

## **ADAPTING YOUR PRACTICE**

### *Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness*



## **DISCLAIMER**

This project was supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U30CS09746, a National Training and Technical Assistance Cooperative Agreement for \$1,625,741, with 0% match from nongovernmental sources. This information or content and conclusions are those of the authors and should not be construed as the official position or policy of, nor should any endorsements be inferred by, HRSA, HHS, or the U.S. government.

All material in this document is in the public domain and may be used and reprinted without special permission. Citation as to source, however, is appreciated. Suggested citation:

Gracy, D., Carlson, J., King, C., Oberg, C., Newport, S., Sherman, P., & Strehlow, A., (2018). Adapting your practice: Assessment and treatment of people with asthma who are experiencing homelessness. Adlparvar, F. (Ed.). Nashville: Health Care for the Homeless Clinicians' Network, National Health Care for the Homeless Council, Inc.

# PREFACE

Clinicians practicing in Health Care for the Homeless (HCH) projects<sup>1</sup> and others who provide care to people who are homeless or at risk of homelessness routinely adapt their practices to foster better outcomes for these patients.

Standard clinical practice guidelines fail to take into consideration the special challenges faced by patients experiencing homelessness that may limit their ability to adhere to a plan of care. Recognizing the gap between established guidelines and clinical practices used by health care providers experienced in the care of individuals who are experiencing homeless, the HCH Clinicians' Network has made the adaptation of clinical practice guidelines for patients experiencing homelessness one of its top priorities.

In 2002–2003, the HCH Clinicians' Network convened an advisory committee of primary care practitioners to develop special recommendations for the care of people with asthma who are experiencing homelessness. These recommended clinical practice adaptations were reviewed and revised in 2018 to ensure they were consistent with updated (EPR-3, 2007) guidelines for the diagnosis and management of asthma and with best practices in homeless health care, which are the most current to date.

We offer this third edition of *Adapting Your Practice: Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness* to promote continued improvement in the quality of asthma care provided to adults and children whose lack of financial and social resources complicate the treatment and self-management of their chronic disease.

Fatemeh Adlparvar, LMSW, MSc  
Editor

---

<sup>1</sup> Health Care for the Homeless projects are funded by the Bureau of Primary Health Care in the Health Resources and Services Administration of the U.S. Department of Health and Human Services under Section 330(h) of the Public Health Services Act.

# ACKNOWLEDGEMENTS

We are grateful to the practitioners serving on this committee, whose members are listed below:

## **Advisory Committee on Adapting Clinical Guidelines for People Experiencing Homelessness with Asthma**

Delaney Gracy, MD, MPH, FAAP  
Chief Medical Officer  
Senior Vice President for Medical Affairs  
Children's Health Fund  
New York, New York

Charles Oberg, MD, MPH  
Professor Emeritus, University of  
Minnesota  
Pediatrician, Hennepin County Medical  
Center  
Minneapolis, Minnesota

Aaron Strehlow, PhD, FNP-C, RN  
Family and Neuropsychiatric Nurse  
Practitioner  
CVS Minute Clinic,  
Formerly with the UCLA School of  
Nursing Health Center at the Union  
Rescue Mission  
Los Angeles, California

Editor: Fatemeh Adlparvar, LMSW, MSc

Peter Sherman, MD, MPH  
Chair of Pediatrics  
Bronx Lebanon Hospital  
Bronx, NY

Coley King, DO  
Director of Homeless Services  
Venice Family Clinic  
Venice Beach, California

We also express our gratitude to John C. Carlson, MD, PhD, Assistant Professor at Tulane University Department of Pediatrics, the primary external reviewer of these guidelines who reviewed, edited, and commented on these recommendations prior to publication.

We also express our gratitude to Sharon Newport, MD, Chief, Pediatric Pulmonology of Bronx Lebanon Hospital, who provided a secondary review and commented on these recommendations prior to publication.

## *Table of Contents*

Introduction	1
Adult Asthma	4
Case Study #1: Adult with Asthma Experiencing Homelessness	4
Diagnosis and Evaluation	6
History	6
Medical History	6
Housing/Living Conditions	9
Occupational Exposures	10
Medical Home, Continuity of Care, & Costs	10
Psychological Stress	11
Physical Exam	12
Diagnostic tests	13
Plan and Management	15
Education, self-management	15
Medications	18
Associated problems/complications	20
Follow-up	21
Pediatric Asthma	23
Case Study #2: Child with Asthma Experiencing Homelessness	23
Case Study #3: Child with Asthma Experiencing Homelessness	25
Diagnosis and Evaluation	27
History	27
Medical History	27
Housing/Living Conditions	29
Social History	30
Other Considerations	32
Physical Exam	32
Diagnostic Tests	33
Plan and Management	34
Education, self-management	34
Medications	36
Associated problems/complications	39
Follow-up	41
Appendix	43
Primary Source	44
References	44
Other Resources	46
Websites	48
About the HCH Clinicians' Network	48

# INTRODUCTION

## Defining the Problem

Asthma is a chronic inflammatory disease of the airways that has been on the rise for the past 40 years throughout the industrialized world. It is a stubborn, chronic disease for which there is no cure (NHLBI, 2014). Symptoms manifest as a persistent or recurrent cough, wheezing, tightness in the chest, and shortness of breath (CDC, 2011). In the United States, the prevalence of asthma increased dramatically from 1980 until the late 1990s, and it remains at historically high levels (Akinbami & Schoendorf, 2002). Untreated and undertreated asthma can result in significant disability, reduced quality of life, and even death (CDC, 2017). In 2015, the CDC reported 3,615 deaths in the US from asthma as the primary cause, with 219 of those deaths occurring in children (CDC, 2017). The high prevalence of smoking among people experiencing homelessness (greater than 80%, compared to about 15.1% of the general population) compounds risk for airway hyperactivity, an element of asthma, for the smoker and also others exposed, including children (CDC, 2016; Okyuemi et al., 2006; Shelley et al., 2010; Snyder & Eisner, 2004; Tsai & Rosenheck, 2012).

## Childhood Asthma

Childhood asthma is a serious public health problem in the United States (CDC, 2011). One in every 10 children has asthma (CDC, 2011). The disease affects more than 6 million children under 18 years old and has become the leading cause of chronic hospitalization for children (CDC, 2017; Perzanowski, 2017).

Childhood asthma is also a costly illness, resulting in repeated hospitalizations throughout adolescence and adulthood if untreated or undertreated (AAFA, 2015). In 2007, the annual cost of all asthma was approximately \$56 billion (AAFA, 2015). In 2015 alone, there were more than 13.4 million total visits to health care facilities, including emergency departments, physician offices, and outpatient clinics, with asthma as the primary diagnosis (CDC, 2017). The direct costs (i.e., hospitalizations, medications) and indirect costs (i.e., missed school days, chronic absenteeism) associated with childhood asthma place a large burden on society as a whole (AAFA, 2015).

## Risk Factors

Among the specific risk factors likely to contribute to high rates of asthma prevalence, severity, undertreatment, and emergency department use among people experiencing homelessness are: fragmented care, no regular source of medical care, lack of access to medication, increased exposure to respiratory tract infections in congregate settings, high levels of allergen and air pollution exposure (including exposure to tobacco smoke), and high levels of exposure to pest-related triggers (such as cockroaches and mice) (Cutuli et al., 2014; Liza, 2016; Perzanowski, 2017; Sleath et al., 2006; Smart, 2005). Increased stress or exposure to trauma can also trigger symptoms (AAFA, 2015). Housing instability, disruptions of routine, mental illness, and cognitive impairment can contribute to poor control (Cutuli et al., 2014, 2016; McLean et al., 2004).

Families living in homeless shelters have often been without care for long periods of time and have increased vulnerability caused by chronic exposure to multiple layers of psychosocial stress (Buu et al., 2014; Cutuli et al., 2016). All families experiencing homelessness are living in poverty, are in critically destabilized living situations, and many have experienced other losses, food insecurity, and exposure to violence and trauma (Cutuli et al., 2016; Grant et al., 2006; McLean et al., 2004; Perzanowski, 2017). Common barriers to seeking care include fear of being judged and prior negative experiences with health systems (Perzanowski, 2017; Sleath et al., 2006). Many risk factors for people experiencing homelessness are higher than in the general population (Cutuli et al., 2014; Smart, 2005). Building trust with patients, creating a safe environment, and developing a strong patient-provider relationship requires persistence and intent, but are critical for effective care (Perzanowski, 2017).

### **Clinical Guidelines**

Clinical practice guidelines for the treatment of asthma are fundamentally the same for both homeless and housed populations (EPR, 2007). Nevertheless, health care providers who serve individuals and families experiencing homelessness must consider the instability of their living situations; co-occurring risk factors and health conditions; social stressors; and barriers to care, medication, and other services in the plan of care (Cutuli et al., 2010, 2014, 2016). It is our expectation that a deepened insight to the increased risk factors and other unique challenges faced by families in homeless shelters will help providers to partner with asthmatic patients and their families more effectively in collaboratively building care plans (Cutuli et al., 2014; NHLBI, 2014). This supportive approach, built upon established best-practice guidelines of asthma care, will ultimately improve treatment adherence and patient outcomes (NHLBI, 2014).

The primary clinical source for these recommendations is the *2007 NAEP/NHLBI Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma* (NHLBI 2007). These guidelines recommend assessment of both impairment and risk measures for the classification of the patient's asthma severity and to monitor asthma control. A follow-up assessment is recommended every 1–6 months, depending on the severity of the patient's asthma and his or her control of asthma symptoms. Treatment recommendations found in the EPR-3 asthma guidelines are not restated in this document except to clarify a particular practice adaptation (EPR, 2007).

In summary, homeless children and families face unique challenges related to their living conditions that require specific considerations by health care providers (Cutuli et al., 2010, 2014, 2016; Grant et al., 2006). A goal for health care providers and public health practitioners is to develop programs and practices that address the unique needs of homeless children and reduce their burden of disease (Cutuli et al., 2010, 2014, 2016; McLean et al., 2004).

Of note, this document recounts three case examples, intended to illustrate different facets of care important for individuals and families experiencing homelessness. The patients depicted are of different ages, genders, countries of origin, and primary languages. Because homelessness carries its own stigma, we feel it is important to point out that people of any race and ethnicity, whether born in the United States or

**ADAPTING YOUR PRACTICE:**

**Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

elsewhere, can be homeless. All patients with asthma who are experiencing homelessness need support tailored to their unique needs.

# Adult Asthma

## CASE STUDY #1: ADULT WITH ASTHMA EXPERIENCING HOMELESSNESS

By Dr. Coley King

### Initial Presentation (2013)

MP is a 64-year-old bilingual Spanish-speaking male who has been chronically homeless in the Los Angeles area since the late 1980s. He is a poor historian but reports a long history of physical violence and trauma from a young age. His initial presentation to his new multidisciplinary outreach team is in a local shelter. He complains of a cough, “constantly feeling sick,” and of being “in a bad place.” He reports that when he smokes “mota” (marijuana), he feels better. He reports a history of feeling like jumping out a window when hearing the voices from the past. A review of medical records shows multiple urgent visits over the last several years and subsequent treatment with oral prednisone and Albuterol inhalers. However, there has been no consistent follow-up for maintenance therapy. His hands are visibly scarred and disfigured. He appears tearful. Currently, he has no medications. He reports that his sleeping area is infested with bugs and that he often uses Raid spray near his space; however, on inspection, his shelter space seems to be quite clean.

### Social History

He smokes marijuana daily. He occasionally drinks beer. No reports of other drug use. He spends days on the sidewalk near a lawn and garden center with other day laborers; although reports that he doesn’t get much work. He is functionally illiterate. He is a difficult historian because of frequent use of Salvadorian slang.

### Medical History

Hand lacerations and tendon injuries on both wrists. Reports of breathing problems since youth and recurrent use of Albuterol but no knowledge of an asthma diagnosis. Spinal compression fractures as reported from local emergency visits. Admits to feeling depressed for many years with recurrent thoughts of suicide. No surgeries reported.

### Physical Exam

Height 5'1". Weight 167 lbs. Blood pressure (bp) 119/69. Pulse 90 beats per minute. Temperature 97.3 F/36.3 C. Peak flow 150 L/min, although he is unable to coordinate well to do a proper exam. O<sub>2</sub> saturation 99% on room air. General: No distress with flat affect. Head, ears, eyes, nose, and throat (HEENT): Normal. Cardiovascular: No neck vein distension, regular rate and rhythm (RRR) with no murmurs and normal S<sub>1</sub> and S<sub>2</sub>. Pulmonary: Diffuse wheezing with normal respiratory rate and effort.

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

Extremities: no edema. Psychiatric: flat affect. Alert and oriented to person, place, and time. Poor insight. Musculoskeletal: Bilateral hand contractures and palmar scarring.

**Clinical Assessment**

Moderate persistent asthma. Major depressive disorder with possible psychosis. Posttraumatic stress disorder (PTSD). Lack of housing. Cannabis use/abuse. Spinal compression fractures (old).

Plan: He has met with the outreach team, including a clinical case manager and the medical outreach team consisting of a physician assistant and supervising physician. He is prescribed an Albuterol inhaler and an inhaled steroid as a controller. He is also started on a Selective Serotonin Reuptake Inhibitor (SSRI), and a psychiatry follow-up is arranged. His housing plan is to maintain his current shelter bed with a goal of permanent housing.

**Long-term Follow-up (2017)**

Currently, MP is housed in an apartment secured by a Section 8 voucher and is maintained by his current case manager. His asthma is stable, although he is still not well controlled on an Albuterol inhaler and an anticholinergic inhaler, Acridinium Bromide. Medication use education is ongoing and often difficult. He has not tolerated inhaled steroids. His current mental health diagnosis of Major Depressive Disorder with psychotic features and PTSD are managed well with ongoing therapy and oral Olanzapine 20 mg daily. His pain is managed with Gabapentin 300mg three times a day or TID. He continues to smoke marijuana, although much less than before treatment.

**Takeaways**

Following a Housing First Model<sup>®</sup>, we recognized that without first addressing MP's housing needs, we wouldn't have much impact on his asthma treatment and overall health outcome. Also, with his very serious overlay of PTSD and depression with psychosis (which we found out had been causing his delusions of insect infestations), we determined that assistance from psychiatry was necessary. An advantage of a multidisciplinary team is having both medical and psychiatric outreach available. Because of the complexity of MP's physical health, mental health, and living conditions, we believe that he would fail out of housing if an interdisciplinary care approach is not continued. Over time, MP's organization has improved, yet he still faces challenges managing his health and housing without intensive case management support. Our team believes that we have justified our intensive outreach services by significantly reducing his use of the local emergency room (ER).

# Diagnosis and Evaluation

## HISTORY

*Due to the complexity and multiplicity of health conditions, and the potential loss of ability to follow-up for patients experiencing homelessness, it is important to take a good history and prioritize treatment goals. When possible, a team approach may be preferable to making the history-taking the sole responsibility of the clinician. Because gathering all pertinent historical details requires a significant amount of trust and patient disclosure, it may be useful to optimize a patient's connection to other team members, when appropriate. A multidisciplinary approach to history taking may also increase efficiency. However, sensitive health and risk questions should be asked by the appropriate person on the team, and patient confidentiality should always be protected.*

## MEDICAL HISTORY

### Reliability

- Assess and address any potential language or cultural barriers through the use of interpreters or other support.
- Assess the patient for special needs, including learning, physical, mental, developmental, or cognitive disabilities that could affect the reliability of history and ability to provide care.
- Mental health conditions may limit the patient's understanding of his or her condition, and a variety of conditions can impair memory.
- Assess whether the patient was born in or has spent time in a country where tuberculosis is common.
- Assess the patient's level of knowledge about asthma, which may be low because of lack of education.
- Recognize that inhalers or other medications can be sold or traded, providing an incentive for some to seek inhalers when they are not asthmatic. Specific and open-ended questions will assist in identifying those seeking inhalers for recreational use. For example, ask, "How is your sleep?" rather than, "Do you cough during the night?"
- Recognize that many people cannot read well and may need assistance to be offered in a discreet, non-threatening, non-shaming way. Some patients may speak but not read English while being literate in another language. Patients who are illiterate may not volunteer this information (Klass, 2007). If using self-assessment questionnaires, incorporate support for those who need it into your protocol.

### Asthma Control

Asthma control refers to recent baseline symptoms. It is easily evaluated through the use of the Asthma Control Test, a validated self-report questionnaire available in many languages online and free to use in clinical settings. The score from this brief

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

questionnaire predicts future exacerbations, hospitalizations, and deaths, and is recommended by the NHLBI guidelines.

**Severity/Risk**

Asthma severity refers to the danger from the underlying diseases, regardless of current symptoms. A severe persistent asthmatic is more likely to require hospitalization when asthma control is lost, while a mild persistent asthmatic may have morbidity that does not require hospitalization if medications are stopped. A patient with any hospitalization in the past year or at least two courses of systemic corticosteroids is defined as high risk; controller medications are indicated to mitigate risk, even if asthma is currently well controlled.

**Triggers**

- Discuss triggers that the patient identifies as causing his or her asthma symptoms, and differentiate these from generic responses of what the patient feels causes asthma symptoms for others.
- Exercise-induced symptoms can be from exercise-induced bronchospasm or pulmonary deconditioning or as part of uncontrolled asthma.
- Nighttime symptoms may be without regard to the environment or associated with sleeping in a particular place.
- Pollen seasons are generally spring (tree pollen), summer (grass pollen), and fall (weed pollen and an increase in mold spores).
- Animals are generally not cross-reactive; specifically ask about symptoms around cats, dogs, rodents, and cockroaches.
- Dampness can trigger symptoms directly or because of mold allergy.
- Tobacco smoke may act as a trigger, in addition to other effects on the lungs.
- Diesel exhaust and ozone are potent triggers for many asthmatics.
- Perfumes, cleaning products, and other odors can trigger symptoms in some patients.
- Specific emotions, including anger, laughter, and sadness can trigger some patients.
- Inhaled substances: Ask the patient to specify any inhaled or smoked substances, such as tobacco, vaping, electronic cigarettes, marijuana, crack cocaine, methamphetamines, or volatile inhalants (glue, paint, Freon, etc.).
- Viral upper respiratory infections (URIs) are the most common trigger of asthma exacerbations and can cause wheezing independently of asthma. Living in congregate shelters or crowded conditions can increase the risk of exposure to URIs.
- Weather, including changes in temperature and storms, can trigger symptoms
- It is often unclear why certain work or housing environments trigger symptoms.
- Refer to an allergist if possible. If serum testing for allergies is conducted, use a region-specific aeroallergen panel. Do not include food allergy testing because this has high rates of false-positive results that will confuse the picture.

**Medications**

- Current controller medications (consistency and duration).
- If controller medications have been used consistently, how well do they work?

- If controller medications are inconsistently used, explore reasons for this.
- Rescue medications (frequency of use).
- It is helpful to ask how long a quick-relief inhaler lasts (e.g., days, weeks, months). Many patients will report using their short-acting beta agonist only once or twice a day, but the inhaler (which contains 200 inhalations, unless it is a sample inhaler) lasts only 1–2 weeks, which is inconsistent with reported usage.
- Over-the-counter medications, herbal medications, vitamins, and folk remedies.
- Explore the differences in what a patient has been prescribed and what they have been able to access. Patients may not offer this information before the establishment of a trusting relationship with the provider.
- Pharmacies can provide information about the frequency of refills dispensed, but medications may also be dispensed directly by providers at outreach sites.
- Ask about tolerability/side effects of medications.
- Inquire whether the patient shares inhalers with others.
- If applicable, ensure the patient knows the difference between the controller and reliever—and the appropriate use of each.
- Inquire where the patient receives their asthma medication and whether they can access it when needed.
- Inquire about adherence to prior treatment and what the patient does to relieve symptoms if a quick-relief inhaler is not available.
- Discuss barriers to medication adherence and treatment.
- Patients may also be rationing their medication, sharing with friends or family members, or lacking it altogether.

### **Comorbid Conditions**

There are some medical conditions that make asthma management more difficult because of their direct effect on asthma or by mimicking symptoms in patients who have both conditions. These include:

- Congestive heart failure.
- Vocal cord dysfunction is commonly present in patients with asthma, but patients can learn to differentiate by locating symptoms in the throat versus the chest.
- PTSD, panic disorder, and general anxiety can cause acute onset dyspnea.
- Gastroesophageal reflux disorder (GERD) when there are symptoms of reflux; research does not substantiate the belief that silent GERD affects asthma.
- Obstructive sleep apnea makes asthma more difficult to control. Access to sleep studies can be challenging, but if risk factors are present, treatment with nasal steroid can be initiated.
- Allergic rhinitis makes asthma more difficult to control; intranasal steroids are often helpful to improve rhinitis and asthma.
- Diagnosis of asthma is best made using spirometry when symptoms are present to document airways obstruction with reversibility after a bronchodilator is administered. If there is concern that symptoms are entirely from a comorbid condition, referral for spirometry should be made.

## **ADAPTING YOUR PRACTICE:**

### **Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

#### **Infections**

- Inquire when and where last TB screening (TB skin test/Interferon Gamma-Release Assay) was done. This now includes the PPD/TST and the Interferon Gamma-Release assays, such as the QuantiFERON-Gold TB blood test.
- Inquire about tuberculosis (TB) symptoms (prolonged cough, hemoptysis, fever, night sweats, weight loss), but realize that cough and weight loss frequently occur among people experiencing homelessness for other reasons.
- Recognize that incarceration, even for a short duration increases risk of TB exposure. Inquire whether the patient ever had TB or exposure to others with active TB.
- Inquire about when patient's last Human Immunodeficiency Virus (HIV) test was done.
- If a patient has had two or more pneumonias in a year, screening for an antibody deficiency can be performed by drawing levels of IgG, IgM, IgA, CBC, and pneumococcal titers.
- Inquire about the immunization history, especially Pneumovax and annual influenza immunization.

## **HOUSING/LIVING CONDITIONS**

*At every visit, document the patient's housing status and living conditions, and list barriers to consistent treatment or medication. Many people experiencing homelessness live in environments with asthma triggers, such as mold, dust mites, cockroach feces, animal dander, tobacco smoke, and air pollution.*

#### **Sleeping Conditions**

- Discuss where patient sleeps (street, floor, bed).
- Describe mattress condition.
- If a patient is living on the street, ask about protection from the elements.
- If the patient is living in a shelter, ask for a description of the living conditions at the shelter (e.g., crowded or unsanitary; shared space vs. individual apartments, infestations, whether fans are used). Basement rooms, for example, are more likely to contain mold.
- Discuss whom the patient lives and who pays rent (if applicable).
- Inquire how long patient has lived in the current location.

#### **Medication Storage**

- Discuss where personal belongings are stored (i.e., medications and inhalers).
- If living in a shelter, ask about rules for medication use and storage.

#### **Triggers**

- Clearly document environmental exposures that may trigger or exacerbate the patient's asthma.
- Assess exposure to mold, dust, cockroaches, mice, and pets.
- Describe proximity to tunnels and busy highways.

- Inquire whether the patient or any member of the household smoke cigarettes, marijuana, or other substances that can create fumes.
- If requiring a nebulizer, ask if electricity is reliably available.
- If the patient has been seen before, ascertain whether environmental conditions have improved or deteriorated. Many patients may not know their triggers, so this part of the assessment will be a good opportunity for education and to help them learn more about the association with their asthma control.

## **OCCUPATIONAL EXPOSURES**

*Occupational exposures are a significant contributor to triggering and exacerbating asthma symptoms. Activities such as sweeping, cleaning, and exposure to cleaning solvents, insecticides, herbicides, and fumes can be triggering.*

- Inquire where and how frequently the patient works.
- Inquire about the type of work performed.
- Discuss potential sources of occupational exposures linked to asthma.
- If living at a shelter, inquire about chores the patient does that may trigger or exacerbate symptoms.
- Discuss the patient's daily activity level and the relationship of activity to symptoms.
- Inquire whether the patient does any strenuous activities.
- Inquire whether symptoms interfere with activities requiring physical exertion. It may be helpful to ask whether symptoms interfere with "taking care of business."
- If a patient is being required to do tasks that trigger his or her asthma, an advocacy letter from you may help the patient to be reassigned to more appropriate duties.

## **MEDICAL HOME, CONTINUITY OF CARE, AND COSTS**

### **Medical Home**

Common barriers to a "medical home" (source of comprehensive primary care) include, but are not limited to, lack of health insurance, change in health insurance, lack of transportation, lack of accessible clinic hours, and unaffordable co-pays. Continuity of care is associated with improved outcomes in patients with chronic medical conditions.

- Inquire about health care providers the patient has seen and whether he or she is currently receiving care from the shelter or other outreach sites.
- Federally funded health centers are medical homes that accept patients regardless of ability to pay.
- In some states, adults experiencing homelessness are eligible for certain benefits if they are U.S. citizens or legal residents.
- If a patient does not have a medical home, ask about limiting factors.

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

- Assess the patient's use of hospital ERs, urgent care clinics, or other clinics to help evaluate symptom control, barriers to primary care, and patient understanding of services and exacerbation management.
- Establish relationships with local ERs to facilitate communication.
- If possible, have the patient sign a release of information to obtain prior health records.
- Try to locate medical records quickly, but don't delay care.
- Inquire whether the patient has Medicaid/Medicare; if not, inquire whether he or she would like to receive assistance enrolling in it.
- Explore the patient's eligibility and access to entitlements and support programs, including food stamps, emergency cash assistance, and Section 8 housing.

**Medication Affordability**

- Inquire where the patient obtains medications; explicitly ask if there are multiple sites.
- Many adults experiencing homelessness are uninsured or have insurance that does not adequately pay for medications. Insurance status can present a serious barrier to treatment.
- Ask whether the patient has health insurance that adequately covers prescriptions. A co-pay of even \$5–\$10 may be insurmountable for a patient who is struggling to buy basic groceries.
- Some pharmaceutical companies have medication support and sample programs. It may be worth seeing if your patient qualifies. Federally funded health centers have access to 340B pharmacy pricing to reduce costs.

## PSYCHOLOGICAL STRESS

**Domestic Violence and Abuse**

As with all patients, routinely screen for domestic violence, child abuse, and neglect. Assess for survival sex activities (prostitution or trading sex for goods or protection), history of being a victim of human sex trafficking, other high-risk behaviors, and trauma.

**Family Health/Stress**

Understand that the individual may have experienced significant access barriers to care or have an incomplete understanding of the health condition or treatment needs. Social support, case management, mental health, or legal services may be needed.

- Ask about other health or social problems.
- Discuss social supports, patient strengths, and small or large successes that may be built upon and encouraged.

**Nutrition**

Cooking facilities vary dramatically in shelters. Some shelters may only have a cafeteria, allowing limited food choices. Some have one microwave per floor. Other

shelters have full cooking facilities in the patient's apartment, but the patient may have limited funds to use for food. He or she may live in a neighborhood with minimal access to healthy, affordable food. Patients who live on the streets may be primarily living off scavenged food items that others have discarded.

- Ask where the patient gets food and what kinds of food the patient eats.
- Find out whether the patient is facing food insecurity or chronic hunger.

### **Treatment During Incarceration**

Some people experiencing homelessness have a history of incarceration, which may be a factor in their asthma control or treatment needs. Discuss barriers to asthma treatment and maintenance during and after incarceration.

- Inquire whether the patient has been incarcerated recently.
- Discuss whether he or she received treatment for asthma during incarceration.
- Inquire whether current medications were those stored/released after incarceration.

## **PHYSICAL EXAM**

### **General**

Use every patient visit as an opportunity for a general physical exam, including lungs, skin, and weight, as recommended by the U.S. Preventive Service Task Force guidelines. ***The physical examination may be your only contact with the patient; many people experiencing homelessness rarely see a primary care provider because of housing instability and limited access to health care.***

### **Breath Sounds**

Describe the forced exhalation through the mouth. Take sufficient time for observation to ensure accuracy and reproducibility of the exam.

### **Signs of Pulmonary Disease**

Look for clubbed fingers and barrel chest as clues to pulmonary disease other than asthma. Bronchitis, emphysema, and TB, are frequently seen in patients experiencing homelessness and may mimic asthma symptoms.

### **Nasal Findings**

Inspect the nasal mucosa; chronic sinusitis or nasal inflammation/irritation because of drug inhalation may contribute to symptoms and complicate asthma control. Control of allergic rhinitis also improves asthma symptoms in patients who have both. Nasal polyposis can make asthma difficult to control.

### **Mental Health Status**

Assess for cognitive deficits secondary to substance abuse, mental illness, trauma or developmental delay that may compromise understanding and treatment adherence.

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

Be familiar with signs and symptoms of substance abuse/dependence and short- and long-term effects of psychoactive substances (see <http://www.drugabuse.gov/drugpages.html>).

## DIAGNOSTIC TESTS

### Peak Flow Meter (PFM)

PFMs are useful in the clinic to assess lung function and document improvement. Dispensing them for self-care is not always useful, given that PFMs are expensive, easily lost, and require a high level of motivation to use. Recording results of serial PFM measurements is impractical for many people experiencing homelessness. Ask whether the patient would find a PFM useful.

### Spirometry

Spirometry is the recommended tool for diagnosis and is very important to assess reversible airway obstruction. Clinics should adopt the use of spirometry only when there is sufficient volume to maintain the skills of the individual performing the test. If your clinic cannot afford a spirometer, explore collaboration with another facility that has one, consider writing a grant to purchase a spirometer or seek donated equipment. If spirometry is not available, do not delay treatment; treat on empirically based on the history and physical exam. If available, do spirometry at the initial visit and on follow-up, as needed. Consider referral to pulmonology or allergist for severe asthmatics, but assess the patients' transportation or other access barriers. Patients who cannot or will not adhere to recommendations for diagnostic testing should be treated on the basis of history, physical exam, and measured office peak flow compared to predicted peak flow.

### Chest X-ray

A chest X-ray may be desirable to evaluate for other pathologies since many people experiencing homelessness have not previously had access to these diagnostic tests because of lack of health insurance and financial resources, lack of transportation, and priorities that do not include diagnostic testing.

### TB Testing

Perform TB skin testing/screening (purified protein derivative/interferon gamma-release assay), which is often required for admission to shelters, recognizing that individuals experiencing homelessness have an increased risk for exposure to TB.

### HIV Test

Optimally, offer testing in a setting where facilities, expertise, and support are available to provide HIV care. All patients regardless of housing status should be offered an HIV test as a standard practice of care, to avoid the stigma associated with homelessness.

### **Serologies or Sputum Cultures**

When indicated, consider respiratory infections that cause a chronic cough. Be alert to common infectious respiratory diseases in your region and in regions where the patient has lived, such as histoplasmosis in the Midwest and coccidioidomycosis in the Southwest and California. People experiencing homelessness may travel from region to region and may have recently come from an area of endemic disease.

### **Allergy Testing**

When available, testing should be considered to identify any allergens that trigger the patient's asthma symptoms. The high rate of asthma in individuals experiencing homelessness is thought to be related, in part, to the presence of mold, animal dander, dust, cockroaches, and cigarette smoke in shelters or other living situations. Families experiencing homelessness may have less control over their environments than housed families. Patients with unexplained, severe, or difficult-to-control asthma symptoms should be referred for allergy testing. As above, when referring to a specialist, assess the patient's transportation limitations and other access barriers to care.

# *Plan and Management*

## **EDUCATION, SELF-MANAGEMENT**

For information on priorities for allergen avoidance in patients with asthma, see appendix.

### **Asthma Action Plans**

Work with the patient to develop an appropriate treatment plan. The patient is the expert and should be recognized as a partner, not a student. Patient-centered care is a shared endeavor, and cultural humility must be displayed. Use appropriate language, and reinforce with written action plans containing pictures, etc., as necessary. Wallet-sized instruction cards and inhaler labeling stickers can be helpful. Magnets to encourage posting of action plans in the living space can be helpful. Link to website for asthma action plans: [https://www.cdc.gov/asthma/tools\\_for\\_control.htm](https://www.cdc.gov/asthma/tools_for_control.htm)

### **Proper Equipment Use**

Use lay terminology to explain the correct method, and incorporate the patient's preferred terms, where appropriate. For persistent asthmatics, make sure the patient understands how to distinguish the different types of inhalers and how each should be used. Consider applying a sticker or other visual reminder to differentiate rescue inhalers from controller inhalers. An educational chart or poster of the respiratory inhalers is useful to help patients correctly identify the type of inhaler they use.

- Document training and demonstration of correct use of inhalers.
- Ask the patient to demonstrate inhaler use at every visit; if incorrect, demonstrate correct use.

### **Spacers**

Most patients can be taught how to use inhalers without spacers. Many patients find spacers bulky, breakable, and difficult to carry. A plastic water bottle with a hole cut in the bottom may be used as a spacer; clients can discard these and make new ones as needed (Duarte & Camargos, 2002; Zar Asmus, & Weinberg, 2002).

### **Nebulizers**

If used properly, inhalers can provide medication delivery equivalent to nebulizers. Rarely will a patient require nebulizers for symptom relief. Due to the cost, health insurance coverage is generally necessary to obtain a nebulizer. If critically necessary, work with shelter staff and other service providers to provide a place for nebulizers to be used and stored. Consider giving daily or twice-daily nebulizer medication treatments in the clinic, especially if the patient is unable to obtain his or her own nebulizer and the clinic is readily accessible, as in a shelter-based clinic.

### **Cleaning Nebulizers and Spacers**

Teach the patient how to cleanse nebulizers and spacers with a 1:1 solution of vinegar and water. Nebulizers and spacers should be disassembled, rinsed in solution, and dried rather than left on the floor. Give the patient a bottle of vinegar or make it available in shelters, since people experiencing homelessness may not be able to obtain vinegar.

### **Living Conditions**

Explain to the patient how environmental conditions, like exposure to cigarette smoke, can worsen asthma symptoms.

- Suggest ways to minimize the patient's exposure to secondhand smoke; encourage smoking cessation or, at minimum, smoking outdoors and changing clothes afterward, if possible.
- Explain that cockroaches are also a common trigger of asthma symptoms. Insecticidal baits are readily available and are the most effective strategy for eliminating infestations. Insecticidal sprays are much less effective. You may also be able to assist by writing a letter to the shelter requesting pest management when needed.
- Eliminating reservoirs of house dust mites is generally ineffective at reducing symptoms and does not need to be recommended.

### **Smoking**

Do not assume that patients experiencing homelessness are not interested in smoking cessation, although it may be a lower priority than meeting survival needs. Studies show that smoking cessation interventions can be successful and do not increase relapse risk for recovering substance users.

- If the patient is not ready to quit smoking, promote harm reduction by encouraging the patient to reduce the number of cigarettes smoked daily.
- Document at every visit the patient's motivation and level of confidence in his or her ability to stop using tobacco products, on a scale of 1 to 10.
- Check with your city's department of health to see if there are programs for smoking cessation available. Some programs give out free patches and gum to help quit smoking.
- Provide access to the National Institutes of Health's free tobacco quit line: <https://smokefree.gov/tools-tips/speak-expert> or to the CDC's 1-800-QUIT-NOW line.

### **Symptoms**

Educate the patient about signs and symptoms of asthma exacerbations, such as night-time/early morning cough, post-tussive emesis, shortness of breath (only able to talk in short sentences), and wheezing. Audible wheezing is a late sign.

- Teach the patient to recognize his or her own symptoms, to implement the asthma action plan, and to contact you or their primary care provider early on, instead of waiting until they have a full-blown attack. To facilitate this, ensure that the patient has a number to reach for on-call support. Having the clinic's

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

telephone number will facilitate better care, decrease anxiety, and divert unnecessary ER use.

**Patient Goals**

Encourage the patient to select his or her own treatment goals, even if they differ from the provider's goals or are prioritized differently. The practice of cultural humility is critical to improving compliance with treatment. Shared decision-making should be emphasized and highlighted. There is evidence that this assists with patient's adherence to treatment.

**Asthma Action Plan**

Consider developing a symptom-based action plan (see EPR, 2007, Sec. 3, Comp. 2, 25–27) for people experiencing homelessness unless they are able and motivated to use a peak flow meter. Symptom-based action plans have been demonstrated to be comparable to peak flow-based action plans. Provide guidance, preferably written, in language the patient can understand.

- Ask the patient what he or she would do if an asthma attack did not respond to a rescue short-acting beta agonist.
- To maximize the patient's ability to retain and use the action plan when needed, provide a written plan appropriate to the patient's literacy level, illustrated with photographs or other graphics, on an easily stored, wallet-sized card.

**Exercise**

Exercise is important for asthmatic adults. Good asthma control should allow patients to comfortably exercise and participate in activities. Help create this goal and expectation with your patients. If exercise is a trigger for the patient, incorporate medication use prior to exercise, as per NHLBI guidelines for exercise-induced asthma. The ability to engage in regular exercise may be a challenge because of space or safety in or around shelters. Help patients to plan and to incorporate physical activity into their routines, as possible.

**Educational Materials**

Make sure the patient can read and understand any written materials you provide (Klass, 2007). Ask simple questions to assess their understanding. Use existing resources for patient education materials (e.g., EPR, 2007, Sec. 3, Comp. 2, 30–31, 36–38), or develop your own that are appropriate to your patients' literacy levels and primary language. In general, written patient education materials should be at the fourth-grade reading level or lower.

**Prevention**

Make the patient aware of increased risks when exposed to people with respiratory infections (colds, flu).

- Explain that nasal discharge is extremely contagious and that infectious organisms can survive up to 6 hours on nonporous surfaces.
- Encourage frequent handwashing.

- Encourage covering coughs/sneezes with the crook of the elbow rather than the hand.
- Strongly encourage an annual flu shot and explain the difference between a cold and the flu.

### **Reflection Questions**

At the end of every clinic visit, ask the patient, “Is there anything we talked about today that is unclear? Is there anything in the plan of care that will be difficult for you to do?” Asthma management is complex and usually requires multiple health education sessions. Having the patient repeat back what you discussed can be a way to assess understanding and reinforce the plan.

### **Education of service providers**

Encourage improvements in places where patients experiencing homelessness live.

- For information about Health Care for the Homeless projects in your area, see <http://www.nhchc.org/HCHdirectory.html>. Identify partners in your community to help families experiencing housing instability with medical, legal, and housing issues.
- Educate shelter staff about controlling environmental conditions that exacerbate asthma by:
  - Prohibiting smoking in shelters.
  - Repairing leaking faucets and maintaining humidity below 50% to reduce proliferation of mold.
  - Eradicating cockroach and rodent infestations using baits, traps, and integrated pest management.
- Educate staff at shelters about how to recognize asthma attacks and how to help. Inform staff about factors that trigger asthma symptoms and engage them in decreasing asthma triggers:
  - Limit residents’ exposure to cleaning solutions such as bleach.
  - Provide no-smoking areas.
  - Inspect for and eradicate moisture, cockroaches, and rodents.
  - Offer smoking cessation intervention to shelter staff.

## **MEDICATIONS**

### **Classification**

Using history and the NHLBI guidelines, classify both patient **severity** and **control**. Use the stepwise guide to drive medication management. Link to NHLBI website: <https://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines>

### **Anti-inflammatory Medications**

**As per NHLBI guidelines, controller medications must be used for persistent asthma, and inhaled corticosteroids are recommended.** For persistent

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

asthmatics, daily use of inhaled corticosteroids is the first-line recommendation for controllers. Oral corticosteroids should only be given on an urgent and limited basis. Long-acting bronchodilators can be helpful in older children and adolescents, but should not be used for patients who, in the clinician's judgment, are at high risk for overusing them.

**Choice of Rx**

Use the simplest medical regimen possible to facilitate adherence to treatment. Use whatever medications are appropriate and available to the patient, considering medication expense (including co-pay) and duration of treatment.

**Inhaled Corticosteroids (ICS)**

There is strong evidence that inhaled corticosteroids improve long-term outcomes for persons with asthma (EPR, 2007). Nevertheless, these anti-inflammatory medications are frequently under-prescribed by practitioners and underused by patients. Prescribe controller medications according to standard clinical guidelines (EPR, 2007), recognizing that people experiencing homelessness are at especially high risk for inappropriate or insufficient preventive treatment and may rely unnecessarily on acute care. Educate the patient about the importance of preventive rather than crisis management of asthma. Patients experiencing homelessness may dislike ICS because some taste bad, cause voice hoarseness, or value immediate relief more than prevention and assume that ICS "don't work" as well as controllers. Although this is frustrating for the clinician, repeated explanation, encouragement, and support may promote adherence.

**Short-acting Beta-agonists**

Because of their immediate effect, patients usually like short-acting beta-agonists. Homeless service providers should recognize the potential for abuse of these inhalers because of their quick action and their street value. Use creative ways to monitor the number of inhalers used while optimizing symptom control.

**Long-acting Beta-agonists**

Be cautious about prescribing long-acting beta-agonists because of the danger of overuse, which can happen inadvertently if the client confuses among multiple inhalers. Be sure that the patient understands not to use this inhaler for rescue.

**Medication Refills/Storage**

Dispensing medications on site may be more effective than sending patients experiencing homelessness to the pharmacy with a prescription. Consider pharmacy delivery programs to help patients with transportation barriers. Be aware that medications may be obtained from other facilities, such as storefront clinics, outreach programs, or ERs.

- Discuss safe storage of medications.
- Some controller medicines are dry powders that must be stored in cool, dry places, which presents a barrier to use by some people experiencing homelessness.

- Ask patients to bring all medications to every visit, including those obtained from other providers, to facilitate identification of drugs that may exacerbate asthma or have side effects that mimic asthma symptoms (e.g., angiotensin-converting enzyme inhibitors).
- Ensure that prescriptions are written with an adequate number of refills. Ask where the patient gets prescriptions filled and uncover any access barriers to obtaining medication.
- Prescription assistance programs offered by many pharmaceutical companies, samples, and prescription delivery programs may be helpful. Facilities with 340B pharmacy pricing can reduce costs.
- If prescription delivery services are not already available in your area, consider talking to a local pharmacy about collaborating to help reach your patients/their customers.
- Monitor the prescription refill rate to assure that medications are being used at proper intervals, not over- or under-utilized or shared/misused by other people.
- Lost and stolen medications: Recognize that people living with homelessness may live on the streets, in congregate housing, or in other unstable housing situations without access to proper or safe medication storage. Discuss with patients how they plan on safely storing their medications.

## **ASSOCIATED PROBLEMS/COMPLICATIONS**

### **Unable to Reach for Follow-up**

Patients experiencing homelessness are often transient, and follow-up can be difficult. Establish systems for follow-up, such as a monthly check-in file on high-risk patients. Most electronic medical records have ALERT sections as well as RECALL features to help track follow-up. Establish relationships with shelter staff who may be able to tell you where the individual or family can be reached if the patient has left the shelter. People experiencing homelessness frequently change phone numbers or have an inconsistent availability of minutes/service on their phones. When possible, obtain an appropriate secondary contact number. Look into alternative means of contacting via text messaging or emails. When appropriate, add a relative or friend who is more stably housed to contact as a back-up but ensure that you always appropriately protect confidential patient information. Discuss with the patient the preferred and most reliable means of contact. Lack of funds for transportation may compromise homeless patients' ability to keep follow-up appointments. Offering transportation passes or coordinating with social workers may be helpful.

### **Financial Barriers**

Many patients experiencing homelessness lack health insurance or do not have prescription drug coverage. Provide assistance in applying for Medicaid and other entitlements for which the patient may be eligible. Resources for obtaining reduced-cost medications for uninsured patients include the U.S. Department of Health and Human Services' 340B Pharmaceutical Discount Program (<http://www.hrsa.gov/opa/>), state pharmaceutical assistance programs (<http://www.ncsl.org/programs/health/drugaid.htm>), and pharmaceutical companies'

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

patient assistance programs (PAP) for low-income individuals. If possible, assign a staff member to master and assist patients with PAP paperwork, which is different for every company. Some companies will waive the requirement to provide tax documents if a letter documenting the patient's homelessness is included with the application. Medication obtained through a PAP is usually mailed to the patient or the clinic; therefore, the patient must either have a mailing address or provide other contact information, so the clinic can notify him or her when the medication arrives. Medication samples can also be used, but samples may not be consistently available, compromising ongoing care. Some large retail pharmacies offer low prices for generic medications (for example, \$4 for a 30-day supply). Investigate prices at large regional discount retailers.

**Transience**

People experiencing homelessness may move locations on a frequent basis, which compromises routine asthma management and makes episodic, crisis care more likely. However, providers should not be discouraged by this and should continue to discuss asthma control with patient.

**Functional Impairments**

Cognitive deficits secondary to substance abuse, mental illness, trauma, or developmental disability may limit understanding of the disease process and compromise adherence to treatment. These should be taken into account when treating asthma. Involving case managers and outreach workers may be helpful.

**Treating Comorbid Conditions**

From the history, ensure that you have addressed anxiety, vocal cord dysfunction, allergic rhinitis, symptomatic GERD, and other common comorbid conditions that worsen asthma or mimic its symptoms. It may be necessary to incorporate management of other conditions into the asthma action plan.

## **FOLLOW-UP**

**Referrals**

Refer the patient to a mental health professional for psychological or social problems, if needed. Explore the complementary service resources in your area. Assess and address transportation and other access barriers when making referrals.

**Outreach**

Connect with homeless outreach programs, homeless health care providers, your local coalition that provide services to individuals and families experiencing homelessness, or other advocates for underserved populations in your community. For information about Health Care for the Homeless projects in your area, see <http://www.nhchc.org/HCHdirectory.html>. Identify advocates in your community to help families who are unstably housed with medical, legal, and housing issues.

**In closing:** We applaud you for your commitment to providing high-quality health care for homeless individuals and families struggling with asthma. The needs can be overwhelming, and often it feels like you can never do enough. Do make an effort to establish and access your own support systems, and give yourself the care and breathing space that you need to avoid burnout and compassion fatigue. Your employing institution or local professional association may have support or resources. For more information on physician burnout, see <https://www.thehappy.md.com/blog/bid/290755/physician-burnout-the-three-symptoms-three-phases-and-three-cures>.

# *Pediatric Asthma*

## **CASE STUDY #2: CHILD WITH ASTHMA EXPERIENCING HOMELESSNESS**

**By Dr. Delaney Gracy**

### **Initial Presentation (2016)**

JL is a 7-year-old white female brought to the clinic for vaccination. The child has not attended school in the 3 weeks since becoming homeless because she and her family were moved to a shelter 2 hours from their previous housing. They moved into a shelter because they were living doubled up with two other families in a two-bedroom apartment. The mother was told that the child could not start school without vaccine records, but she does not know the name or phone number of their most recent provider. She reports they have never really had a regular doctor.

### **Social history**

The child lives with her mother, age 23, and her 3-year-old brother, who does not speak and is also here for evaluation today. The shelter is a one-room facility. The patient has to share a bed with either her brother or mother, and she alternates. She hasn't been sleeping well, but the mom says this is because they have to keep the light on for her brother, who gets scared, especially since seeing a rat in the room on the first night. The mother is frustrated, as she says the room also has cockroaches and no cooking facilities. Of note, the mother appears anxious and tearful.

### **Medical history**

No diagnoses of chronic illness, but the mom says it seems like her daughter is always sick or coughing. She says she coughs almost every night, even when she is not "sick." She was hospitalized once at about 1 year of age, and the mom thinks the diagnosis was "bronchitis." Once a doctor gave her a "pump" medicine, which seemed to help, but she says no one ever said that her daughter has asthma. The mother also is concerned because the child is gaining weight because she says she cannot keep up with the other kids at school and cannot participate in gym because she always feels tired when active.

### **Physical exam**

Height 48 inches (50th percentile). Weight 66 lbs. (94th percentile); bp 96/57. Pulse 90 bpm. Temperature 98.3 F. O<sub>2</sub> saturation 99% on room air. General: No distress, cheerful, engaged girl. HEENT: Normal exam, 2+ tonsils. Cardiovascular: No neck vein distension, regular rate and rhythm (RRR) with no murmurs and normal S1 and S2.

Pulmonary: Occasional cough, diffuse wheezing with normal respiratory rate and effort. Skin: Rough scaly patches on flexural surfaces of elbows and knees. Exam is otherwise normal. Rest of exam noncontributory.

### **Clinical assessment**

Overweight. Severe persistent asthma.

### **Plan**

7-year-old child. Probable diagnosis of asthma. No spirometry available in clinic for Albuterol challenge. Will start child on inhaled corticosteroids and Albuterol; asthma action plan completed and school medication form completed for rescue medications for school. Discussed plan and diagnosis with the mother, who expressed understanding and was able to repeat back instructions for medications. Gave spacer and demonstrated use. The mother lacks transportation and will use a pharmacy with delivery service to the shelter. Recreated vaccine card as well as possible from state registry, started on catch-up schedule for vaccines. Provided new vaccine card for the mother and a paper about the McKinney-Vento Act with information stating that schools cannot exclude children experiencing homelessness from school because of lack of medical records, including vaccines, and advised that the mother provide a copy of the Act to the school. Gave letter to the mother to give to shelter advocating for pest abatement as a medical necessity for her child's condition. Child to follow up in one week with medications to review, plan, and demonstrate use. Gave mother after-hours number for clinic and instructed her to call us if she has any questions or concerns. Referring mother to an adult provider for routine care and work-up for depression.

### **Long-term Follow-up (2017)**

The patient is doing well. Severe, persistent asthma, but it is well controlled on the current regimen. The patient has been using Albuterol before physical exercise and has increased participation and activity, though weight remains close to 95 percentile. The family has been moved to another shelter with fewer cockroaches and no evidence of rats. Allergy testing has shown her to be allergic to German cockroaches, cats, and birch. The child recently won an art contest and is gaining confidence at school.

### **Takeaways**

The case above is a common scenario in the care of children in the shelter system. Most have lacked continuity in their prior care, frequently leading to missed diagnoses. Making the diagnosis of asthma is the pivotal step to drive appropriate care thereafter. Clinicians must be thorough in the ruling out of other casual possibilities and use accurate language and caution with treating empirically. However, lacking spirometry, in this scenario an immediate medication trial is the most appropriate approach. The goal of this case example was to highlight several fundamentals: Many asthmatics in shelters are undiagnosed, and many will come into your care with something else as their chief complaint. Aggressive diagnosis and treatment to bring the condition under control are critical. Intensive, iterative asthma education, parent buy-in, advocacy to help the family mitigate environmental factors, and ensuring the child is able to participate in school and exercise are fundamental to quality care.

# **CASE STUDY #3: CHILD WITH ASTHMA EXPERIENCING HOMELESSNESS**

**By Dr. Charles Oberg**

## **Initial Presentation**

KR is a 4-year-old Somali boy who presents with the following history upon admission to a local hospital with pneumonia. He was initially seen at a homeless shelter by a Health Care for the Homeless pediatric provider. The mother stated that he “has a cough all the time.” Over the course of several months, he was seen numerous times for recurrent fevers, upper respiratory infections with persistent cough, sore throats, difficulty sleeping, and poor appetite. The clinical encounters were at the shelter clinic, in an urban hospital’s pediatric clinic, and in several ERs.

## **Social History**

Although of Somali descent, he was born in a refugee camp in Ethiopia after the family fled Somalia because of political unrest and fear of terrorist attacks. The family immigrated to the United States when he was 2 years old. They first arrived in Utah and then relocated to Minnesota. The family had no permanent housing and was placed in a homeless shelter in Minneapolis. The family remained in the shelter for more than 7 months.

## **Medical History**

In addition to his asthma, there was a family history of TB. The child also had a history of chronic otitis media that required pressure equalization tube placement at 3 years of age. He also had an orchiopexy for an undescended right testicle.

## **Physical Exam**

Height 3’2”. Weight 25 lbs. Pulse 115. Temp 100.8. O2 saturation 100% on room air. General: No acute distress. HEENT: Nasorhinitis and moderately enlarged tonsils. Cardiovascular: RRR with normal S1 and S2, Grade I/VI low-frequency systolic murmur. Pulmonary: Intermittent cough with occasional end-expiratory wheezing that improved with Albuterol nebulization. Musculoskeletal: Normal. Neuro: Alert and interactive.

## **Clinical Assessment**

A chest X-ray revealed a persistent left upper lobe infiltrate that had been previously seen 1 month prior to admission. He was admitted for pneumonia, persistent cough, and a work-up to rule out TB because of the family history and chest X-ray findings. A nasal swab PCR was positive for parainfluenza. The HIV test and T Spot were negative.

## **Plan**

The infiltrate was still present at the time of admission. During the hospital stay, he was seen by a pediatric pulmonologist consultant and was diagnosed with cough-variant

persistent asthma. He was started on antibiotics for pneumonia, a 5-day course of oral steroids, and controller and rescue inhalers. The rationale for treating with antibiotics was the infection's persistence and the unilateral nature suggestive of a secondary bacterial pneumonia; of note, it cleared soon after treatment. Also because of its persistent nature, along with the family history of TB, the T-spot and HIV testing were ordered. Most likely, the parainfluenza was the trigger or contributed to the asthma exacerbation that prompted the hospitalization. His asthma is under much better control with continued controller medication.

### **Long-term Follow-up**

His primary care pediatrician enrolled him in a medical home for children with both chronic medical conditions and housing instability. A medical home coordinator and a community health worker were assigned to his case and the implementation of an asthma action plan. The child continues to be seen by both his pediatrician and pediatric pulmonologist. He has had several mild asthma exacerbations but has not required further hospitalization for asthma. He was eventually diagnosed with obstructive sleep apnea secondary to enlarged tonsils secondary to recurrent tonsillitis. He successfully underwent a tonsillectomy and adenoidectomy, which resulted in significant improvement in his sleep apnea.

### **Takeaways**

In our program, we see many refugees, which introduces additional medical-legal elements to the needs of our patients that we work hard to address, and that is critical to the successful care of our patients. Although trauma is in the background of many of our patients, the type of trauma experienced by our refugee patients requires special sensitivity and insight, which has been proven critical to their care. Finally, when seeing foreign-born patients from certain countries, it will be important for clinicians to be familiar with the infectious disease risks that may necessitate different screenings, and also cultural/folk remedies and perceptions of health and wellness that are frequently used and need to be considered. This case highlights a number of important points in the care of children with asthma. It highlights the heterogeneity and diversity among families experiencing homelessness. Each family comes from different backgrounds and family histories with unique circumstances that contribute to their housing instability. It also is an excellent example of the benefits of care coordination. It was through the communication between the Health Care for the Homeless Project with the primary care provider and pediatric pulmonologist that resulted in the enrollment in a medical home with a community health worker that helped to provide continuity of medical care as well as access to additional community resources and services.

# Diagnosis and Evaluation

## HISTORY

*Because of the complexity and multiplicity of health conditions, and the potential loss of ability to follow-up for patients experiencing homelessness, it is important to take a good history and prioritize treatment goals. When possible, a team approach may be preferable to limiting the history-taking to the clinician. As many of the pertinent historical details require a significant amount of trust and patient disclosure, when appropriate, it may be useful to optimize a patient's connection to team-members other than the physician or prescribing clinician as a strategy to increase efficiency. However, sensitive health and risk questions should be asked by the appropriate person on the team, and patient confidentiality should always be protected.*

*Parents are sometimes reticent to disclose information that they feel could reflect negatively on their caregiving. Some may have child protective services cases open and may worry children will be taken away. As always, do appropriately assess any risk to the child and act accordingly in the child's best interest. Regardless, it will also be important to create as safe and supportive an environment as possible for the parent to establish a therapeutic relationship with you.*

## MEDICAL HISTORY

Try to locate medical records quickly, but do not delay care. Thoroughly review the patient's medical history. For asthmatics, of particular importance are current prescription medication use (especially controller use), dosage and interval; over-the-counter medications; and herbal medications, vitamins, folk remedies, and any other alternative medication or treatment used. There may be significant differences in what a patient has been prescribed and what they have been able to access in terms of treatment and medication. It is often important to explicitly clarify the difference, as patients may not offer this information prior to the establishment of a trusting relationship with the provider. Similar attention may be important in accurately eliciting risk factor/behavior information. As with all asthmatics, review previous hospitalizations, intensive care stays and intubations; and immunization history.

- There is no evidence that gastroesophageal reflux disorder (GERD) may be a harbinger of an atopic profile. Ask about exercise-induced symptoms and treat accordingly to prevent children from being excluded from physical activities.
- Ask specifically about vocal cord dysfunction, eczema, and allergic rhinitis, comorbidities that may individually worsen asthma.
- Ask about exercise-induced symptoms, as they may influence the asthma severity, control classification, and the care plan.

- The latest NHLBI guidelines suggest treatment of comorbid conditions that may worsen asthma, such as allergic bronchopulmonary aspergillosis, GERD, obesity, obstructive sleep apnea, rhinitis and sinusitis, and stress or depression.
- As per NHLBI guidelines, assess symptoms and medication use to classify both asthma severity and control status. All clinicians should be familiar with the latest guidelines and be able to use them to care for patients with asthma. A detailed discussion of the guidelines is beyond the scope of this monograph. The guidelines can be found at <https://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines>.

### **Undiagnosed Asthma**

Many families who are unstably housed have not had consistent medical care. Children may have been treated for multiple episodes of wheezing, but often by different health care providers—and thus never diagnosed with asthma. Even if the parent/guardian/child does not report a history of asthma, ask whether the child has a frequent cough, particularly at night.

- Inquire whether the patient has ever been prescribed an inhaler, diagnosed with wheezing, “bronchitis/bronchiolitis,” or pneumonia.
- Ask whether the patient has been in the ER or hospital for breathing problems.

### **Medical Home**

Inquire if the child has a “medical home” (a regular source of coordinated primary care). If a child does not have a medical home, ask about the limiting factors. Common barriers include, but are not limited to, lack of health insurance, change in health insurance, lack of transportation, lack of accessible clinic hours, and unaffordable co-pays.

### **Significant Allergies**

Allergies can be triggers that can hinder the control of asthma. If triggers are unclear or severe, consider referral to an allergist. Keep in mind that many children may spend some of their time in day care or other environments with additional triggers.

### **Viral URIs**

Viral URIs, common among young children, are the most common triggers of asthma exacerbations and can cause wheezing independently of asthma. Living in shelters or crowded conditions as well as day care attendance increase risk of exposure to URIs.

### **ER/Acute-care Visits**

As per NHLBI guidelines, document use of ER/acute care services, oral steroid use, hospitalizations, ICU stays, and intubations, when using the patient’s medical history to assess risk, distinguish the use of emergency services based on acuity versus the lack of more appropriate access for nonemergency-room level clinical needs. The results of the assessment may affect the severity/control score, treatment plan, and understanding of support services needed.

### **Low birth weight (LBW)/prematurity**

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

LBW is related to respiratory problems in infants, and babies born to homeless mothers are at higher risk of LBW.

- Ask whether the child was smaller than normal at birth (provide a point of reference) or born prematurely.
- Ask whether the child was intubated or needed oxygen during the neonatal period.

**Continuity of Care**

Children experiencing homelessness may lack continuity of care and see many different providers because of frequent relocation. Try to identify and allay confusion about different drugs prescribed or conflicting information conveyed by multiple providers. Many areas now have immunization registries that can be helpful. As highlighted in the above scenario, many children who end up in homeless shelters have had multiple providers and poor continuity of care.

- Ask who has provided medical care for the child in the past.
- If possible, have the parent/guardian sign a release of information to obtain the records.

## HOUSING HISTORY/LIVING CONDITIONS

**Housing/Living Conditions**

At every visit, document the patient's housing status and living conditions, and list barriers to consistent treatment or medication. Ask specific questions to guide priorities, risk assessment, and treatment considerations.

- Discuss where the child sleeps at night.
- Discuss whom the child lives with and who pays rent.
- Inquire about the length of time the child has lived in current location.
- Especially for street youth, assess safety and ability to secure and administer medication.

**Environment**

Clearly document environmental factors that may trigger or exacerbate the patient's asthma.

- Discuss mold, dust, cockroaches, mice, pets, and proximity to tunnels and busy highways nearby (air pollution).
- Inquire about seasonal patterns and related triggers such as pollen and cold air. If the family lives in a shelter, ask for a description. Basement rooms, for example, are more likely to contain mold. Ask about the condition of the mattresses.
- Inquire whether any member of the household smokes cigarettes, marijuana, and other substances that can create fumes, and if so, counsel appropriately.

- Inquire whether there is somewhere they can plug in a nebulizer, if needed, and whether electricity is reliably available.
- If the patient has been seen before, ascertain whether environmental conditions have improved or deteriorated. Many patients may not know their triggers, so this part of the assessment can be a good opportunity for education.

## **SOCIAL HISTORY**

### **Entitlements**

In some states, children experiencing homelessness are eligible for Medicaid or State Children's Health Insurance Program (SCHIP) if they are U.S. citizens or legal residents.

- Explore the child's or family's eligibility and access to entitlements and support programs, including Medicaid, SCHIP, Women, Infants and Children (WIC) Food and Nutrition, Supplemental Security Income (SSI), Supplemental Nutrition Assistance Program (SNAP), etc.
- Ask how the family obtains medicine, with respect to both cost and transportation.

### **Domestic Violence and Abuse**

As with all patients, routinely screen for domestic violence, child abuse, neglect, and exposure to violence in the community.

### **Family Health/Stress**

Understand that the family may have experienced significant access barriers to care or have an incomplete understanding of the child's condition or treatment needs. Social support, case management, or mental health services may be needed.

- Ask about other health or social problems of family members.
- Help the parent/guardian prioritize the family's needs.

### **Nutrition**

Cooking facilities vary dramatically in shelters. Some shelters may only have a cafeteria, allowing limited food choices. Some have one microwave per floor. Other shelters have full cooking facilities in the patient's apartment, but the patient may have limited funds to use for food. Patients may live in a neighborhood with minimal access to healthy, affordable food. Those who live on the streets may be primarily living off scavenged food items that others have discarded.

- Ask where the family gets food and which kinds of food the patient eats.
- Find out whether the family is facing food insecurity or chronic hunger.

### **School Attendance**

It is not uncommon for a child who becomes homeless or enters the shelter system to be placed in a different school district, requiring re-enrollment. Because of a lack of

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

appropriate paperwork or vaccination records, attendance is often delayed. A student who is regularly missing more than 2 days per month is considered chronically absent by the Department of Education's standards. Being chronically absent has an impact on learning, grade promotion, reading level, etc. If the child is missing school because of asthma, find out why. In addition to lack of symptom control and frequent exacerbations, many parents keep their asthmatic children home when it is cold or rainy, in the fear that conditions will induce asthma attacks. In children experiencing homelessness, this is often made worse by lack of access to appropriate warm clothing. Recognize that this may be a sensitive topic for parents and they may be hesitant to disclose information for fear of getting in trouble.

- Inquire about any health services at child's school (e.g., school nurse or full-service health clinic).
- Inquire about any other supportive services the child receives at school (e.g., Individualized Education Plan [IEP], counseling services, social work services, or other therapy).
- Inquire how much school the child has missed and why.
- Assess how many days of school the child missed in the prior year because of asthma, and also in the last few months.
- Work to address the causes of absences through medication control, health education, and even social work support, when needed.

**Parental Health**

Poor health of a parent is a common reason for a child to miss school or have uncontrolled asthma. Arranging other methods of getting a child to school is a practical way to prevent a parent's illness from affecting their child's attendance. Children living in shelters are entitled to be bused to school through the McKinney-Vento Homeless Assistance Act of 1987, a federal law mandating that students with temporary housing receive transportation to school.

- Inquire whether the parent works and what kind of work he or she does.
- Inquire about the frequency of missed work.
- Discuss how parent's health may impact the child.

**Parental Missed Work**

It is important to be aware that a child's asthma may impact a parent's ability to work with the possibility of being fired from a job because of missing work when a child is sick. Parents should be provided with any work-related documentation they need to support missed work days. Additionally, there can be resources to sign-up for such as the Family and Medical Leave Act (FMLA), a federal program that allows for unpaid absences from work to address personal health care needs or the health care needs of a child and protects a person from being unnecessarily terminated from their job. Information on the FMLA can be found at <https://www.dol.gov/general/topic/benefits-leave/fmla>.

## OTHER CONSIDERATIONS

### Special Needs or Considerations

In some cases, provision of adequate care for the child may include identifying support for the parent.

- Assess both the patient and parent for special needs—including learning, physical, mental, developmental, or cognitive disabilities that could affect care.
- Assess and address any potential language or cultural barriers.

### Literacy Level

It is important to identify caregivers and older patients who cannot read well. This information may not be readily offered, but is important for safe and effective care.

- Create a sensitive, “shame-free” environment in which individuals can feel comfortable revealing any difficulty they may have with reading. If the patient is willing, you can assess basic literacy by encouraging the patient to read something for you, in a private space. If written educational materials are not available at an appropriate literacy level or in the patient’s primary language, consider using pictograms, but make sure the patient understands the pictures before leaving the clinic.
- Many smart phones now have voice-memo functions, so this may be an option. Follow HIPAA regulations for any protected health information.
- Routinely ask or assess the reading abilities of families in a nonjudgmental way, offer assistance, and modify the care plan and health education as needed. Color-coding inhalers with stickers or pictures, for example, can be helpful. Similarly, be aware that some people have adequate general literacy, but poor health literacy (i.e., they lack familiarity with health-related concepts, terms, and practices).

## PHYSICAL EXAM

### General

Use every patient visit as an opportunity for a general physical exam that includes assessment of the lungs, skin, height, weight, head circumference (as applicable). Additionally, developmental surveillance and screening as recommended by standard clinical guidelines, such as American Academy of Pediatrics Bright Futures ([https://www.aap.org/en-us/Documents/periodicity\\_schedule.pdf](https://www.aap.org/en-us/Documents/periodicity_schedule.pdf)) and Early and Periodic Screening, Diagnosis and Treatment services, (<http://www.cms.hhs.gov/MedicaidEarlyPeriodicScrn/>), should be performed. ***This may be your only contact with the patient; many children experiencing homelessness rarely see a primary care provider because of transportation issues and limited access to health care.***

## **DIAGNOSTIC TESTS**

### **Spirometry**

Spirometry is the recommended tool for diagnosis and can be helpful in assessing reversible airway obstruction, especially where the diagnosis is not clear, or symptoms are difficult to reproduce, such as with exercise-induced asthma. If spirometry is not available, do not delay treatment; treat empirically based on the history and physical exam. If available, perform spirometry at the initial visit, and on follow up as needed. Consider referral to pulmonology for severe asthmatics, but assess your patients' transportation or other access barriers to specialty care.

### **Allergy Testing**

Testing should be considered when available, to identify any allergens that trigger the child's asthma symptoms. The high rate of asthma among children experiencing homelessness is thought to be related, in part, to the presence of mold, animal dander, dust, cockroaches, and cigarette smoke in shelters, or other challenging living situations. Families experiencing homelessness may have less control over their environments than housed families. Children with unexplained, severe, or difficult to control asthma symptoms should be referred for allergy testing. As above, when referring to a specialist, assess the patient's transportation limitations and other access barriers to care.

### **Purified Protein Derivative**

Perform TB skin testing/screening (purified protein derivative/interferon gamma-release assay), which is often required for admission to shelters, recognizing the increased risk for exposure to TB in children experiencing homelessness.

# *Plan and Management*

## **EDUCATION, SELF-MANAGEMENT**

For information on priorities for allergen avoidance in patients with asthma, see the appendix.

### **Classification**

Utilizing the patient history, NHLBI guidelines classify both the severity of episodes and the patient's asthma control. Use the stepwise guide to drive medication management. Link to NHLBI website: <https://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines>.

### **Anti-inflammatory Medications**

As per NHLBI guidelines, controller medications must be used for persistent asthma, and inhaled corticosteroids are recommended. For persistent asthmatics, daily use of inhaled corticosteroids is the first-line recommendation for controllers. Oral corticosteroids should only be given on an urgent and limited basis. Long-acting bronchodilators can be helpful in older children and adolescents, but should not be used for patients who, in the clinician's judgment, are at high risk for overusing them. Inhaled controllers treat any form of persistent asthma.

### **Inhalers**

When prescribing anti-inflammatory medications and bronchodilators, select metered-dose inhalers (MDIs) that can be used at the same times of day with the same number of inhalations for all medications prescribed. Make it simple.

### **Spacers**

For improved delivery of metered-dose medications, spacers should be given to younger children, depending on their ability to coordinate inhalations with actuations on MDIs. Spacers are available with masks for younger children and without for older children. If you are unable to obtain a spacer for a patient, one can be made from a one-liter soda bottle. Using a knife, cut a cross into the base of the bottle and fit the MDI snugly into this opening. The patient can inhale the medication from the neck of the bottle after activating the MDI. The improvised spacer can be easily replaced if lost or if the patient cannot carry a spacer with him or her. However, use of homemade spacers may be evidence of barriers to access in health.

### **Nebulizers**

Nebulizers are larger and less portable than inhalers and require electricity for operation; for these reasons, they are rarely the best option for a child requiring urgent medication administration. Evidence supports equal efficacy of MDI/spacer/mask use for younger children and babies, which may be a better option for patients who are unstably housed or in shelters. If a patient feels strongly that the child does better with a nebulizer machine, consider prescribing the MDI/mask/spacer

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

as well, so that the child will have access to rescue medicine when not at home. If a family uses a nebulizer, ensure they are aware of necessary cleaning and maintenance regimen for safe use.

**Medication Storage**

Discuss safe storage of medications. Each family member with asthma should possess and use only their own inhalers. As the provider for the child, you may need to refer asthmatic parents or caregivers to an appropriate adult provider and support access if they have had barriers in getting their own medicine.

**Medication Refills**

Assure that prescriptions are written with an adequate number of refills. Write on the prescription to dispense two inhalers at a time, so that the family can leave one with the school nurse. Ask where the family gets prescriptions filled and uncover any access barriers to obtaining medication. Prescription-assistance programs offered by many pharmaceutical companies, samples, and prescription-delivery programs may be helpful. If prescription delivery services are not already available in your area, consider talking to a local pharmacy about collaborating to help reach their customers, or use a pharmacy that reminds patients about refills and delivers medication. Monitor the prescription refill rate to ensure that medications are used at proper intervals, not over- or under-utilized by an unsupervised child or adolescent or shared/misused by other people. Be aware that medications may be obtained from multiple facilities, such as storefront clinics, outreach programs, or ERs. This may lead to a proliferation of multiple medications that can have life-threatening interactions as well as prescribing of ineffective medications (such as Albuterol syrup). Also, acute care facilities may be reluctant to prescribe a controller medication leading to inadequate treatment of persistent asthma.

**Immunizations**

Keep all immunizations up to date according to standard clinical guidelines ([www.aafp.org/x7666.xml](http://www.aafp.org/x7666.xml)). Ensure that children experiencing homelessness and their family members are given the influenza vaccine each fall. All healthy children under 24 months of age and children under 60 months of age with high-risk conditions such as asthma (or other chronic pulmonary, cardiac, or renal disease) should also receive the pneumococcal conjugate vaccine, especially if taking high-dose oral corticosteroid medications. The McKinney-Vento Homeless Assistance Act of 1987 also stipulates that homeless children cannot be excluded from school because of lack of immunization records. In addition to vaccinating the child, it is useful to vaccinate all family members against the flu to prevent transmission within the household and to help prevent transmission within the shelter. Many parents have concerns about the flu vaccine, many of which based upon erroneous information. It is important that clinicians present the need for vaccinations in a very positive light to balance the negative information that a parent may be hearing.

# MEDICATIONS

## Asthma Action Plans

Work with the parent and child to develop an appropriate treatment plan. The patient and family are the experts and should be recognized as partners, not students. Treatment should be a shared endeavor, and cultural humility must be displayed. Use appropriate language, and reinforce with written action plans containing pictures, etc., as necessary. Wallet-sized instruction cards and inhaler-labeling stickers can be helpful. Magnets to encourage posting of action plans in the home can be helpful, and copies for school and all caregivers are critical.

## School Medication Administration Forms

These forms (often referred to as MAFs or 504 forms) are required to be on file in a child's school to allow the use of rescue inhalers. Ensure that the family has a completed form for medication use at their school. Ensure that, in addition to a rescue inhaler for use at home, the child has a rescue inhaler to leave with the school nurse or in his or her backpack, as appropriate. To facilitate this, specify the distribution of two rescue inhalers at a time on the prescription for the pharmacy. It is critical that families understand that without the appropriate paperwork, the school will be unable to give the child emergency medication, even in a severe exacerbation.

## School-based Asthma Controller Management

School-based management of controller medications is an emerging approach that may be appropriate for some homeless patients. Research has demonstrated a decrease in asthma symptoms and an increase in school attendance with school-based programs (Halterman et al., 2004; Noreen et al., 2004). With appropriate paperwork and clinical guidance, some school nurses are authorized to dispense a prescribed controller medication once or twice daily at school. Though the treatment is only available five days a week, this may be a useful strategy for caregivers struggling to consistently ensure the child is taking a needed controller medication on a daily basis.

## Educational Delays

Recognize that uncontrolled asthma frequently results in loss of sleep, causing fatigue that interferes with learning, missed school days, and educational setbacks (Mitchell et al., 2005). Monitor school attendance and work with the patient, family, and school to maintain good asthma control. Work with school nurses to assure that barriers to care are addressed. Collaboration with the school nurse can be a great benefit to the child and the school. Find out whether the child's school has a school-based clinic.

## Living conditions

Explain to the parent/caregiver how environmental conditions, like exposure to cigarette smoke, can worsen asthma symptoms.

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

- Suggest ways to minimize the child's exposure to secondhand smoke; encourage smoking cessation or, at minimum, smoking outdoors and changing clothes before contact with the child, if possible.
- Explain that cockroaches are also a common trigger of asthma symptoms. Insecticidal baits are readily available and are the most effective strategy for eliminating infestations. Insecticidal sprays are much less effective. You may also be able to assist by writing a letter to the shelter requesting pest management when needed.
- Eliminating reservoirs of house dust mites is ineffective at reducing symptoms and does not need to be recommended.
- Mattress and pillow covers are unhelpful in controlling asthma symptoms and should not be recommended.
- Advise parents to damp dust when the child is not in the room and avoid exposing the child to household cleaners or vacuuming when the asthmatic child is present. The child should not be in the house within 30 minutes of the cleaning.

**Symptoms**

Educate both the patient and parent/guardian about signs and symptoms of asthma exacerbations, such as nighttime/early morning cough, post-tussive emesis, shortness of breath (only able to talk in short sentences), and wheezing. Family members losing sleep because a child is coughing most of the night and missed school and days of work are also important signs that the asthma is not well-controlled. Audible wheezing and shortness of breath are late signs. Teach the child to recognize his or her own symptoms. Help families learn to recognize symptoms, implement the asthma action plan, and contact you early on, instead of waiting until the child has a severe attack that requires an ER visit or hospitalization. To facilitate this, ensure families have a phone number to reach a clinician, especially after hours. This will improve care, relieve anxiety, and divert unnecessary ER use as well. It is also important that children with EIA appropriately treat this condition rather than excuse themselves from gym and other forms of physical activity that are so crucial for a child's health and well-being.

**Exercise**

Exercise is important for asthmatic children. Good asthma control should allow children to exercise and participate in activities without inducing symptoms. Help create this goal and expectation with your patients. If exercise is a trigger for the child, incorporate reliever use prior to exercise, as per NHLBI guidelines for exercise-induced asthma. Obtaining exercise may be a challenge because of limited space or safety concerns for some families in shelters. Help families to plan exercise and incorporate it into their routines, as possible.

**Proper Equipment Use**

Demonstrate to patients/guardian how to use a metered dose inhaler, dry powder inhaler, spacer, or nebulizer with face mask for an infant or younger child, as appropriate. Stickers can help families differentiate between their controller and their reliever. Have the child demonstrate inhaler technique during clinic visits, as

this is important to optimal medication delivery. Document training and demonstration of correct use of inhalers and spacers and ensure that the child has access to both. Have replacement filters for the nebulizer available.

### **Cleaning Nebulizers and Spacers**

Teach parents/guardians how to cleanse nebulizers and spacers properly, using a 1:1 solution of vinegar and water. Instruct them to take nebulizers and spacers apart, rinse in solution, and dry rather than leaving them on the floor. Give them a bottle of vinegar or make it available in shelters, as homeless families may have difficulty obtaining vinegar on their own.

### **Educational Materials**

Make sure the patient/parent/guardian can read and understand any written materials you provide (Klass, 2007). Ask simple questions to assess their understanding. Use existing resources for patient education materials (e.g., EPR 2007, Sec. 3, Comp. 2, 30–31, 36–38) or develop your own that are appropriate to your patients' literacy levels and primary language. In general, written patient education materials should be at the fourth-grade reading level or lower.

### **Education of Service Providers**

Encourage improvements in places where children experiencing homelessness live, receive child care, and attend school. Educate shelter staff about controlling environmental conditions that exacerbate asthma by prohibiting smoking in shelters; repairing leaking faucets and maintaining humidity below 50% to reduce proliferation of mold; and sealing doors to keep out cockroaches, rodents, and other vermin. Educate staff at child-care centers and schools about how to recognize asthma attacks and how to help children with asthma to avoid exacerbations and cope with stresses associated with homelessness.

### **Extended clinic hours**

Accessible clinic times, such as evenings and weekends, are essential for parents/guardians who cannot take off from work to attend daytime clinic appointments without risking their jobs. Inform them about accessible appointment, walk-in, as well as phone support both during clinic hours and when the clinic is closed. It is important that any clinic providing health care for children offer all of these options. Be sure that your patients understand that you are their first line of support unless it is a life-threatening situation. This can help limit unnecessary ER use. Parents may not have had previous experience with an on-call service and might benefit from an explanation of its use.

### **Written Log**

If a child's asthma is difficult to control, consider asking the parent to keep a log of the child's asthma symptoms and record what seems to make them worse. If providers can give families a log book or notebook, it can facilitate and encourage the logging of symptoms.

### **Prevention**

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

Make the parent/guardian aware of increased risks when a child with asthma is exposed to people with respiratory infections (colds, flu). Explain that nasal discharge is extremely contagious and that infectious organisms can survive up to 6 hours on nonporous surfaces. Encourage frequent handwashing by caretakers of children. If possible, minimize the use of antibacterial soaps and hand sanitizers, which may increase bacterial resistance. Encourage covering coughs/sneezes with the crook of the elbow rather than the hand. Strongly encourage an annual flu shot and explain the difference between a cold and the flu. Explore options for pest control, including Integrated Pest Management (IPM), which provides control without toxic chemicals. Shelters should offer this option. Families in private housing may need to pay for this themselves, which may limit its use. Be aware of any community-based asthma programs that offer integrated services; education, home visits, environmental assessment, IPM, and legal support.

**Patient Advocacy**

If shelter or living conditions that are outside of the family's control are exacerbating the child's asthma, find out what you can do to help. A medical-legal partnership may help. A letter from you may allow a family to be moved to a more appropriate shelter without the mice, cockroaches, mold, or other contributing factors. Because smoking is an extremely common trigger, work with local shelters to encourage a smoking ban inside and around living areas, if not already in place (Buu, 2014).

**Reflection Questions**

At the end of every clinic visit, ask the patient/parent/guardian, "Is there anything we talked about today that is unclear? Is there anything in the plan of care that will be difficult for you to do?" Asthma management is complex and usually requires multiple health education sessions. Having the family repeat back what you discussed can be a way to reinforce the plan.

## **ASSOCIATED PROBLEMS/COMPLICATIONS**

**Uncoordinated Care**

Children experiencing homelessness typically see many different providers and require a variety of medical and social services. For this reason, they need a "medical home"—that is, a regular source of primary care and a primary care provider to coordinate their health care. Unstably housed families may also need additional support to manage any referrals and may need transportation assistance to be able to attend appointments. Care coordination can be a critical support to ensure access to necessary services and to reduce redundancy. A child may be eligible for a Children's Medical Home, which can provide care coordination for children with chronic illness. Some families may be eligible for nonemergency medical transport through Medicaid for pre-scheduled services.

**Unable to Reach for Follow-up**

Patients experiencing homelessness are often transient, and follow-up can be difficult. Establish systems for follow-up, such as a monthly check-in file on high-risk patients. Most electronic medical records have ALERT sections as well as RECALL features to help track follow-up. Establish relationships with shelter staff who may be able to tell you where the family can be reached if they have left the shelter. Families experiencing homelessness change phone numbers frequently or have inconsistent access to telephone service due to limited call minutes. When possible, obtain an appropriate secondary contact number. Look into alternative means of contact, e.g., text messaging or emails. When appropriate, add a relative or friend who is more stably housed to contact as a back-up but ensure that you always appropriately protect confidential patient information. Discuss with the patient the most reliable source of contact.

### **Financial Barriers**

Most children experiencing homelessness are eligible for Medicaid or SCHIP, but many are not enrolled. Both programs provide coverage for pharmaceuticals and medical supplies. Lack of health insurance and required co-payments for prescription drugs limit families experiencing homelessness's access to treatment. Provide assistance with applications for entitlements (SSI/SSDI, Medicaid/SCHIP, Food Stamps, WIC Food and Nutrition program). If the patient does not qualify for public health insurance, consider using the U.S. Department of Health and Human Services' 340B Pharmaceutical Discount program (<http://www.hrsa.gov/opa/>), if eligible or pharmaceutical companies' patient assistance programs for low-income individuals. Free medication samples can also be used, but these may not be available on a continuing basis. Consider using manufacturer-sponsored patient-assistance programs or gift cards to help offset costs of humidifiers, OTC medications, and other items useful for asthma management.

### **Loss of Equipment and Medications**

Medications, inhalers, spacers, PFMs, and nebulizers are easily lost, stolen, or damaged. Discuss safe storage options along with proper equipment use and spacers with the family and have them demonstrate use at each visit. Help arrange for safe storage of equipment and medications, if necessary.

### **Family Stress**

Social or family stress can exacerbate asthma and threaten family relationships. A child with a chronic illness presents another source of stress for a family already dealing with the highly stressful experience of homelessness. Help alleviate stress by facilitating access to stable housing and supportive services and coordinating with childcare centers and schools. Offer stress management support for the child and the caregiver.

## **FOLLOW-UP**

### **Frequency**

Encourage the parent/guardian to bring the child back to the clinic within 3–7 days of the initial visit and to bring all asthma and other medications to every visit. If spirometry is available and was done at the initial visit, repeat spirometry testing at the follow-up visit. A visual demonstration of improvement in the child’s pulmonary function may help motivate the child and parent/guardian to continue the preventive regimen.

### **Other Providers**

Contact any other medical providers the patient sees regularly; inform them about the care you have provided, and with the parent or guardian’s permission describe the child’s current condition and living situation.

### **Referrals**

Consider referral to a pulmonologist for any case of persistent asthma and to an allergist for cases where an allergen is a potential precipitant. Visiting Nurse Services can be very helpful in providing home visits for children that have been recently hospitalized or visited the ER. They can ensure that a patient has their medication, understands its use, and is taking their medication properly. Refer the family to a mental health professional for psychological or social problems, if needed. Explore options for temporary placement of children if the parent or caregiver needs inpatient care or is overly stressed—for example, through foster care agencies, medical respite programs, or other family members. Explore the complementary resources in your area. Assess and address transportation and other access barriers when making referrals.

### **School Attendance**

Ask about missed school days and coordinate services with the patient’s school to limit missed school due to illness or medical appointments. Ensure that patients have appropriate paperwork to attend school and receive emergency medication, as discussed above.

### **Outreach**

Connect with homeless outreach programs, homeless health care providers, local coalitions who provide services to individuals and families experiencing homelessness, or other advocates for underserved populations in your community. For information about Health Care for the Homeless projects in your area, see <https://www.nhchc.org/resources/clinical/tools-and-support/outreach/>. Early Intervention services are available to many children who are homeless. These services, often provided in family shelters, may include education and referrals to meet the child’s medical needs.<sup>2</sup> Identify advocates in your community to help families who are unstably housed with medical, legal, and housing issues.

---

<sup>2</sup> The Individuals with Disabilities Education Act (IDEA) provides funding to states to provide early intervention services for children from birth to 3 years of age with developmental delays and disabilities.

**In closing:** We applaud you for your commitment to providing high-quality health care for homeless individuals and families struggling with asthma. Your patients' needs can be overwhelming, and often it feels like you can never do enough. Do make an effort to establish and access your own support systems, and give yourself the care and breathing space that you need to avoid burnout and compassion fatigue. Your employing institution or local professional association may have support or resources.<sup>3</sup>

---

Early intervention services are provided based on the presence of developmental delay or a diagnosed physical or mental condition associated with developmental delay—defined as a documented delay in cognitive, communicative, physical, social, emotional, or adaptive development, with the amount of delay required for eligibility defined by the individual states (FPG Child Development Institute, 2007: <http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED496637>). To find your local Parent Center to access Early Childhood Intervention Services, visit: <http://www.parentcenterhub.org/find-your-parent-center/>.

<sup>3</sup> For more information on physician burnout, see <https://www.thehappy.md.com/blog/bid/290755/physician-burnout-the-three-symptoms-three-phases-and-three-cures>.

## **APPENDIX**

### Priorities for Allergen Avoidance in Patients with Asthma

<b>Allergen</b>	<b>Avoidance technique</b>	<b>Effect</b>	<b>Reference</b>
Cockroach	Insecticidal baits	Improves asthma symptoms, lung function, hospitalizations in children (adults not studied)	Rabito, 2017
Mouse/rat	Integrated pest management	Less missed school, sleep disruption in children (adults not studied)	Pongracic, 2008
Mold/moisture	Repair of leaks/moisture reduction	Improvement in asthma for adults. Benefits not as clear in children	Sauni, 2015
House dust mite	Bed/pillow encasements	Does not help in children or adults	Arroyave, 2014 Gøtzsche, 2008

## PRIMARY SOURCE

National Asthma Education and Prevention Program (NAEPP)/National Heart, Lung & Blood Institute (NHLBI)/NIH (2007). Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3):

<http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>

## REFERENCES

- Arroyave, W. D., Rabito, F. A., Carlson, J. C., Friedman, E. E., & Stinebaugh, S. J. (2014). Impermeable dust mite covers in the primary and tertiary prevention of allergic disease: a meta-analysis. *Annals of Allergy, Asthma & Immunology*, 112(3):237-48.
- Asthma and Allergy Foundation of America (2015, August). *Asthma facts and figures*. Retrieved from <http://www.aafa.org/page/asthma-facts.aspx>
- Akinbami, L. J., & Schoendorf, K. C. (2002). Trends in childhood asthma: Prevalence, health care utilization, and mortality. *Pediatrics*, 110(2), 315–322. doi:10.1542/peds.110.2.315
- Buu, M. C., Carter, L., Bruce, J. S., Baca, E., Greenberg, B. & Chamberlain, L. J. (2014). Asthma, tobacco smoke and the indoor environment: A qualitative study of sheltered homeless families. *Journal of Asthma*, 51(2), 142–148.
- Centers for Disease Control and Prevention (2011, May 03). *Asthma in the US*. Retrieved from <https://www.cdc.gov/vitalsigns/asthma/>
- Centers for Disease Control and Prevention (2017, March 31). *Asthma facts*. Retrieved from <https://www.cdc.gov/nchs/fastats/asthma.htm>
- Centers for Disease Control and Prevention (2016, December 01). Current cigarette smoking among adults in the United States. Retrieved from [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/adult\\_data/cig\\_smoking/](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/)
- Centers for Disease Control and Prevention (2007, Oct. 19). National surveillance for asthma—United States, 1980–2004. *Morbidity and Mortality Weekly Report* 56(SS08); 1–14; 18–54. <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5608a1.htm>
- Conn, K. M., Halterman, J. S., Lynch, K., & Cabana, M. (Sept. 2007). The impact of parent’s medication beliefs on asthma management. *Pediatrics*, 120(3), e521–e526 (doi:10.1542/peds.2006–3023). <http://pediatrics.aappublications.org/cgi/content/abstract/120/3/e521>
- Connor, S. E., Cook, R. L., Herbert, M. I., Neal, S. M., & Williams, J. T. (2002, May). Smoking cessation in a homeless population: There is a will, but is there a way? *Journal of General Internal Medicine*, 17(5), 396–372.
- Cutuli, J. J., Herbers, J. E., Rinaldi, M., Masten, A. S., & Oberg, C. N. (2010). Asthma and behavior in homeless 4-7 year olds. *Pediatrics*, 125, 144–51
- Cutuli, J. J., Ahumada, S., Herbers, J., LaFavor, T., Masten, S., & Oberg, C. N. (2016). Adversity and children experiencing family homelessness: Implications for health. *Journal of Children and Poverty*, 1–15.
- Cutuli, J. J., Herbers, J. E., Lafavor, T. L., Ahumada, S. M., Masten, A. S., & Oberg, C. N. (2014). Asthma and adaptive functioning among homeless kindergarten-aged

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

- children in emergency housing. *Journal of Health Care for the Poor and Underserved*, 25(2), 717.
- Duarte, M., & Camargos, P. (2002). Efficacy and safety of a home-made non-valved spacer for bronchodilator therapy in acute asthma. *Acta Paediatrica*, 91(9), 909–913.
- Gøtzsche, P. C., & Johansen, H. K. (2008) House dust mite control measures for asthma. *Cochrane Database of Systematic Reviews*, 2008(2):CD001187.
- Grant, R., Bowen, S., McLean, D. E., Berman, D., Redlener, K., & Redlener, I. (2006). Asthma among homeless children in New York City: An update. *American Journal of Public Health*, 97(3), 448–450.  
<http://www.ajph.org/cgi/content/abstract/95/2/245>
- Halterman, J. S., Szilagyi, P. G., Yoos, H. L., Conn, K.M., Kaczorowski, J.M., Holzhauser, R.J., . . . McConnochie, K.M. (2004) Benefits of a school-based asthma treatment program in the absence of secondhand smoke exposure: results of a randomized clinical trial. *Archives of Pediatrics & Adolescent Medicine*, 158, 460–467
- Klass, P. (2007). When paper is the enemy. *Health Affairs*. 26(2), 515–519.  
[http://www.medscape.com/viewarticle/553585\\_print](http://www.medscape.com/viewarticle/553585_print)
- Liza, P. (2016). *Not reaching the door: Homeless students face many hurdles on the way to school (Rep.)*. New York, NY: New York City Independent Budget Office.
- McLean, D. E., Bowen, S., Drezner, K., Rowe, A., Sherman, P., Schroeder, S., . . . Redlener, I. (2004, March). Asthma among homeless children: Undercounting and undertreating the underserved; *Archives of Pediatrics & Adolescent Medicine*, 158(3), 244–249.
- Mitchell, D. K., Adams, S. K., & Murdock, K. K. (2005). Associations among risk factors, individual resources, and indices of school-related asthma morbidity in urban, school-aged children: A pilot study. *Journal of School Health*, 75: 375–383.
- National Heart, Lung, and Blood Institute (2014, August 4). How is asthma treated and controlled? Retrieved from <https://www.nhlbi.nih.gov/health/health-topics/topics/asthma/treatment>
- Noreen, M., Brown, R., Joseph, C. L. M., Anderson, E. A., Liu, M., & Valerio, M. A. (2004). Effects of a comprehensive school-based asthma program on symptoms, parent management, grades and absenteeism. *Chest*, 125(5), 1,674–1,679
- Okuyemi, K., Caldwell, A., Thomas, J., Born, W., Richter, K., Nollen, N., Braunstein, K., & Ahluwalia, J. (April 2006). Homelessness and smoking cessation: Insights from focus groups. *Nicotine & Tobacco Research*, 8(2), 287–296.
- Perzanowski, M. (2017, April). Asthma Interventions. Lecture presented at Child Public Health Lecture in Mailman School of Public Health, New York.
- Pongracic, J. A., Visness, C. M., Gruchalla, R. S., Evans, R. 3rd, & Mitchell, H. E. (2008). Effect of mouse allergen and rodent environmental intervention on asthma in inner-city children. *Annals of Allergy, Asthma & Immunology*, 101(1):35-41.
- Rabito, F. A., Carlson, J. C., He, H., Werthmann, D., & Schal, C. (2017). A single intervention for cockroach control reduces cockroach exposure and asthma morbidity in children. *Journal of Allergy and Clinical Immunology*, 140(2): 565-570.
- Sauni, R., Verbeek, J. H., Uitti, J., Jauhiainen, M., Kreiss, K., & Sigsgaard, T. (2015) Remediating buildings damaged by dampness and mould for preventing or

- reducing respiratory tract symptoms, infections and asthma. *Cochrane Database of Systematic Reviews*, 2015(2):CD007897.
- Shelley, D., Cantrell, J., Warn, D., & Wong, S. (2010). Smoking cessation among sheltered homeless: a pilot. *American Journal of Health Behavior*, 34(5): 544-552.
- Sleath, B. L., Jackson, E., Thomas, K. C., Galloway, J., Dumain, L., Thorpe, J., . . . Morrisey, J. (2006). Literacy and perceived barriers to medication taking among homeless mothers and their children. *American Journal of Health-System Pharmacy*, 63(4), 346–51.  
<http://www.medscape.com/medline/abstract/16452520?prt=true>
- Smart, B. A. (Aug. 2005). Asthma among homeless children: Undercounting and undertreating the underserved. *Pediatrics*, 116(2), 560.  
<http://pediatrics.aappublications.org/cgi/reprint/116/2/S1/560>
- Snyder, L. D., & Eisner, M. D. (2004). Obstructive lung disease among the urban homeless. *Chest*, 125, 1,719–1,725.  
<http://chestjournal.org/cgi/content/abstract/125/5/1719>
- Tsai, J., & Rosenheck, R. A. (2012). Smoking among chronically homeless adults: Prevalence and correlates. *Psychiatric Services*, 63(6), 569–576.  
doi:10.1176/appi.ps.201100398
- Zar, H. J., Asmus, M. J., & Weinberg, E.G. (June 2002). A 500-ml plastic bottle: An effective spacer for children with asthma. *Pediatric Allergy & Immunology*, 13(3), 217–222.

## OTHER RESOURCES

- American Academy of Allergy, Asthma & Immunology. Pediatric Asthma: Promoting Best Practices.  
<http://www.aaaai.org/members/resources/initiatives/pediatricasthmaguidelines/copyright.stm>
- American Academy of Pediatrics (AAP), Committee on Infectious Diseases (2000, August). Policy statement: Recommendations for the prevention of pneumococcal infections, including the use of pneumococcal conjugate vaccine (Prevnar), polysaccharide vaccine and antibiotic prophylaxis (RE9960). *Pediatrics* 106(2), 362–366.
- Centers for Disease Control and Prevention (2017, February 23). *Early release of selected estimates based on data from the January–September 2016 national health interview survey*. Retrieved from  
<https://www.cdc.gov/nchs/nhis/releases/released201702.htm>
- Centers for Disease Control and Prevention, National Center for Health Statistics. (2006). *Health, United States, 2006 with Chartbook on Trends in the Health of Americans*. [http://www.cdc.gov/nchs/data/06.pdf](http://www.cdc.gov/nchs/data/hus/06.pdf)
- Centers for Disease Control and Prevention (2006, Sept. 22). Revised Recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *Morbidity and Mortality Weekly Report* 55(RR14), 1–17.  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm>

**ADAPTING YOUR PRACTICE:****Assessment and Treatment of People with Asthma Who Are Experiencing Homelessness**

- Gulliver, S. B., Kamholz, B. W., Helstrom, A. W. (Fall 2006). Smoking cessation and alcohol abstinence: What do the data tell us? National Institute on Alcohol Abuse and Alcoholism. Alcohol Research and Health. Retrieved from [http://pubs.niaaa.nih.gov/publications/arh\\_293/208-212.htm](http://pubs.niaaa.nih.gov/publications/arh_293/208-212.htm)
- Health Care for the Homeless Clinicians' Network (2000, December). Short of breath: A winter's tale of asthma, COPD & homelessness. *Healing Hands* 4(6), 1-2. <http://www.nhchc.org/Network/HealingHands/2000/December2000HealingHands.pdf>. <http://archpedi.ama-assn.org/cgi/reprint/158/3/244>
- Institute for Children and Poverty (2006). *Homeless in America part two: A statistical reader*. p. 8: <http://www.icpny.org/index.asp?CID=3>
- Kozyrskyj, A. L., Ernst, P., & Becker, A. B. (2007) Increased risk of childhood asthma from antibiotic use in early life. American College of Chest Physicians. *Chest*, 131(1), 753-1,759. <http://www.chestjournal.org/cgi/content/abstract/131/6/1753>
- Kraybill, K. (2006). Shelter health: Essentials of care for the people living in shelter. *About asthma*, 48-49. National Health Care for the Homeless Council. <https://www.nhchc.org/wp-content/uploads/2012/02/ShelterHealthGuide0506.pdf>
- Ma, C. T., Gee, L., & Kushel, M. B. (2008) Associations between housing instability and food insecurity with health care access in low-income children. *Ambulatory Pediatrics*, 8, 50-57
- McMurray-Avila, M. Organizing health services for homeless people, 2nd edition. (2001). National Health Care for the Homeless Council. Table of contents, introduction available at <http://www.nhchc.org/wp-content/uploads/2011/10/Pagesfrom2ndedition-101901.pdf>
- Morrison, S. (2007). Self-management support: Helping clients set goals to improve their health. National Health Care for the Homeless Council. <https://www.nhchc.org/wp-content/uploads/2011/09/SelfManagementSupport052907.pdf>
- National Health Care for the Homeless Council. (2005). *Health Care for the Homeless: Introduction & Outreach*. [DVD and user's guide.] To order: <http://www.nhchc.org/publications.html>
- Okuyemi, K., Thomas, J., Hall, S., Nollen, N., Richter, K., Jeffries, S., Caldwell, A., & Ahluwalia, J. (October 2006). Smoking cessation in homeless populations: A pilot clinical trial. *Nicotine & Tobacco Research*, 8(5), 689-699.
- President's Taskforce on Environmental Health Risk and Safety Risks to Children: Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities (2012, May). <https://www.epa.gov/>
- Rubin, B. K. (2004). What does it mean when a patient says, my asthma medication is not working? *Chest*, 126(3), 972-981. [http://journal.chestnet.org/article/S0012-3692\(15\)31244-7/fulltext](http://journal.chestnet.org/article/S0012-3692(15)31244-7/fulltext)
- Weinreb, L., Goldberg, R., Bassuk, E., & Perloff, J. (1998). Determinants of health and service use patterns in homeless and low-income housed children. *Pediatrics* 102, 554-562.
- Zerger, S. (2002). Chronic medical illness and homeless individuals: A preliminary review of the literature. National Health Care for the Homeless Council. [http://www.nhchc.org/Publications/literaturereview\\_chronicillness.pdf](http://www.nhchc.org/Publications/literaturereview_chronicillness.pdf)

## WEBSITES

American Academy of Allergy	<a href="http://www.aaaai.org/">www.aaaai.org/</a>
Asthma & Immunology American Academy of Family Physicians	<a href="http://www.aafp.org/">www.aafp.org/</a>
American Thoracic Society	<a href="http://www.thoracic.org/">www.thoracic.org/</a>
Center for Parent Information & Resources	<a href="http://www.parentcenterhub.org/">http://www.parentcenterhub.org/</a>
Asthma Action Plan—CDC	<a href="http://www.cdc.gov/asthma">www.cdc.gov/asthma</a>
Health Disparities Collaboratives	<a href="http://www.healthdisparities.net">www.healthdisparities.net</a>
Medicaid	<a href="http://www.medicaid.gov">www.medicaid.gov</a>
National Guideline Clearinghouse	<a href="http://www.guideline.gov">www.guideline.gov</a>
National Health Care for the Homeless Council; HCH Clinicians' Network	<a href="http://www.nhchc.org/">www.nhchc.org/</a>
National Heart, Lung and Blood Institute	<a href="http://www.nhlbi.nih.gov/index.htm">www.nhlbi.nih.gov/index.htm</a>
National Institutes of Health	<a href="http://www.nih.gov">www.nih.gov</a>
National Jewish Medical Research Center	<a href="http://www.nationaljewish.org">http://www.nationaljewish.org</a>
U.S. Dept. of Health & Human Services Tobacco Cessation	<a href="http://www.surgeongeneral.gov/tobacco/">www.surgeongeneral.gov/tobacco/</a>

### **ABOUT THE HCH CLINICIANS' NETWORK**

Founded in 1994, the Health Care for the Homeless Clinicians' Network is a national membership association that unites care providers from many disciplines who are committed to improving the health and quality of life of homeless people. The Network is engaged in a broad range of activities including publications, training, research and peer support. The network is operated by the National Health Care for the Homeless Council, and our efforts are supported by the Health Resources and Services Administration, the Substance Abuse and Mental Health Services Administration, and member dues. The Network is governed by a Steering Committee representing diverse community and professional interests.

To become a member or access materials, visit our website at <http://www.nhchc.org>.