

# ADAPTING YOUR PRACTICE

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*Treatment and Recommendations  
for Homeless Children  
with Otitis Media*

## Otitis Media



# **ADAPTING YOUR PRACTICE**

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for Homeless Children  
with Otitis Media*

Health Care for the Homeless  
Clinicians' Network  
2008 *Second Edition*

**ADAPTING YOUR PRACTICE:  
Treatment & Recommendations for Homeless Children with Otitis Media**

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**DISCLAIMER**

The information and opinions expressed in this document are those of the Advisory Committee for the Adaptation of Clinical Guidelines for Homeless Children with Otitis Media, 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.

## **PREFACE TO THE SECOND EDITION**

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

Standard clinical practice guidelines often fail to take into consideration the unique challenges presented by homelessness that may limit patients' ability to adhere to a plan of care. Recognizing the gap between standard clinical guidelines and clinical practices routinely 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.

Recommendations for the care of homeless children with otitis media were initially developed in 2003 by primary care providers working in homeless health care across the United States. A second advisory committee, convened in 2008, reviewed and revised these recommended practice adaptations to assure their consistency with current clinical standards for the diagnosis and management of otitis media and with best practices in homeless health care. These clinicians, listed on the next page, represent several of the HCH projects that participated in the development of the first edition of these adapted clinical guidelines.

We offer this second edition of *Adapting Your Practice: Treatment and Recommendations for Homeless Children with Otitis Media* to promote continuing improvement in the quality of care provided to children in displaced families, whose lack of financial and social resources complicate the treatment and self-management of their illness. We hope these recommendations offer helpful guidance to primary care providers, and that they will contribute to improvements in the quality of care for disadvantaged children with acute ear infection or effusion and outcomes of that care.

Patricia A. Post, MPA  
HCH Clinicians' Network

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# Care for Homeless Children with Otitis Media: Summary of Recommended Practice Adaptation

## DIAGNOSIS & EVALUATION

### History

- **Housing & medical home** – At every visit, document patient’s housing status and living conditions, list barriers to treatment, and inquire about regular source of primary care.
- **Exposure to viral illness** – Inquire about congregate living situations (shelters, daycare) and recent exposure to people with upper respiratory infections (colds, flu).
- **Exposure to smoke** – Ask if anyone in regular contact with the child smokes, whether mother smoked during pregnancy. Ask about passive exposure to marijuana, cocaine.
- **Breast vs. bottle feeding** – Ask if infant is being breastfed or bottle fed; if the latter, does infant drink from bottle while lying on back? Explore stresses in parent’s life that may interfere with adequate attention to infant.
- **Sleep disturbance** – Ask if ear discomfort interrupts child’s sleep (and that of others in the shelter/ household).
- **Hearing difficulties, delayed speech** – Ask when child’s hearing was last screened; elicit information about possible hearing difficulties (trouble listening?) and speech delays (speak as well as peers?). Consider other causes of developmental delay (premature birth, weak parenting skills).
- **Social development/ behavior** – Inquire about child’s interaction with family members and behavior at daycare/school. Explore possible causes of behavior problems besides hearing loss (stress, feeling ostracized, family violence).
- **Missed school** – Ask about missed school days due to ear discomfort or other illness.
- **Prior ear infections/ treatment** – Ask about number and treatment of past ear infections, symptoms and duration of current complaint, and whether child has received full course of any antibiotic treatments.
- **History of allergies** – Ask about allergic reactions (asthma, rhinitis, sinusitis); recognize that homeless children are 3-6 times more likely than other children to have asthma.
- **Other medical history** – Ask about medical conditions common to homeless people that may directly or indirectly affect the child’s health (anemia, obesity, lead toxicity, TB, STDs, behavioral health problems, HIV). Review immunization record. Ask about medications/CAM therapies the child has received for ear infections or other reasons.

### Physical examination

- **General** – Perform a complete pediatric exam at every visit. Whatever the chief complaint, use each visit as opportunity to identify and address all problems, recognizing that homeless families may not see a medical provider unless their child is sick.
- **Otologic examination** – Thoroughly examine tympanic membranes; evaluate for AOM, OME. To remove cerumen, consider use of curette instead of hydrogen peroxide drops, which require multiple return visits. In evaluating ear pain, consider possibility of a foreign body in the ear.
- **Dental examination** – Evaluate for dental caries and other oral health problems that may cause ear pain. (Homeless families often have unmet dental health needs.)

### Diagnostic tests

- **Pneumatic otoscopy/ tympanometry/ acoustic reflectometry** – Consider cost-effectiveness, accuracy, availability, and ease of use on outreach in selecting a device to confirm Dx of AOM/ OME. Pneumatic otoscopy recommended if other diagnostic technologies are unavailable to the provider.
- **Hearing screening** – Perform routine audiometric screening at every visit. If hearing loss is suspected, refer to audiologist. Be aware that hearing screening is among the services to which children on Medicaid are entitled (most homeless children qualify for Medicaid).

## PLAN & MANAGEMENT

### Education, Self-Management

- **Incidence** – Inform parent/caregiver that children 6-24 mos. old have highest risk of ear infections. Explain relationship of AOM in infants to previous URIs; stress importance of vaccinations (HIB, PCV-7) to prevent URIs.
- **Signs & symptoms** – Specify signs and symptoms of OM requiring immediate visit to a medical provider: ear pain, irritability, ear drainage, fever, pulling/rubbing ear. Instruct parent/caregiver to follow up with PCP if symptoms worsen within first 24-72 hrs after treatment. Work with case manager/ shelter-based nurse to expedite follow-up care.
- **Management** – Urge families to discuss potential follow-up barriers with PCP (financial, transportation, geographical, limited time off from work, behavioral health problems, family stressors). Assist in resolution of identified barriers and weigh these factors in deciding whether to “wait and observe” or prescribe antibiotics for AOM in a homeless child. Assess parent/caregiver’s ability and resources to participate in the plan of care.
- **Risks of delayed/ interrupted treatment** – Explain risks to hearing, speech, emotional development, school performance from chronic, serious ear infections.
- **Prevention** – Explain what parent/caregiver can do to reduce child’s susceptibility to future ear infections:
  - **Breastfeeding:** Prevents/reduces severity of OM (if no contraindications). Provide lactation guide at shelters, drop-in centers, meal sites used by homeless families.
  - **Prop baby, not bottle:** Hold baby’s head at 45° angle to prevent fluid from flowing into eustachian tubes. (Refer to WIC, where available, if formula feeding.)
  - **Smoke-free environment:** Passive smoking increases frequency of ear infections. Recommend smoking cessation program for parent or harm reduction—i.e., reduce child’s exposure to secondhand smoke (by smoking outdoors, wearing removable apparel, washing hands before holding child).
  - **Prevent URIs:** Frequent hand washing to prevent spread of viral infections in congregate settings. Have child fully immunized against pneumococcal disease.

## Care for Homeless Children with Otitis Media: Summary of Recommended Practice Adaptation

- **Antibiotics** – Urge completion of all antibiotics as prescribed (don't stop when symptoms cease or use for next infection). Provide measuring device. Explain why use of leftover/borrowed medication is never recommended and why meds should *not* be placed in a baby bottle. Address safe storage and how to manage refrigeration if required.
- **After hours** – Instruct parent/caregiver what to do and number to call if problems arise when clinic is closed.

### Medications

- **Antibiotics** – Prescribe only for AOM; if close follow-up is not assured, treat immediately instead of waiting for spontaneous resolution of infection. (For chronic OME with suspected hearing loss, refer to ENT.)
- **Simple regimen** – Prefer shorter courses of inexpensive antibiotics with once daily dosing (if clinically indicated) that do not require refrigeration and are easily tolerated. Use IM delivery as a last resort. Consider use of capsules for children over age 5 (can be opened and sprinkled in food if necessary).
- **Prescriptions** – If patient does not have health insurance, provide assistance in applying for Medicaid/SCHIP, charity care, patient assistance programs, or 340B Pharmaceutical Discount program.
- **GI upsets** – Prescribe medications with minimal GI side effects, recognizing difficulties homeless families have in managing diarrhea and maintaining hydration (limited access to diapers, clean water, bathing facilities).
- **Pain management** – Recognize that pain management during the first 24 hours of an acute ear infection is important, whether antibacterial treatment is used or not. Mobility of homeless families often delays pain management; a crying child increases stress for families struggling to cope with the inordinate stresses of homelessness.
- **Aids to adherence** – Be sure instructions for administering medication and dosing intervals are understood and that parent/caregiver can read prescription labels and educational materials. Provide aids to assure accurate dosing (chart, measuring device).
- **Immunization** – Immunize infants and young children against pneumococcal disease (PCV7) to reduce risk for OM.

### Associated problems, complications

- **Congregate living** – increases risk of exposure to viral infections and incidence of OM. Educate families about preventive measures.
- **Parental smoking** – increases risk of OM in children exposed to secondhand smoke. Refer parent to smoking cessation program; assess readiness to change.
- **Hearing problems** – secondary to multiple/chronic ear infections may affect child's attachment to parent and emotional and social development. Screen hearing routinely; refer to audiologist/ ENT specialist as needed.
- **Speech delays** – exacerbated by ear infections in homeless children (who may have delayed social and verbal skills unrelated to OM). Refer to speech pathologist as needed.

- **Lack of transportation** – can impede access to specialty care. Help with transportation to needed health services.
- **Financial barriers** – lack of health insurance or resources to make co-payments impeding access to prescription medications. Help family apply for entitlements (Medicaid/SCHIP) and reduced-cost drugs through patient assistance programs.
- **Poor adherence** – due to misunderstanding of instructions, difficulty administering meds while patient is in childcare or school, parental problem that interferes with treatment (mental illness, addiction). Assess parent's capacity to understand instructions and follow through with treatment; help parent obtain assistance if needed.
- **Familial stress** – homelessness exacerbated by acute/chronic illness. Facilitate access to stable housing, supportive services, and other resources (through childcare centers, schools).

### Follow-up

- **Primary care** – Help family find regular source of primary care, apply for medical assistance, and identify housing alternatives. Provide care until they find stable housing and a PCP that meets their needs. If child already has a PCP, refer immediately; facilitate transportation and share information about family's living situation and special needs. Obtain family's consent for release of information.
- **Frequency** – Follow-up care from a PCP in 5–7 days or less after initial treatment for AOM, depending on severity; if infection has not improved in 48–72 hours, consider change in medication. PCP follow-up for otorrhea > 2 weeks duration. Follow-up for OM with sterile effusion in 2–3 months; referral to ENT if fluid persists.
- **Specialty referrals** – Develop referral arrangements with specialists willing to accept Medicaid patients or provide *pro bono* care, recognizing that homeless children require access to professionals in multiple clinical disciplines.  
Refer to **audiologist/ speech pathologist** if there is hearing loss, balance problem, speech delay, sleep disorder with effusion, chronic infection, or if speech/hearing milestones are unclear;  
Refer to **ENT specialist** if chronic OM is suspected, to evaluate need for myringotomy and pressure equalizing tube placement (thresholds for surgery: fluid with hearing loss for 3 mos. or 5-6 episodes OM within 6 mos.).
- **Case management** – Involve social worker/ case manager/ shelter nurse to facilitate return visits.
- **Outreach** – Coordinate medical care with an outreach worker; work closely with daycare staff to promote preventive measures.



## **INTRODUCTION**

Both *Acute Otitis Media* (AOM, bacterial middle ear infection with purulent fluid) and *Otitis Media with Effusion* (OME, chronic sterile middle ear fluid) are highly prevalent among children living in low-income families who are homeless or at risk of becoming homeless. Exposure to respiratory infections and secondhand smoke in family shelters and the housing conditions that frequently precede episodes of homelessness, together with limited access to a regular source of primary care, increase risk for chronic infection and hearing loss – which is associated with delays in speech and social development, as well as poor school performance. Residential instability and the damaging effects of emotional and behavioral health problems on many homeless families complicate the provision of adequate medical care, even when it is available and accessible to them. The following research findings document these risks:

Poverty has a negative impact on children’s health, achievement and behavior (Kaler, 2008; Brooks-Gunn, 1997). Despite similarities in the health status of poor children who are housed and those who are homeless, there are marked differences. Homeless children have more acute and chronic health problems, including asthma, anemia, ear infections, elevated lead levels, and dental problems (Grant, 2007; Berti, 2001; Redlener, 1999; Weinreb, 1998; Rubin, 1997; AAP, 1996).

There are more speech delays in homeless toddlers (National Center on Homeless Families, 1999), and poorer academic performance in school-age homeless children due to frequent changing of schools, irregular attendance, behavior problems, and reduced energy levels/concentration due to the stresses associated with homelessness (Rubin, 1996; Eddins, 1993; Wood, 1992). Delayed growth or development, anxiety, and depression can also impede learning (Grant, 2006; Morris, 2004; Paradise, 2000; Aber, 1997; Wick, 1997; Eddins, 1993; Fierman, 1991; Bassuk, 1986).

As might be expected in families with unstable housing, homeless children are often behind in their immunizations (Karr, 2004; HRSA, 1999; Wood, 1992). Typically these children do not have a regular source of primary care (a “medical home”). Without easy access to health care services, chronic illnesses such as recurrent otitis media often go undiagnosed and untreated. Multiple, untreated ear infections can result in hearing loss that may delay speech and eventually affect school performance and social development. Socio-economically disadvantaged children such as those who are homeless may be more vulnerable than other children to the effects of otitis media on language development (Paradise, 2000).

Ear infection has been reported to be the third most common health problem seen in children by Health Care for the Homeless providers, after minor upper respiratory infections and minor skin infections (Wright, 1990). Living in shelters or doubled up with other families, in daycare or at school, homeless children are frequently exposed to upper respiratory infections, which are associated with increased risk for otitis media (Poehling, 2007; Paradise, 1997). Studies in New York (Grant, 2006; Redlener, 1999) found that homeless children in the city’s shelters suffered from otitis media at rates 50 percent higher than the national average.

Children in homeless families are also frequently exposed to secondhand smoke, which has been demonstrated to increase the risk of recurrent ear infections in young children (Telethon Institute, 2008; Arcavi & Benowitz, 2004; Ilicali, 2001; Adair-Bischoff CS, 1998). Higher rates of smoking have been reported among homeless people than in the general population (Okuyemi, 2006; Sachs-Ericsson, 1999; Weinreb, 1998).

Despite these risks, there is evidence that the gap between the health status of homeless and housed children in families with few resources narrows when aggressive measures are taken to assure early intervention, a regular source of health care, and linkage with supportive services to help parents develop economic self-sufficiency and sustain stable housing (Grant, 2007).

Clinical practice guidelines for children with otitis media who are homeless are fundamentally the same as for those who are housed. Nevertheless, primary care providers who routinely care for homeless children recognize the need to take their living situations, the mobility of this population, and difficulty with follow-up into consideration when developing a plan of care. It is our expectation that these simple adaptations of established guidelines will improve treatment adherence and patient outcomes. The treatment recommendations in this guide were compiled to assist clinicians that provide primary care for children who are homeless or marginally housed, living in cars or shelters, on the streets, or doubled up with friends or relatives.

*Diagnosis and Management of Acute Otitis Media* (AAP, AAFP, 2004) and *Otitis Media with Effusion* (AAP, 2004) are the primary source documents for these adaptations. Recommendations found in these guidelines are not restated in this document except to clarify a particular adaptation.

### **CASE STUDY OF A HOMELESS CHILD WITH OTITIS MEDIA WITH EFFUSION**

D.H. is a 21/2-year-old African American male who presented with the complaint of wheezing. He and his mother are residing in an overnight shelter and were seen in the day shelter for women and children. The child goes to a local clinic and has lived his whole life in the same city.

**Medical history:** The patient's last well-child check-up was six months ago, when he was diagnosed with asthma, speech delay, and chronic otitis media with effusion (OEM). A hearing test was not ordered at that time. His immunizations are up to date, according to his mother. Prescribed medications: Albuterol in a nebulizer and Albuterol syrup for asthma. The nebulizer was last used one month ago.

D.H.'s mother stated that he does not listen to her, especially when she calls to him from a distance. He has never been seen by an ear, nose and throat (ENT) specialist, although his mother stated that his primary care provider (PCP) had mentioned that an ENT referral may be made.

**Physical exam:** The tympanic membranes were noted to be retracted on examination, with decreased light reflex and mobility. On further questioning, the patient's mother stated that he had an "ear infection" for a "whole year" last year. He was last treated six months ago. His mother stated that often she did not complete the entire course of medication, but would stop when the child felt better or when she moved from one relative to another and left the medication at the previous house.

**Treatment & follow-up:** Amoxicillin was ordered, the prescription was filled, and the PCP was notified of the treatment given and the family's current living situation. The PCP was encouraged to order an ENT referral as soon as possible so that follow-up can occur while the family is still in shelter.

# Pediatric Otitis Media

## *Diagnosis and Evaluation*

### **HISTORY**

As with all patient visits, a carefully taken history is important to the accurate diagnosis of otitis media.

- **History of present illness** Ask about signs and symptoms of *acute otitis media* (AOM) – including fever, ear pain, and irritability, which may co-occur with symptoms of an upper respiratory illness (rhinorrhea, cough or congestion). Since there can be significant overlap among symptoms of AOM and viral URIs, do not rely on history alone for the diagnosis. In addition, ask about symptoms of *otitis media with effusion* (OME) – including mild, intermittent ear pain; fullness or popping; any suggestion of hearing loss or inappropriate response to sounds in infants; speech or language delays; balance problems; problems with school performance; or other new behavioral problems. At each encounter, document any of these symptoms in the medical record. (AAP, AAFP, 2004)
- **Housing & medical home** Ask specific questions to determine whether the family is homeless (“Where do you live? Who lives where you live? How long have you lived there? How long will you be living 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, is the family able to access this medical home? Is transportation a barrier? Does the patient’s regular primary care provider demonstrate sensitivity to the needs of homeless children and families? Ask these questions in several different ways to elicit desired information.
- **Exposure to viral illness** Ask whether the patient is in school or daycare or living in a shelter or other congregate situation. Ask how many children s/he plays with and if anyone in recent contact with the child is sick. Exposure to viral illness in congregate living situations is a primary risk factor for otitis media (Poehling, 2007).
- **Exposure to smoke** Ask whether the parent or other member of the household smokes, and whether the mother smoked during pregnancy with this child. Prevalence of smoking among homeless people is higher than in the general population. Parental smoking and passive smoke exposure increase the incidence of otitis media (American Lung Association, 2005; Arcavi & Benowitz, 2004; Adair-Bischoff & Sauve, 1998). Ask about passive exposure to substances other than nicotine, such as marijuana or crack cocaine.

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### Treatment & Recommendations for Homeless Children with Otitis Media

- **Breast vs. bottle feeding** Ask if the infant is being breastfed to identify cultural or other barriers to breastfeeding. Ask this in a nonjudgmental way. An infant who is breastfed obtains passive immunity from his mother. Children who are breastfed tend to have fewer ear infections than do bottle fed infants (AAP, 2005; Hanson, 1999). If bottle feeding, ask whether the infant holds the bottle and drinks from it while lying on his/her back. (This may increase risk of ear infection.) Bottle “propping” may be indicative of parental stress and/or lack of time to spend holding the child. Mothers who are depressed or distracted by the highly stressful experience of homelessness may not be able to give adequate attention to their children.
- **Sleep disturbance** Ask if the child has trouble sleeping related to apparent ear discomfort. Interrupted sleep can raise already high stress levels for a homeless family, especially if sleeping in a shelter.
- **Hearing difficulties, delayed speech** Ask when the child was last screened for hearing. Ask questions to elicit information about possible hearing difficulties and speech delays. (Does the child have trouble listening? Does the child speak as well as other children of the same age? What is the school reporting?) Recognize that developmental delays may also result from poor prenatal care, premature birth and/or weak parenting skills, which are frequent consequences of homelessness.
- **Social development/ behavior** Inquire about the child’s interaction with family members and behavior at daycare or school. Difficulty hearing can cause a child to be frustrated and may be misdiagnosed as a behavior problem. Hearing and/or speech problems may be masked by behavior problems that can affect a child’s emotional development. Behavior problems also occur in response to the stress of living in a shelter and feeling ostracized by other children. Ask about family violence.
- **Missed school** If the child is school age, inquire about attendance and recent time lost due to frequent moves, especially missed days due to ear discomfort or other illnesses.
- **Prior ear infections/treatment** Ask about the patient’s past ear infections (how many?) and whether/how they were treated, in addition to symptoms and duration of the current complaint. Determine if the child received a full course of any antibiotic treatment. Lack of treatment or inadequate/incomplete therapy for an ear infection may result in late complications such as mastoiditis or hearing loss.
- **History of allergies** Be aware that homeless children are 3 to 6 times more likely than the average American child to have asthma. Heightened exposure to environmental pollutants and other allergens elevates their risk of developing asthma (HCH Clinicians' Network, 2000). Ask about a history of allergic reactions – including asthma, rhinitis and sinusitis – which are often associated with chronic otitis media with effusion.

- **Other medical history** Always take the opportunity to ask about other medical conditions for which homeless people are at increased risk that may directly or indirectly affect the child's health – e.g., *anemia, malnutrition/obesity, lead toxicity, tuberculosis, sexually transmitted diseases, alcohol and drug problems*. This is especially important, given homeless families' limited access to health screening, mental health care, substance abuse treatment, and specialty care in general.

Ask about *HIV infection* in the parent or child. HIV-infected children are susceptible to recurrent ear infections and may also have speech and language disabilities related to effects of HIV virus on the developing central nervous system (Retzlaff, 1999).

It is also important to review the patient's *immunization record* (delayed immunizations are common among homeless children). This may also help the clinician identify likely pathogens causing AOM.

Ask about any *medications, herbal or vitamin supplements, or other complementary or alternative therapies* the patient has received for acute or chronic ear infections or for any other reason (Bukutu, 2008; Carr, 2006).

## **PHYSICAL EXAMINATION**

- **General** Do a complete pediatric exam at every visit according to standard clinical guidelines (e.g., *American Academy of Pediatrics guidelines: [www.aap.org/policy/paramtoc.html](http://www.aap.org/policy/paramtoc.html)*) and Early and Periodic Screening, Diagnosis and Treatment (EPSDT) services required for children on Medicaid (specified in *Early and Periodic Screening, Chapter 05, State Medicaid Manual: [www.cms.hhs.gov/manuals/pub45/pub\\_45.asp](http://www.cms.hhs.gov/manuals/pub45/pub_45.asp)*). Whatever the chief complaint, use the visit as an opportunity to identify and address all problems. Remember that this may be your only contact with the family. Homeless families may not see a medical provider unless their child is sick.
- **Otologic examination** Good evaluation of the appearance of the tympanic membranes is vital for prompt diagnosis. Use pneumatic otoscopy as routine part of every exam for AOM or OME (see Diagnostic Tests, below). If cerumen is present, enough must be removed to allow inspection of eardrum. Irrigation should be avoided, given the possibility of an underlying perforation of the tympanic membrane. Because follow-up may not be possible, use of a curette and otoscope is preferable for homeless children; hydrogen peroxide drops may help dissolve wax but require one or more return visits, which may be more difficult to arrange with homeless families.

Clear distinction should be made between a well aerated middle ear, one that is filled with sterile effusion (retracted appearance, dull, with loss of light reflex and distinctly impaired mobility), and one with acute otitis media filled with purulent effusion (bulging with a white or yellow creamy appearance). Redness alone (in absence of fluid) does not indicate a middle ear infection, so a distinction should be made between erythema due to inflammation versus from crying or high fever.

- **Dental examination** Evaluate for dental caries and other oral health problems, which can cause ear pain. (Homeless families often have unmet oral health needs.) In evaluating the etiology of ear pain, also think about the possibility of a foreign body in the ear (Barclay, 2008).

## **DIAGNOSTIC TESTS**

- **Pneumatic otoscopy/ tympanometry/ acoustic reflectometry** These tests help to confirm the presence of fluid behind the tympanic membrane, and thus support the diagnosis of acute otitis media or middle ear effusion.

*Pneumatic otoscopy*, recommended as the primary diagnostic method (AAP/AAFP, 2004), is cost-effective, accurate, available at every office, and easy to bring on outreach.

*Tympanometry* can be helpful in children over 4 months of age if the examiner is unsure of the middle ear status by otoscopic examination alone; however, given the higher cost for equipment and testing, this method may not be available to many clinicians who provide care for homeless children.

*Spectral gradient acoustic reflectometry (SGAR)* can be used as an alternative to tympanometry to confirm an otoscopic diagnosis of middle ear effusion in children aged 2 years and older (Chianese, 2007; Babb, 2004). SGAR offers the advantage of easy portability but may not be available to all clinicians serving homeless children.

- **Hearing screening** Perform a routine audiometric screening at every visit, especially if the child has a history of otitis media. Suspicion of hearing loss should trigger referral to an audiologist to conduct a formal diagnostic test. Recognize that hearing screening is among the services to which children on Medicaid are entitled as a routine part of preventive and primary care. (Most homeless children are eligible for Medicaid.)



## ADAPTING YOUR PRACTICE:

### Treatment & Recommendations for Homeless Children with Otitis Media

#### CASE STUDY: HOMELESS CHILD WITH ACUTE OTITIS MEDIA

A.M. is a 4-year-old African American female who presented in December with a complaint of ear pain, irritability, and fever of two days duration. A.M., her mother, older sister, and infant brother reside with the children's grandmother. The household consists of the grandmother, A.M.'s family, several cousins, and 2 aunts. There are several smokers in the household. The child was assigned to a clinic across town where the family lived before moving in with relatives two months ago. Before moving to this city, the family lived in three other states with relatives and friends. A.M. is not in daycare. The child was seen at the day drop-in center.

**Medical history:** The patient was diagnosed with upper respiratory infection and eczema at her last well-child check-up (WCC) by a provider in a neighboring state. The mother cannot remember if this was the 4 year-old WCC, and says of the child, "She keeps colds." The older sister and infant brother also have colds. A.M.'s mother took her to the hospital emergency room (ER) two weeks ago with the same symptoms. The ER sent her home with 2 days supply of "a pink medicine" and a prescription for the rest. Since the family has not received medical assistance yet and A.M. was feeling better, the mother did not fill the prescription. Motrin was recommended, but no money was available to purchase it.

**Physical exam:** The tympanic membranes were noted to be bulging, inflamed, and with decreased mobility. The child was quiet during the exam. Her temperature was 102°F. Thick, yellow nasal discharge was noted. Lungs were clear. Throat was clear. Assessment: Acute otitis media (AOM) with suspected sinusitis and eczema.

**Plan of care:** Explore history of wheezing or night time cough (possibility of asthma). Ask if the child spends time in a group setting. Review immunization history through retrieval of past records from other parts of the country. Ask if a delay in speech or social development has been noted. Conduct a developmental evaluation with particular attention to speech/language; if there are indications of developmental delay refer to public schools' early intervention team for speech and hearing services. (If the child is shy or unwilling to cooperate due to illness, base the developmental evaluation on parental report.) Test hearing following treatment. Evaluate using tympanometry.

Antibiotic treatment: amoxicillin capsules, tablets, chewable tablets, or powder for oral suspension (if no allergy reported) at 80-90mg/kg/day q 12 hours for one week, as long as symptoms improve. This medication does not require refrigeration, is easily tolerated and inexpensive. (Alternative medications: azithromycin or injection of ceftriaxone.) Treat with ibuprophen or acetaminophen for pain and fever. Emphasize the importance of fluids, specifying clear liquids that are caffeine free. Recommend normal saline nasal spray or drops to alleviate nasal congestion.

**Follow-up:** Stress importance of follow-up with a PCP within 1-2 weeks, regardless of where the family is; if they can't return to the clinic, help them find another place for follow-up care. Consider referral to an Ear, Nose, and Throat specialist (ENT) to evaluate the patient's need for Pressure Equalization Tubes (PET). Provide or refer to public health nurse for assistance with appointments, transportation, applying for medical assistance, and connecting with a regular source of primary care. Give the child's grandmother a written explanation of the child's diagnosis, treatment and needed follow-up, as well as a phone number she can call if there are questions. Document the family's contact information as well, including cell phone numbers, if any (which are not uncommon among homeless people); if possible, follow-up by telephone. Educate the family about eliminating secondhand smoke in the home.

## Plan and Management

### EDUCATION, SELF- MANAGEMENT

- **Incidence** Explain to the parent/caregiver that children between 6 and twenty-four months of age are at highest risk for developing ear infections (Klein, 2004), that infants are most likely to develop AOM after an upper respiratory infection (Revai, 2007), and that vaccinations which prevent URIs (Hib and PCV-7) can significantly reduce the incidence of ear infections (Poehling 2007; Brunton, 2006).
- **Signs & symptoms** Educate the parent/caregiver about signs and symptoms of otitis media that indicate immediate need to see a medical provider: ear pain, irritability, drainage from the ear, fever, pulling and rubbing the ear(s). Ear touching alone does not necessarily mean an ear infection.
- **Management** Educate the parent/caregiver about the need to follow up with the child's primary care provider (PCP) if symptoms worsen within the first 24-72 hours after treatment. Work with case managers and shelter-based nurses to expedite follow-up care. Urge families to discuss their current situation and possible barriers to follow up with their PCP: financial, transportation, geographical, limited time off from work, mental health, chemical dependency, other family stressors. Such factors could influence the PCP's decision to "wait and observe" or prescribe antibiotics when the child presents with acute otitis media. Health care providers should not assume that because the family is homeless they are not in a position to "wait and observe." Assess the parent or caregiver's ability and resources to participate in the plan of care.
- **Prevention** Explain what can be done to reduce the child's susceptibility to future ear infections:
  - **Breastfeeding** Educate parents about the advantages of breastfeeding in preventing otitis media (if no contraindications<sup>2</sup>). Antibodies in breast milk reduce the incidence and severity of ear infections (AAP, 2005; Hanson, 1999). Provide a lactation guide at shelters, drop-in centers, and meal sites used by homeless families.
  - **Prop the baby, not the bottle** If the infant is bottlefeeding, recommend holding the baby's head at a 45-degree angle to prevent fluids from flowing into the eustachian tubes and causing ear infections. If the baby is formula feeding, refer the family to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), if available in the community.

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<sup>2</sup> Mothers who are actively using amphetamine, cocaine, heroin, or phencyclidine should not be encouraged to breastfeed their infant (AAP, 2005). Breastfeeding is not recommended for HIV-positive mothers if there is a safe alternative - i.e., if infant formula is available, if there is access to clean water to prepare formula milk and cleanse bottles and nipples, if refrigeration is available to store prepared formula, and if mother has ability to manage formula feeding with appropriate hygiene (DHHS, 2008).

***Smoke-free environment*** Explain that passive smoking (secondhand smoke) can increase the frequency of ear infections (Ilicali, 2001). Recommend a smoke-free environment for the child and a smoking cessation program for the parent. If the family is not interested in smoking cessation, recommend a harm reduction approach. For example, suggest smoking outdoors, wearing something that can be removed after smoking, and washing hands before holding the child to reduce exposure to secondhand smoke. Encourage smoking cessation activities sponsored by shelters where homeless children reside.

***URI prevention*** To prevent the spread of viral infections in shelters and other congregate settings, recommend frequent hand washing and distribution of hand sanitizers, as well as immunization against pneumococcal disease.

- **Risks of delayed/ interrupted treatment** Explain risks to hearing, speech, emotional development, and school performance from chronic, serious ear infections.
- **Antibiotics** Emphasize that all antibiotics must be completed as prescribed (don't stop when symptoms cease or use for the next infection). Urge the parent/caregiver to use standard measurements for antibiotics (not just "a swig"). Provide a measuring device. Explain why use of "leftover" or borrowed medication is never recommended. (Parents who feel there is no other alternative may resort to this if acute illness stresses the family.) Remind parents *not* to put medication in a baby bottle.

While it is important to try to treat with an antibiotic that does not require refrigeration, recognize that sometimes this is not possible for homeless families. Always ask about access to refrigeration before dispensing medications that require it. If refrigeration is required but not easily available, explain that a styrofoam cooler and ice can be used to store the medication. Be aware that families staying in shelters or other places without a private space frequently have their personal items (including medications) stolen; be prepared to develop an alternate plan to help these families provide the full course of antibiotic treatment to their child.

- **After hours** Tell the parent/caregiver what to do and a number to call if problems arise outside clinic hours.

## **MEDICATIONS**

- **Antibiotics** should be used in cases of acute otitis media only. Although there is strong evidence that antibiotics can be deferred while awaiting spontaneous resolution of infection, this approach may not be appropriate in homeless populations, as close follow-up may not be assured. Antibiotics should not be used for chronic sterile effusion but hearing evaluation is important and an ENT referral may be necessary.
  
- **Simple regimen** In general, shorter courses of antibiotics given once or twice a day are preferable to more complicated regimens for children living in shelters. Medications that require refrigeration should be avoided if the family does not have access to safe refrigeration. (Be aware that many shelters have problems with medications being stolen out of communal refrigerators.) A number of clinicians prescribe high-dose amoxicillin or (if there is treatment failure) amoxicillin/clavulanate potassium for their homeless patients. These medications do not require refrigeration, are easily tolerated, and are inexpensive.

For children who will not take oral medications, as a last resort consider intramuscular delivery, such as single dose of ceftriaxone, recognizing that this is a more painful alternative. For a child over five years of age, consider use of capsules as an alternative to liquid preparations, which often require measuring and refrigeration. Capsules are relatively easy to swallow, even for a young child, or can be opened and sprinkled in food (e.g., apple sauce), if necessary.

- **Prescriptions** Find out if the patient has health insurance coverage. If not, provide assistance in applying for Medicaid or the State Children’s Health Insurance Program (SCHIP) and investigate charity programs available through some hospitals. Most homeless children are eligible for Medicaid or SCHIP. Help the family get prescriptions filled, especially if use of an approved pharmacy within a managed care network is required. Know what medications are on your state’s Medicaid/ SCHIP drug formularies and which ones require pre-authorization by a managed care plan. If possible, prescribe medications that do not require prior authorization, which can delay treatment and may discourage homeless families from getting prescriptions filled.

If the patient is uninsured or if copayments required by the patient’s health plan present a financial barrier to treatment, consider providing medication samples on site, if available, recognizing the possibility that obtaining continued medication may be difficult. Investigate other options for reduced-cost drugs – e.g., pharmaceutical companies’ Patient Assistance Programs for low-income individuals and/or the US Department of Health and Human Services’ 340B Pharmaceutical Discount program, if eligible. (For information about the 340B program, including eligibility, covered drugs, and registration process, see: <http://pssc.aphanet.org/about/whatisthe340b.htm>).

## **ADAPTING YOUR PRACTICE:**

### **Treatment & Recommendations for Homeless Children with Otitis Media**

- **GI upsets** Prescribe medications with minimal gastrointestinal side effects. Diarrhea is more difficult for homeless families to manage because of limited access to diapers and facilities for cleansing the child. Maintaining adequate hydration can also be a problem if fluids are not readily available.
- **Pain Management** Recognize that management of pain during the first 24 hours of an acute ear infection is important, whether antibacterial treatment is used or not (AAP, AAFP 2004). Clinicians often undertreat pain associated with acute otitis media, and homeless families may delay pain management while moving from place to place. A crying child in pain increases the stress experienced by homeless families.
- **Aids to adherence** Assure that instructions for administering medications are fully understood, including the time interval between doses. Make sure parents/caregivers can read prescription labels and all written instructions/educational materials; ask them to explain how the medicine will be given to the child. Provide a chart to keep track of the medication schedule and an appropriate measuring device (e.g., syringe or medicine spoon for liquid medications, medication box for pills) to assure accurate dosing.
- **Immunization** Make sure the patient is fully immunized against pneumococcal disease, which will decrease risk for otitis media. Recommended for infants and young children: 7-valent pneumococcal polysaccharide-protein conjugate vaccine (PCV7). (CDC, 2008)

## **ASSOCIATED PROBLEMS/ COMPLICATIONS**

- **Congregate living** in shelters or doubled up with other families increases homeless children's risk of exposure to viral infection, which may increase the incidence of otitis media. Educate families about preventive measures.
- **Parental smoking** The high prevalence of tobacco smoking among homeless people increases children's risk for otitis media. Refer the parent to a smoking cessation program; counsel to explore readiness to change. Consider the child's exposure to other smoke from marijuana, crack cocaine, etc.
- **Hearing problems** Multiple ear infections or chronic middle ear effusion can result in hearing loss that may affect the child's cognitive, linguistic, emotional and social development, as well as attachment to the parent and how the parent interacts with the child. Routinely assess hearing; refer to audiologist/ ENT as needed.
- **Speech delays** Homeless children have more problems with speech delays unrelated to otitis media than do poor housed children. These problems are exacerbated by ear disease. Many homeless children have delayed social and verbal skills, which make it difficult to assess for speech delays. Refer to speech therapist as needed.

- **Lack of transportation** Homeless families often have difficulty obtaining transportation to specialty appointments. Help with transportation to all needed health services.
- **Financial barriers** Lack of health insurance or required copayments for pharmaceuticals may make it difficult for homeless families to obtain prescribed medications. Help the family obtain all entitlements for which the child is eligible (including Medicaid/SCHIP) as well as reduced-cost drugs available through public or private patient assistance programs.
- **Poor adherence** Assess the parent's/caregiver's ability to understand directions and follow through with treatment. Help the parent seek needed assistance (e.g., substance abuse counseling, help from childcare center staff). Speak in a straightforward, nonjudgmental manner. Acknowledge how complicated homeless peoples' lives are, and the fact that there are conflicting priorities. Be sure the parent understands the importance of treatment for the child. Use language the patient/parent can understand. Articulate realistic but high expectations.
- **Familial stress** A child with acute or chronic illness presents another source of stress for a family already dealing with the highly stressful experience of homelessness. Help to alleviate stress by facilitating access to stable housing, supportive services, and other resources (e.g., through childcare centers and schools). Inform the family about the McKinney-Vento Homeless Assistance Act, which requires that all school districts make special accommodations to ensure access to school for children whose families are homeless. (For state and local resources on homelessness and education, see [www.serve.org/nche/states/state\\_resources.php](http://www.serve.org/nche/states/state_resources.php))

## **FOLLOW-UP**

- **Primary care provider (PCP)** Help homeless families find a regular source of primary care, apply for medical assistance, and identify housing alternatives. Provide comprehensive primary care until the family finds stable housing and a primary care clinic that meets their needs. If the patient already has a regular PCP and you are not that person, refer immediately; facilitate transportation; and share significant information with that provider. Make sure the PCP understands the family's living situation and special needs. Obtain the family's consent for release of personally identifiable health information as needed.
- **Frequency** Homeless children with AOM should receive follow-up care from a primary care provider in 5–7 days or less after initiation of treatment, depending on severity; longer intervals may result in loss to follow-up. If the infection has not improved within 48–72 hours, consider a change in medical therapy. Patients with purulent drainage from the ear(s) (otorrhea) for more than 1 week's duration should be seen by their PCP, and possibly referred to an ENT specialist for a thorough cleaning and evaluation using a microscope to rule out conditions such as tympanic membrane perforation or cholesteatoma. Children with sterile middle ear fluid should be followed up in 2–3 months and referred to an ENT doctor if fluid persists.

## ADAPTING YOUR PRACTICE:

### Treatment & Recommendations for Homeless Children with Otitis Media

- **Specialty referrals** Homeless children are at significant risk for delayed treatment when continuity of care is lacking. If referrals are delayed, there may not be another opportunity for assessment and intervention to arrest damaging results of otitis media. More aggressive referrals are needed for homeless children, who require access to professionals in multiple clinical disciplines. Access to specialists is limited in many places, especially in rural areas. Work toward establishing relationships with specialists in your community. Develop referral relationships with specialists willing to accept Medicaid patients or provide *pro bono* care for individuals who do not qualify for public health insurance.

**Referral to audiologist/ speech pathologist** Any hearing loss, balance problem, speech delay, or sleep disorder with effusion or chronic ear infection should trigger referral to an audiologist and/or a speech pathologist. If speech and/or hearing milestones are unclear, refer. Educate clinicians to whom you refer patients about the family's living conditions.

**ENT referral** Consider referral to an ear, nose, and throat (ENT) specialist in the case of persistent middle ear effusion or significant recurrent acute otitis media, for evaluation of need for myringotomy and pressure equalizing tube placement. Typical thresholds for surgery are fluid with hearing loss for three months, or 5–6 episodes of otitis media in a six-month period. However, early referral may be necessary, especially if other underlying developmental or hearing impairment is present. Early referral may be necessary in the homeless population, since it may be difficult to rigorously document these criteria.

- **Case management** Whenever possible, involve a social worker, case manager or shelter nurse to facilitate return visits. Give appointment slips to the parent/caregiver, social worker, and shelter staff.
- **Outreach** Coordinate medical care with an outreach worker. Work closely with daycare/school staff to promote preventive measures – e.g., hand washing, isolating children who are sick (when possible), identifying those with health problems and referring them to a PCP.

## PRIMARY SOURCES

- American Academy of Family Physicians, American Academy of Otolaryngology-Head and Neck Surgery, and American Academy of Pediatrics Subcommittee on Otitis Media With Effusion. (2004). *Otitis Media With Effusion: Clinical Practice Guideline*. *Pediatrics*; 113(5): 1412-1429.  
<http://aappolicy.aappublications.org/cgi/content/abstract/pediatrics;113/5/1412>
- American Academy of Pediatrics, American Academy of Family Physicians Subcommittee on Management of Acute Otitis Media (2004 May). Diagnosis and Management of Acute Otitis Media: Clinical Practice Guideline. *Pediatrics* 113(5): 1451-1465.  
[http://www.aafp.org/online/etc/medialib/aafp\\_org/documents/clinical/clin\\_recs/otitismedia.Par.0001.File.dat/final\\_aom.pdf](http://www.aafp.org/online/etc/medialib/aafp_org/documents/clinical/clin_recs/otitismedia.Par.0001.File.dat/final_aom.pdf)

## OTHER REFERENCES

- Aber JL et al. (1997). The effects of poverty on child health and development. *Annu Rev Public Health*; 18: 463-83.
- Adair-Bischoff CE and Sauve RS. (1998). Environmental tobacco smoke and middle ear disease in preschool-age children. *Archives of Pediatrics and Adolescent Medicine*; 152(2): 127-133.
- AAP. (2005). Breastfeeding and the use of human milk. Policy Statement. *Pediatrics*;115(2): 496-506. <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;115/2/496>
- AAP. (1996). Health needs of homeless children and families (RE9637). *Pediatrics*; 98(4): 351-353.
- American Lung Association. (2005). Secondhand Smoke Fast Facts.  
[www.healthyearkansas.com/pdf/smokefree\\_info.pdf](http://www.healthyearkansas.com/pdf/smokefree_info.pdf)
- Arcavi L & Benowitz NL. (2004). Cigarette smoking and infection. *Arch Intern Med*;164(20): 2206-2216.
- Babb MJ, Hilsinger RL, Korol HW, Wilcox RD. (2004). Modern acoustic reflectometry: Accuracy in diagnosing otitis media with effusion. *Ear, Nose & Throat Journal*; 83(9): 622-624.
- Barclay L. (2008). Diagnostic methods to treat ear pain in primary care setting. *Am Fam Physician*;77:621-628. <http://www.medscape.com/viewarticle/570960>
- Barclay L & Murata P. (2006). Pocket card tool may help determine severity of acute otitis media. *Pediatr Infect Dis J*;25:101-107. [www.medscape.com/viewarticle/524891](http://www.medscape.com/viewarticle/524891)
- Bassuk EL, Rubin L and Lauriat AS. (1986). Characteristics of homeless sheltered families. *Am Jnl Pub Health*; 76:1097-1101.
- Berti LC, Zylbert S, Rolnitzky L. (2001). Comparison of health status of children using a school-based health center for comprehensive care. *Journal of Pediatric Health Care*;15(5):244-50.



**ADAPTING YOUR PRACTICE:**  
**Treatment & Recommendations for Homeless Children with Otitis Media**

- Brickner PW, Ed. (1990). *Under the Safety Net: The Health and Social Welfare of the Homeless in the United States*. Chapter 8: Health Care for Children in Homeless Families. NY: W. W. Norton & Company. 123-124, 128, 131, 382. ISBN 0393028852, 9780393028850
- Brooks-Gunn J & Duncan GJ. (1997). The effects of poverty on children. *Future Child* 7:55-71.
- Brunton S. (2006). Current face of acute otitis media: Microbiology and prevalence resulting from widespread use of heptavalent pneumococcal conjugate vaccine. *Clin Ther*;28(1):118-23.
- Bukutu C, Deol J and Vohra S. (2008). Complementary, holistic, and integrative medicine: Therapies for acute otitis media. *Pediatr Rev*;29;193-199.  
<http://pedsinreview.aappublications.org/cgi/content/full/29/6/193>
- Carr RR & Nahata MC. (2006). Complementary and alternative medicine for upper-respiratory-tract infection in children. *Am J Health-Syst Pharm*;63(1): 33-39.  
[www.medscape.com/viewarticle/521318](http://www.medscape.com/viewarticle/521318)
- Centers for Disease Control and Prevention (CDC). (2008). *Manual for the Surveillance of Vaccine-Preventable Diseases*, Fourth edition. Pneumococcal disease.  
[www.cdc.gov/vaccines/pubs/surv-manual/chpt11-pneumo.htm](http://www.cdc.gov/vaccines/pubs/surv-manual/chpt11-pneumo.htm)
- CDC, National Center for HIV, STD and TB Prevention. (2001). Section 8: Formula feeding counseling for children born to HIV-seropositive mothers.  
[www.cdc.gov/hiv/pubs/HAC-PCG/section8.htm](http://www.cdc.gov/hiv/pubs/HAC-PCG/section8.htm)
- CDC. (2000). Preventing pneumococcal disease among infants and young children: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*; 49(No. RR-9):1-35.
- Chianese J, Hoberman A, Paradise JL, Colborn DK, Kearney D, Rockette HE, Kurs-Lasky M. (2007). Spectral gradient acoustic reflectometry compared with tympanometry in diagnosing middle ear effusion in children aged 6 to 24 months. *Arch Pediatr Adolesc Med*;161(9):884-888. <http://archpedi.ama-assn.org/cgi/reprint/161/9/884.pdf>
- Eddins E. (1993). Characteristics, health status and service needs of sheltered homeless families. *ABNFJ*; 4: 40-44.
- Fierman AH et al. (1991). Growth delay in homeless children. *Pediatrics*; 88: 918-925.
- Grant R, Shapiro A, Joseph S, Goldsmith S, Rigual-Lynch L, Redlener I. (2007). The health of homeless children revisited. *Adv Pediatr*; 54(1): 173-187.
- Grant R, Lynch L, Joseph S. (2006). Otitis media affects early development for high-risk children. Oral Presentation, American Public Health Association, Nov. 2006.
- Hanson LA. (1999 Aug). Human milk and host defence: immediate and long-term effects. *Acta Paediatr Suppl*; 88(430): 42-6.

- Health Care for the Homeless Clinicians' Network. (2000). 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>
- Health Resources and Services Administration (HRSA). (1999). The Health Center Program; Program Assistance Letter: Health Care for the Homeless Outcome Measures. Center for the Vulnerable Child, Children's Hospital Oakland, [Study to test the utility of antibiotic treatment for otitis media and age-appropriate immunization status and determine their usefulness for HCH programs that target children].  
<http://bphc.hrsa.gov/policy/pal9907/oakland.htm>
- Ilicali OC, Keleş N, De er K, Sa un OF, Güldiken Y. (2001). Evaluation of the effect of passive smoking on otitis media in children by an objective method: Urinary cotinine analysis. *Laryngoscope*; 111: 163-7.
- Kaler SG & Rennert OM (Eds.), National Institute of Child Health and Human Development, NIH, Bethesda, Maryland. (2008). Reducing the impact of poverty on health and human development: Scientific approaches. *Annals of the New York Academy of Sciences*, Vol. 1136, Jun 2008. ISBN 1-57331-711-X, 378 pp, 37 papers.
- Karr C & Kline S. (2004). Homeless children: What every clinician should know. *Pediatr Rev*; 25;235-24. <http://pedsinreview.aappublications.org/cgi/content/full/25/7/235>
- Keyhani S, Kleinman LC, Rothschild M, Bernstein JM, Anderson R, Chassin M. (2008). Overuse of tympanostomy tubes in New York metropolitan area: evidence from five hospital cohort. *BMJ*. 2008 Oct 3;337:a1607. [http://www.bmj.com/cgi/reprint/337/oct03\\_1/a1607](http://www.bmj.com/cgi/reprint/337/oct03_1/a1607)
- McMurray-Avila M, Gelberg L, Breakey WR. (1998). Balancing act: Clinical practices that respond to the needs of homeless people. Symposium on Homelessness Research sponsored by HUD/HHS: <http://aspe.hhs.gov/progsys/homeless/symposium/8-Clinical.htm>
- Montauk SL. (2006). The homeless in America: Adapting your practice. *Am Fam Physician*;74:1132-8. <http://www.aafp.org/afp/20061001/1132.pdf>
- Morris R I & Strong L. The impact of homelessness on the health of families. *The Journal of School Nursing*; 20(4): 221-227. <http://jsn.sagepub.com/cgi/reprint/20/4/221>
- National Center on Homeless Families. (1999). Homeless children: America's new outcasts: [http://familyhomelessness.org/policy/homeless\\_children\\_print.html](http://familyhomelessness.org/policy/homeless_children_print.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.
- Paradise JL and Bluestone CD. (2005). Consultation with the specialist: tympanostomy tubes: A contemporary guide to judicious use. *Pediatr Rev*; 26;61-66.  
<http://pedsinreview.aappublications.org/cgi/content/full/26/2/61>
- Paradise JL et al. (2000). Language, speech sound production, and cognition in three-year-old children in relation to otitis media in their first three years of life. *Pediatrics*; 105(5): 1119-30.

**ADAPTING YOUR PRACTICE:****Treatment & Recommendations for Homeless Children with Otitis Media**

- Paradise JL, Rockette HE, Colborn DK, Bernard BS, Smith CG, Kurs-Lasky M, et al. (1997). Otitis media in 2253 Pittsburgh-area infants: Prevalence and risk factors during the first two years of life. *Pediatrics*;99: 318–33.
- Poehling KA, Szilagyi PG, Grijalva CG, et al. (2007). Reduction of frequent otitis media and pressure-equalizing tube insertion in children after introduction of pneumococcal conjugate vaccine. *Pediatrics*;119:707–15.
- Redlener I & Johnson D. (1999). Still in crisis: The health status of New York’s homeless children. The Children’s Health Fund. [www.childrenshealthfund.org/hshc4.html](http://www.childrenshealthfund.org/hshc4.html)
- Retzlaff C. (1999). Speech and language pathology & pediatric HIV. *J Int Assoc Physicians AIDS Care*; 5(12): 60–2, 1999.
- Revai K, Dobbs LA, Nair S, Patel JA, Grady JJ, and Chonmaitree T. (2007). Incidence of acute otitis media and sinusitis complicating upper respiratory tract infection: The effect of age. *Pediatrics*; 119(6):e1408–12.
- Rubin DH, Erickson CJ, Agustin Ms, Cleary SD, Allen JK, Cohen P. (1996). Cognitive and academic functioning of homeless children compared with housed children. *Pediatrics*; 97: 289–294.
- Sachs-Ericsson N, Wise E, Debrody CP, Paniucki HB. (1999). Health problems and service utilization in the homeless. *J Health Care Poor and Underserved*; 10(4): 443–52.
- Siegel RM & Bien JP. (2004). Acute Otitis Media in children: A continuing story. *Pediatr Rev*; 25;187–193. <http://pedsinreview.aappublications.org/cgi/content/full/25/6/>
- Telethon Institute for Child Health Research (Telethon Institute). (2008). Ear infections in children linked to passive smoking. *Science Daily* 19 May 2008. Retrieved October 31, 2008, from <http://www.sciencedaily.com-/releases/2008/05/080519110703.htm>
- U.S. Department of Health and Human Services (DHHS), Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. (Jul 29, 2008). *Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection*. Bethesda (MD). 134 p. <http://aidsinfo.nih.gov/contentfiles/PediatricGuidelines.pdf> Retrieved 9/9/08
- 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.
- Wellbery C. (2008). Otitis media guidelines do not reflect clinical practice. *Am Fam Physician*; 77(4):516–17.
- Wood D (Ed.). (1992). *Delivering Health Care to Homeless Persons: The Diagnosis and Management of Medical and Mental Health Conditions*. New York: Springer Publishing.
- Wright JD. (1990). The health of homeless people: Evidence from the National Health Care for the Homeless Program. In: Brickner PW et al. (Eds.) *Under the Safety Net: The Health and Social Welfare of the Homeless in the United States*. New York: W.W. Norton, 1990: 15–31.
- Wick Roberts JE, Wallace IF, Henderson FW (Eds). (1997). *Otitis Media in Young Children: Medical, Developmental, and Educational Perspectives*. City, State: Paul H. Brookes Publishing Co.

## **SUGGESTED RESOURCES**

American Academy of Pediatrics (AAP). (2006). *Red Book: Report of the Committee on Infectious Diseases*, 27<sup>th</sup> edition, Section 4. Antimicrobial Agents and Related Therapy: 738–739. <http://aapredbook.aappublications.org/current.shtml>

Klein JO, Bluestone CD (2004). Otitis media. In: RD Feigin et al., Editors, *Textbook of Pediatric Infectious Diseases*, vol. 1, 5th ed., pp. 215–234. Philadelphia: Saunders.

Kraybill K & Olivet J. (2006). *Shelter Health: Essentials of Care for People Living in Shelter*. 198 pages, with Tool Kit on CD. <http://www.nhchc.org/shelterhealth.html>

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: [www.nhchc.org/Publications/Pagesfrom2ndedition-101901.pdf](http://www.nhchc.org/Publications/Pagesfrom2ndedition-101901.pdf)

National Health Care for the Homeless Council. (2005). *Health Care for the Homeless: Introduction & Outreach*. DVD and user's guide. To order: [www.nhchc.org/publications.html](http://www.nhchc.org/publications.html)

## **WEBSITES**

American Academy of Pediatrics	<a href="http://www.aap.org">www.aap.org</a>
American Academy of Family Physicians	<a href="http://www.aafp.org">www.aafp.org</a>
HRSA Health Disparities Collaboratives	<a href="http://www.healthdisparities.net">www.healthdisparities.net</a>
National Guideline Clearinghouse	<a href="http://www.guideline.gov">www.guideline.gov</a>
National Health Care for the Homeless Council	<a href="http://www.nhchc.org">www.nhchc.org</a>
HCH Clinicians' Network	<a href="http://www.nhchc.org/network.html">www.nhchc.org/network.html</a>
Resources on homeless children & youth	<a href="http://www.nhchc.org/pediatrics.html">www.nhchc.org/pediatrics.html</a>
Adapted clinical practice guidelines	<a href="http://www.nhchc.org/practiceadaptations.html">www.nhchc.org/practiceadaptations.html</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 order Network materials, call 615 226-2292 or write [network@nhchc.org](mailto:network@nhchc.org). Please visit our Web site at [www.nhchc.org](http://www.nhchc.org).