Complete Summary

GUIDELINE TITLE

Diagnosis and treatment of otitis media in children.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Diagnosis and treatment of otitis media in children. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2004 May. 27 p. [58 references]

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
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SCOPE

DISEASE/CONDITION(S)

- Otitis media
- Otitis media with effusion

GUIDELINE CATEGORY

Diagnosis
Management
Prevention
Treatment

CLINICAL SPECIALTY

Allergy and Immunology
Family Practice
Nursing
Otolaryngology
Pediatrics
Pharmacology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To increase appropriate antibiotic usage for otitis media infections
- To increase the timely and appropriate clinical follow-up for patients with a diagnosis of otitis media
- To improve parents' (caretakers') knowledge of symptoms suggestive of otitis media, appropriate indicators for a provider visit, risk factors, and outcomes of otitis media

TARGET POPULATION

Children from birth to age 18

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis

Examination of ear using pneumatic otoscopy for suspected acute otitis media and otoscopy and/or tympanometry for suspected otitis media with effusion

Treatment/Management

1. Observation of mildly symptomatic children
2. Therapeutic antibiotic regimens (first-line: amoxicillin; second-line: amoxicillin/clavulanate potassium [Augmentin®], cefuroxime axetil [Ceftin®], ceftriaxone sodium [Rocephin®], cefprozil [Cefzil®], loracarbef [Lorabid®], cefdinir [Omnicef®], cefixime [Suprax®], cefpodoxime proxetil [Vantin®]; other second-line (not recommended after failed course of amoxicillin): trimethoprim sulfa [Bactrim®, Septra®], clarithromycin [Biaxin®], erythromycin ethylsuccinate and sulfisoxazole acetyl [Pediazole®], azithromycin [Zithromax®])
3. Antibiotic ear drops such as ciprofloxin or ofloxacin added to oral antibiotics in children with a draining middle ear
4. Prophylactic antibiotic regimens (amoxicillin)
5. Otitis media education for caretakers, including discussion of prevention measures
6. Referral to an ear, nose, and throat (ENT) specialist for consideration of ventilating tubes
7. Follow-up

MAJOR OUTCOMES CONSIDERED

- Symptom relief
- Antibiotic resistance
- Otitis media recurrence rate
- Clinical resolution of acute otitis media and otitis media with effusion
- Hearing loss

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

No additional descriptions of literature search strategies are available.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analyses.

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Institute Partners: System-Wide Review

The guideline annotation, discussion and measurement specification documents undergo thorough review. Written comments are solicited from clinical, measurement, and management experts from within the member groups during an eight-week review period.

Each of the Institute's participating member groups determines its own process for distributing the guideline and obtaining feedback. Clinicians are asked to suggest modifications based on their understanding of the clinical literature coupled with their clinical expertise. Representatives from all departments involved in implementation and measurement review the guideline to determine its operational impact. Measurement specifications for selected measures are developed by the Institute for Clinical Systems Improvement (ICSI) in collaboration with participating member groups following implementation of the guideline. The specifications suggest approaches to operationalizing the measure.

Guideline Work Group

Following the completion of the review period, the guideline work group meets 1 to 2 times to review the input received. The original guideline is revised as necessary and a written response is prepared to address each of the responses received from member groups. Two members of the Respiratory Steering Committee carefully review the input, the work group responses, and the revised draft of the guideline. They report to the entire committee their assessment of four questions: (1) Is there consensus among all ICSI member groups and hospitals on the content of the guideline document? (2) Has the drafting work group answered all criticisms reasonably from the member groups? (3) Within the knowledge of the appointed reviewer, is the evidence cited in the document current and not out-of-date? (4) Is the document sufficiently similar to the prior edition that a more thorough review (critical review) is not needed by the member group? The committee then either approves the guideline for release as submitted or negotiates changes with the work group representative present at the meeting.

Pilot Test

Member groups may introduce the guideline at pilot sites, providing training to the clinical staff and incorporating it into the organization's scheduling, computer and other practice systems. Evaluation and assessment occurs throughout the pilot test phase, which usually lasts for three-six months. At the end of the pilot test phase, ICSI staff and the leader of the work group conduct an interview with the

member groups participating in the pilot test phase to review their experience and gather comments, suggestions, and implementation tools.

The guideline work group meets to review the pilot sites' experiences and makes the necessary revisions to the guideline; the Respiratory Steering Committee reviews the revised guideline and approves it for release.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations for the diagnosis and treatment of otitis media and otitis media with effusion in children are presented in the form of an algorithm with 23 components, accompanied by detailed annotations. An algorithm for Diagnosis and Treatment of Otitis Media in Children and an algorithm for Otitis Media with Effusion are provided; clinical highlights and selected annotations (numbered to correspond with the algorithm) follow.

Class of evidence (A-D, M, R, X) ratings are defined at the end of the Major Recommendations field.

Clinical Highlights

1. Schedule an appointment for the child within 24 hours of the call to the clinic. (Annotation #4)
2. A clinical examination is necessary to diagnose acute otitis media. Diagnosis made over the phone is generally discouraged. (Annotation #4)
3. Educate parents on measures to prevent the occurrence of otitis media. (Annotation #6)
4. Prescribe first-line antibiotics (amoxicillin) when the diagnosis of otitis media is made. (Annotation #7)
5. Prescribe second-line antibiotics when the patient fails to respond to first-line drugs, has a history or lack of response to first-line drugs, is hypersensitive to first-line medications, has a resistant organism as defined by culture, or has a coexisting illness requiring a second-line medication. (Annotation #7)
6. Recheck in 3 to 4 weeks or at next well child visit (if within 4 to 6 weeks) for all children < 5 years of age, and those 5 years of age or older if risk factors are identified, there is a history of previous ventilation tubes or ear surgery, or if there is a history of speech or development delay. (Annotation #10)
7. Refer the patient to an ear, nose, and throat (ENT) physician when the criteria are met. (Annotation #12)

Diagnosis and Treatment of Otitis Media in Children Algorithm Annotations

2. Symptoms Suggestive of Otitis Media?

   Children less than 3 years old more often present with non-specific symptoms (irritability, fever, night waking, poor feeding, coryza, conjunctivitis, and occasionally balance problems). Ninety percent (90%) of infants and toddlers with otitis media have associated rhinitis symptoms.

For more information on symptoms of acute otitis media (AOM) please refer to Annotation Appendix A of the original guideline document, "Recommended Patient Education Content."

Ear pulling without associated symptoms is usually not a symptom of otitis media.

Evidence supporting this recommendation is of classes: C, R

4. Schedule Appointment Within 24 Hours

While symptoms of acute otitis media are often dramatic, the illness is rarely an emergency. Most children can be treated symptomatically through the night unless symptoms of a more serious illness are present. Comfort measures can be discussed with parent/caretaker. (Refer to Annotation Appendix A, "Recommended Patient Education Content" in the original guideline document.)

Diagnosis of otitis media is made by exam. Diagnosis by phone should be avoided except in special circumstances (children with a history of multiple sets of ventilating tubes or children in high-risk categories such as cleft palate or Down's syndrome who present with bloody or purulent drainage and who are well known to the provider, and in whom follow-up is assured).

5. Meets Diagnostic Criteria for Acute Otitis Media (AOM)?

Middle ear effusion (seen on examination and/or confirmed by pneumatic otoscopy) with:

a. Local signs of inflammation (redness, bulging)
b. Symptoms associated with AOM:
    - otalgia
    - otorrhea
    - irritability
    - restlessness
    - poor feeding
    - fever

AOM is characterized by middle ear effusion with acute inflammation. (The tympanic membrane is usually full or bulging [decreased mobility by pneumatic otoscopy]. Color is usually red, yellow or cloudy.) Symptoms may include otalgia, otorrhea, irritability, restlessness, poor feeding or fever. Tympanometry is usually not necessary to establish the diagnosis of AOM.

6. Discuss Prevention of Otitis Media

Parents/caretakers should be counseled about otitis media prevention. Elimination of controllable risk factors should be encouraged whenever possible.

Otitis media prevention measures to discuss include:

- encouraging breast feeding
- feeding child upright if bottle fed
- avoiding exposure to passive smoke
- limiting exposure to numbers of children to the extent possible
- teaching adults and children careful hand washing technique
- limiting exposure to viral upper respiratory infections
- avoid pacifier use beyond 10 months of age
- ensure immunizations are up-to-date; including influenza and Prevnar®

For more information on prevention of otitis media (OM), please refer to Annotation Appendix A, "Recommended Patient Education Content" in the original guideline document.

Evidence supporting this recommendation is of classes: B, C, D

7. Initiate Appropriate Treatment

Treatment Options for Acute Otitis Media

- Antibiotic regimen using criteria for first- versus second-line antibiotics.
- Observation of mildly symptomatic children is encouraged in the absence of risk factors. Risk factors may include: severity of symptoms, age < 2 years, and parental acceptance.

Options for treatment include:

A. Therapeutic (10 day) course of antibiotics. Consideration may be given to a shortened course of antibiotics (5 days) for children who are at low risk (i.e., age > 2 years, no history of chronic or recurrent otitis media and intact tympanic membranes).
    1. First-Line Medications
        a. amoxicillin (40 mg/kg/day) if low risk (> 2 years, no day care, and no antibiotics for the past three months).
        b. 80 mg/kg/day if not low risk or for resistant AOM if the lower dose was used initially.

    2. Recommended second-line medications include: (Check the health plan formulary listing for currently available medications.)
        a. amoxicillin/clavulanate potassium (Augmentin®)
        b. cefuroxime axetil (Ceftin®)
        c. ceftriaxone sodium (Rocephin®): prescribe one dose for new onset otitis media and a three-day course for a truly resistant pattern of otitis media or if oral treatment cannot be given.
        d. cefprozil (Cefzil®)
        e. loracarbef (Lorabid®)
        f. cefdinir (Omnicef®)
        g. cefixime (Suprax®)
        h. cefpodoxime proxetil (Vantin®)

3. Indications for second-line medications include:
    a. failure to respond to first-line drugs (resistant or persistent acute otitis media)
    b. history of lack of response to first-line drug (failure of medication on at least two occasions in the current respiratory season)
    c. hypersensitivity to first-line medications
    d. presence of resistant organism determined by culture
    e. coexisting illness requiring a second-line medication

4. Second-line medications that are currently used but are not as strongly supported in the literature are listed below. These medications are not recommended when the patient has failed a course of amoxicillin.
    a. trimethoprim sulfa (Bactrim®, Septra®)
    b. clarithromycin (Biaxin®)
    c. erythromycin ethylsuccinate and sulfisoxazole acetyl (Pediazole®)
    d. azithromycin (Zithromax®)

Observation with or without provisional prescription if symptoms of AOM should worsen

This option is not recommended in the acutely ill child but may be considered in an asymptomatic or only mildly symptomatic child with mild findings on exam. Parents should be instructed to call back if symptoms persist, if the child is inconsolable, or if the child is becoming more ill.

For a child with a draining ear, whether from ventilation tubes or perforation, a nontoxic drop (such as ciprofloxin or ofloxacin) may be added to oral antibiotic treatment.

The use of nasal decongestants and corticosteroids is not supported in the literature.

Treatment of Resistant Acute Otitis Media

Resistant acute otitis media (AOM) is defined as persistence of moderately severe symptoms (pain and fever) after 3 to 5 days of antibiotic therapy with findings of continued pressure and inflammation (bulging) behind the tympanic membrane. A second antibiotic should be chosen; the alternative first-line medication may be an appropriate choice. (Referral to ENT specialist may be indicated if significant pain and fever continue for 4 to 5 days on the second medication or if complications of otitis media occur.)

Treatment of Persistent Acute Otitis Media

Persistent AOM is defined as continued findings of AOM present within 6 days of finishing a course of antibiotics. A second course of therapy with a different antibiotic is indicated for persistent AOM.

Evidence supporting this recommendation is of classes:

First-line medications: A, M, R

Second-line medications: A, D

Treatment of resistant acute otitis media: A, M, R

Treatment of persistent acute otitis media: R

8. History of Recurrent Acute Otitis Media?

History should be reviewed or elicited at the time of diagnosis of AOM. If criteria of recurrent AOM are present, a prophylactic antibiotic regimen follows the therapeutic course of antibiotics. Children in high-risk categories may be considered for more aggressive or earlier intervention with prophylactic antibiotics. The decision for prophylaxis should be based on both the diagnostic criteria and the child's risk factors.

Diagnostic Criteria for Recurrent Acute Otitis Media

- A minimum of three or more episodes of AOM in a 6-month period or during a respiratory season or 4 or more in a year

Children at Increased Risk of Recurrent Acute Otitis Media

- Cleft palate, craniofacial abnormalities and Down's syndrome (very high risk category)
- First episode early (under 6 months)
- Family history of recurrent AOM in a sibling or parent
- Day care attendance
- Exposure to tobacco smoke
- Not breast-fed
- Ethnic origin: Native American or Innuit (Eskimo)

Evidence supporting this recommendation is of classes: B, C, D, R

9. Consider Prophylactic Regimen

Prophylactic Treatment Options

- amoxicillin (20 mg/kg QD [once a day])

The usual duration of antibiotic prophylaxis is 2 to 6 months. Parents should be advised that prophylaxis has been shown to reduce the frequency of AOM by 40% to 50% but will not eliminate its occurrence.

Evidence supporting this recommendation is of class: A

10. Schedule Follow-Up in 3 to 4 Weeks

Follow-up Considerations

- Recheck all children < 5 years old
- Recheck children ≥ 5 years old if:
    - risk factors identified
    - history of previous ventilating tubes or ear surgery
    - history of speech or developmental delay

Timing of Rechecks

- Recheck in 3 to 4 weeks or at next well child visit if within the next 4 to 6 weeks.
- Reassess for symptoms of unresponsive otitis: pain, fever, or irritability continuing after 3 to 5 days of treatment. (Refer to Annotation #7, "Initiate Appropriate Treatment.")

Evidence supporting this recommendation is of class: D

11. Acute Otitis Media Resolved?

Resolution is defined as a return to normal on exam with no evidence of effusion or inflammation and/or normal mobility. Tympanometry is not routinely needed to document resolution.

12. Criteria for Ear, Nose, and Throat Referral Met?

A child needs to meet one of the following nine criteria for ear, nose, and throat (ENT) referral for consideration of ventilating tubes:

1. Patients in high-risk categories should be referred immediately to ENT; patients with craniofacial anomalies, Downs' syndrome, cleft palate, and patients with speech and language delay.
2. Recurrent AOM which fails medical management (≥3 episodes in 6 months or ≥4 episodes in one year) with failure of prophylaxis defined as recurrence x 2 on prophylaxis in a 2 to 6 month time period. (A prophylactic regimen is described in Annotation #9, "Consider Prophylactic Regimen.")
3. Refractory acute otitis media with moderate to severe symptoms unresponsive to at least 2 antibiotics. (Refer to Annotation #7, "Initiate Appropriate Treatment.")
4. Bilateral or unilateral otitis media with effusion (OME) persisting for at least 3 months with hearing threshold of 20 dB or worse.

5. Development of advanced middle ear disease involving tympanic membrane atrophy, retraction pockets, ossicular erosion or cholesteatoma.
6. Medical treatment failure secondary to multiple drug allergy or intolerance.
7. At least 2 recurrences of otitis media within 2 to 3 months following ventilating tube extrusion with failed medical management.
8. Impending or actual complication of otitis media including:
    a. Mastoiditis
    b. Facial nerve paralysis
    c. Lateral (sigmoid) sinus thrombosis
    d. Meningitis
    e. Brain abscess
    f. Labyrinthitis

9. History of six or more months of effusions out of the previous twelve months.

Children at increased risk for otitis media include those under two years of age, those who have an episode of otitis media at less than 6 months of age, children in day care, and children who have a positive family history of otitis media.

Counseling Messages

When counseling parents/caregivers about otitis media prevention, encourage measures to diminish risk factors when possible. (Refer to Annotation #6, "Discuss Prevention Otitis Media.") Discussions with parents should take place regarding medical versus surgical treatment.

Evidence supporting this recommendation is of classes: R, X

15. Meets Diagnostic Criteria for Otitis Media with Effusion?

Middle ear effusion (seen on examination and/or confirmed by pneumatic otoscopy) or abnormal tympanometry or acoustic reflectometry without signs or symptoms of AOM.

The diagnosis of otitis media with effusion (OME) is distinguished from AOM by the presence of an effusion with a lack of signs or symptoms of inflammation or pressure behind the eardrum. Tympanic membrane findings: opaque or yellow, position neutral or retracted, decreased mobility or air fluid level. Tympanometry or pneumatic otoscopy may be useful in establishing the diagnosis.

Evidence supporting this recommendation is of classes: C, R, X

Otitis Media with Effusion Algorithm Annotations

18. Consider Treatment Options

Treatment options to be considered include:

1. Observe--rechecking in 4 to 6 weeks.

   Course of antibiotics should be given as a trial prior to referral for ventilating tubes. Ten-day course of antibiotics using first- and second-line criteria. (Refer to Annotation #7, "Initiate Appropriate Treatment.")

2. Referral for ventilating tubes if patient meets ENT referral criteria.

   Course of antibiotics should be given as a trial prior to referral for ventilating tubes. Ten-day course of antibiotics using first- and second-line criteria. (Refer to Annotation #7, "Initiate Appropriate Treatment.")

Evidence supporting this recommendation is of class: R

19. Follow-up 4 to 6 Weeks

    More frequent rechecking than every 4 to 6 weeks of OME is unnecessary and inappropriate. Ninety (90%) to 95% of OME will resolve in 3 to 4 months. Continued observation to assure complete resolution is appropriate since hearing loss accompanies OME.

    Evidence supporting this recommendation is of classes: A, D

20. Otitis Media with Effusion Resolved?

    Mobility of the eardrum should be normal or results of tympanogram or pneumatic otoscopy should confirm resolution.

    Evidence supporting this recommendation is of classes: C, X

21. Criteria for ENT Referral Met?

    Refer to Annotation #12, "Criteria for ENT Referral Met?"

<u>Definitions</u>:

Classes of Research Reports

A. Primary Reports of New Data Collection:

   Class A:

   - Randomized, controlled trial

   Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

Detailed and annotated clinical algorithms are provided for:

- Diagnosis and Treatment of Otitis Media in Children
- Otitis Media with Effusion

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The guideline contains an annotated bibliography and discussion of the evidence supporting each recommendation. The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Symptom relief
- Reduction of recurrence of otitis media
- Appropriate antibiotic usage for otitis media infections in children
- Timely and appropriate clinical follow-up for children with a diagnosis of otitis media
- Education of parent (caretakers) on the symptoms suggestive of otitis media, appropriate indicators for a provider visit, risk factors and outcomes of otitis media

Subgroups Most Likely to Benefit

- Children at increased risk for otitis media include those under two years of age, those who have an episode of otitis media at less than 6 months of age, children in day care, and children who have a positive family history of otitis media. For poorly understood reasons, children of Native American or Innuit descent are also at high risk for developing otitis media.
- Children at increased risk of recurrent acute otitis media and most likely to benefit from prophylactic antibiotics include those with cleft palate, craniofacial abnormalities and Down's syndrome (very high risk category); children who experience their first episode early (under 6 months); children with a family history of recurrent acute otitis media in a sibling or parent; children in day care, children who are exposed to tobacco smoke; children who were not breast-fed; and children of Native American or Innuit (Eskimo) descent.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for release, a member group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment and tobacco cessation.

Detailed measurement strategies are presented in the original guideline document to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

RELATED NQMC MEASURES

- Diagnosis and treatment of otitis media in children: percentage of children with a diagnosis of acute otitis media who were prescribed first-line antibiotics.
- Diagnosis and treatment of otitis media in children: percentage of children less than 5 years old with a diagnosis of acute otitis media who had an appropriate routine follow-up visit within the recommended time interval.
- Diagnosis and treatment of otitis media in children: percentage of parents (caretakers) receiving education on the symptoms suggestive of otitis media, appropriate indicators for a provider visit, risk factors, and outcomes of otitis media.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Diagnosis and treatment of otitis media in children. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2004 May. 27 p. [58 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 May (revised 2004 May)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT SpecialtyCare, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, Hamm Clinic, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hennepin Faculty Associates, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Health Care, North Suburban Family Physicians, NorthPoint Health &: Wellness Center, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, St. Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Winona Health

ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; e-mail: icsi.info@icsi.org; Web site: www.icsi.org.

SOURCE(S) OF FUNDING

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Health Plan, PreferredOne, and UCare Minnesota. In-kind support is provided by the Institute for Clinical Systems Improvement's (ICSI) members.

GUIDELINE COMMITTEE

Respiratory Steering Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: Paul Berry, MD (Work Group Leader) (HealthPartners Medical Group) (Pediatrics); Pamela Harris, MD (Park Nicollet Health Services) (Allergy); Barbara Malone, MD (Otolaryngology & Head and Neck Surgery, P.A.) (Ear, Nose, and Throat); David Sherris, MD (Mayo Clinic) (Ear, Nose, and Throat); Bruce Cunningham, DO (Family HealthServices Minnesota) (Family Practice); Brian Ebeling, MD (Quello Clinic, Ltd) (Family Practice); Mark Hagberg, MD (Park Nicollet Health Services) (Family Practice); Robert Sheeler, MD (Mayo Clinic) (Family Practice); Tom Bisig, MD (Mayo Clinic) (Internal Medicine); Richard Pfohl, MD (Park Nicollet Health Services) (Internal Medicine); Susan Virant, RN (HealthPartners Medical Group) (Adult Nursing); Peter Marshall, PharmD (HealthPartners) (Pharmacy); Teresa Hunteman (Institute For Clinical Systems Improvement) (Measurement/Implementation Advisor); Nancy Greer, PhD (Institute For Clinical Systems Improvement) (Evidence Analyst); Jenelle Meyer, RN (Institute For Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, Institute for Clinical Systems Improvement (ICSI) has adopted the policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline, but they are noted here to fully inform users. Readers of the guideline may assume that only work group members listed below have potential conflicts of interest to disclose.

No work group members have potential conflicts of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previously released version: Diagnosis and treatment of otitis media in children. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2002 Dec. 28 p.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Diagnosis and Treatment of Otitis Media in Children. In: ICSI pocket guidelines. April 2003 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2003 Mar. p. 220-3.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on March 22, 1999. The information was verified by the guideline developer on April 19, 1999. This summary was updated by ECRI on October 13, 2000, December 20, 2001, and most recently on April 18, 2003. The updated information was verified by the guideline developer on May 22, 2003. This summary was updated by ECRI on August 23, 2004.

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