

Health Care Delivery Strategies

Addressing Key Preventive Health Measures in Homeless Health Care Settings



Health Care for the Homeless Clinicians' Network
National Health Care for the Homeless Council
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PREFACE

The United States Preventive Services Task Force (USPSTF) provides recommendations intended to improve the health outcomes for children, adolescents, adults, and pregnant women within the general population. The significant barriers influencing health outcomes of individuals experiencing homelessness, however, are not addressed in these recommendations. Key morbidities and causes of mortality among those who are homeless include cardiovascular disease, infectious diseases, substance abuse and mental health issues. These types of poor health outcomes are often related to lack of access to stable housing, nutritious foods, transportation, employment, access to quality health care services and treatment, and health insurance. While there is a growing body of clinical guidance adapted to individuals experiencing homelessness and other underserved populations, there are few resources aimed at prioritizing preventive care services.

Homeless health care clinicians often see clients with acute care needs that take priority over more general preventive care needs. This is especially true in settings where clinical staff is lacking, provider time with clients is limited and needed services are not always available. In an effort to provide guidance on this issue, an advisory committee of homeless health care clinicians came together to examine the USPSTF recommendations for the general population, review evidence-based research on the key morbidities and mortalities in the homeless population and share clinical practices and challenges within homeless health care treatment settings.

Health Care Delivery Strategies for Addressing Key Preventive Health Measures in Homeless Health Care Settings is a result of this work. These recommendations aim to prioritize preventive care services for individuals who are homeless by considering the disease prevalence within this patient population, the health management barriers faced by clients and the challenges encountered by the clinicians who serve those clients in traditionally resource-poor settings. When possible, homeless health care clinicians strive to provide the highest quality care in agreement with standard clinical guidelines, including recommendations of the USPSTF. The following recommendations highlight the bare minimum preventive services that can be incorporated during one clinic visit with very limited resources.

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INTRODUCTION

For the past quarter century, experts in the field of prevention and primary care who comprise the U.S. Preventive Services Task Force (USPSTF) have provided recommendations intended to improve health outcomes for children, adolescents, adults, and pregnant women (Agency for Healthcare Research and Quality 2010). Over the same time, research has amassed regarding health needs of individuals experiencing homelessness, and the USPSTF recommendations for the general population do not specifically address these challenges. The Health Disparities and Inequalities Report (2011a) from the Centers for Disease Control & Prevention (CDC) documents that socioeconomic status and living conditions have a direct influence on health and “inadequate housing contributes to infectious and chronic disease and injury and can affect child development adversely.”

Barriers to care affect health outcomes for all populations; therefore, it stands to reason that more numerous and restrictive barriers result in a greater impact on health. Individuals and families experiencing homelessness experience more health issues and die at a younger age than do their housed counterparts (Zlotnick 2009). Homeless individuals and families often have competing priorities that put them at a higher risk for not seeking care (Gelberg 1997). Manageable health conditions, such as hypertension, high cholesterol, and diabetes, are equally prevalent in both the homeless and general populations but are less controlled in persons experiencing homelessness. These particular conditions contribute to cardiovascular disease, which is the leading cause of death among older men experiencing homelessness (Lee 2005). There is a growing body of research to identify causes of morbidity and mortality among the homeless, but little exists to identify and prioritize preventive care (Maciosek 2009, Plumb 1997).

Preventive care can occur on three levels—primary, secondary and tertiary. Primary prevention is the attempt to prevent a disease or condition from developing. Secondary prevention is after a disease develops but before any complications have arisen. If a disease is caught early, there may be a better chance of treating or curing it. Tertiary prevention occurs after complications from a disease and aims to prevent further damage for the disease. Considering the difficulties that individuals who are homeless face in controlling diseases once they develop, it is imperative that clinicians serving those individuals make primary prevention a priority where feasible.

The Steering Committee of the Health Care for the Homeless (HCH) Clinicians’ Network sets the clinical agenda for the National Health Care for the Homeless Council to address priorities and challenges in the provision of health care for those who are homeless. In 2008, the HCH Clinicians’ Network identified integrating preventive medicine and primary care as a high priority topic. Clinicians reported lack of time, staff, resources and services as significant limiting factors in providing preventive care services. The following recommendations are a response to the need for clinical guidance on providing high impact preventive health services that can be addressed in a limited amount of time and with limited resources. These recommendations highlight the bare minimum preventive services that could be incorporated in one clinic visit. Homeless health care clinicians do follow standard clinical guidelines when possible and strive to provide the highest quality of care to their patients. Preventive medicine guidelines not mentioned in this document can be found on the USPSTF website at <http://www.uspreventiveservicestaskforce.org/> and in the following locations:

- Cancer: American Cancer Society (<http://www.cancer.org>)
- Oral Health
 - Adolescents – American Academy for Pediatric Dentistry (http://www.aapd.org/media/Policies_Guidelines/G_Periodicity.pdf)

- Adults - American Dental Association
(<http://ebd.ada.org/ClinicalRecommendations.aspx>)
- Suicide: American Psychiatric Association
(http://www.psychiatryonline.com/pracGuide/pracGuideChapToc_14.aspx)

METHODS

A literature review was conducted to examine the relationship between homelessness and health as well as the availability of clinical guidance on preventive medicine for clinicians serving individuals experiencing homelessness and other marginalized populations. A Preventive Medicine Task Force (PMTF) comprised of HCH clinicians was formed to identify and prioritize preventive practices that could be used in health care for the homeless settings using the above literature review. Individuals experiencing homelessness are at increased risk for health related issues which include but are not limited to nutrition disorders, higher rates of respiratory disorders, skin and dental problems, sexually transmitted diseases, and injuries due to environmental exposure, accident and violence (Tansley 2008). In addition, approximately 50% of individuals experiencing homelessness have mental health issues, of which approximately 25% have serious mental disorders, including chronic depression, bipolar disorder and schizophrenia (National Alliance to End Homelessness 2011). Housing status also impacts social relationships and ability to access goods and services; individuals who lack adequate housing are faced with the conflict of meeting competing needs more often than their housed counterparts (Murphy 2006). Lastly, it is important to identify systematic structural barriers within the health care setting that often preclude the provision of recommended preventive care practices.

In order to construct relevant guidelines for preventive care in homeless health care settings, the HCH PMTF evaluated USPSTF recommendations (2010) for general and special needs populations. Each USPSTF recommendation was reviewed for the following:

1. Impact of care to individuals experiencing homelessness
2. Resource availability to implement the recommendation
3. Potential barriers to implementing the recommendation

The HCH PMTF also identified preventive measures not present in the USPSTF recommendations based on the high prevalence and impact on health outcomes in individuals experiencing homelessness. Funding stream requirements were also cited as a factor in developing preventive care priorities.

RESULTS

The HCH PMTF identified the following screening and delivery recommendations as contributing to the highest impact of care within the homeless health care treatment settings. This table is followed by a more detailed description of each recommendation.

RECOMMENDATIONS		
Clinical Topic	United States Preventive Services Task Force (USPSTF)	Health Care for the Homeless (HCH) Preventive Medicine Task Force (PMTF)
Cardiovascular Disease Risk		
High Blood Pressure Screening	Routine screening for adult men and women	Same as USPSTF
Hyperlipidemia Screening	Men aged 20 – 35 and women over 20 who are at increased risk for coronary heart disease; all men aged 35 and older	Same as USPSTF Note: increased prevalence of hyperlipidemia in individuals who take antipsychotics. See research based monitoring protocols for individuals taking SGA's
Type 2 Diabetes Mellitus Screening in Adults	Asymptomatic adults with sustained blood pressure greater than 135/80 mg Hg	Combination of USPSTF and American Diabetes Association Recommendations <ul style="list-style-type: none"> ▪ First-degree relative with type 2 diabetes mellitus ▪ African-American, Hispanic, Asian, Pacific Islander or Native American ethnicity ▪ Overweight, especially abdominal obesity ▪ Cardiovascular disease, hypertension, dyslipidemia or other features of metabolic disease Groups with greater risk for type 2 diabetes (American Diabetes Association 2011) <ul style="list-style-type: none"> ▪ People with impaired glucose tolerance and /or impaired fasting glucose ▪ People over age 45 ▪ People with a family history of diabetes ▪ People who are overweight ▪ People who do not exercise regularly ▪ People with low HDL cholesterol or high triglycerides, high blood pressure ▪ Certain racial and ethnic groups (e.g., Non-Hispanic Blacks, Hispanic/Latino Americans, Asian Americans and Pacific

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		<p>Islanders, and American Indians and Alaska Natives)</p> <ul style="list-style-type: none"> ▪ Women who had gestational diabetes, or who have had a baby weighing 9 pounds or more at birth <p>A consensus panel of experts representing endocrinologists and psychiatrists developed relevant guidance regarding screening individuals for obesity, diabetes, hypertension, and dyslipidemia. Before starting a patient on an antipsychotic drug, or as soon as possible after initiation of therapy, assessments should be made to determine if the patient is overweight or obese or has diabetes, hypertension, or dyslipidemia (American Diabetes Association 2004).</p>
Depression Screening	Screen when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up	<p>Same as USPSTF</p> <p>Refer to appropriate provider if necessary and applicable</p>
Intimate Partner Violence Screening	<p>No current recommendation</p> <p>1996 recommendation states: The USPSTF found insufficient evidence to recommend for or against routine screening of parents or guardians for the physical abuse or neglect of children, of women for intimate partner violence, or of older adults or their caregivers for elder abuse.</p>	<p>Recommends screening due to evidence of high prevalence within population</p> <p>Consider review of most studied intimate partner violence screening instruments in Intimate Partner Violence Screening Tools: A Systematic Review (Rabin 2009)</p> <ul style="list-style-type: none"> ▪ Hurt, Insult, Threaten and Scream (HITS) – physical, emotional abuse; current abuse; 4 questions ▪ Woman Abuse Screening Tool (WAST) – physical, emotional, sexual abuse; current, ever abused; 8 questions ▪ Partner Violence Screen (PVS) – physical; current past year abuse; 3 questions ▪ Abuse Assessment Screen (AAS) – physical, emotional, sexual abuse; past year, ever abused; pregnant women; 5 questions
Infectious Diseases		
Hepatitis C Screening	Recommends against routine screening for hepatitis C virus (HCV) infection in asymptomatic adults who are not at increased risk (general population) for infection	Recommends adults and unaccompanied youth treated in health care for the homeless settings are offered HCV testing; Frequency of repeat testing after negative outcome to be determined at the local level based on epidemiological data
HIV Screening	Strongly recommends that clinicians screen for human immunodeficiency virus (HIV) all adolescents and adults at increased risk for HIV infection	<p>Recommends following CDC guidelines:</p> <ul style="list-style-type: none"> ▪ In all health-care settings, screening for HIV infection should be performed routinely for all patients aged 13-64 years. ▪ Healthcare providers should initiate screening unless prevalence

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		<p>of undiagnosed HIV in their patients has been documented to be less than 0.1%.</p> <p>Repeat Screening:</p> <ul style="list-style-type: none"> ▪ Test all persons likely to be at high risk for HIV at least annually, including: injection-drug users and their sex partners, persons who exchange sex for money, sex partners of HIV-infected persons, and MSM or heterosexual persons who themselves or whose sex partners have had more than one sex partner since their most recent HIV test.
Tuberculosis (TB) Screening	<p>USPSTF instructs clinicians to follow CDC recommendations for individuals if they:</p> <ul style="list-style-type: none"> ▪ Have spent time with person known or suspected to have active TB, HIV infection or another condition that weakens the immune system and puts them at high risk for active TB disease ▪ Have symptoms of active TB disease ▪ Are from a country where active TB disease is very common (e.g. Latin America and the Caribbean, Africa, Asia, Eastern Europe, and Russia) ▪ Live someplace in US where active TB disease is more common such as a homeless shelter, migrant farm camp, prison or jail, or some nursing homes ▪ Inject illegal drugs 	Same as CDC, expand recommendation based on local epidemiological data
Chlamydia Screening	Screen all sexually active non-pregnant young women aged 24 and younger and for older non-pregnant women who are at increased risk	Screen all sexually active individuals based on local epidemiological data
Gonorrhea Screening	Screen all sexually active women, including those who are pregnant, for gonorrhea infection if they are at increased risk for infection (that is, if they are young or have other individual or population risk factors)	Same as USPSTF, expand recommendation based on local epidemiological data
Immunization Delivery	<p>USPSTF defers to CDC Advisory Committee on Immunization Practices (ACIP):</p> <ul style="list-style-type: none"> ▪ Seasonal Influenza ▪ Pneumococcal, age 65 and over every 5 years, or younger if at high risk) ▪ Pneumococcal polysaccharide, through age 18 and adult over age 65 plus individuals in high risk groups ▪ MMR, through age 18 or born post 1957 one booster dose, 	Same as CDC, specific emphasis on Hepatitis B, Seasonal Influenza, and Pneumococcal vaccinations

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	<p>or individuals in high risk groups</p> <ul style="list-style-type: none"> ▪ Varicella, through age 18 and all adults w/o immunity ▪ Zoster, 1 dose if unvaccinated or previous history of herpes, or chickenpox ▪ Hepatitis A, through 18 and adults who meet certain provisions ▪ Hepatitis B, through age 18 and high risk adults ▪ Human papillomavirus (HPV), through age 18 and all unvaccinated women under age 26 ▪ Meningococcal, through age 18 and others who travel where disease is endemic and those who live in close quarters ▪ Polio, through age 18 	
Substance Abuse		
Alcohol Misuse Screening	Recommends screening and behavioral counseling interventions to reduce alcohol misuse by adults, including pregnant women, in primary care settings	Same as USPSTF
Drug Use Screening	Concludes current evidence is insufficient to assess the balance of benefits and harms of screening adolescents, adults, and pregnant women for illicit drug use	Follow SAMHSA recommendations (2006b): recommends clinician screening with regard to frequency, amount and duration of use. Look for signs of abuse/dependence
Tobacco counseling and intervention	<p>Recommends that clinicians ask adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products</p> <p>Recommends that clinicians ask all pregnant women about tobacco use and provide augmented pregnancy-tailored counseling for those who smoke</p>	Same as USPSTF

Cardiovascular disease risks factors

Based on the Framingham model, major independent risk factors for cardiovascular disease are identified as (1) cigarette smoking, (2) elevated blood pressure, (3) elevated serum total and LDL cholesterol, (4) low serum HDL cholesterol and (5) diabetes mellitus (Grundey 1999). In a retrospective chart review of individuals experiencing homelessness and their matched housed counterparts, Szerlip (2002) found that the prevalence of significant contributing risk factors for cardiovascular disease were very similar (with the exception of cigarette smoking) across both housed and homeless populations; these findings were also identified by Lee (2005). In another study, Lee (2005) found significant evidence to conclude that diagnosis and treatment for hypertension, hyperlipidemia and diabetes among individuals experiencing homelessness is inadequate. Specifically, 33% of the homeless cohorts were aware of their hypertensive status and only 17% were receiving treatment, whereas 57% of the general population knew their hypertensive status and 34 % were receiving treatment. Jones (2009) identified cardiovascular disease as being the leading cause of death among homeless adults 45 - 64. The authors also note that homeless adults 24 - 44 years of age experience cardiovascular mortality at three times the rate of their housed counterparts.

Cardiovascular disease and homelessness are linked through a cascade of circumstantial factors including lifestyle, mental health status, treatment protocol and access to care. There is no single factor that can explain the prevalence of cardiovascular disease in the homeless population, nor is there one formula for its alleviation; there are, however, evidence-based recommendations based on risk factors associated with homelessness.

Screening recommendations

Clinical risk assessment recommendations made by the USPSTF for the general population regarding prevention of cardiovascular disease include ascertainment of the following: age, diabetes, total cholesterol levels, high-density lipoprotein cholesterol levels, blood pressure and tobacco use (US Preventive Services Task Force 2009). In addition, the USPSTF recommends that men aged 45 to 79 and women 55 to 79 use aspirin to reduce myocardial infarction (men) and ischemic stroke (women) when the potential benefit outweighs the potential harm from gastrointestinal hemorrhage. A calculator used to estimate 10-year risk can be found on the National Cholesterol Education Program website at <http://hp2010.nhlbi.nih.net/atpiii/calculator.asp>.

After thorough review of the USPSTF recommendations, prevalence of cardiovascular disease in the homeless population, potential impact screening measures have on health outcomes and potential barriers within health care for the homeless settings, the HCH PMTF identified the following screening measures as contributing to the highest impact of care.

Blood pressure screening

Blood pressure screening is typically available within resource poor treatment settings. Because elevated blood pressure does not typically manifest symptomatically, the HCH PMTF suggests that blood pressure screening be available routinely within Health Care for the Homeless treatment settings in effort to provide timely diagnosis and effective treatment options.

Hyperlipidemia screening

A potential barrier to lipid screening within a resource poor treatment setting is the cost incurred in procuring access to laboratory facilities when none are available on site. It may also be difficult to obtain a fasting lipid profile because patients who are homeless and utilize walk-in treatment services may have eaten during the fasting timeframe. Even those patients who have a scheduled appointment and are aware of the

fasting requirement may be unable to balance food procurement with a fasting schedule. The USPSTF (2008b) recommends a total panel in conjunction with HDL-C on fasting or non-fasting samples. When the laboratory services are not able to provide a reliable HDL-C measure, the USPSTF (2008b) finds a total cholesterol measure acceptable. The USPSTF also reports on a LDL measure that does not require fasting; however, the direct LDL-C test is more expensive. The HCH PMTF notes that if resources are available, the LDL-C is an appropriate non-fasting option; however, in the majority of resource poor treatment settings, total cholesterol and HDL-C or total cholesterol measure is sufficient in assessing lipid status.

It is also important to note the relationship between antipsychotic use and metabolic disorders. Studies that have investigated this relationship in patients with schizophrenia treated with second-generation antipsychotic (SGA) drugs showed an increase in metabolic disorder pathologies including hyperlipidemia (de Hert 2009, Valeria 2009). In addition, it has been suggested that lifestyle activities may lead to the elevated prevalence of metabolic abnormalities in persons with mental disorders, such as schizophrenia, prior to antipsychotic therapy (Valeria 2009). It was noted during the Consensus Development Conference on Antipsychotic Drugs and Obesity and Diabetes that the effect of SGA drugs on dyslipidemia varies and “appears to differ depending on the SGA used” (Holt 2004).

The general consensus is the importance of establishing baseline screening and follow-up. Establishing a baseline lipid profile prior to delivery of antipsychotic therapy is ideal, followed by a complete lipid profile every two years when LDL is normal and every 6 months when LDL is greater than 130ml/dL, including referral back to prescribing physician for possible medication change. When baseline data does not exist, clinicians should monitor lipid profiles for persistently elevated LDL (Valeria 2009). Additional assessment and monitoring practices released by the American Diabetes Association resulting from the Consensus Development Conference include baseline measures of

- Personal/family history
- Weight
- Waist circumference
- Blood pressure
- Fasting plasma glucose
- Fasting lipid profile

Conference attendees also recommend that patient weight be reassessed at 4, 8 and 12 weeks and every 12 weeks thereafter. In addition, fasting plasma glucose, lipid levels and blood pressure should be assessed at 12 weeks after introduction of SGA, and an annual assessment including family history, waist measure, blood pressure and fasting glucose, with fasting lipid profiles assessed every five years (Holt 2004). Patients with mental illness, especially those undergoing antipsychotic drug therapies, benefit from the provision of integrated care practices.

Diabetes Screening

The USPSTF recommends diabetes screening for asymptomatic individuals who have a sustained blood pressure greater than 135/80. Prevalence of type 2 diabetes has grown substantially over the past five decades with growth escalation more notable each decade and none more notable than the last decade (CDC 2010a). The following list highlights this growth in the US:

- 1959 - 1.49 million (.87 % of population)
- 1968 - 3.18 million (1.62 % of population)
- 1979 - 5.19 million (2.37 % of population)
- 1989 - 6.47 million (2.66 % of population)
- 1999 - 10.87 million (4.00 % of population)

- 2009 – 20.67 million (6.86 % of population)

Diabetes occurs at approximately the same rate in the homeless and general populations (Szerlip 2002); however, diagnosis and management of diabetes in individuals experiencing homelessness remains greatly inadequate (Lee 2005). Despite the growing prevalence of diabetes, there is no universal consensus on who should be screened and how often screening should take place with the exception of those persons who exhibit risk factors of cardiovascular disease, specifically hypertension (Vijan 2010). Due to the low diagnosis rate within homeless population, the HCH PMTF agrees that the following risk factors for developing type 2 diabetes in homeless individuals should include:

- Greater than age 45 years old
- First-degree relative with type 2 diabetes
- African-American, Hispanic, Asian, Pacific Islander or Native-American ethnicity
- Overweight, especially abdominal obesity
- Diagnosis of cardiovascular disease, hypertension, dyslipidemia or other features of the metabolic syndrome

Metabolic disorders are strongly associated with antipsychotic drug treatment. Patients diagnosed with schizophrenia whose treatment plan includes second-generation antipsychotics are diagnosed with type 2 diabetes at four times the rate as those taking first-generation antipsychotics (Valeria 2009). Diabetes screening practices in patients with mental illness, especially those undergoing antipsychotic drug therapy, should follow the recommendation offered with hyperlipidemia screening in patients with mental illness and provide integrated care linking the patient's primary and psychiatric care providers.

Diabetes management poses a significant challenge for individuals experiencing homelessness. Poorly managed diabetes increases the likelihood that individuals will suffer from disease related complications such as heart disease, stroke, hypertension, blindness, kidney disease, neuropathy and lower-limb amputation (American Diabetes Association 2010). In a study conducted to measure diabetes management among individuals experiencing homelessness, 72% of the participants reported difficulty in managing their diabetes, with 64% reporting challenges in procuring the proper foods appropriate for glucose control (Hwang 2000). Identifying diabetes management challenges in patients exhibiting elevated A1c is essential in identifying effective diabetes management strategies. Coordinated and integrated care between primary, specialized and social service providers has been shown to improve health outcomes in underserved populations (Baty 2010).

Depression Screening

Data from the 2003 Health Care for the Homeless (HCH) User Survey revealed that 42% of respondents over the age of 13 reported having experienced at least one symptom of depression for most or all of the past month (HRSA 2003). Secondary analyses of this survey revealed that over 20% of participants had unmet mental health needs (Baggett 2010). It is difficult to actualize the exact number of homeless individuals who are diagnosed with depressive disorders because many individuals experiencing homelessness have multiple morbidities. Only 7% of those individuals seen in community health centers for homeless individuals are diagnosed with depression as their primary diagnosis (HRSA 2009).

Homelessness is a significant stressor on physical and emotional health (Vazquez 2005). Variation of life experiences and the frequency in which individuals experience undesirable events significantly impact the ability to maintain a level of functional resourcefulness (La Gory 1990); thus, personal resourcefulness is reduced as environmental demands increase. Deforge (2008) reports that "homelessness is the most severe...environmental demand, because it encompasses all that impacts a person's domain of life."

The HCH PMTF agrees that depression screening should be part of preventive care in conjunction with effective delivery of care. Potential barriers to depression screening in homeless health care settings are related to the services required for treatment, including lack of counseling services, specialists who prescribe appropriate medications, pharmaceutical services and ability to maintain routine follow-up care. Cultural beliefs and attitudes regarding mental health issues, including depression, can also be barriers to the provision of depression screening and care. The USPSTF (2009b) recommends screening in clinical settings that have the resources available to provide “adequate diagnosis, effective treatment, and follow-up” (O’Connor 2009). It is unlikely that clinical settings that do not have the resources and support care systems available can positively impact depression outcomes (O’Connor 2009, USPSTF 2009b). Therefore, staff-assisted depression care supports should be prioritized so that accurate diagnosis, effective treatment and follow-up can be offered to all individuals presenting for care.

Intimate Partner Violence Screening

Exposure to violence is often chronic and intergenerational for many homeless women, children, and young adults (Swick 2008). Children who live in environments where intimate partner and familial violence takes place are at increased risk for behavioral and physical problems and often go on to experience higher rates of mortality and morbidity as adults (Harrison 2011). Youth who experience maltreatment and leave home in effort to escape often become homeless as a consequence. On the street youth face a myriad of struggles, including continued exposure to violence and victimization. Without adequate treatment, homeless youth frequently default to exposed behaviors and display inappropriate relationship interactions (Tyler 2008). Familial and intimate partner violence is a significant contributing factor to family homelessness. Homelessness in families with young children is especially prevalent when an abused woman does not have access to adequate resources to support herself and her children (Swick 2008). Exposure to violence has lifelong consequence. Tam (2003) reported a high rate of exposure to violence during childhood (72.5%) among homeless persons. Approximately the same level of substance and alcohol abuse (70.7%) was noted among this population.

The U.S. Preventive Services Task Force found “insufficient evidence to recommend for or against routine screening of parents or guardians for the physical abuse or neglect of children, of women for intimate partner violence, or of older adults or their caregivers for elder abuse” (USPSTF 1996). However, Strehlow (2003) reported that evidence-based clinical practice guidelines adapted for individuals experiencing homelessness are necessary to address the specific needs of homeless individuals and the homeless health care providers who provide care and treatment for this underserved population. While intimate partner violence is not exclusive to persons living in stressful environments, it is a prevalent element in many lives of individuals experiencing homelessness (Swick 2008). Screening tools that utilize brief assessment are widely available and are preferred in the clinic setting.

Screening Tools

For a compilation of intimate partner violence (IPV) assessment tools, see Intimate Partner Violence and Sexual Violence Victimization Assessment Instruments for Use in Healthcare Settings from the Centers for Disease Control and Prevention (Basille 2007). Rabin (2009) conducted a meta-analysis of intimate partner violence assessment tools and found that the most commonly used tools were tested in a small number of studies and therefore require further reliability and validity testing. Additionally, the tools vary in regards to sensitivity and specificity depending on the population tested. Lastly, there is a lack of consensus on comparison measures, so it is difficult to identify a gold standard among them. Rabin concludes that IPV

assessments should be short, comprehensive and evaluated in various populations. Below is brief description of the four most tested assessment tools.

- **Hurt, Insult, Threaten and Scream (HITS)** – Asks about current physical and emotional abuse. Only 4 questions. Tested with women, men and ethnically/racially diverse populations.
- **Woman Abuse Screening Tool (WAST)** – Asks about physical, emotional and sexual abuse including current and historical abuse. On the longer side at 8 questions. Tested with ethnically/racially diverse populations.
- **Partner Violence Screen (PVS)** – Asks about only physical abuse but includes current and past year experiences. Very short at 3 questions. Tested with men, women and ethnically/racially and socioeconomic diverse populations.
- **Abuse Assessment Screen (AAS)** – Asks about physical, emotional and sexual abuse including past year and historical abuse. One question specifically about abuse during pregnancy. Medium length at 5 questions. Tested with ethnically/racially diverse women (mostly low-income), international populations and in obstetric settings.

Infectious Disease Screening

Homeless individuals live in conditions that are conducive to poor health and often have limited access to health care (Badiaga 2008). Appropriate infectious disease screening is essential to target treatment for individuals experiencing homelessness. Due to the escalating numbers of homeless individuals, lack of preventive care, behavioral, social and environmental risk associated with homelessness and prevalence of transmissible disease among individuals experiencing homelessness, screening for infectious diseases and conditions which can affect individuals en masse is essential (Badiaga 2008). Homeless youth are particularly vulnerable to blood borne disease and sexually transmitted disease infection (Marshall 2008). The following screening measures are recommended by the HCH PMTF in efforts to identify infection, provide appropriate treatment and reduce further transmission. Even negative screening results offer an opportunity for risk reduction counseling.

Hepatitis C Screening

Hepatitis C (HCV) is the leading chronic blood borne disease in the US and for many individuals, HCV infection remains asymptomatic for several years (CDC 2011b, Desai 2003). The exact number of those infected with HCV is unclear, as predominate studies to assess prevalence within the US population do not include incarcerated and homeless persons (Armstrong 2006). Based on the Third National Health and Nutrition Examination Survey, approximately 3.9 million (1.8%) tested positive for the HCV antibody, of which approximately 2.7 million are chronically infected (Armstrong 2006). Of those persons chronically infected, approximately 10–20% will go on to develop cirrhosis (Nyamathi 2006).

Unlike hepatitis A and hepatitis B, there is no vaccine available for hepatitis C (CDC 2010b, Nyamathi 2006). HCV infection is five times more prevalent than HIV and common in those persons infected with HIV (Hall 2004). When individuals are co-infected with HCV and HIV, treatment for each is impaired and disease progression is accelerated. HCV is most often transmitted via parenteral modes, with 60% of newly diagnosed HCV infections linked to injection drug use (IDU) (Nyamathi 2006). There is some debate as to the additional risk factors including unsafe sex, tattooing and body piercing, inhaled crack and methamphetamine and marijuana and alcohol use (Nyamathi 2006, Roy 2001).

The literature shows that individuals experiencing homelessness are at high risk for HCV infection “with prevalence rates ranging from 17% to 45%” (Nyamathi 2006). Results from the Nyamathi study indicate that HCV infection among homeless men is positively associated with

- Age (46 years and older)
- Ethnicity (Latino)
- History of incarceration
- History of military service
- Fair to poor health
- History of IDU
- History of sharing personal hygiene products
- Having multiple tattoos
- Having an IDU sex partner

The study also indicated a negative association between hepatitis B vaccination and HCV infection and use of non-injection drugs such as marijuana. Men who had completed the hepatitis B vaccine series were twice as likely to be HCV negative than those who had not. No associations were found regarding HCV infection and trading sex for money or for having a sexually transmitted disease. Despite being able to target particular risky behaviors in individuals who are homeless and the relative accessible availability of diagnostic screening measures within public health systems, the availability of effective treatment remains challenging (Desai 2003). Screening can be an effective tool to bring awareness to individuals so they can be targeted for behavioral modification counseling. The HCH PMTF recommends that screening take place even when treatment is inaccessible.

HIV Screening

The Centers for Disease Control and Prevention National Prevention Information Network states that HIV disproportionately affects those individuals experiencing homelessness (CDC 2010). Approximately .04% of the general US population was HIV-positive in 2006, compared to 3.4% of individuals experiencing homelessness. The largest group of undiagnosed HIV-infected individuals is 13–24 years old, followed by the 25–34 age range (CDC 2011c).

Individuals experiencing homelessness are exposed to harsh environmental conditions, disease, violence, malnutrition, stress and addictive substances at a much greater rate than their housed counterparts, regardless of age or other demographic characteristics, and continued exposure to these conditions increases HIV risk (CDC 2010). Additionally, homeless individuals are often subjected to discrimination and prejudice, which has the potential to reduce the likelihood that homeless individuals infected with HIV will disclose their status to others, including sex partners (Fogg 2010, Wolitski 2009).

Of those experiencing homelessness, youth are at the greatest risk for contracting HIV (Marshall 2009). Homeless youth are more likely to trade sex for food, shelter, and drugs and are more likely to be victimized and manipulated (Marshall 2009). According to Gwadz (2010), homeless youth are 2–10 times more likely to be infected with HIV than their housed counterparts.

The CDC recommends annual testing for those individuals at most risk (Gwadz 2010). Use of rapid testing along with on site counseling services and treatment options for individuals who test positive is essential in modifying outcomes and further dissemination of HIV/AIDS. The National Health Care for the Homeless Council provides recommendations for adapting clinical practice with regard to HIV/AIDS treatment (National Health Care for the Homeless Council 2008).

TB Screening

The Centers for Disease Control and Prevention tracks incidence of tuberculosis in the US, which has seen a noted decline of reportable cases since 1992 (Brewer 2001). This decline is due in part to the identification of high-risk settings and enhanced infection control to reduce nosocomial transmission (Mitruka 2011). In 2003, the reported TB rate in the US was 5.1/100,000; however, this rate did not reflect TB rates among individuals experiencing homelessness, because homeless individuals were not counted in the same population surveys as their housed counterparts (Haddad 2005, Hudson 2005).

Studies that focus on the chronically homeless estimate that TB rates among homeless individuals are likely to be “20 times those of the US general population” and 6.3% of all TB cases (Brewer 2001). Homeless individuals diagnosed with TB are more likely to be male than those diagnosed with TB in the general population, 84% to 61% respectively (Haddad 2005). TB-HIV co-infection is more prevalent among individuals experiencing homelessness than non-homeless, yet homeless individuals are more likely to be tested for HIV than their housed counterparts (76% vs. 53% respectively). Although homeless individuals are more likely to have latent *M. tuberculosis* infection, the compounding of substance abuse or HIV infection can result in progression to active TB status (McElroy 2003).

Other TB disease characteristics among homeless individuals compared to the non-homeless are that homeless TB patients are more likely to have pulmonary disease and less likely to have a drug resistant strain of *M. tuberculosis*. Homeless individuals are less likely to complete treatment than their housed counterparts (77% and 84% respectively), yet good case management along with drug observation therapy has been shown to have excellent outcomes (Haddad 2005). Of the 398 persons involved in the 27 TB outbreaks from 2002-2008, there were several similar patient characteristics (Mitruka 2011):

- 45 were HIV positive
- 233 reported alcohol and/or substance abuse
- 126 had a history of incarceration
- 78 had a history of homelessness

Because incidence of TB has been drastically reduced in the general population, the USPSTF does not make any recommendation with regard to screening. The HCH PMTF recommends that screening should be utilized in Health Care for the Homeless settings based on CDC recommendations as well as local epidemiology (see recommendations table).

Chlamydia and Gonorrhea Screening

Despite the success of large-scale screening and intervention programs for sexually transmitted infections (STIs), there remain “persistent ... pockets of infection.” These pockets include individuals who are socially disadvantaged, without regular access to health care, sex workers and individuals experiencing homelessness (Grinley 2006). *Chlamydia thachomatis* and *Neisseria gonorrhoeae* are the most commonly reported STIs in the United States (National Health Care for the Homeless Council 2008). “Chlamydia bacterium can infect the cervix, fallopian tubes, throat, anus, and male urethra” (Henning 2007). Untreated, chlamydial infection can lead to pelvic inflammatory disease, ectopic pregnancy or infertility (Shields 2004). *Neisseria gonorrhoeae* is sometimes characterized by vaginal and penile secretions, swollen glands and pain when urinating, though some infected individuals may be asymptomatic. Left untreated, gonorrhea-infected individuals may become sterile (CDC 2009).

Homeless youth are particularly vulnerable to STIs (Van Leeuwen 2002). Of the approximately 1.6 million youths who are homeless each year, many are characterized by having “high levels of substance abuse,

mental illness, and physical and sexual abuse” (Van Leeuwen 2002), all of which put these youth at increased risk for STIs, including HIV infection (Solorio 2006). A sampling of homeless youth in Denver, Colorado showed 12.4% of males and 14.0% of females to be infected with chlamydia and 3.0% of males and 4.9% of females to be infected with gonorrhoea (Van Leeuwen 2002). These results are approximately four times the national average as reported by the CDC (2009) for youth ages 15–24 years. Testing, follow-up and treatment delivery is challenging when working with transient individuals. CDC guidelines recommend using out-of-clinic settings for testing and delivery of treatment when working with high-risk populations such as homeless youth (Auerswald 2006).

Immunization Delivery

Over the 20th century, the quality of life and life expectancy have increased dramatically due to advances in public health. Of the “Ten Great Public Health Achievements in the United States 1900–1999,” vaccination is the leading mechanism by which smallpox and polio were eradicated and many other devastating infectious diseases controlled (CDC 1999). Despite the overall improvements in health, not all populations benefited equally. The CDC has released the first in an series of reports examining disparities and health inequalities in the US (CDC 2011). Among the topics discussed in the first report is seasonal influenza vaccination coverage (Setse 2011). The CDC did not include homeless individuals in this population assessment because homeless individuals are not typically available by landline. The authors found race/ethnicity, income and education as statistically significant factors related to seasonal vaccination status. Using a variety of surveys, including the National Health Interview Survey, Vlahov (2007) corroborated the finding that immunization rates are lower among minority racial/ethnic groups as well as hard to reach (HTR) populations, including persons living in disadvantaged urban communities, undocumented immigrants, individuals with substance abuse issues and homeless individuals. The authors estimate that 65% of HTR persons are at risk for influenza and are not immunized.

In an effort to prevent and control transmissible disease in homeless individuals, Badiaga (2008) recommended implementing systematic vaccination against hepatitis B, hepatitis A, influenza, *Streptococcus pneumoniae* and diphtheria. Individuals experiencing homelessness are often hard to reach and may not return for multiple-dose schedules required for hepatitis A and B immunization. Therefore, utilization of a nurse case-managed approach with incentives combined with an accelerated series is recommended to enhance compliance (Nyamathi 2009). However, homeless youth and Caucasians are less likely to complete two of the three dose series even when the delivery is accelerated. Older partnered individuals are more likely to complete all three doses of the series. Badiaga (2008) found increased immunization compliance among IDUs when the vaccine was delivered in conjunction with syringe-exchange programs. Both Badiaga (2008) and Nyamathi (2009) found that, in addition to homeless youth being among those at the highest risk for HBV and HCV, they are among the most difficult to reach and successfully immunize. According to Sneller (2008), community-based organizations should collaborate with state, federal and local programs to completely immunize all children and adolescents, especially those living in high risk settings, including “homeless shelters, migrant camps, juvenile detention centers, and other residential facilities.”

Substance Abuse

Homeless and marginally housed individuals have more substance abuse, mental health and social support system issues than do housed individuals (Eyrich-Garg 2008). Chronic substance abuse disorders (drugs and alcohol) put individuals who are homeless at “higher risk for other health problems and impact their access to care” (Savage 2008). Homeless adults on whole have a much lower life expectancy rate than do housed adults. Screening for problem substance abuse issues helps identify those who need intervention and general health care (D’Amore 2001). Alcohol abuse among individuals experiencing homelessness is

reported to range between 58% and 84% (Morse 1999, North 2004, Savage 2008). Drug abuse among homeless individuals is reported to range from 27% to 57% (Savage 2008, Vangesst 2002, Zuvekas 2000).

Alcohol Misuse and Illicit Drug Use Screening

Data extrapolated from the Drug and Alcohol Services Information System and the Treatment Episode Data Set show that homeless adults and young adults who received inpatient treatment for substance abuse were more likely to have referred themselves and less likely to have been referred through the criminal justice system than their housed counterparts (SAMHSA 2006a, 2010). Homeless adults receiving inpatient substance abuse treatment were more likely to be male compared to housed individuals (78% and 68% respectively) and almost twice as likely to be veterans (9% and 5%). These reports indicated that for homeless adults receiving inpatient services, the primary substance of abuse was alcohol, and for young adults the primary substances of abuse were alcohol and heroin.

Individuals experiencing homelessness often have co-occurring health problems including substance abuse and mental health issues (Eyrich-Garg 2008, Rose 2009). In their 2002 report to Congress, the Substance Abuse and Mental Health Services Administration (SAMHSA) emphasized the need for screening given the incidence of co-occurring health issues and the vulnerability of individuals with mental health disorders to substance abuse (Rose 2008). Savage (2008) suggested that utilization of brief assessment tools such as the AUDIT and the DAST to screen for alcohol and substance abuse helps to identify those individuals who may benefit from intervention and individualized care plans. SAMHSA (2006b) recommended that all patients should be screened for substance abuse and co-occurring disorders. A short guide to identifying and screening for co-occurring substance abuse and mental disorders, including a very brief screening tool, can be accessed through http://www.kap.samhsa.gov/products/brochures/pdfs/saib_fall06_v4i2.pdf. Examples of tools specifically designed for pregnant woman are TWEAK and T-ACE (Russell 2004).

Tobacco Counseling and Intervention

Individuals experiencing homelessness smoke cigarettes at much higher rates than do their housed counterparts. High prevalence of tobacco use is common among individuals with mental health disorders and substance abuse (Baggett 2010, Shelley 2010). Smokers are at increased risk for cardiovascular disease, stroke, respiratory disease and certain cancers including lung, head, neck, stomach and bladder. Despite the overwhelming evidence that smoking among individuals experiencing homelessness contributes to an excess burden of disease, cessation programs have primarily focused on housed individuals (Okuyemi 2006). In effort to identify the discrepancy in smoking prevalence and cessation between homeless adults and their housed counterparts, Baggett (2010) analyzed data from the 2003 Health Care for the Homeless User Survey. This report is the first to analyze the contributing factors unique to homelessness. Results from this survey indicate that 54% had received advice to quit during the past year with the highest being among those individuals who had obstructive lung disease. Of those who currently smoked, over 81% had experienced physical or sexual assault, almost 80% had a history of mental illness and over 80% had a history of illicit drug or alcohol use. The authors conclude that the persistent prevalence of smoking among homeless individuals is due to the “considerable comorbidities and barriers to quitting faced by homeless smokers.” Findings by Baggett (2010) indicate that smoking cessation interventions should be tailored and intensive, focus on the unique needs of the individual and include counseling to address trauma resulting from experiences of abuse and victimization.

REFERENCES

Agency for Healthcare Research and Quality. Prevention and care management: U.S. Preventive Services Task Force (USPSTF), 2011. <http://www.ahrq.gov/clinic/prevenix.htm>

American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, North American Association for the Study of Obesity. Consensus development conference on antipsychotic drugs and obesity and diabetes. *Diabetes Care* 2004;27:596-601.

American Diabetes Association. Diabetes statistics, 2011. <http://www.diabetes.org/diabetes-basics/diabetes-statistics/>

Armstrong G, Wasley A, Simard E, McQuillan G, Kuhnert W, Alter M. The prevalence of Hepatitis C virus infection in the United States, 1999 through 2002. *Annals of Internal Medicine* [serial online] 2006;144(10):705-714.

Aspirin for the Prevention of Cardiovascular Disease: U.S. Preventive Services Task Force Recommendation Statement. *Annals of Internal Medicine* 2009;150(6):396-404.

Auerswald C, Sugano E, Ellen J, Klausner J. Street-based STD testing and treatment of homeless youth are feasible, acceptable and effective. *Journal of Adolescent Health* 2006;38(3):208-212.

Badiaga S, Raoult D, Brouqui P. Preventing and controlling emerging and reemerging transmissible diseases in the homeless. *Emerging Infectious Diseases* 2008;14(9):1353-1359.

Baggett T, Rigotti N. Cigarette smoking and advice to quit in a national sample of homeless adults. *American Journal of Preventive Medicine* 2010;39(2):164-172.

Baggett TP, O'Connell J.J, Singer DE, Rigotti NA. The unmet health care needs of homeless adults: A national study. *American Journal of Public Health* 2010;100(7):1326-1333.

Basile KC, Hertz MF, Back SE. Intimate Partner Violence and Sexual Violence Victimization Assessment Instruments for Use in Healthcare Settings:Version 1. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control 2007. <http://www.cdc.gov/NCIPC/publications/IPVandSVscreening.pdf>

Baty P, Viviano S, Schiller M, Wendling A. A systematic approach to diabetes mellitus care in underserved populations: improving care of minority and homeless persons. *Family Medicine* 2010;42(9):623-627.

Brewer TF, Heymann S, Krumplitsch SM, Wilson ME, Colditz GA, Fineberg HV. Strategies to decrease tuberculosis in US homeless populations. *JAMA* 2001;286(7), 834.

Centers for Disease Control and Prevention. Great public health achievements – United States, 1900–1999. *Morbidity and Mortality Weekly Report* 1999;48(12):241-243.

Centers for Disease Control and Prevention. Sexually transmitted diseases in the United States, 2008. 2009. <http://www.cdc.gov/std/stats08/trends.htm>

HEALTH CARE DELIVERY STRATEGIES:
ADDRESSING KEY PREVENTIVE HEALTH MEASURES IN HOMELESS HEALTH CARE SETTINGS

- Centers for Disease Control and Prevention. Long-term trends in diabetes. 2010a. http://www.cdc.gov/diabetes/statistics/slides/long_term_trends.pdf
- Centers for Disease Control and Prevention. Vaccine information for adults. 2010b. <http://www.cdc.gov/vaccines/spec-grps/adults.htm>
- Centers for Disease Control and Prevention: National Prevention Information Network. The homeless. 2010. <http://www.cdcnpin.org/scripts/population/homeless.asp>
- Centers for Disease Control and Prevention. CDC health disparities and inequalities report – United States, 2011. Morbidity and Mortality Weekly Report 2011a;S(60):1-113.
- Centers for Disease Control and Prevention. Hepatitis C information for health professionals. 2011b. <http://www.cdc.gov/hepatitis/HCV/index.htm>
- Centers for Disease Control and Prevention. HIV surveillance – United States, 1981 – 2008. Morbidity and Mortality Weekly Report 2011c;60(21):689-693.
- Centers for Disease Control and Prevention. Testing for TB infection. 2011d. <http://www.cdc.gov/tb/topic/testing/default.htm>
- Harrison SL, Cronholm PF, Fogarty CT, Ambuel B. Intimate partner violence. *American Family Physician* 2011;83(10):1165-1172.
- D’Amore J, Hwang O, Chiang W, Goldfrank L. (2001). The epidemiology of the homeless population and its impact on an urban emergency department. *Academic Emergency Medicine*, 2001;8(11), 1051-1055.
- DeForge B, Belcher J, O’Rourke M, Lindsey M. Personal resources and homelessness in early life: Predictors of depression in consumers of homeless multiservice centers. *Journal of Loss & Trauma* 2008;13(2-3):222-242.
- de Hert MM, Falissard BB, Mauri MM, Shaw KK, Wetterling TT. P03-135 Epidemiological study for the evaluation of metabolic disorders in patients with schizophrenia: The meteor study. *European Psychiatry* 2009;24(S1):S1134.
- Desai RA, Rosenheck RA, Agnello V. Prevalence of Hepatitis C virus infection in a sample of homeless veterans. *Social Psychiatry & Psychiatric Epidemiology* 2003;38(7):396.
- Eyrich-Garg KM, Cacciola JS, Carise D, Lynch KG, McLellan A. Individual characteristics of the literally homeless, marginally housed, and impoverished in a US substance abuse treatment-seeking sample. *Social Psychiatry & Psychiatric Epidemiology* 2008;43(10):831-842.
- Fogg C, Mawn B. HIV Screening: Beliefs and Intentions of the Homeless. *JANAC* 2010;21(5):395-407.
- Gelberg L, Gallagher TC, Andersen RM, Koegel P. Competing priorities as a barrier to medical care among homeless adults in Los Angeles. *American Journal of Public Health* 1997;87(2):217-220.

**HEALTH CARE DELIVERY STRATEGIES:
ADDRESSING KEY PREVENTIVE HEALTH MEASURES IN HOMELESS HEALTH CARE SETTINGS**

Grimley D, Annang L, Lewis I, Smith W, Aban I, Hooks T, Williams S, Hook EW 3rd, St. Lawrence J. Sexually transmitted infections among urban shelter clients. *Sexually Transmitted Diseases* 2006;33(11):666-669.

Grundty S, Pasternak R, Greenland P, Smith S, Fuster V. Assessment of cardiovascular risk by use of multiple-risk-factor assessment equations: a statement for healthcare professionals from the American Heart Association and the American College of Cardiology. *Circulation* 1999;100(13):1481-1492.

Gwadz MV, Cleland CM, Quiles R, Nish D, Welch J, Michaels LS, Gonzalez, JL, Ritchie AS, Leonard, NR. CDC HIV testing guidelines and the rapid and conventional testing practices of homeless youth. *AIDS Education And Prevention: Official Publication Of The International Society For AIDS Education* 2010;22(4):312-327.

Haddad M, Wilson T, Ijaz K, Marks S, Moore M. Tuberculosis and homelessness in the United States, 1994-2003. *JAMA* 2005;293(22):2762-2766.

Hall CS, Charlebois ED, Hahn JA, Moss AR, Bangsberg DR. Hepatitis C virus infection in San Francisco's HIV-infected urban poor high prevalence but low treatment rates. *JGIM* 2004;19(4):357-365.

Health Care for the Homeless Clinicians' Network. Recommendation of the care of homeless patients. 2010. <http://www.nhchc.org/Publications/SummaryGenRecsPDA032310.pdf>

Henning D, Ryan A, Sancu L, Dunning T. Screening for chlamydia trachomatis: barriers for homeless young people. *Australian Journal of Advanced Nursing* 2007;24(3):8-13.

Holt R. Consensus development conference on antipsychotic drugs and obesity and diabetes: response to consensus statement. *Diabetes Care* 2004;27(8):2086-2087.

Hudson J, Van Zetta S, Brissette B, Driver C, Macaraig M, Winters A, Poonja S, Munsiff S, Beatty M, Marder, Gutkovich A, Oxtoby M, Grabau J, Driscoll J, Smith P, Coronado, F. Tuberculosis transmission in a homeless shelter population ~ New York, 2000-2003. *MMWR* 2005;54(6):149-152.

Hwang S, Bugeja A. Barriers to appropriate diabetes management among homeless people in Toronto. *CMAJ* 2000;163(2):161-165.

Krieger J, Higgins D. Housing and health: Time again for public health action. *American Journal of Public Health* 2002;92(5):758-768.

La Gory M, Ritchey FJ, Mullis J. Depression among Homeless. *Journal of Health & Social Behavior* 1990;31(1):87-102.

Lee T, Hanlon J, Ben-David J, Booth G, Cantor W, Connelly P, Hwang S. Risk factors for cardiovascular disease in homeless adults. *Circulation* 2005;111(20):2629-2635.

Maciosek MV, Coffield AB, Edwards NM, Flottemesch TJ, Solberg LI. Prioritizing clinical preventive services: A review and framework with implications for community preventive services. *Annual Review of Public Health* 2009;30(1):341-355.

**HEALTH CARE DELIVERY STRATEGIES:
ADDRESSING KEY PREVENTIVE HEALTH MEASURES IN HOMELESS HEALTH CARE SETTINGS**

Marshall B. The contextual determinants of sexually transmissible infections among street-involved youth in North America. *Culture, Health & Sexuality* 2008;10(8):787-799.

Marshall B, Kerr T, Shoveller J, Montaner J, Wood E. Structural factors associated with an increased risk of HIV and sexually transmitted infection transmission among street-involved youth. *BMC Public Health* 2009;9(7):1-9.

McElroy PD, Southwick KL, Fortenberry ER, Levine EC, Diem LA, Woodley CL, Williams PM, McCarthy KD, Ridzon R, Leone PA. Outbreak of tuberculosis among homeless persons coinfecting with human immunodeficiency virus. *Clinical Infectious Diseases* 2003;36(10):1305.

Mitruka K, Oeltmann J, Ijaz K, Haddad M. Tuberculosis outbreak investigations in the United States, 2002-2008. *Emerging Infectious Diseases* 2011;17(3):425-431.

Morse G, Samberg L, Calysyn R, Blasinsky M, Landow W, Goldman H. Case management models for persons who are homeless and mentally ill: The ACCESS demonstration project. *Community Mental Health Journal* 1999;35(4):325-346.

Murphy D. Exploring the complex relationship between housing and health through consideration of the health needs of people who are homeless. 2006 European Network for Housing Research Conference. Brussels, Belgium. 2006.

National Alliance to End Homelessness. Mental and physical health. 2011.
http://www.endhomelessness.org/section/issues/mental_physical_health

National Health Care for the Homeless Council. Treatment and recommendations for homeless patients with Chlamydial or Gonococcal infections. 2008. <http://www.nhchc.org/Publications/STI123108.pdf>

North C, Eyrich K, Pollio D, Spintxnagel E. Are rates of psychiatric disorders in the homeless population changing? *American Journal of Public Health* 2004;94(1):103-108.

Nyamathi A, Dixon E, Wiley D, Christiani A, Lowe A. Hepatitis C virus infection among homeless men referred from a community clinic. *Western Journal of Nursing Research* 2006;28(4):475-488.

Nyamathi A, Sinha K, Saab S, Marfisee M, Greengold B, Leake B, Tyler D. Feasibility of completing an accelerated vaccine series for homeless adults. *Journal of Viral Hepatitis* 2009;16(9):666-673.

O'Connor EA, Whitlock EP, Beil TL, Gaynes BN. Screening for Depression in Adult Patients in Primary Care Settings: A Systematic Evidence Review. *Annals of Internal Medicine* 2008;151(11):793-803.

Okuyemi K, Thomas J, Hall S, Nollen N, Richter K, Jeffries S, Caldwell AR, Ahluwalia JS. Smoking cessation in homeless populations: a pilot clinical trial. *Nicotine & Tobacco Research: Official Journal Of The Society For Research On Nicotine And Tobacco* 2006;8(5):689-699.

Perron B, Alexander-Eitzman B, Gillespie D, Pollio D. Modeling the mental health effects of victimization among homeless persons. *Social Science & Medicine* 2008;67(9):1475-1479.

**HEALTH CARE DELIVERY STRATEGIES:
ADDRESSING KEY PREVENTIVE HEALTH MEASURES IN HOMELESS HEALTH CARE SETTINGS**

Pluck G, Kwang-Hyuk L, Lauder HE, Fox JM, Spence SA, Parks RW. Time perspective, depression, and substance misuse among the homeless. *Journal of Psychology* 2008;142(2):159-168.

Plumb J. Homelessness: care, prevention, and public policy. *Annals Of Internal Medicine* 1997;126(12):973-975.

Rabin RF, Jennings JM, Campbell JC, Bair-Merritt MH. Intimate partner violence screening tools: A systematic review. *American Journal of Preventive Medicine* 2009;36:439-445.

Rokach A. (2008). How do the homeless cope with loneliness? *Psychology Journal* 2008;5(4):215-227.

Roy É, Haley N, Leclerc P, Boudreau J, Boivin J. Risk factors for initiation into drug injection among adolescent street youth. *Drugs: Education, Prevention & Policy* 2007;14(5):389-399.

Russell M. New assessment tools for risk drinking during pregnancy: T-ACE, TWEAK and others. *Alcohol Health & Research World* 1994;18(1):55.

Substance Abuse and Mental Health Services Administration. Homeless admissions to substance abuse treatment: 2004. 2006a. <http://www.oas.samhsa.gov/2k6/homeless/homeless.htm>.

Substance Abuse and Mental Health Services Administration. Substance abuse in brief fact sheet. 2006b. http://www.kap.samhsa.gov/products/brochures/pdfs/saib_fall06_v4i2.pdf.

Substance Abuse and Mental Health Services Administration. Homeless young adult treatment admissions. 2010. <http://www.oas.samhsa.gov/2k10/234/234HomelessYth2k10Web.pdf>.

Savage C, Gillespie G, Lindsell C. Health status and access to care for homeless adults with problem alcohol and drug use. *Journal of Addictions Nursing* 2008;19(1):27-33.

Setse R, Euler G, Gonzalez-Feliciano A, Bryan L, Furlow C, Weinbaum C, Singleton J. Influenza vaccination coverage - United States, 2000-2010. *MMWR Surveillance Summaries* 2011;60(1):S38-41.

Shelley D, Cantrell J, Wong S, Warn D. Smoking cessation among sheltered homeless: a pilot. *American Journal of Health Behavior* 2010;34(5):544-552.

Shields S, Wong T, Mann J, Jolly A, Haase, D, Mahaffey S, Moses S, Morin M, Patrick DM, Predy G, Rossi M, Sutherland D. Prevalence and correlates of Chlamydia infection in Canadian street youth. *The Journal Of Adolescent Health* 2004;34(5):384-390.

Sneller V, Fishbein D, Weinbaum C, Lombard A, Murray P, McLaurin J, Friedman L. Vaccinating adolescents in high-risk settings: Lessons learned from experiences with hepatitis B vaccine. *Pediatrics* 2008;121(1):555-562.

Solorio M, Milburn N, Weiss R, Batterham P. (2006). Newly homeless youth STD testing patterns over time. *The Journal Of Adolescent Health* 2006;39(3):443.e9-443.e16.

**HEALTH CARE DELIVERY STRATEGIES:
ADDRESSING KEY PREVENTIVE HEALTH MEASURES IN HOMELESS HEALTH CARE SETTINGS**

Strehlow AJ, Kline S, Zerger S, Zlotnick C, Proffitt B, Goolsby M. Health Care for the Homeless assesses the use of adapted clinical practice guidelines. *Journal of the American Academy of Nurse Practitioners* 2005;17(11):433-441.

Swick K. The dynamics of violence and homelessness among young families. *Early Childhood Education Journal* 2008;36(1):81-85.

Tam TW, Zlotnick C, Robertson MJ. (2003). Longitudinal perspective: Adverse childhood events, substance use, and labor force participation among homeless adults. *American Journal of Drug & Alcohol Abuse* 2003;29(4):829.

Tansley K. Health without a home. *Community Practitioner* 2008;81(10):38-39.

Tyler K, Melander L, Noel H. Bidirectional partner violence among homeless young adults: risk factors and outcomes. *Journal of Interpersonal Violence* 2009;24(6):1014-1035.

United States Preventive Services Task Force. Counseling and interventions to prevent tobacco use and tobacco-caused disease in adults and pregnant women. 2009a.

<http://www.uspreventiveservicestaskforce.org/uspstf09/tobacco/tobaccors2.htm>.

United States Preventive Services Task Force. Screening and behavioral counseling interventions in primary care to reduce alcohol misuse. 2004. <http://www.uspreventiveservicestaskforce.org/uspstf/uspdrin.htm>.

United States Preventive Services Task Force. Screening for depression in adults: U.S. Preventive Services Task Force Recommendation Statement. *Annals of Internal Medicine* 2009b;151(11):784-792.

United States Preventive Services Task Force. Screening for family and intimate partner violence. 1996.

<http://www.uspreventiveservicestaskforce.org/3rduspstf/famviolence/famviolrs.htm>.

United States Preventive Services Task Force. Screening for illicit drug use. 2008a.

<http://www.uspreventiveservicestaskforce.org/uspstf08/druguse/drugrs.htm>.

United States Preventive Services Task Force. Screening for lipid disorders in adults. 2008b.

<http://www.uspreventiveservicestaskforce.org/uspstf08/lipid/lipidrs.htm>.

Valeria K, Gabriela N, Igor O. Disturbances of glucose and lipid metabolism associated with antipsychotic treatment. *Acta Medica Martiniana* 2009;9(2):10-17.

Vangeest J, Johnson T. Substance abuse and homelessness: Direct or indirect effects? *Annals of Epidemiology* 2002;12(7):455-461.

van Leeuwen JM, Rietmeijer CA, LeRoux TT, White RR, Petersen JJ (2002). Reaching homeless youths for Chlamydia trachomatis and Neisseria gonorrhoeae screening in Denver, Colorado. *Sexually Transmitted Infections* 2002;78(5):357-359.

Vázquez C, Muñoz M, Crespo M, Guisado A, Dennis ML. A comparative study of the twelve-month prevalence of physical health problems among homeless people in Madrid and Washington, D.C. *International Journal of Mental Health* 2005;34(3):35-56.

Vijan S. Type 2 diabetes. *Annals of Internal Medicine* 2010;152(5):ITC31-15.

Vlahov D, Coady M, Ompad D. Strategies for improving influenza immunization rates among hard-to-reach populations. *Journal of Urban Health* 2007;84(4):615-631.

Wolitski R, Pals S, Kidder D, Courtenay-Quirk C, Holtgrave D. The effects of HIV stigma on health, disclosure of HIV status, and risk behavior of homeless and unstably housed persons living with HIV. *AIDS And Behavior* 2009;13(6):1222-1232.

Zlotnick C, Zerger S. (2009). Survey findings on characteristics and health status of clients treated by the federally funded (US) Health Care for the Homeless Programs. *Health & Social Care in the Community* 2009;17(1):18-26.

Zuvekas S, Hill S. Income and employment among homeless people: The role of mental health, health and substance abuse. *The Journal of Mental Health Policy and Economics* 2000;3(3):153-163.