (22-52%) in homeless population sub-groups as compared to the general population (HCH Clinicians Network, 2013). Rates of hepatitis C are highest in persons with a history of intravenous drug use (IVDU), previous hospitalization for mental health issues, and lifetime alcohol abuse (Nyamathi et al., 2002). Hepatitis C is under diagnosed because it progresses slowly and tends to be asymptomatic until late stages.

Mood disorders are the most common psychiatric conditions within the homeless population with a prevalence of 20-40% and the prevalence of schizophrenia is lower at 6-13%

(Frankish et al, 2005; Hwang, 2001). Approximately 33% of patients with chronic illness have co-occurring depression and this poses challenges with self-care and treatment adherence, and worsens physical symptoms and functional impairment (HCH Clinicians Network, 2006).

Persons with mental health disorders have a greater than double life time risk of having a substance use disorder as compared to the general population (Nehlin, Fredriksson, & Jansson, 2012). The prevalence of alcohol misuse disorders is six to seven times higher than the general population and homeless men have the highest prevalence estimated at 60%. People who are experiencing homelessness tend to under report their substance use and mental health issues due to stigma, fear, and lack of insight (Weber et al., 2013). It is possible that the statistics reported in the literature under-represent the problem. People with severe mental illness and/or substance use diagnoses comprise two percent of the population in British Columbia and utilize a significant portion of health services due to their complex needs (BCMh, 2014).

### **Barriers to Care**

People experiencing homelessness have poor access to health care services. An analysis of care needs of people experiencing homelessness found that 32% reported unmet medical or surgical needs, and 21% reported unmet mental health care needs (Baggett, O'Connell, Singer & Rigotti, 2010). Structural barriers for care access include traditional clinic hours, intolerance of missed appointments, discrimination, and disrespectful treatment by health care providers (McNeil et al., 2013; Parker & Albrecht, 2012). Individual barriers for care access include lack of transportation, lack of means to fill prescriptions, low literacy, lengthy wait times, mental health issues, competing priorities, and not knowing where to access help (Daiski, 2007; Parker & Albrecht, 2012; Weber et al., 2013). There are many competing priorities serving as barriers to health care access. Priority is given to obtaining food and shelter or attending employment

opportunities rather than seeking health care for some (Baggett et al., 2010; Daiski, 2007; Hwang et al., 2010). Other factors associated with having unmet health care needs include, food insufficiency, presence of medical comorbidities, history of victimization, and lack of a consistent primary care provider (Baggett et al., 2010).

It is not surprising that when faced with these multiple barriers and competing priorities people experiencing homelessness seek crisis-oriented health care when their health issues become urgent. For many, the ED becomes the best option for health care because it is accessible 24 hours a day and care is given despite lack of insurance and lack of a permanent address (Zlotnick, Zerger, & Wolfe, 2013). According to Savage et al., (2008) people experiencing homelessness often rely on ED for their medical care needs because they do not have a primary care provider. Wise & Phillips (2013) report that only 6% of the sample of people experiencing homelessness in their study accessed care from a family doctor, which is the most appropriate and cost effective place for preventative care. Interestingly, 59% did not get what they needed when accessing care at either the ED or a clinic (Savage et al., 2008). A lack of appropriate and timely community resources has been identified as one of the gaps leading to substantial emergency room, hospital use, and cost for this population (BCMh, 2014; Daiski, 2007).

### **Provincial Policy**

The BCMh (2014) reports that people with severe mental health and/or substance use disorders represent about two percent of British Columbia's population and they utilize a proportionally large amount of resources. For example, people with severe mental illness and or substance use disorders comprise six per cent of ED visits and 29 per cent of these visits result in admission to an inpatient bed at a cost of \$390 million (BCMh, 2014). The desired outcome for this population is a reduction in hospitalizations through effective prevention. Similarly, the

BCMh (2014) goal for effective chronic disease prevention and management through universal population health interventions applies to those experiencing homelessness as they experience high rates of chronic disease such as diabetes, hypertension, and chronic lung disease.

The British Columbia Ministry of Health and the Ministry of Children and Family Development released 'Healthy minds, healthy peoples: A ten-year plan to address mental health and substance use in British Columbia' (BCMh & MCFD, 2010). The goals and interventions most relevant to this population sub set are:

- 1) Improve the quality and accessibility of services for people with mental health and substance use problems (p. 40). Primary care mental health and substance use assessment and care planning can prevent the development of severe problems and reduce the use of more costly health care services. By 2015, the number of British Columbians who receive mental health and substance use assessments and planning interventions by primary care physicians will increase by 20 per cent (p. 8).
- 2) Reduce the economic cost to the public and private sectors resulting from mental health and substance use problems (p. 40). Integrating interventions by primary care and mental health and substance use teams result in better outcomes and decrease the need for emergency and hospital services. By 2018, through implementation of integrated primary and mental health and substance use services, there will be a 20 per cent reduction in the number of days mental health and substance use patients occupy inpatient beds while waiting for appropriate community resources (p. 8).

### **Health Screening**

Screening is a process that helps to determine if further evaluation is needed to rule out a condition and it is not diagnostic in itself. There are recommended screening tools for the health

condition that present commonly in the homeless population: diabetes, hypertension, hepatitis C, depression, and alcohol use disorders. The CHEP (2014) recommends blood pressure screening at all appropriate visits using the recommended method and these are included in their online guidelines. According to the 2013 American Society of Hypertension and the International Society of Hypertension (ASH/ISH) guidelines, prehypertension is defined as a systolic blood pressure (SBP) between 120 and 139 mmHg and a diastolic blood pressure (DBP) between 80 and 89 mmHg. Stage I hypertension is defined as SBP between 140-159 mmHg and DBP between 90 -99 mmHg, and Stage II hypertension is defined as SBP greater than or equal to 160mmHg or DBP greater than or equal to 100mmHg (Scordo & Pickett, 2014). An Australian study concluded that screening for diabetes and hypertension followed by optimal treatment in those with positive screening in the age group 50-69 is likely to reduce end stage kidney disease and death as well as provide a cost benefit (Howard et al., 2010). The screening test for hypertension was blood pressure measurement with a threshold of 140/90 mmHg. The screening test for diabetes was fasting blood sugar level. The CDA (2013) recommends diabetes screening every three years for people 40 years of age and older, and more frequently in people with higher risk. The CDA has developed a screening tool to identify higher risk individuals and this resource is available at the CDA website free of charge. The recommended screening for diabetes is fasting plasma glucose or hemoglobin A1c (CDA, 2013). A FPG of equal to or greater than 7.0 mmol/L or an A1c equal to or greater than 6.5% is diagnostic of diabetes (CDA, 2013). A FPG between 6.1 and 6.9 mmol/L may be considered prediabetes and an oral glucose tolerance could be considered, and all patients who have screened positive for prediabetes should be screened more frequently (CDA, 2013).

The Centers for Disease Control and Prevention [CDC] (2008) recommends universal screening for hepatitis C in all high-risk individuals and this includes: people born between 1945-1965, any history of intravenous drug use (IVDU) some sexual practices (i.e. anal receptive or with a partner known to be HCV+), those with a history of blood transfusion or hemodialysis. Seventy five percent of people infected are unaware of their status. The Anti-HCV serum test is the recommended screening test (CDC, 2008). This test is reliable, cost effective with a sensitivity >97%. Anti-HCV does not distinguish between acute, chronic, or resolved infection and therefore further testing of HCV-RNA is required to distinguish between these states or infection.

The US Preventative task Force (USPSTF) recommends routine screening for all average risk patients when treatment supports are available (O'Conner, Whitlock, Gaynes, & Beil, 2009). The PHQ-2 is a very brief preliminary screen that is 97% sensitive, 67% specific, and has a 93% negative predictive value (Narayana & Wong, 2014). If the PHQ-2 is positive then the PHQ-9, which is the full screen, should be completed. The PHQ-9 has 61% sensitivity and is 94% specific. Both screeners are readily accessible and free to use.

The AUDIT-C can be used as the initial screen for alcohol misuse. It is comprised of the three consumption questions from the full AUDIT and has been shown to have good sensitivity and specificity. For women and men the sensitivity is 0.85 and 0.75, and specificity 0.89 and 0.88 respectively (Nehlin, Fredriksson, & Jansson, 2012). If the AUDIT-C is positive then further assessment using the full 10 item AUDIT should be done. The AUDIT has been standardized across nations and has sensitivity in the mid 0.9 and specificity of 0.8 (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). This tool is readily available and free of cost

from the World Health Organization website. Additionally, there is an implementation manual available as a resource.

### **Clinical Practice Guidelines**

The National Health Care for the Homeless Council (NHCHC) is a US National network comprised of doctors, nurses, social workers, patients, advocates (2014). This is a leading organization for research and comprehensive health care and housing. Members collaborate with the government and private agencies and provide support to more than 200 public health centers and HCH programs in all 50 states. The NHCHC provides training and evidence-based resources such as adapted clinical practice guidelines and publications specific for the homeless population (2014).

Screening, assessment, and treatment of both physical and behavioral health disorders are crucial for the homeless population for several reasons. Many persons experiencing homelessness have undiagnosed or untreated health disorders, they have significant difficulty navigating the healthcare system and accessing specialty care, and often the stigma of mental illness limits the person from seeking appropriate care (HCH Clinicians Network, 2006). Congruent with the literature findings, Bonin et al., (2010) report that chronic health conditions such as diabetes, and mental health and/or substance use disorder are more prevalent and more severe in persons experiencing homelessness as compared to the general population. It is estimated that half of mental disorders are undiagnosed in the primary care setting because of the variability of the care providers' skill in recognizing and treating these disorders (HCH Clinicians Network, 2006). Providing care that integrates primary and behavioral health care has been found to reduce disparities and stigma, improve function and clinical outcomes, and are also cost effective (HCH Clinicians Network, 2006).

The Health Care for the Homeless Clinician's Network (HCH Clinicians Network) created a document titled "Adapting your practice: general recommendation for the care of homeless patients" with support from the Bureaus of Primary Health Care, Health Resources and Services Administration, and the U.S. Department of Health and Human Services (Bonin et al., 2010). Additionally, people experiencing homelessness not only have care access challenges but also difficulties adhering to treatment plans because of several factors such as mental health and substance use disorders, transient lifestyle, lack of space to safely store medications, and competing priorities as discussed earlier. The HCHCN (Bonin et al., 2010) have made simple adaptations to clinical guidelines to assist health care providers to recognize the importance of considering living situations and co-occurring disorders when creating a plan of care. Our clinic utilizes these clinical practice guidelines in providing care to the population of people experiencing homelessness.

### **Implications for the DNP**

Several strategies to address unmet needs and barriers to care have been proposed in the literature. Advanced practice nurses are well situated to take a leadership role in the development of innovative care models to address the health care needs of vulnerable populations (Weber et al., 2013). The overarching plan to integrate primary care with mental health and substance use with a goal to improve patient outcomes and decrease the need for emergency and hospital services is congruent with BC's ten-year mental health plan (BCMh, 2010). The clinic redesign is improving the quality and accessibility of services, assessment, and care planning and this has great potential to decrease the development of severe problems and reduce the use of more costly health care services. The clinic strives to provide effective chronic disease prevention and management through screening and interventions to improve health and decrease hospitalization

in concordance with “Setting priorities for the B.C. health system” (BCMh, 2014). The implementation of a health-screening program as part of the intake process at the PHS resource center is addressing some of the unmet needs of this population.

### **Approach to the Conduct of the Project**

#### **Setting**

**Description and function of the project setting.** The setting for this project is the Progressive Housing Society (PHS) office located in Burnaby close to the New Westminster border. This site was chosen because of the existing relationship between FHA and PHS and there was an opportunity to expand the current outreach services to better serve people experiencing homelessness. The Progressive Housing Society was incorporated in 1981 and offers supportive housing to Burnaby residents struggling with severe and persistent mental illness, substance abuse disorders, and homelessness. Progressive Housing Society has a mission to empower individuals to engage with their community and achieve personal independence through access to resources and learning life skills (PHS, 2010). The PHS currently provides clothing, assistance with transportation to specialist appointments, housing subsidies, and short term emergency grant funding for such expenses as prescriptions. The resource center strives to provide walk in appointment availability and a respectful and welcoming environment. Currently the clinic operates from 8:30 in the morning until noon on Wednesday mornings. Practitioners within this interdisciplinary team currently includes; a Nurse Practitioner (NP), Psychiatrist, Substance Use Counselor (SUC), Licensed Practical Nurse (LPN), Case Managers (CM), Housing Support Worker, Peer Support Worker, and Volunteers. Fraser Health has contracted PHS to provide some of the housing and support for clients experiencing severe and persistent mental illness.

Earlier this year a program evaluation of the current homeless outreach medical clinic program revealed several concerns. Highlights from the patient feedback were frustrations with the limited time available for appointments and challenges with being referred to specialist services. The staff members voiced concern about the lack of consistent and standardized triage and the lack of a clear mandate and goals for the program. Several staff and patients commented that currently the program provides only a Band-Aid solution by addressing immediate crises rather than creating long-term solutions. A gap analysis for the outreach medical clinic identified the following needs:

- 1) Health screening is needed for all patients for the most commonly occurring conditions within this population. Time constraints pose significant challenges to screening and there is only enough time to meet the acute needs. Currently there is no availability of screening tools because of time and space constraints. Additionally, there is no computer, internet service, or printing capabilities at the outreach for accessing tools electronically. This is the focus of this project.
- 2) Mental health and substance use services – there currently are no mental health or substance use services at the outreach program. Although clients have been referred, many do not follow through. The assumption is that having a mental health professional onsite to connect with the patient will lead to increased engagement in services.
- 3) Chronic disease management – Evidenced based and standardized trajectories of management are the standard of care for chronic disease and these will be incorporated in to the care at the clinic. The screening program will identify those patients with chronic conditions, or at risk for a chronic condition. The plan of care will include chronic disease management flow sheets from the BC clinical practice guidelines.

4) Health Education – this is a crucial component of health care and promotion of self-management by the patients. With the current model there is not enough time for adequate health teaching.

**Organizational change.** Using Lewin’s change model the organization is in the action phase of the change process (Dulaney & Stanley, 2005). We are currently working to meet benchmarks that align with Ministry goals. Most of the clinic staff is motivated to continuous positive changes.

**Facilitators, barriers, and challenges.** There are several factors that help with the continued facilitation of this project including commitment from both organizations, FHA provision of resources, a motivated team who work together to problem solve, and PH leadership, who remain flexible, persistent and embrace ‘outside the box’ thinking. One main barrier for this project is the lack of universal electronic medical record (EHR) for documentation and the ability to produce statistical reports and this had added to the effort and time to gather and maintain clinical data. This barrier has been communicated to the FHA director and the process of exploring the provision of an EHR has commenced. Before implementation we identified lack of participation as a potential barrier, however, we found most patients were interested and did participate in screening

Program redesign always comes with some challenges. The key challenges identified for this project include the change process, new learning, and resistance. We did find the new learning was time intensive and frustrating. It took more than a month to incorporate the change of using the screening tools, tracking results, and gathering basic demographics. It is possible that there was some resistance because it is noted that on several occasions blood pressure readings were not taken and information was not documented despite initial training and ongoing

reminders and direction. Resistance occurs for several reasons including lack of knowledge or perceived loss of power (Timmins, 2008). Other challenges include the complexity of care associated with this population, and the challenges associated with the complex service coordination. Having an onsite psychiatrist and SUC greatly reduces barriers to accessing mental health and substance use services and greatly improves service coordination

**Participants.** There were no research subjects. This project did not require institutional review board approval.

### **Implementation**

The practice improvement plan was based on the clinical microsystem model for improvement described by Nelson, Batalden, & Godfrey (2007). The first step is to describe and clarify the improvement using aims, measures, and expected changes and these are presented below (Nelson et al., 2007). The plan, do, study, and act (PDSA) model is a structured tool designed to conduct a test of change (Nelson et al., 2007). The benefits of using PDSA cycles include increased clarity and greater success rates.

**Specific Aim:** we aim to increase routine screening in clinic practice for all patients. 100% of patients will have screening for diabetes, hypertension, hepatitis C, depression, and substance use within 4 months. The Global Aim statement is found in Appendix A.

- a. Plan – research screening tools, choose the ones best suited to the practice needs, prepare for use in clinic
- b. Do – trial use in clinic, document usage, barriers, facilitators
- c. Study – analysis and summarize
- d. Act – make revisions and start another PDSA cycle if required

A brief training session was provided to the volunteer and the LPN to introduce the screening tools, the purpose of screening and to ensure that the screening tools were administered consistently. Next the plan for data collection was introduced to ensure that data was collected in a consistent way. There were several opportunities for questions and clarification. A brief instruction sheet was posted on the corkboard in the office for reference. When new patients arrived they were invited to participate in the screening program. If the client agreed the volunteer gave them the PHQ-2 and AUDIT-C to self-complete. Assistance was offered if the person was unable to read the tools. The volunteer also collected basic demographic data including date of birth, address, and Personal Health Number (PHN). Next, the LPN would offer blood pressure screening and document results if the patient agreed. Blood pressure was measured using the CHEP guidelines (2014) found the Appendix. Both the volunteer and the LPN documented results on a paper form.

Next, the patient was brought in to see the NP. First, the client's main concern was addressed and then the screening results were discussed. If the AUDIT-C was positive the patient was asked to complete the full AUDIT with the NP. Although not part of the original screening program, the NP asked about substance use other than alcohol and about smoking and tobacco use. These questions were added because it was apparent during the first few weeks of screening that these issues were prevalent in the patients attending the clinic. If the PHQ-2 was positive the NP completed the PQH-9 with the patient. Screening for diabetes and HCV were offered and a lab requisition was given if the patient was interested. Follow up appointments were offered to all patients. A referral to the psychiatrist was offered to all patients with positive PHQ-2 score. A referral to the substance use counselor (SUC) was offered to all patients with a positive AUDIT-C screen and those with other identified substance use issues. All results were

documented results on a paper form including any follow up and plans of care. The NP entered the data on to an excel spreadsheet.

### **Outcomes**

We captured information on 28 patients who participated in the screening program at the resource center clinic. This is a small number of patients and interpretation should be cautious. Data was collected from January through April 2015 using a paper based tool that was entered in to an excel spreadsheet (Appendix B). There is no information that would allow identification of patients. Descriptive statistics are used to describe the findings from this project. An average of 7 new patients were seen each month. The age range was 20 – 63. The mean age was 45.6 and the median age was 52. There were 18 males (64%), 8 females (29%), and 2 transgender persons (male to female) (7%) that participated in screening. This finding is similar to literatures finding that the majority of the homeless population is male with an estimate between 56.3 and 81% (Bigelow & Stepka, 2012). Fourteen (50%) of the patients were homeless, 8 (29%) were precariously housed, and 6 (21%) were in stable housing.

The prevalence of diabetes and prediabetes in Canada is estimated at 7.6% and is about equal for the homeless population and the general population (Greiver et al., 2014; Jones et al., 2009). We expected to have a similar finding in our patient population, however, the combined prevalence of diabetes and prediabetes was 18%. There was one person screened who met the criteria for a diagnosis of diabetes and 4 patients met the criteria for impaired glucose tolerance. This finding is greater than expected and could be related to the small number of patients seen. Of the 21 patients participating in the blood pressure screening, there was only one person (4.7%) with high blood pressure and this is a low percentage and inconsistent with the literature which reports a 20-40% prevalence, but could be related to small number of patients seen

(Lindsay et al., 2013). About 48% of screening program patients had prehypertention and this is higher than the literature findings of 40% prevalence (Lindsay et al., 2013). Prehypertension is defined as having blood pressure in the high normal range, specifically, a systolic blood pressure between 120 and 139 or a diastolic blood pressure between 80 and 89 mmHg.

Of the 13 patients who completed HCV screening, 32% of patients had a positive HCV screen. One patient completed treatment, one is set to start treatment in 1 month, and 2 patients are in the process of finding housing and financial stability so they can better manage treatment. This finding is consistent with the prevalence of 22- 52% reported in the literature (HCH Clinicians Network, 2013). At the time this paper was written, there were 8 patients who had yet to complete blood work and this could affect the findings related to HCV prevalence with screening.

Of the 28 patients who did the PHQ-2, 85% scored positive and this is higher than the prevalence of 20-40% reported in the literature (Frankish et al, 2005; Hwang 2001). Forty three percent (n=12) scored positive on the AUDIT-C and 64% patients (n=18) reported using substances other than alcohol. Polysubstance use was more common for the patients as compared to use of alcohol alone. These results are similar to the 2011 survey findings that 54% of people experiencing homelessness reported addiction issues (RSCH, 2012).

Although screening for nicotine use and smoking was not part of the original screening program, there was the high prevalence of cigarette smoking with 79% of patients actively smoking. Smoking rates in the homeless population range between 69-99% (Bigelow & Stepka, 2012). CAN-ADAPTT (2011) reports higher smoking rates among people with mental health and substance use issues with a range of 40-90%. Smoking can contribute to respiratory and cardiovascular disease, infection, and cancer and is the leading cause of preventable death in the

United States (Bigelow & Stepka, 2012). There are reports in the literature that smokers who are experiencing homelessness do want to quit smoking and can successfully quit smoking (Bigelow & Stepka, 2012; CAN -ADAPTT, 2011). Reported barriers to smoking cessation in this population include cravings, stress, weight gain, cost, lack of knowledge about available programs, and transportation challenges (Bigelow & Stepka, 2012).

Our first goal was to increase routine screening in clinical practice for all patients, having 100% of patients screened for diabetes, hypertension, HCV, depression, and substance use within 4 months. This goal was not met for hypertension screening because 6 patients who agreed to have this screening did not have a documented reading, and this occurred mostly (5 patients) in the last month of this project. The second goal was for 80% of those patients needing a care plan will have one documented on file. This outcome was met and all patients who participated in screening had a documented care plan. We did not include patients who declined screening in determining if goals were achieved.

There were other findings not directly related to the original plan for a screening program. Several patients needed reminders and prompts to go for blood work and it took about 8 weeks to get the blood work results. During the last month (April) several patients who agreed to the screening did not get their blood pressure measured and this was the task assigned to the LPN. The reason this was missed needs to be investigated so a solution can be found.

### **Clinical Implications/ Recommendations**

There was a high prevalence of prediabetes among patients who participated in screening. The term prediabetes encompasses several high-risk categories such as impaired fasting glucose (IFG), impaired glucose tolerance (IGT), and high-risk hemoglobin A1c concentrations (Tabak, Herder, Rothmann, Brunner, & Kivimaki, 2012). The diagnostic criteria for prediabetes varies

between organizations. For example, the CDA defines prediabetes as an A1c between 6.0% and 6.4%, a fasting plasma glucose (FPG) between 6.1 and 6.9 mmol/L and the American Diabetes Association (ADA) uses an A1c between 5.7% and 6.4% or a fasting plasma glucose (FPG) between 6.1 and 7.0 mmol/L (Goldenberg & Punthakee, 2013). IFG is more common in men and people older than 40 years and about 70% of people with prediabetes will develop diabetes (Tabak et al., 2012). It is believed that beta cell function and insulin resistance develops before diabetes is diagnosed. Prediabetes should be treated. Reducing the risk of developing diabetes will decrease the burden of disease, morbidity and mortality, and healthcare costs. For example, reducing the risk of developing diabetes will result in lower rates of renal failure, cardiovascular disease, and diabetic retinopathy (Goldenberg & Punthakee, 2013).

Lifestyle modifications including weight loss and regular exercise and these interventions may improve beta cell function and insulin resistance (Singh, et al., 2012; Tabak et al., 2012). The DaQing Diabetes Prevention Study followed people for 20 years and found that people who participated in the lifestyle changes had a 43% reduced risk of developing diabetes (Tabak et al., 2012). Pharmacological treatments may reduce the risk of diabetes. Metformin has had positive results in research with the benefit being higher in prediabetic people with high BMI (Tabak et al., 2012). Alpha-glucosidase inhibitors (i.e. acarbose) and thiazolidinediones (i.e. pioglitazone) may be effective in reducing the risk of diabetes in people with IGT (Singh et al., 2012; Tabak et al., 2012). Metformin is an older medication with a good safety profile and could be considered in people with prediabetes who are unable to make lifestyle changes (Tabak et al., 2012).

CHEP (2014) recommends health behavior management to reduce the risk of developing hypertension. Thirty to sixty minutes of moderate intensity dynamic exercise four to seven days per week and weight reduction of is recommended. Additionally, Body Mass Index (BMI)

should be measured for all patients. Patients should be encouraged to follow the low risk drinking guidelines and reduce dietary sodium intake with diets such as Dietary Approaches to Stop Hypertension (DASH) diet. This population also requires more frequent screening because of the increased risk of developing hypertension or diabetes. We are developing a system to flag the patients requiring more frequent screening.

Of those screened for hepatitis C, 32% had a positive HCV screen which is consistent with the prevalence of 22- 52% reported in the literature (HCH Clinicians Network, 2013). HCV is one of the leading causes of death from liver disease. In British Columbia the main barriers to HCV treatment include too few providers of this specialty treatment and limits for coverage of the medications used to treat HCV. It is important to identify HCV treatment providers and build a collaborative relationship between our clinic and the specialists so the patient can receive timely and appropriate care. The British Columbia Ministry of Health recently added two newer hepatitis C medications (sofosbuvir and sofosbuvir –ledipasvir) to the PharmaCare Special Authority coverage (2015). These additions provide greater opportunity for patients with previous failed treatment or intolerance for interferon to receive treatment.

There was a very high rate of positive depression screens in this patient population. All patients with a positive screen completed the PHQ-9 and were referred to our psychiatrist for further assessment and treatment if indicated. In addition to psychiatric treatment, patient outcomes may be improved by offering access to online or group CBT and exploring the possibility of adding counseling services to the resource center. This will be one of our action items over the next three months.

Polysubstance use was more common for the patients as compared to use of alcohol alone. A systematic review by Hwang Tolomiczenko, Kouyoumdjian, & Garner (2005) found

that coordinated treatment for adults with mental illness and/ or substance abuse experiencing homelessness was associated with improved health outcomes. Interestingly, there is no evidence indicating which treatment is the most effective because when interventions are compared no significant differences have been found. The key finding is that provision of at least one needed service does make a difference for the health of people experiencing homelessness (Hwang et al., 2005). The harm reduction approach provides a balance of autonomy and structure allowing clients to be genuinely engaged, to build on existing strengths and allowing providers to work with and accept the non-linear nature of addiction recovery and ultimately reduce the stigma associated with substance abuse (Lee & Petersen, 2009). The addition of a SUC working from a harm reduction philosophy will be a beneficial support for the patients receiving care at the clinic. Incorporating onsite primary care with the service delivery model provides an opportunity to improve the health care access disparities for people experiencing homelessness (Weinstein, LaNoue, Plumb, King, Stein, & Tsemberis, 2013). Situation the primary care clinic within the resource center is expected to contribute to improved health care access and outcomes for this population. Additionally, it allows for collaboration with the other available services and service providers.

There was a high prevalence of cigarette smoking among patients who participated in the screening program. Recommendations to address smoking from the CAN-ADAPTT guideline (2011) includes, screening all patients and flagging the charts of smokers to help remind practitioners to assess smoking at each visit. Clinicians should advise patients to quit smoking and identify their stage of change in regards to cessation. A brief intervention and an offer for treatment should be done at each visit. Smoking cessation supports with multiple formats have shown to be more successful than offering only one strategy. Ideally, clinicians should offer

individual and group counseling (2 types- skill and problem solving AND support/encouragement, print and web based materials, and peers support. There are several pharmacotherapies to assist with smoking cessation such as nicotine replacement and oral medication. We will start asking about nicotine use at every follow up visit as well as advise cessation of use and offering nicotine treatment. Additionally we are considering the feasibility of starting a nicotine dependence support group.

Often there is not enough time to complete adequate health teaching during the appointment times and we are considering adding a weekly group to teach about common chronic health conditions such as hypertension and diabetes. Additionally, it would be helpful to have health information handouts readily available for patients. We currently do not have a computer or internet access so having a file with several different handouts on various health topics and conditions would be very helpful. The NP could gather the handouts and the volunteer could make copies and set up a file. This would also address the recommendation of increasing health education that was identified during program evaluation prior to implementation. Provision of a group focusing on wellness with topics such as healthier eating on a budget and ways to increase physical activity may help address the issue of prevention for hypertension and diabetes. This would also address the issue of improved chronic disease management as recommended in the gap analysis done during program evaluation prior to implementation.

It took up to 8 weeks for patients to complete their blood work and many patients needed several reminders to go to the lab. We are considering offering non-fasting blood work for screening this way the peer support worker could accompany the patient across the street to the lab for blood work at any time. For many patients who are experiencing homelessness, eating

takes priority over having a blood test. This may help increase follow through with blood tests and reduce the barriers of attending the lab.

The clinic hours are limited and it was sometimes challenging for patients to make it to the clinic in the morning. On several occasions there was a high volume of patients waiting to be seen and because of the limited hours, the visits times were condensed and rushed in order to get to all the patients who were waiting. More clinical time is needed to meet the patient demand and the team plans to advocate for this. A high percentage of patients (64%) have substance use issues and collaborative care could potentially lead to better outcomes. With this in mind, we would specifically request afternoon hours on the day the SUC is present and this would help with care planning and coordination of care. This would also address the issue of increasing access and engagement to substance use services as recommended from the gap analysis done during program evaluation prior to implementation of this project.

The screening process could be modified and simplified. During our last team huddle we discovered a tool that can be downloaded from Oregon SBIRT and it is a one-page screen for alcohol use, drug use, and depression (PHQ-2). We plan to start utilizing this tool starting May 2015 and this tool is found in Appendix C. Additionally, the volunteer could be trained to take a blood pressure measurement and then could be in charge of greeting the patients, gathering basic demographic information and completing the initial screening. This would be cost saving to the program. Also, by having one dedicated person in charge of screening there will be greater consistency, which could translate to an increase in screening opportunities. This would help reducing barriers to screening (i.e. time constraints and lack of resources) which was one of the issues identified in the gap analysis done during program evaluation prior to implementation.

### **Conclusion**

Homelessness and the associated health issues are a significant problem in British Columbia. Common health conditions within this population include diabetes, hypertension, hepatitis C, depression, and substance use disorders (Frankish et al, 2005; Hwang et al., 2010; Savage et al., 2008; Schanzer et al., 2007; Weber et al., 2013). Many persons experiencing homelessness have undiagnosed or untreated health disorders, they have significant difficulty navigating the healthcare system and accessing specialty care, and often the stigma of mental illness limits the person from seeking appropriate care (HCH Clinicians Network, 2006). Many of these conditions are either preventable or could be effectively managed with the provision of routine primary health care (Savage et al., 2008; Schanzer et al., 2007; Weber et al., 2013). Screening is an effective tool to engage people in their care and identify possible health conditions for which appropriate care management could be initiated.

### **Summary**

The resource center clinic implemented a health-screening program for the population of people experiencing homelessness or precarious housing situations. One of the program intentions was to align our service with BCMH and MCFD goals of increased accessibility, increased screening and preventative health care services, and increased integration of primary care and mental health and substance use services. The clinic hours are limited and screening was available Wednesday mornings from 0830 until noon. On average 7 new patients were seen each month. The patient population was predominantly male (64%), the average age was 45.6, and 50% were homeless. Of the patients screened, 48% had prehypertension and 16% had prediabetes. A high percentage (85%) of patients who participated in screening had a positive screen for depression and this was higher than expected. The number of patients with positive

HCV screening was within the expected range. A very high percentage (79%) of patients seen in the clinic for screening smoke cigarettes. Polysubstance use was more common for the patients as compared to use of alcohol only.

To improve the health of this population we need to increase the number of clinic hours and offer clinic time later in the day. Patients with prediabetes and prehypertension should have more frequent screening. We need to provide more health education and this could be through the use of handouts or weekly groups. Further assessment and intervention with regards to nicotine dependence is needed and this may include the addition of a support group. There was a very high rate of positive depression screens in this patient population and in addition to treatment from a psychiatrist, providing patients with group or online CBT could help improve outcomes. The prevalence of HCV was similar to what has been reported in the literature. In order to improve the health outcomes for HCV positive patients it is important to develop links with clinics offering support and treatment for HCV. Additionally, reducing barriers to screening such as offering non-fasting lab tests, using a one page tool that incorporates screening for depression, alcohol use and substance use, and having one key person completing the initial screening may increase consistency and patient participation.

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## **Appendix A**

### **Global Aim Statement**

We aim to improve the patient care process in the Fraser Health/ Progressive Housing outreach medical clinic for person's experiencing severe mental illness and or substance use who are homeless or precariously housed. The process begins with the initial client engagement with our services. The process ends with the transition of care once the patient has stabilized.

By working on the process, we expect:

- 1) To align our service with BCMH and MCFD goals
  - a. Improved quality of services (i.e. privacy, availability of required clinical tools)
  - b. Increased accessibility of services
  - c. Increased screening and preventative health care
  - d. Increased integration of care (Primary care/ mental health/ substance use)
  - e. Reduced ED and hospital stays with overall reduced costs
  
- 2) To build a partnership with the Burnaby Division of Family Practice
  - a. Increased patient attachment to a Primary care provider
  - b. Increased capacity of primary care in the community
  - c. Improved patient satisfaction
  - d. Increased provider satisfaction
  
- 3) To strengthen the partnership with the PHS Housing team
  - a. Increased collaboration with shared clients
  - b. Increased patient attachment to a Primary care provider
  - c. Increased accessibility of services
  
- 4) Provision of patient centered care:
  - a. Utilizing the Health Care for the Homeless adapted clinical guidelines
  - b. Increased health education with a goal of chronic disease self-management

It is important to work on this now because we have identified the need to improve:

- 1) Service quality and accessibility
- 2) Integration of care
- 3) Screening and preventative health care process
- 4) Management of chronic disease and patient education
- 5) Capacity of primary care through relationship with community partners
- 6) The attachment of patients to a primary care provider
- 7) Patient satisfaction
- 8) Provider satisfaction
- 9) Decreased health care costs – decreased ED and inpatient stays

## Appendix B

## Data Collection Tool

ID	Date	Age	Gen	Housing Status	PHQ-2	AUDIT	Nicoti	Substa	BP	HCV Screen	Glucose	
A-1	07-Jan-15	63	M	Housed	Neg	Neg	Pos	Neg	130/80	Neg	6.5	
R-2	07-Jan-15	52	M	Precariously Housed	Pos	Neg	Pos	Pos	124/80	Pos - completed tx	5.3	Psychiatry/ SUC referral
H-3	14-Jan-15	51	T	Homeless	Pos	Pos	Pos	Pos	116/80	Pos	5.9	Psychiatry/ Public health/ SUC/ Housing
K-4	14-Jan-15	51	F	Housed	Pos	Pos	Pos	Neg	110/70	Neg	5.8	Psychiatry/ SUC referral
M-5	14-Jan-15	61	M	Homeless	Pos	Neg	Neg	Neg	127/98	declined- pain	declined has GP	GP/ Housing
K-6	14-Jan-15	58	M	Precariously Housed	Pos	Neg	Pos	Neg	133/90	declined has GP	declined has GP	GP/ Housing
H-7	28-Jan-15	42	T	Housed	Declined	Neg	Pos	Neg	100/60	Neg	5.4	Psychiatry
K-8	04-Feb-15	57	M	Homeless	Pos	Pos	Pos	Pos	118/70	Neg	**	SUC/ Housing
D-9	02/04/15	33	F	Homeless	Declined	Pos	Pos	Pos	Declined	Declined	Declined	Housing
P-10	02/04/15	54	F	Homeless	Pos	Neg	Pos	Neg	110/68	Neg	**	Housing/ Specialist referral - derm
G-11	02/04/15	missing	M	Homeless	Neg	Pos	Pos	Pos	not done	Declined	Declined	Housing
M-12	02/04/15	53	M	Precariously Housed	Pos	Neg	Pos	Pos	128/87	Declined	6.3	Housing/ PCC
M-13	02/04/15	54	F	Housed	Pos	Pos	Pos	Pos	132/80	Neg	6.8	Psychiatry/ SUC referral
A-14	02/18/15	48	M	Homeless	Pos	Neg	Pos	Pos	168/114	given req	given req	Psychiatry
M-15	18-Feb-15	38	M	Precariously Housed	Pos	Pos	Pos	Pos	115/65	Declined	Declined	Psychiatry/ SUC referral
A-16	18-Feb-15	55	M	Homeless	Pos	Pos	Pos	Pos	136/83	Pos	5.4	Housing
B-17	04-Mar-15	20	M	Precariously Housed	Pos	Neg	Pos	Pos	108/65	Neg	5.5	Psychiatry/ Housing
M-18	11-Mar-15	53	F	Precariously Housed	Pos	Pos	Pos	Pos	96/65	Pos - previous test +	6.7	SUC/ Housing/ Public Health
D-19	11-Mar-15	54	M	Precariously Housed	Neg	Neg	Neg	Neg	130/80	Neg	7.3	Housing/ specialist referral for kidney (as a result of screen)
M-20	11-Mar-15	44	F	Housed	Pos	Neg	Neg	Neg	108/70	Neg	5.2	Psychiatry/ Public health/ SUC/ Housing
F-21	01-Apr-15	51	F	Precariously Housed	Pos	Neg	Pos	Pos	not done	given req	given req	SUC/ Housing
B-22	01-Apr-15	53	M	Homeless	Pos	Pos	Pos	Pos	not done	given req	given req	Psychiatry/ Housing
P-23	01-Apr-15	43	M	Homeless	Pos	neg	Neg	Pos	not done	given req	given req	Housing
T-24	01-Apr-15	55	M	Homeless	Pos	Neg	Neg	Neg	not done	given req	given req	Psychiatry/ Housing
P-25	15-Apr-15	57	M	Homeless	Neg	Neg	Pos	Neg	134/80	given req	given req	Housing
W-26	22-Apr-15	25	M	Housed	Pos	Neg	Neg	Pos	not done	given req	given req	Psychiatry
E-27	29-Apr-15	31	F	Homeless	Pos	Pos	Pos	Pos	110/78	given req	given req	SUC/ Housing
W-28	29-Apr-15	21	M	Homeless	Pos	Pos	Pos	Pos	100/70	given req	given req	Psychiatry/ SUC referral/ Housing

Appendix C

Revised Screening Tool

**Annual questionnaire**

Once a year, all our patients are asked to complete this form because these factors can affect your health as well as medications you may take. Please help us provide you with the best medical care by answering the questions below.

Patient name: _____
Date of birth: _____

Alcohol: One drink =  12 oz. beer  5 oz. wine  1.5 oz. liquor (one shot)

None      1 or more

MEN: How many times in the past year have you had 5 or more drinks in a day?	<input type="radio"/>	<input type="radio"/>
WOMEN: How many times in the past year have you had 4 or more drinks in a day?	<input type="radio"/>	<input type="radio"/>

**Drugs:** Recreational drugs include methamphetamines (speed, crystal) cannabis (marijuana, pot), inhalants (paint thinner, aerosol, glue), tranquilizers (Valium), barbiturates, cocaine, ecstasy, hallucinogens (LSD, mushrooms), or narcotics (heroin).

	None	1 or more
How many times in the past year have you used a recreational drug or used a prescription medication for nonmedical reasons?	<input type="radio"/>	<input type="radio"/>

<b>Mood:</b>	No	Yes
During the past two weeks, have you been bothered by little interest or pleasure in doing things?	<input type="radio"/>	<input type="radio"/>
During the past two weeks, have you been bothered by feeling down, depressed, or hopeless?	<input type="radio"/>	<input type="radio"/>