

ADAPTING YOUR PRACTICE

*Treatment and Recommendations
for Homeless Patients
with Asthma*

Asthma



ADAPTING YOUR PRACTICE

Treatment and Recommendations for Homeless Patients with Asthma

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Health Care for the Homeless
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DISCLAIMER

The information and opinions expressed in this document are those of the Advisory Committee on Adapting Clinical Guidelines for Homeless Individuals with Asthma, not necessarily the views of the U. S. Department of Health and Human Services, the Health Resources and Services Administration, or the National Health Care for the Homeless Council, Inc.

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PREFACE

Clinicians practicing in Health Care for the Homeless (HCH) projects¹ and others who provide care to people who are homeless or at risk of homelessness routinely adapt their practice to foster better outcomes for these patients.

Standard clinical practice guidelines fail to take into consideration the special challenges faced by homeless patients 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 homeless, the HCH Clinicians' Network has made the adaptation of clinical practice guidelines for homeless patients 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 homeless. These recommended clinical practice adaptations were reviewed and revised in 2008 to assure their consistency with the 2007 NAEPP/NHLBI Expert Panel Report 3: *Guidelines for the Diagnosis and Management of Asthma* (EPR 2007) and with best practices in homeless health care.

We offer this second edition of *Adapting Your Practice: Treatment and Recommendations for Homeless Patients with Asthma* 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.

Patricia A. Post, MPA
Editor

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ADAPTING YOUR PRACTICE:

Treatment and Recommendations for Homeless Patients with Asthma

Asthma Care for Homeless Adults: Summary of Recommended Practice Adaptations

DIAGNOSIS & EVALUATION

History

- **Living conditions** – Elicit a description of where the patient sleeps, where medications and inhalers are stored, rules for medication use/storage if living in a shelter. Assess allergen exposure.
- **Working conditions** – Ask about occupational exposures that may contribute to asthma.
- **Symptoms** – Ask what causes / worsens asthma symptoms, if treatment is effective, if patient is awakened by dry cough, about frequency of inhaler use.
- **Functional impairment** – Determine patient’s activity level and relationship of activity to symptoms.
- **Prior diagnosis, treatment** – Ask when patient was diagnosed with asthma, number of ER visits, hospitalizations. Ask about adherence to prior treatment and what patient does to relieve asthma symptoms.
- **Inhaled substances** – Specify substances inhaled: tobacco, marijuana, cocaine, glue, heroin.
- **Treatment during incarceration** – If patient was recently incarcerated, ask about treatment during incarceration and if medications were returned on release.
- **Medical/ mental health history** – Ask about history of mental illness, tuberculosis, and HIV.
- **Prior providers** – Ask about other health care providers and where prescriptions were filled. Assess patient mobility and the likelihood of remaining in one place to work on asthma control.
- **Health insurance** – Ask whether patient has prescription drug coverage.
- **Literacy** – Assess patient’s ability to read instructions in English or their primary language.
- **Reliability** – Consider possibility that patient may give unreliable information about a history of asthma to obtain inhalers to sell or to enhance illicit drug effects.

- **Complexity** – Recognize that homeless patients’ complex health and social conditions complicate history taking, diagnosis, and treatment.
- **ER/ acute care visits** – Ask how and when patient uses emergency rooms, outreach sites, and other health care facilities to assess symptom control, treatment adequacy, and potential for primary care.

Physical examination

- **Nasal exam** – Assess for nasal inflammation or signs of chronic sinusitis secondary to drug inhalation, which may complicate asthma control.
- **Mental health status** – Assess for cognitive deficits, delusions, hallucinations, and signs and symptoms of psychoactive substance use that complicate treatment adherence.

Diagnostic tests

- **Spirometry** – Access to spirometry may be limited; history, physical examination, and peak flow measurement may be the only available options for diagnosis.
- **Tuberculin testing and chest X-ray** – Maintain a high index of suspicion for tuberculosis as an alternative or co-existing condition. Screen for tuberculosis with purified protein derivative testing; consider chest X-ray in immunosuppressed or symptomatic patients.
- **HIV test** – Offer where facilities, expertise, and support are available to provide HIV care.
- **Serologies or sputum cultures** – Consider other respiratory infections (histoplasmosis, coccidiomycosis) that cause chronic cough. Be alert to infections in region(s) where patient has lived.

Asthma Care for Homeless Adults: Summary of Recommended Practice Adaptations

PLAN & MANAGEMENT

Education, Self-Management

- **Inhaler use** – Ask patient to demonstrate at every visit. Demonstrate/explain correct use.
- **Spacers** – Toilet paper rolls, respiratory tubing, or plastic water bottles with a hole cut in the bottom may be used with inhalers as spacers.
- **Nebulizers** – Recognize that patients without health insurance usually cannot get nebulizers. Those who have nebulizers and live in shelters need designated space for storage and use.
- **Cleaning nebulizers & spacers** – Teach patient how to clean equipment with vinegar and water; provide vinegar.
- **Smoking** – Encourage cessation. Investigate providing pharmacologic aid through manufacturers' patient assistance programs. If patient is not ready to quit, use harm reduction approach of decreasing number of daily cigarettes.
- **Shelter staff** – Educate shelter staff about reducing asthma triggers such as mold, dust, chemicals, and secondhand smoke.
- **Patient goals** – Encourage patient to set own treatment goals.
- **Asthma action plan** – Use a symptom-based action plan if patient is unable to carry or use a peak flow meter. Provide a wallet-size written action plan appropriate to literacy level.
- **Assessment of understanding and ability to adhere** – Ask, “Was anything discussed today unclear? Will anything in this plan of care be difficult for you to do?”

Medications

- **Choice of Rx** – Use the simplest medical regimen available to patient.
- **Inhaled corticosteroids** – Discuss importance of controller medications at each visit, but realize homeless clients may value quick relief over prevention and may not use ICS.
- **Short-acting beta agonists** – Recognize potential for misuse and monitor number of inhalers used. Recognize that patients may be obtaining additional inhalers at emergency rooms, outreach sites, or other facilities.
- **Long-acting beta agonists** – Assess patient's ability to use these correctly; prescribe cautiously or not at all if they may be used for quick relief.

- **Dispensing inhalers** – Recognize that patients may not fill prescriptions; dispensing them on site is more effective.
- **Medication reconciliation** – Have patients bring their medications to each visit to identify drugs provided by other clinicians that may exacerbate asthma.

Associated problems, complications

- **Lost, stolen, abused medications** – Be aware that albuterol is used to enhance effects of cocaine and has high street value.
- **Financial barriers** – Help uninsured patients apply for SSI/ Medicaid or obtain medications through pharmaceutical discount programs (340B, manufacturer-sponsored patient assistance programs).
- **Transience** – Recognize that patients may seek care from more than one source and may not remain in one area, or may be intermittently incarcerated.
- **Functional impairments** – Evaluate for cognitive deficits secondary to substance use, mental illness, trauma, and/or developmental disability that complicate treatment.
- **Literacy/ language barriers** – Assess literacy tactfully; obtain or create educational materials appropriate to literacy levels and primary language, and assess understanding.
- **Misdiagnosis** – Recognize that patients may have been misdiagnosed with asthma during emergency room visits or by other care providers.

Follow-up

- **Regular follow-up** – Explain importance of regular care, explore barriers, and provide incentives to return.
- **Contact information** – Identify ways to contact the patient (case managers, cell phones, shelters, e-mail, voicemail services, outreach workers).
- **Medication control** – Identify ways patient can obtain medication refills before inhalers run out.
- **Outreach, case management** – Coordinate a plan of care with outreach workers and case managers.
- **Shelters** – Work with shelter staff to facilitate rescue care, store nebulizers, remind clients to take medication, provide smoke-free spaces, and decrease asthma triggers.

ADAPTING YOUR PRACTICE:

Treatment and Recommendations for Homeless Patients with Asthma

Asthma Care for Homeless Children: Summary of Recommended Practice Adaptations

DIAGNOSIS & EVALUATION

History

- **Housing & medical home** – At every visit, document housing status, living conditions, whether child has medical home, barriers to consistent treatment.
- **Environment** – Document environmental triggers that exacerbate asthma and whether there is a place to plug in a nebulizer.
- **Entitlements** – Ask whether patient has private or public health insurance (Medicaid/ SCHIP) and how family obtains medicine.
- **Special needs** – Ask if child has special needs, developmental delays.
- **Continuity of care** – Recommend one primary care provider to coordinate care; address any confusion about treatment information from prior providers.
- **Medical history** – Request medical records. Ask about current medication use/dosage/interval (especially controller use), hospitalizations, ICU stays, intubations, immunizations.
- **ER/ acute care visits** – Ask about emergency room and acute care facility visits to control asthma symptoms. Inquire about time of day and circumstances of acute visits, and if oral steroids were prescribed.
- **Family health/ stress** – Ask about family members' health and social problems. Help family prioritize needs, manage stress. Look for cues to abuse, since children with chronic illness are at higher risk for abuse.
- **Nutrition** – Ask where family gets food and what foods the child eats.

Physical Examination

- **General** – At every visit, perform general physical exam (lungs, skin, etc.) and developmental surveillance per standard clinical guidelines, recognizing that many homeless children rarely see a primary care provider due to mobility and limited access to health care.

Diagnostic tests

- **Spirometry** – Assess reversible airway obstruction, optimally at initial visit. If spirometry testing is unavailable, proceed with treatment on the basis of history and physical exam.
- **Peak flow** – Measure lung function routinely. Explore and address barriers to individual peak flow meter storage and use.

- **Allergy testing** – Refer child with unexplained, persistent asthma symptoms for allergy testing to help identify factors that trigger asthma exacerbations.
- **PPD** – Perform TB skin test, often required for admission to shelters.
- **HIV** – Test children with HIV-positive parent/ guardian if not already tested.

PLAN & MANAGEMENT

Education, Self-Management

- **Living, school, and care conditions** – Explain that exposure to respiratory infections, cigarette smoke and other environmental factors (cockroaches, dust, household cleaners, mice, mold) can worsen asthma symptoms. Work with staff in shelters, schools, and childcare centers to control these triggers.
- **Symptoms** – Teach parent/ guardian/ child to recognize asthma exacerbation: night-time/ early morning cough, post-tussive emesis, shortness of breath, wheezing. Promote preventive regimen.
- **Proper equipment use** – Teach patient/ parent/ guardian how to use metered dose inhaler, spacer, and nebulizer, if available, and evaluate use at every visit. Provide literacy and language appropriate written directions; provide written directions and replacement filters for nebulizer.
- **Cleaning nebulizers and spacers** – Explain to patient/ parent/ guardian: Take nebulizers and spacers apart; rinse using equal proportions of vinegar and water; dry. Provide vinegar if necessary.
- **Educational materials** – Assure that patient/ parent/ guardian can read and understand written instructions; assess understanding.
- **Extended clinic hours** – Provide walk-in, evening, and weekend access if possible; inform family how to access care during hours when clinic is closed.
- **Written log** – Provide a written log book to document asthma symptoms and possible exacerbating factors.
- **Action plans** – Provide oral and written explanations in language patient can understand, using graphics and easily stored wallet-size cards.
- **ER visits** – Advise parent/ guardian how to contact primary care provider prior to emergency room visits
- **Standard questions** – Ask, “Is anything we talked about unclear? Will anything in the plan of care be difficult for you to do?”

Asthma Care for Homeless Children: Summary of Recommended Practice Adaptations

PLAN & MANAGEMENT (continued):

Medications

- **Anti-inflammatory medications** – Strongly consider daily use of inhaled corticosteroids as first line controller medication. Oral corticosteroids may be given on an urgent and limited basis. Reserve long-acting drugs for children/ adolescents with adequate supervision, due to risk of overuse.
- **Inhalers** – Simplify care by selecting metered dose inhalers that can be used at the same time of day, with the same number of inhalations for all medications prescribed.
- **Spacers** – Use one-liter soda bottles as alternative to expensive, easily lost manufactured spacers.
- **Nebulizers** – Identify resources to replace lost nebulizers. Use premixed solution bullets to minimize dosage errors.
- **Medication storage** – Ask if shelter can store medications but make them immediately available when needed. Determine if powdered medications can be stored properly in a cool, dry place.
- **Medical refills** – Write prescriptions with an adequate number of refills. Monitor refill rate to assure that medications are not over- or under-utilized, recognizing that quick-relief inhalers may be diverted by family members or shelter residents to sell on the street or to enhance cocaine effects.

Associated problems, complications

- **Antibiotic use** – Recognize possible increased risk of asthma for infants treated with antibiotics; assure antibiotic treatment is warranted.
- **Financial barriers** – Lack of health coverage can present barrier to treatment; provide assistance with Medicaid/ SCHIP applications. Use pharmaceutical discount programs, manufacturer-sponsored patient assistance programs, and gift cards to offset costs of medication and equipment required for asthma care.
- **Familial stress** – Facilitate access to stable housing with supportive services and other resources to alleviate stress.

Follow-up

- **Medication assessment** – Instruct parent/ guardian to bring all of the patient's medications to each visit, including those prescribed or provided by other health care providers (emergency room, outreach clinics).
- **Entitlements** – Assist with application for all entitlements (Medicaid, SCHIP, SSI/SSDI, WIC, Food Stamps).
- **Referrals** – Refer to mental health professional, developmental clinic, or other available resources if there are patient or family problems that interfere with adherence to plan of care.
- **Contact information** – Document phone number of relative/ friend with stable address, family's cell phone number. Maintain contact with patient through shelters, childcare centers, schools.
- **School attendance** – Document missed school days; coordinate services with school.
- **Outreach** – Collaborate with outreach/ early intervention services and homeless advocates in your community.

INTRODUCTION

Asthma is a chronic inflammatory disease of the airways that has been on the rise for the past 40 years throughout the industrialized world. In the United States, the prevalence of asthma increased dramatically from 1980 until the late 1990s, and remains at historically high levels. At the time of the 2005 National Health Interview Survey, 7.6% of the total US population and 10.2% of those living below poverty reported current asthma, (CDC Oct. 2007, CDC 2005). Asthma prevalence rates are significantly higher among the urban poor, and higher still for homeless people (Zerger 2002). Heightened exposure to environmental pollutants and other allergens elevates their risk of asthma exacerbations. Restricted access to appropriate treatment increases their morbidity.

A homeless child is 3 to 6 times more likely to have asthma than the average American child. Nationwide, 20% of homeless children have asthma compared to approximately 9% of all US children (Institute for Children and Poverty 2005, CDC 2006). Several cities have reported prevalence rates of 30% or more among homeless children. A 1998–1999 study in New York City found that nearly 40% of homeless children in shelters suffered from asthma, and that over 90% of those with persistent asthma did not receive appropriate medical care (McLean et al. 2004). Between 1999 and 2002, asthma prevalence for homeless children in the New York City shelter system declined to 33% but remained higher than for any other documented pediatric population. Of children with a prior asthma diagnosis, 65% visited an emergency department at least once during the preceding year, and only 15% were taking appropriate asthma controller medications (Grant R et al. 2006). Children living in poorer neighborhoods have higher rates of hospitalization for asthma (McLean et al. 2004), which is often an indicator of inadequate preventive care.

Among the risk factors likely to contribute to high rates of asthma prevalence, severity, undertreatment, and emergency department use among homeless people are: fragmented care, no regular source of medical care, increased exposure to respiratory tract infections in congregate settings, high levels of allergen and air pollution exposure (including exposure to tobacco smoke), and psychosocial stressors such as trauma, mental illness, and cognitive impairment which can trigger and increase the severity of asthma (McLean et al. 2004).

The high prevalence of smoking among homeless people (approximately 70%, compared to about 25% of the general population) compounds their risk for airway hyperreactivity, an element of both asthma and chronic obstructive pulmonary disease (Okuyemi et al. April 2006, Snyder and Eisner 2004, CN 2000). Research supports the feasibility of smoking cessation interventions for homeless smokers, demonstrating promising effects of counseling (motivational interviewing) and nicotine replacement therapy in this population (Okuyemi et al. Oct. 2006, Conner et al. 2002). Persons in treatment programs for alcoholism or other substance use disorders may be erroneously told that trying to quit smoking may endanger their sobriety. Recent research indicates that smoking cessation does not increase risk of relapse for persons in recovery; it may even improve the likelihood of their maintaining sobriety (Gulliver et al. 2006).

Clinical practice guidelines for the treatment of asthma are fundamentally the same for both homeless and housed populations. Nevertheless, health care providers who serve homeless individuals must consider their living situation and co-occurring conditions in the plan of care. It is our expectation that simple adaptations of established guidelines will improve treatment

adherence and patient outcomes. The recommendations in this guide were compiled to assist clinicians who provide asthma care for homeless adults and children. Many of these clinicians are practicing in targeted Health Care for the Homeless programs. Any clinician, however, regardless of practice site, may have homeless patients in his or her practice.

The primary source for these recommendations is the 2007 NAEPP/NHLBI Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma. These guidelines recommend assessment of both impairment and risk measures in order to classify the patient's asthma severity and monitor asthma control. A follow-up assessment is recommended in 1-6 months, depending on the patient's asthma severity level and 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.

CASE STUDY: HOMELESS ADULT WITH ASTHMA

Clinical presentation: The patient is a 49-year-old African American male who complains of wheezing and breathing difficulty for the past two weeks. He has difficulty conversing, stopping frequently to cough or catch his breath. He reports he is short of breath with exertion and wheezes constantly, especially at night. His symptoms are aggravated with activity and at night when the temperature drops. He sleeps in a shelter under a fan. He says that his "arbitrol" inhaler helps the most to control his symptoms. He uses albuterol about 10–12 times per day, and a "green" inhaler two or three times a day. The patient states that he has had asthma "for years" but not as a child, and usually uses Primatene Mist if he can't get prescription inhalers. He was seen at the county hospital emergency room three days ago. He was given three inhalers but reports they were stolen yesterday while he was taking a shower at the mission. He denies fever or chills. He reports occasional chest pain but none now, a cough producing green "flame," cold symptoms, and a history of bronchitis and pneumonia. He uses a Primatene Mist inhaler repeatedly during the interview, spraying three rapid puffs into his mouth, then inhaling and exhaling quickly.

Social history/environment: Homeless for the past ten years, he lives in shelters and on the streets and eats at missions or shelters. He works occasionally as a day laborer and says he was on welfare but is now on "penalty" (disenrolled for noncompliance with program requirements). Currently he has no income; he states he is unable to work because of his asthma. He has a 10th grade education. He is single and not in a relationship. He has no children or record of military service.

Medical history: The patient reports he is allergic to penicillin (unknown reaction) and has seasonal allergies. He uses two or three inhalers — the albuterol inhaler plus a green and a white one. He does not know his personal best peak flow. He has been a tobacco smoker, one pack per day, for over 30 years. He also smokes crack cocaine daily. He reports no intravenous drug use but admits to consuming alcohol daily for "several" years. He has had hypertension for 10 years and was diagnosed with congestive heart failure three years ago. In addition to his "asthma pumps," he uses two "pressure pills:" a "water pill" and a "little blue pill." He has not had a flu shot and doesn't think he has had pneumococcal vaccine. He had a positive tuberculin test in the past and a chest X-ray negative for tuberculosis last year. He states no treatment was recommended; "I'm just allergic to the TB test."

In 1999, he was hospitalized for a myocardial infarction and pneumonia. He reports no other hospitalizations but has been to various emergency rooms for treatment of his asthma symptoms. He has used oral steroids in the past. He denies symptoms of gastroesophageal reflux disease. He denies depressed mood, hearing voices, anxiety, or other psychiatric or emotional problems but recalls one hospitalization because his "nerves were bad." He denies ever taking psychotropic drugs.

Physical examination: Height 72 inches, weight 225 pounds, BP 150/100, HR 92, RR 24, peak flow 200, 210, 170, with fair effort. He smells of tobacco and has a flat affect. His hygiene is poor; he wears several layers of dirty clothes. His psychiatric evaluation indicates no hallucinations or delusions; score of 52 on the Global Assessment Scale.* His teeth are in poor repair, with missing and carious teeth. His respiration is unlabored, without accessory use; inspiratory and expiratory wheezes are audible in all lung fields. Heart rate is regular, no S3, S4, or murmur. He has pitting edema about halfway up both lower legs.

Clinical assessment: Acute asthma/ respiratory distress, poorly controlled; homeless; moderate hypertension, uncontrolled, on unknown medications; history of cardiovascular disease; knowledge deficit related to medications; ineffective inhaler use; inhaler overuse; nicotine dependence; substance abuse, possible dependence; mental illness/ neurocognitive deficits; dental caries.

* The Global Assessment of Functioning (GAF) is a numeric scale (0 through 100) used to rate the social, occupational and psychological functioning of adults. A score of 51-60 indicates moderate symptoms or any moderate difficulty in social, occupational, or school functioning (DSM-IV-TR, page 32).

Adult Asthma

Diagnosis and Evaluation

HISTORY

- **Living conditions** – Ask the patient to describe where he or she sleeps. Many homeless people live in environments with asthma triggers, such as mold, dust mites, cockroach feces, animal dander, tobacco smoke, and air pollution. Ask where the patient stores belongings, medications and inhalers. If living in a shelter, ask about rules for medication use/storage. Ask about conditions at the shelter. Do guests sleep on the floor or on beds? Are conditions crowded or unsanitary? Are fans in use?
- **Working conditions** – Ask if and where the patient works; inquire about occupational exposures that may contribute to asthma, such as sweeping, cleaning, and exposure to cleaning solvents, insecticides, herbicides, and fumes. Ask what chores the patient is required to do that trigger or exacerbate symptoms.
- **Symptoms** – Ask what causes and worsens asthma symptoms, whether current treatment works, and if current living situation affects symptoms. Ask if the patient is awakened by a dry cough at night (a frequently overlooked symptom). Ask if he or she is using inhalers and, if so, frequency of use. It is helpful to ask how long a quick-relief inhaler lasts (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 one to two weeks, inconsistent with reported usage. Ask if the patient shares inhalers with others.
- **Functional impairment** – Ask specific questions to determine the patient’s activity level and the relationship of activity to symptoms. Ask if the patient does anything strenuous and if symptoms interfere with activities requiring physical exertion. Homeless people have to walk a lot and typically do jobs that require physical activity. Shelter accommodations or meal sites may require walking up multiple flights of stairs. It may be helpful to ask if symptoms interfere with “taking care of business.”
- **Prior diagnosis, treatment** – Ask when and how the patient was diagnosed with asthma. Ask about the number of emergency room visits, when the most recent ER visit occurred, and about prior hospitalizations. Patients may report they have asthma when in fact their symptoms are related to chronic obstructive pulmonary disease (COPD). Shortness of breath due to panic attacks may also be confused with asthma. Ask about adherence to prior treatment and what the patient does to relieve symptoms if a quick-relief inhaler is not available. Patients who report that opening a window, going outside, or turning on a fan relieves their symptoms may have panic attacks or anxiety rather than, or in addition to, asthma.
- **Inhaled substances** – Ask the patient to specify any inhaled substances, such as tobacco, marijuana, crack cocaine, or glue.
- **Treatment during incarceration** – Ask if the patient has been incarcerated recently, and if so, whether asthma was treated during incarceration and if medications were returned after release.

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- **Medical/mental health history**– Take a comprehensive medical history, including cardiac and mental health status and history of gastroesophageal reflux disorder (GERD). Ask whether the patient ever had tuberculosis or exposure to others with active tuberculosis. Ask when the last tuberculin skin test (purified protein derivative), chest X-ray, and Human Immunodeficiency Virus (HIV) tests were done. Ask about tuberculosis symptoms (prolonged cough, hemoptysis, fever, night sweats, weight loss), but realize that cough and weight loss occur frequently among homeless persons for other reasons. Recognize that incarceration, even for a short period of time, increases risk of tuberculosis exposure.
- **Prior and concurrent providers** – Inquire about other health care providers the patient has seen and whether he or she is currently receiving health care at the shelter or other outreach sites. Recognizing the mobility of this population, assess the likelihood that the patient will stay in one place long enough to work on better asthma control. Ask where the patient obtains medications. Pharmacies provide valuable information about providers and medications prescribed as well as the frequency of refills dispensed, but medications may also be dispensed directly by providers at outreach sites.
- **Health insurance** – Ask whether the patient has health insurance that covers prescriptions. Most homeless adults are uninsured or have insurance that does not pay for medications. This can present a serious barrier to treatment.
- **Literacy** – Assess the patient’s primary language, literacy level, and ability to read instructions. Patients who are illiterate may not volunteer this information (Klass 2007). Recognize that some patients may speak but not read English while being literate in another language.
- **Reliability** – Assess the reliability of information provided by the patient. Inhalers or other medications can be sold or traded, providing an incentive for some individuals to seek inhalers when they do not actually have asthma. Carefully worded questions elicit answers which will assist in identifying those seeking inhalers for recreational use. Ask, “How is your sleep?” rather than “Do you cough during the night?”
- **Complexity** – Acuity, multiplicity of health conditions, and sporadic follow-up of homeless patients complicate taking a good history and prioritizing treatment goals.
- **Emergency Room/ acute care visits** – Assess the patient’s use of hospital emergency rooms, urgent care clinics, and/or other clinics to help evaluate symptom control and adequate treatment. Establish relationships with local emergency rooms to facilitate communication.

PHYSICAL EXAMINATION

- **Forced expiration** – Take sufficient time for observation to assure accuracy and reproducibility of exam.
- **Other pulmonary disease** – Look for clubbed fingers and barrel chest as clues to pulmonary disease other than asthma. Bronchitis, emphysema, and/or tuberculosis, frequently seen in homeless patients, may mimic asthma symptoms.
- **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, since PFMs are expensive, easily lost, and require a high level of motivation to use. Recording results of serial PFM

measurements is impractical for many homeless people. Ask if the patient would find a PFM useful.

- **Nasal findings** - Inspect the nasal mucosa; chronic sinusitis or nasal inflammation/irritation due to drug inhalation may contribute to symptoms and complicate asthma control.
- **Mental health status** - Assess for cognitive deficits secondary to substance abuse, mental illness, trauma, and/or developmental delay that may compromise understanding and treatment adherence. 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

- **Spirometry, chest X-ray**- Although spirometry is recommended for diagnosis of asthma and chest X-ray may be desirable to evaluate for other pathology, many homeless patients do not have 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. 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.
- **PPD**- Screen for tuberculosis in patients with a chronic cough. A negative PPD does not rule out tuberculosis; obtain a chest X-ray for symptomatic patients, especially if they are HIV positive or otherwise immunosuppressed.
- **HIV test** - Optimally, offer testing in a setting where facilities, expertise, and support are available to provide HIV care.
- **Serologies or sputum cultures** - When indicated, consider respiratory infections that cause 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 coccidiomycosis in the Southwest and California. Homeless people may travel from region to region and may have recently come from an area of endemic disease.

Plan and Management

EDUCATION, SELF- MANAGEMENT

- **Inhaler use** – Ask the patient to demonstrate inhaler use at every visit; if incorrect, demonstrate correct use. Using street terminology to explain the correct method may be helpful; for instance, if the patient smokes marijuana or cocaine, compare inhaler use to “taking a big hit off a joint or crack pipe.” Make sure the patient understands how to distinguish different types of inhalers and how each should be used.
- **Spacers** – Many patients find spacers bulky, breakable, and difficult to carry. Seek alternative medication delivery modalities. Plastic water bottles with a hole cut in the bottom may be used as spacers; clients can discard these and make new ones as needed (Zarr, Asmus and Weinberg 2002; Duarte and Camargo 2002).
- **Nebulizers** – If used properly with inhalers, spacers can provide medication delivery equivalent to nebulizers. However, some patients require nebulizers for symptom relief. Health insurance coverage is generally necessary to obtain a nebulizer. 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/her own nebulizer and the clinic is readily accessible, as in a shelter-based clinic.
- **Cleaning nebulizers and spacers** – Teach the patient how to properly cleanse nebulizers and spacers with vinegar and water, in equal proportions. 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 homeless people may not be able to obtain vinegar.
- **Smoking** – Do not assume that homeless patients 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 him or her 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.
- **Educate shelter staff** – Inform staff about factors that trigger asthma symptoms and engage them in decreasing asthma triggers: limit residents’ exposure to dust and cleaning solutions, provide no-smoking areas, and inspect for and eradicate mold and pests. Offer smoking cessation intervention to shelter staff.
- **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.
- **Asthma action plan** – Ask the patient what he or she would do if an asthma attack did not respond to a rescue short-acting beta agonist. Provide guidance, preferably written, in language the patient can understand. Consider developing a symptom-based action plan (see EPR 2007, Sec. 3, Comp. 2, 25–27) for homeless patients 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. 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-size card.

- **Standard 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?”

MEDICATIONS

- **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 and duration of treatment.
- **Inhaled corticosteroids (ICS)** – There is strong evidence that inhaled corticosteroids improve long-term outcomes for persons with asthma (EPR 2007, 2002). Nevertheless, these anti-inflammatory medications are frequently underprescribed by practitioners and underused by patients. Prescribe controller medications according to standard clinical guidelines (EPR 2007, 2002, 1997), recognizing that homeless patients 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. Homeless patients may dislike ICS because some taste bad, 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 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. Offer alternative forms of treatment (nebulizers, if possible, or oral drugs) for patients who are misusing short-acting beta-agonists.
- **Long-acting beta-agonists** – Be cautious about prescribing long-acting beta-agonists because of the danger of overuse, which can happen inadvertently if multiple inhalers are confused. Be sure that the patient understands not to use this inhaler for rescue.
- **On-site provision** – Dispensing medications on site is more effective than sending homeless patients to the pharmacy with a prescription.
- **Medication storage** – Some controller medicines are dry powders that need to be stored in cool, dry places, a barrier to their use by some homeless people.
- **Medication reconciliation** – Ask patients to bring all medications to every visit, including those obtained from other providers, to facilitate identification of drugs which may exacerbate asthma (nonsteroidal anti-inflammatory medications, beta blockers) or have side effects that mimic asthma symptoms (angiotensin converting enzyme inhibitors).
- **Immunizations** – Influenza and pneumococcal disease can exacerbate asthma. Homeless people with asthma are especially vulnerable to these diseases, given their high risk for exposure to respiratory infections in congregate living situations. All asthma patients should be immunized against influenza annually. Asthma alone is not an indication for pneumococcal vaccine unless the patient is on oral steroids or also has COPD.

ASSOCIATED PROBLEMS/COMPLICATIONS

- **Lost, stolen, misused medications** – Recognize that albuterol is valuable on the street for enhancing a crack cocaine high; and medications are often lost or stolen, on the street or in shelters, or may be confiscated by law officers during a police stop or arrest.
- **Financial barriers** – Many homeless patients 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 US Department of Health and Human Services’ 340B Pharmaceutical Discount Program (<http://www.hrsa.gov/opa/>), state pharmaceutical assistance programs (SPAPS) (<http://www.ncsl.org/programs/health/drugaid.htm>), and pharmaceutical companies’ 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** – Homeless people are often mobile, compromising routine asthma management and making episodic, crisis care more likely. However, providers should not be discouraged by this, and should continue to educate homeless clients about asthma control.
- **Functional impairments** – Cognitive deficits secondary to substance abuse, mental illness, trauma, and/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.
- **Literacy/ language barriers** – Create a sensitive, “shame-free” environment in which individuals can feel comfortable revealing any difficulty they may have with reading. Assess literacy by encouraging the patient to read something for you. 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 or other site of care.
- **Treating GERD** – Although GERD can trigger asthma symptoms, it is challenging for homeless patients to control their diet and to change their sleeping position. It may be helpful to engage shelter and feeding program staff in assisting patients with GERD.
- **Transportation** – Lack of funds for transportation may compromise homeless patients' ability to keep follow-up appointments. Offering transportation passes or coordinating with outreach workers may be helpful.

FOLLOW-UP

- **Regular follow-up** – Routine follow-up is recommended for all asthma patients, but many homeless patients return only during crises or exacerbations. Explore barriers to follow-up with the patient. Explain the importance of routine follow-up and self care to prevent future crises. Consider providing incentives, such as food gift certificates, bus tokens, or toiletries, for keeping follow-up clinic appointments. Consider providing walk-in services.
- **Contact information** – At every visit, ask where the patient is staying and how he or she can be contacted (address, phone/cell phone number, e-mail address, emergency contact, case manager’s name and number, shelter phone number). If the patient is sleeping outdoors or in a vehicle, find out where outreach workers may be able to locate him or her.
- **Medication control** – Ask patients to return, even for brief follow-up, before their inhalers run out; this may minimize inhaler abuse that occurs with multiple authorized refills and decrease the use of OTC bronchodilators.
- **Outreach, case management** – Include medication adherence in the case management plan. Coordinate the plan of care with outreach workers, social workers, and case managers.
- **Shelters** – Establish rapport with shelter staff to facilitate rescue care; ask them to store nebulizers and remind clients to take medications. Assure shelter staff that this does not constitute “dispensing” medications. Urge shelters to provide smoke-free spaces, use allergen-impermeable mattress/pillow covers, launder bedding weekly in hot water (>140° F), repair dripping faucets, and keep humidity below 50% to reduce proliferation of vermin and molds.

CASE STUDY: HOMELESS CHILD WITH ASTHMA

Clinical Presentation: ND is a three-year old female who presents to the mobile medical van to have a WIC form completed, with the chief complaint of cough and runny nose for one week.

Social History: The patient has been residing in a homeless shelter for the past three months with her mother, older sister, and two brothers. The mother lost her apartment when the building where she lived was sold and she was unable to find another affordable apartment.

Medical History: The patient's birth history was unremarkable. She was born to a 26-year-old mother by normal, spontaneous vaginal delivery. Mild jaundice at birth required one day of phototherapy. The mother reports that ND was diagnosed with asthma one year ago following multiple visits to their primary care doctor and local emergency room for episodes of "fast breathing and coughing." ND was prescribed an "asthma pump" by her primary care doctor. Her mother says that she gives that to ND whenever her asthma "acts up"; sometimes she needs to give it two or three times in a day. During ND's last doctor visit she was prescribed an additional asthma pump; the mother cannot remember the name of the new medicine. Her doctor said ND should use the new pump every day. The mother did not fill the prescription because she thinks ND is too young to take any kind of daily medication. ND has had a total of 3 hospitalizations and 8 emergency room visits for asthma since her diagnosis. The mother reports ND's immunizations are up to date but lost her immunization record in the move to the shelter.

The mother was recently diagnosed with diabetes; she must take a pill every day and is not happy about it. She does not want her daughter to become dependent on medication like she is. ND's mother admits to being depressed. The loss of her apartment, a 30 pound weight gain in the past 4 months, and the diagnosis of diabetes have made her feel hopeless and constantly stressed. She feels that she is not able to spend as much time with her children since she entered the shelter system. She feels that she is letting her children down.

Physical exam: The physical exam is significant for a quiet and timid child with clear lungs on auscultation. There is mild nasal congestion. The rest of the exam is noncontributory. The child is developmentally appropriate for her age.

The mother is quite attentive to the child, and is concerned about her frequent trips to the ER for asthma. She is very interested in what you have to tell her about asthma and wants to have the needs of her other children attended to as well.

Pediatric Asthma

Diagnosis and Evaluation

HISTORY

- **Housing and medical home** – Ask specific questions to determine whether the family is homeless, such as: “Where do you live? Who lives where you live? How long have you lived there? Where did you live before?” At every visit, document the patient’s housing status and living conditions, list barriers to consistent treatment, and ask if the child has a “medical home” (regular source of primary care). If so, ask whether access to this primary care provider is limited by a change in health insurance, lack of transportation, or lack of accessible hours. Ask questions in several different ways to elicit desired information.
- **Environment** – Clearly document environmental factors that may trigger or exacerbate the patient’s asthma. Ask the family about mold, dust, cockroaches, mice, and proximity to tunnels and busy highways in the place where they live. If the family lives in a shelter, ask for a description. Basement shelters have more mold. Ask whether any member of the household smokes cigarettes, marijuana, crack cocaine or other substances. Ask whether there is somewhere they can plug in a nebulizer. If the patient has been seen before, ascertain whether environmental conditions have improved or deteriorated.
- **Viral URIs** –Viral upper respiratory infections, common among young children, are the most common trigger of asthma exacerbations, and can cause wheezing independently of asthma. Ask if the patient lives in a shelter or spends time near others who are sick. Living in shelters increases risk of exposure to URIs.
- **Entitlements** – Explore the child’s or family’s access to entitlements, including Medicaid, State Children’s Health Insurance Program (SCHIP), or Supplemental Security Income (SSI), to determine possible eligibility for health insurance and financial assistance with permanent housing. In many states, most homeless children are eligible for Medicaid or SCHIP if they are US citizens or in the US legally. Ask how the family obtains medicine.
- **Special needs** – Assess the patient’s special needs, including possible developmental delays.
- **Continuity of care** – Ask who has provided medical care for the child in the past; have the parent/guardian sign a release of information to obtain the records. Try to allay confusion about different drugs prescribed or different information conveyed by multiple providers.
- **Medical history** – Try to locate medical records quickly, but don’t wait for them to be found. Aggressively inquire about the patient’s medical history: current medication use (especially controller use), dosage and interval; previous hospitalizations, intensive care stays and intubations; and immunization history. Ask specifically about gastroesophageal reflux disorder (GERD), eczema and allergic rhinitis, comorbidities which may individually worsen asthma or be harbingers of an atopic profile.
- **Emergency room/ acute care visits** – Assess the patient’s use of hospital emergency rooms, urgent care clinics, and/or other clinics for “urgent/acute” care visits to help establish

ADAPTING YOUR PRACTICE:

Treatment and Recommendations for Homeless Patients with Asthma

symptom control and adequate treatment. Ask at what time of day and under what circumstances acute visits have been needed. Ask if any oral steroids were prescribed during ER/acute care visits as an indicator of risk for further asthma exacerbations.

- **Low birth weight (LBW)/ prematurity** – Ask whether the child was smaller than normal at birth or born prematurely. LBW is related to respiratory problems in infants, and babies born to homeless mothers are at higher risk of LBW. Ask if the child was intubated or needed oxygen during the neonatal period.
- **Family health/ stress** – Ask about other health or social problems of family members, and help the parent/guardian prioritize the family’s needs. Elicit information about social stress, which can exacerbate asthma, and relationship problems, including interpersonal violence. Chronic illness in a child increases that child’s risk of abuse.
- **Nutrition** – Ask where the family gets food and what kinds of food the patient eats.

PHYSICAL EXAMINATION

- **General** – Use every patient visit as an opportunity for a general physical exam, including lungs, skin, height, weight, head circumference, developmental surveillance and screening recommended by standard clinical guidelines such as American Academy of Pediatrics guidelines (<http://aappolicy.aappublications.org/>), and Early and Periodic Screening, Diagnosis and Treatment (EPSDT) services (<http://www.cms.hhs.gov/MedicaidEarlyPeriodicScrn/>) required for children on Medicaid. This may be your only contact with the patient; many homeless children rarely see a primary care provider due to mobility and limited access to health care.

DIAGNOSTIC TESTS

- **Spirometry** – This is the recommended tool for diagnosis and is very important to assess reversible airway obstruction. 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 wait; treat on the basis of history and physical exam. If available, do spirometry at the initial visit.
- **Peak flow meters (PFMs)** – PFMs provide reliable measures of lung function only when used routinely, with results recorded. As with adults, there may be barriers to storage and use. When possible provide the patient with a complementary peak flow meter or prescription for the PFM.
- **Allergy testing** – Testing should be considered when available, to identify any allergens that trigger the child’s asthma symptoms. The high rate of asthma in homeless children is thought to be related, in part, to the presence of mold, animal dander, dust, cockroaches, and smoke in shelters or other living situations. Homeless families may have less control over their environments than housed families. Children with unexplained, persistent asthma symptoms should be referred for allergy testing.
- **PPD** – Perform TB skin testing (purified protein derivative), which is often required for admission to shelters, recognizing homeless children’s higher risk for exposure to tuberculosis.
- **HIV test** – Test children of an HIV-positive parent, if not already tested.

Plan and Management

EDUCATION/ SELF-MANAGEMENT

- **Living conditions** - Explain to the parent/guardian and caregivers how living conditions, especially exposure to cigarette smoke, worsen asthma symptoms. Suggest ways to minimize the child's exposure to second-hand smoke; encourage smoking cessation or smoking out of doors. Explain that cockroach feces are a common trigger of asthma symptoms. Advise moving the patient's pillow to the end of the bed not adjacent to a wall, where cockroaches are more likely to be found. Let the parent or guardian know that rugs can be a problem. Recommend mattress and pillow covers to keep allergens confined. Damp dust when the child is not in the room, and avoid exposing the child to household cleaners.
- **Symptoms** - Educate the parent/guardian about signs and symptoms of asthma exacerbation, such as night-time/early morning cough, post-tussive emesis, shortness of breath (only able to talk in short sentences), wheezing. Audible wheezing is a late sign. Teach the child to recognize his/her own symptoms. Many parents/guardians recognize when their child's symptoms are likely to flair. Educate them about recognizing symptoms and implementing an action plan, such as providing a nebulizer treatment or starting oral corticosteroids, instead of waiting until the child has a full blown attack.
- **Proper equipment use** - Teach the patient/parent/guardian how to use a metered dose inhaler (MDI), dry powder inhaler (DPI), spacer, or nebulizer with face mask for an infant or younger child: Provide an index card or a sticker to put on the pump with directions for use. Document training and demonstration of correct use of inhalers and spacers. Have replacement filters for the nebulizer available. Evaluate the parent/child/guardian's use of the nebulizer at every visit.
- **Cleaning nebulizers/ spacers** - Teach parents/guardians how to cleanse nebulizers and spacers properly, with vinegar and water, in equal proportions. 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; 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 literacy level and primary language.
- **Education of service providers** - Advocate for improvements in places where homeless children live, receive childcare, and attend school. Educate shelter staff about controlling environmental conditions that exacerbate asthma: by prohibiting smoking in shelters, using allergen-impermeable mattress covers, washing sheets weekly in hot water over 140° F to kill dust mites, repairing leaking faucets, maintaining humidity below 50% to reduce proliferation of vermin and mold, and sealing doors to keep out cockroaches, rodents, and other vermin. Educate staff at childcare centers and schools about how they can help children with asthma avoid exacerbations and cope with stresses associated with homelessness.

ADAPTING YOUR PRACTICE:

Treatment and Recommendations for Homeless Patients with Asthma

- **Extended clinic hours** – Accessible clinic time (evenings, weekends) is essential for parents/guardians who cannot take daytime hours off for clinic appointments without risking their jobs. Inform them about accessible appointment, walk-in, or call-in hours.
- **Written log** – Consider asking the parent to keep a log of the child's asthma symptoms and record what seems to make them worse. Some homeless parents keep written logs diligently; others do not. Give families a log book.
- **Action plans** – Educate the patient/parent/guardian about the plan of care. Explain the care plan in language they can understand and provide written action plans to help them remember special instructions for administering medications and preventing/dealing with asthma exacerbations. Use of both written and oral information can help reduce barriers to taking or administering medications (Sleath et al. 2006). To reduce language and literacy impediments, use graphics and simple language (Klass, 2007). Wallet-size instruction cards may be easier to retain and access when living in shelters with limited storage space.
- **Prevention** – 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; infectious organisms can survive up to 6 hours on nonporous surfaces. Encourage frequent hand washing in congregate settings and by caretakers of children. If possible, minimize use of anti-bacterial soaps and hand sanitizers, which may increase bacterial resistance. Encourage covering coughs/sneezes with the crook of the elbow rather than the hand.
- **ER visits** – Instruct the parent/guardian to contact the child's primary care provider, if possible, before taking him or her to the emergency department. Provide phone numbers where a provider can be reached in the clinic or after hours.
- **Standard 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?”

MEDICATIONS

- **Anti-inflammatory medications** – Strongly consider daily use of inhaled corticosteroids as a first line controller medication. Oral corticosteroids may be given on an urgent and limited basis. Consider reserving long-acting drugs for children with adequate and knowledgeable supervision of their medication administration. Long-acting bronchodilators should not be used for older children and adolescents who, in the clinician's judgment, are at high risk for overusing them.
- **Inhalers** – When prescribing anti-inflammatory medications and bronchodilators, select 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 can be made from one-liter soda bottles. Using a knife, cut a cross into the base of a soda 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.

- **Nebulizers** – Inquire about housing stability. Does the patient need to leave the shelter at a specified time in the morning and not return until a specified time in the evening? Is a bed guaranteed, or available only by lottery? Is the family at risk of being told to leave the shelter for rule violation or other reasons? Is there a place where a nebulizer can be plugged in and used? Identify resources to replace lost or stolen nebulizers. Use premixed solution bullets for nebulizers to minimize dosage errors and make storage and administration easier.
- **Response to medications** – Teach caregivers how to count the respiratory rate (RR) to assess response to medication. A sustained decrease in RR 15 minutes after treatment indicates that aerosolized medicines are helping.
- **Medication storage** – Educate the patient/ parent/ guardian about safe storage of medications. Medications are frequently stolen in shelters or may be shared or abused by family members. Ask if shelter staff can store medications and make them immediately available to the patient when needed. Explain that powdered medications should be stored in a cool, dry place.
- **Medication refills** – Assure that prescriptions are written with an adequate number of refills if the parent/guardian is able to get them filled at a local pharmacy, to prevent the patient from running out of medication. Monitor the prescription refill rate to assure that medications are being used at proper intervals, not over- or under-utilized by an unsupervised child or adolescent, or shared/misused by other family members. Be aware that medications may be obtained from other facilities, such as storefront clinics, outreach programs, or emergency rooms.
- **Immunizations** – Keep all immunizations up to date according to standard clinical guidelines (www.aafp.org/x7666.xml). Ensure that homeless children 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 (PCV), especially if taking high-dose oral corticosteroid medications.

ASSOCIATED PROBLEMS/COMPLICATIONS

- **Antibiotic use** – Children treated with at least one antibiotic during the first year of life are twice as likely to develop asthma during childhood as infants not treated with antibiotics (Kozyrskyj et al. 2006). Homeless children are at higher risk for otitis media and respiratory infections which are often treated with antibiotics. Providers should make sure the use of antibiotics is warranted.
- **Uncoordinated care** – Homeless children typically see many different providers and require a variety of medical and social services. For this reason, they need a “medical home”— a regular source of primary care and a primary care provider to coordinate their health care.
- **Follow-up** – Homeless patients are often mobile and follow-up can be difficult. Establish systems for follow-up, such as a monthly tickler file for case managers. Electronic medical records have ALERT sections as well as RECALL features to 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.

ADAPTING YOUR PRACTICE:

Treatment and Recommendations for Homeless Patients with Asthma

- **Financial barriers** – Most homeless children 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 homeless families' access to treatment. Provide assistance with applications for entitlements (SSI/SSDI, Medicaid/SCHIP, Food Stamps, WIC). If the patient does not qualify for public health insurance, consider using the US Department of Health and Human Services' 340B Pharmaceutical Discount program (<http://www.hrsa.gov/opa/>), if eligible, and/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.
- **Improper equipment use** – Patients frequently use inhalers/spacers or nebulizers incorrectly, reducing medication effectiveness. Inhalers, spacers, peak flow meters and nebulizers are easily lost, stolen or damaged. Educate the family about proper equipment use and practical alternatives to manufactured spacers; help arrange for safe storage of equipment and medications.
- **Educational delays** – Recognize that uncontrolled asthma frequently results in loss of sleep, fatigue that interferes with learning, missed school days, and educational setbacks for homeless children (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 will benefit the child.
- **Physical activity** – Well-meaning adults often try to limit the activity of children with asthma to prevent symptoms. Explain that physical activity is important; if the child is having difficulty, medications should be adjusted rather than limiting play and exercise.
- **Familial stress** – Social or familial stress can exacerbate asthma and threaten family relationships. A child with 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.

FOLLOW-UP

- **Frequency** – Encourage the parent/guardian to bring the child back to the clinic within 3-7 days following 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 it 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** – Refer the family to a mental health professional for psychological or social problems. Consider referring the family to a Failure to Thrive (FTT) or GROW clinic if the child has other medical issues. Explore options for temporary placement of children if the

parent or caregiver needs inpatient care – for example, through foster care agencies, medical respite programs, or other family members.

- **Contact information** - Document the phone number of a relative or friend with a stable address who keeps in touch with the patient’s family. Ask if the family has a cell phone; if so, record the number. Be creative about maintaining contact with the patient; consider shelters, childcare centers, or school contacts, with permission or in an emergency.
- **School attendance** - Document missed school days; coordinate services with the patient’s school.
- **Outreach** - Connect with homeless outreach programs, homeless health care providers, and your local homeless coalition 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>. Early Intervention services are available to many homeless children. These services, often provided in family shelters, may include education and referrals to meet the child’s medical needs.² Identify advocates in your community to help homeless families with medical, legal, and housing issues. An example of such a service is the Medical Legal Partnership for Children (MLPC) in Boston, MA.

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

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| American Academy of Allergy, Asthma & Immunology | www.aaaai.org/ |
| American Academy of Family Physicians | www.aafp.org/ |
| American Thoracic Society (ATS) | www.thoracic.org/ |
| Health Disparities Collaboratives | www.healthdisparities.net |
| National Guideline Clearinghouse | www.guideline.gov |
| National Health Care for the Homeless Council; HCH Clinicians' Network | www.nhchc.org/ |
| National Heart, Lung and Blood Institute
National Institutes of Health | www.nhlbi.nih.gov/index.htm |
| National Jewish Medical and Research Center | www.nationaljewish.org/professionals/index.aspx |
| U.S. Dept. of Health & Human Services
Tobacco Cessation | www.surgeongeneral.gov/tobacco/ |

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 order Network materials, call 615 226-2292 or write network@nhchc.org. Please visit our Web site at <http://www.nhchc.org>.