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Guideline Summary NGC-5199

Guideline Title

Evidence-based care guideline for community acquired pneumonia in children 60 days through 17 years of age.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Evidence based care guideline for community acquired pneumonia in children 60 days through 17 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2006 Jul. 16 p. [80 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Cincinnati Children's Hospital Medical Center. Evidence-based clinical practice guideline of community-acquired pneumonia in children 60 days to 17 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2000. 11 p.

The guideline was reviewed for currency in July 2006, using updated literature searches, and was determined to be current.

Scope

Disease/Condition(s)

Community acquired pneumonia

Guideline Category

Diagnosis

Evaluation

Management

Prevention

Treatment

Clinical Specialty

Emergency Medicine

Family Practice

Infectious Diseases

Pediatrics

Pulmonary Medicine

Radiology

Intended Users

Advanced Practice Nurses

Nurses

Patients

Physician Assistants

Physicians

Respiratory Care Practitioners

Guideline Objective(s)

- To improve the use and interpretation of clinical signs and symptoms
- To improve the appropriate use of diagnostic testing
- To improve the use of appropriate antibiotic therapy
- To improve the rate of hospitalized patients who meet admission criteria

Target Population

These guidelines are intended primarily for use in children 60 days through 17 years of age with signs, symptoms, or other findings suggesting a diagnosis of uncomplicated pneumonia acquired by exposure to organisms in the

community.

Exclusions: The guidelines do not address all considerations needed to manage patients with:

- "toxic" appearance or requiring intensive care
- persistence of a neonatal cardiac or pulmonary disorder
- recent hospitalization with exposure to nosocomial flora
- likely aspiration of a foreign body or stomach contents
- congenital, acquired, or drug induced immunocompromise
- chronic conditions such as cystic fibrosis that uniquely alter pathophysiology and care options

Interventions and Practices Considered

Diagnosis/Evaluation

1. Clinical assessment, including initial history, physical examination performed for signs of respiratory illness and fever, use of the World Health Organization age-specific criteria for tachypnea, and assessment of severity based on overall appearance and behavior
2. Chest x-rays, selectively
3. Laboratory tests, selectively (white blood cell count and differential, sputum Gram stain and culture, pleural culture, purified protein derivative and other skin tests in children with a history of exposure to tuberculosis, and additional studies as appropriate)

Note: Blood cultures; cultures, rapid viral studies or serologic testing for specific pathogens; and C reactive protein (CRP), erythrocyte sedimentation rate (ESR) and other measures of acute phase reactants are considered but not recommended for routine studies.

Treatment/Management

1. Antibiotic treatment (when bacterial cause is likely)
   - First line: high-dose amoxicillin (age 60 days to 5 years) or azithromycin (Zithromax®) (age 5 years or older)
   - Second-line (cephalosporin or macrolide): ceftriaxone (Rocephin®), cefuroxime (Ceftin®), cefprozil (Cefzil®), clarithromycin (Biaxin®).
   - Combination of macrolide and beta-lactam agent for severe disease
2. Therapies directed toward airway clearance, such as postural drainage and chest physiotherapy (CPT) are considered but not recommended for patients with uncomplicated pneumonia.
3. Considerations for inpatient admission
4. Follow-up within 24 to 48 hours
5. Consultation with a specialist in infectious diseases or pediatric pulmonary diseases, as appropriate

Prevention

1. Maintain up-to-date immunizations, including heptavalent conjugated pneumococcal vaccine (PCV7, Prevnar®) and annual influenza vaccine
2. Discussion with families of the measures recommended to prevent pneumonia infections

Major Outcomes Considered

- Statistical performance of clinical assessment methods: Likelihood ratios
- Effectiveness of drug treatments
- Rates of antibiotic resistance
- Complication rate

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

To select evidence for critical appraisal by the group, the Medline, EmBase and the Cochrane databases were searched for dates of January, 2000 through August, 2005, to generate an unrefined, "combined evidence" database using a search strategy focused on answering clinical questions relevant to community acquired pneumonia and employing a combination of Boolean searching on human-indexed thesaurus terms (MeSH headings using an OVID Medline interface) and "natural language" searching on words in the title, abstract, and indexing terms. The citations were reduced by: eliminating duplicates, review articles, non-English articles, and adult articles. The resulting abstracts were reviewed by a methodologist to eliminate low quality and irrelevant citations. During the course of the guideline development, additional clinical questions were generated and subjected to the search process, and some relevant review articles were identified. December, 1999 was the last date for which literature was reviewed for the previous version of this guideline. The details of previous review strategies are not documented. However, all original citations were reviewed for appropriateness to this revision.

July 2006 Update

A search using the above criteria was conducted for dates of September 2005 through June 2006. Three relevant articles were selected as potential future citations for the guideline. However, none of these references were determined to require changes to the 2005 version of the recommendations.

Number of Source Documents

362

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

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Recommendations have been formulated by a consensus process directed by best evidence, patient and family preference and clinical expertise. During formulation of these guidelines, the team members have remained cognizant of controversies and disagreements over the management of these patients. They have tried to resolve controversial issues by consensus where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Clinical Validation-Trial Implementation Period

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Experience with implementation of the original publication of this guideline provided learnings which have been incorporated into this revision.

The guidelines have been reviewed and approved by clinical experts not involved in the development process, senior management, Risk Management & Corporate Compliance, other appropriate hospital committees, and other individuals as appropriate to their intended purposes.

Recommendations

Major Recommendations

Each recommendation is followed by evidence classification (A-X) identifying the type of supporting evidence. Definitions for the types of evidence are presented at the end of the "Major Recommendations" field.

Assessment and Diagnosis

General

The objective of the initial clinical assessment is to decide if the child's history and physical examination findings are suggestive of community acquired pneumonia (CAP).

Clinical Assessment

1. It is recommended that the initial history include:
   - age of child (Juven et al., 2000 [C])
   - season of the year (Kim et al., 1996 [C])

- microorganisms currently circulating in the community (Cincinnati area information is posted on Cincinnati Children's Hospital Medical Center (CCHMC's) CenterLink webpage: "What's Bugging Us?") (Local Expert Consensus [E])
- immunization status, especially vaccines for *Streptococcus pneumoniae* and influenza virus if the child has an indication for these vaccines (Lucero et al., 2004 [M]; Harper et al., 2005 [S]), and
- exposure to tuberculosis, including personal or family travel in areas where tuberculosis is prevalent (Local Expert Consensus [E]).

2. It is recommended that a physical examination be initially performed for signs of respiratory illness and for fever (Local Expert Consensus [E]).

Note 1: Respiratory rates are best determined over a full 60-second period and inconsistencies require repeated observations. Respiratory patterns and rates in children are frequently modified by periodic behavioral and physiologic factors (Taylor et al., 1995 [C]; Singhi et al., 1994 [C]; Morley et al., 1990 [C]; Zukin et al., 1986 [C]; Leventhal, 1982 [C]; Berman, Simoes, & Lanata, 1991 [S,E]). See the Table below.

Note 2: Any single clinical finding is not useful in determining if a child does or does not have pneumonia; combinations of clinical findings are more predictive (Margolis & Gadomski, 1998 [M]). See Appendix 1 in the original guideline document.

Note 3: The best individual examination measures in children less than 5 years are:

- nasal flaring (age <12 months)
- oxygen saturation less than 94%
- tachypnea, and
- retractions

(Mahabee-Gittens et al., 2005 [C]; Redd et al., 1994 [C]; Harari et al., 1991 [C]).

The best negative predictive value is obtained if there is an absence of:

- tachypnea alone, or
- all other signs of respiratory illness

(Margolis & Gadomski, 1998 [M]).

See Appendix 1 in the original guideline document.

Note 4: See Appendix 2 in the original guideline document for standardized lung sound nomenclature.

Table: World Health Organization Age-Specific Criteria for Tachypnea*

Age	Approximate normal respiratory rates (breaths/min)	Tachypnea threshold (breaths/min)
2 to 12 months	25 to 40	50
1 to 5 years	20 to 30	40
≥5 years	15 to 25	20

*Tachypnea may not be present in a child with pronounced retractions or other signs of increased work of breathing (World Health Organization, 1999 [E]).

3. It is recommended that the severity of pneumonia be assessed based on overall clinical appearance and behavior, including an assessment of the child's degree of alertness and willingness to accept feedings. Subcostal retractions and other evidence of increased work of breathing increase the likelihood of a more severe form of pneumonia (World Health Organization 1999 [E]).

4. It is recommended that children be assessed with an awareness that a small proportion of patients under five years of age may present without signs of respiratory illness (Bachur, Perry, & Harper, 1999 [D]). In acutely ill and febrile children, pneumonia also may present as pain referred to the abdomen or as fever without a source (Ravichandran & Burge, 1996 [D]; Jona & Belin, 1976 [D]; Local Expert Consensus [E]).

Radiologic Assessment

5. It is recommended, for children with clinical evidence of pneumonia, that chest x-rays be obtained when:

- clinical findings are ambiguous
- a complication such as a pleural effusion is suspected, or
- pneumonia is prolonged and unresponsive to antimicrobials

(Swingler, Hussey, & Zwarenstein, 1998 [A]; Alario et al., 1987 [C]; Bachur, Perry, & Harper, 1999 [D]).

Note 1: In most studies of pneumonia, a positive chest x-ray was necessary to qualify a patient for study entry (Margolis & Gadomski, 1998 [M]; Redd et al., 1994 [C]). This constraint makes it difficult to assess the degree to which chest x-rays are actually needed to diagnose pneumonia in a clinical setting, since the likelihood ratio of a reference standard cannot be measured.

Note 2: Chest x-rays have not consistently been shown to alter management decisions, nor to improve clinical outcomes (Swingler, Hussey, & Zwarenstein, 1998 [A]).

Note 3: Chest x-rays have not been shown to differentiate viral from other etiologies (Virkki et al., 2002 [C]; Korppi et al., 1993 [C]; Alario et al., 1987 [C]; Bettenay, de Campo, & McCrossin, 1988 [D]).

Note 4: The perceived need for and ordering of a chest x-ray is expected to be inversely and appropriately related to the clinician's experience with the diagnosis and treatment of CAP (Margolis & Gadomski, 1998 [M]; Local Expert Consensus [E]).

6. It is recommended that chest x-rays be considered in children less than 5 years of age with high fevers and high white blood cell (WBC) counts of uncertain source (Bachur, Perry, & Harper, 1999 [D]).

Laboratory Assessment

7. It is recommended that a white blood cell count and differential be considered only when adjunctive information is necessary to help decide whether to use antibiotics (Korppi, 2004 [C]; Toikka et al., 2000 [C]; Bachur, Perry, & Harper, 1999 [D]).

Note: The likelihood of a bacterial cause generally increases as WBC counts increase above 15,000/mm^3, especially above 20,000/mm^3 and when associated with fevers higher than 39 degrees C (102.2 degrees F) (Shuttleworth & Charney, 1971 [C]; Bachur, Perry, & Harper, 1999 [D]), but these relationships have not been documented in all studies (Wubbel et al., 1999 [A]; Ruuskanen & Mertsola, 1999 [S,E]).

8. It is recommended that blood cultures **not** be routinely obtained (Claesson et al., 1989 [C]; Hickey, Bowman, & Smith, 1996 [D]).

Note 1: When pneumonia is diagnosed in an outpatient setting, the likelihood of a positive blood culture is less than 2.7% (Hickey, Bowman, & Smith, 1996 [D]).

Note 2: Blood cultures may be helpful for inpatients with more severe, resistant, or other unusual forms of pneumonia. Their utility, however, is limited when antibiotics are administered prior to obtaining the specimen (Kuppermann et al., 1997 [C]; Local Expert Consensus [E]).

9. It is recommended that C reactive protein (CRP), erythrocyte sedimentation rate (ESR), and other measures of acute phase reactants **not** be performed, as these tests are not specific enough to be useful (Korppi, 2004 [C]; Korppi, Remes, & Heiskanen-Kosma, 2003 [C]; Virkki et al., 2002 [C]; Heiskanen-Kosma & Korppi, 2000 [C]; Toikka et al., 2000 [C]; Korppi, Heiskanen-Kosma, & Leinonen, 1997 [C]; Ruuskanen & Mertsola, 1999 [S,E]).

10. It is recommended that cultures, rapid viral studies, or serologic testing for specific pathogens **not** be routinely performed, because the results, especially those that are not immediately available, usually do not affect initial management decisions (Honda et al., 2000 [D]; Skerrett, 1999 [S,E]; Bartlett et al., 1998 [S,E]).

11. It is recommended that purified protein derivative (PPD) and other skin testing be conducted in children with a history of exposure to tuberculosis, including personal or family travel in areas where tuberculosis is prevalent (Alves dos Santos et al., 2004 [D]; Local Expert Consensus [E]).

12. It is recommended that sputum Gram stain and culture on high quality specimens be considered when managing children with more severe disease (Skerrett, 1999 [S,E]; Local Expert Consensus [E]). See Consult and Referrals section.

Note: A high quality sputum is usually defined by the presence of less than 10 squamous epithelial cells and greater than 25 white blood cells per low power field (Skerrett, 1999 [S,E]).

13. It is recommended, that pleural cultures be considered prior to starting antibiotics when managing a child with an effusion (Skerrett, 1999 [S,E]; Local Expert Consensus [E]). See Consult and Referrals section.

14. It is recommended that when historical, physical, radiologic, or laboratory findings are inconsistent, additional studies be considered to evaluate for alternative or coincident conditions, such as foreign body aspiration or immunodeficiency (Local Expert Consensus [E]).

Management

General

There is substantial overlap in the clinical presentation of pneumonias caused by different etiologies, making prediction of etiology based on clinical presentation and radiologic and laboratory assessment very difficult. Choice of antibiotic in the treatment of CAP is generally based on age of patient and severity of illness.

Medications -- age 60 days to 5 years

15. It is recommended, for children 60 days to 5 years of age, that high dose amoxicillin (80 to 90 mg/kg/day) be used for 7 to 10 days when a bacterial cause for CAP is likely. This treatment will cover *S. pneumoniae*, the most common etiology for CAP for children in this age range (Aurangzeb & Hameed, 2003 [A]; Bartlett & Mundy, 1995 [S,E]; Local Expert Consensus [E]). See Appendix 3 in the original guideline document.

Note 1: The following resistance patterns have been reported:

- 16.7% to 35% of *S. pneumoniae* isolates from patients with community acquired respiratory tract infections (all ages) in the U.S. are resistant to penicillins (Gordon, Biedenbach, & Jones, 2003 [C]).
- Twenty-six percent of *S. pneumoniae* isolates from blood/cerebrospinal fluid (CSF) specimens cultured at CCHMC in 2004 were resistant to penicillin (CCHMC, 2004 [O]).
- At least 15% of *S. pneumoniae* in the U.S. are resistant to macrolides (Hyde et al., 2001 [O]).
- An organism resistant to penicillin is often resistant also to erythromycin. Erythromycin resistance generally suggests resistance to all macrolides (Doern et al., 1996 [C]; Campbell & Silberman,1998 [S]).

Note 2: The effectiveness of high dose amoxicillin has been demonstrated for acute otitis media and is considered a reasonable option when treating other infections (Piglansky et al., 2003 [C]; Jadavji et al., 1997 [S,E]; Local Expert Consensus [E]). Resistance of *S. pneumoniae* to penicillin (including amoxicillin) is mediated through alterations in the penicillin-binding proteins. Using high doses of amoxicillin saturates the penicillin-binding proteins, and is therefore considered a reasonable antibiotic option (Pallares et al., 1995 [C]).

Note 3: For children with allergies to penicillin, a macrolide or cephalosporin may be considered (Dudas et al., 2000 [C]; Klein, 1997 [S,E]; Local Expert Consensus [E]). See Consult and Referrals section if other antibiotics are being considered.

Note 4: Because *Mycoplasma pneumoniae* or *Chlamydia (Chlamydophila) pneumoniae* are a less common cause of CAP in children under age 5 years, macrolides are not considered first line therapy (Esposito et al., 2002 [C]). A

macrolide could be added to amoxicillin therapy at the 24 to 48 hour follow up if *M. pneumoniae* or *C. pneumoniae* is then suspected. This practice will avoid overuse of macrolides in this age group while adequately protecting the young child from resistant *S. pneumoniae* (Wubbel et al., 1999 [A]; Harris et al., 1998 [A]; Local Expert Consensus [E]).

Note 5: For an infant or child unable to tolerate liquids, a single initial dose of ceftriaxone may be considered prior to starting oral antibiotics (Baskin, O'Rourke, & Fleisher, 1992 [C]; Chumpa, Bachur, & Harper, 1999 [D]; Local Expert Consensus [E]).

Medications -- age 5 years and older

16. It is recommended, for children age 5 years and older, that a macrolide be used to treat CAP. This treatment will cover *M. pneumoniae* and *C. pneumoniae*, the most common etiologies of CAP for children in this age group. A macrolide may also cover *S. pneumoniae*, the most common bacterial cause of CAP in all age groups. Treatment duration is 7 to 10 days, although a five-day course of azithromycin may be used (Wubbel et al., 1999 [A]; Harris et al., 1998 [A]; Klein, 1997 [S,E]). See Appendix 3 in the original guideline document.

Note 1: The following resistance patterns have been reported:

- At least 15% of *S. pneumoniae* in the U.S. are resistant to macrolides (Hyde et al., 2001 [O]).
- 16.7% to 35% of *S. pneumoniae* isolates from patients with community acquired respiratory tract infections (all ages) in the U.S. are resistant to penicillins (Gordon, Biedenbach, & Jones, 2003 [C]).
- Twenty-six percent of *S. pneumoniae* isolates from blood/cerebrospinal fluid (CSF) specimens cultured at CCHMC in 2004 were resistant to penicillin (CCHMC, 2004 [O]).
- An organism resistant to penicillin is often resistant also to erythromycin. Erythromycin resistance generally suggests resistance to all macrolides (Doern et al., 1996 [C]; Campbell & Silberman, 1998 [S]).
- For high dose amoxicillin discussion see the recommendation for the younger age group.

Note 2: There is no evidence that any macrolide is more efficacious than another for treating *M. pneumoniae* or *C. pneumoniae* (Wubbel et al., 1999 [A]; Harris et al., 1998 [A]; Block et al., 1995 [A]; Klein, 1997 [S,E]).

Medications -- more severe disease

17. It is recommended, in a child with a more severe case of CAP (see recommendation #3), that the combination of both a macrolide and a beta-lactam agent (such as high dose amoxicillin or ceftriaxone) be considered. This will provide better coverage for resistant organisms and mixed infections (Korppi, Heiskanen-Kosma, & Kleemola, 2004 [C]; Heiskanen-Kosma, Korppi & Leinonen, 2003 [C]; Juven et al., 2000 [C]; Local Expert Consensus [E]).

Note: Mixed etiologies are reported in 30% to 50% of children with CAP (Korppi, Heiskanen-Kosma & Kleemola, 2004 [C]; Heiskanen-Kosma, Korppi, & Leinonen, 2003 [C]; Juven et al., 2000 [C]).

Other Therapies

18. It is recommended that therapies directed toward airway clearance, such as postural drainage and chest physiotherapy (CPT), **not** be used for the patient with uncomplicated pneumonia (Hardy et al., 1994 [S,E]; Local Expert Consensus [E]).

Admission Criteria

19. It is recommended that hospital admission be especially considered for infants and children who:

- have oxygen saturation consistently less than 91%
- are severely dehydrated
- are moderately dehydrated and unable to hydrate themselves orally after intravenous (IV) hydration
- are in moderate or severe respiratory distress
- have failed outpatient antibiotic treatment, or
- the clinician or family have identified that it is unsafe to send home

(Local Expert Consensus, [E]).

Follow up

20. It is recommended that practitioners follow up within 24 to 48 hours all patients diagnosed with CAP, including those not initially started on antibiotics (Local Expert Consensus, [E]).

Note: Evaluation of the child not following the expected clinical course may include consideration of:

- alternative diagnosis (Alves dos Santos et al., 2004 [D])
- ineffective antibiotic treatment because of lack of antibiotic coverage for the actual etiology
- ineffective antibiotic treatment because of organisms resistant to either penicillins or macrolides (Hyde et al., 2001 [O])
- complication(s); or
- viral etiology

(Local Expert Consensus [E]).

Consults and Referrals

21. It is recommended that consultation with a specialist in pediatric infectious diseases be considered when allergies, comorbid conditions, or prior antibiotic non-responsiveness confound the choice of therapy for a specific patient (Local Expert Consensus, [E]).

22. It is recommended that consultation with a specialist in pediatric pulmonary diseases is appropriate when

uncertain about the management of an effusion (Byington et al., 2002 [D]; Hardie et al., 1996 [D])

Prevention and Education

23. It is recommended that immunizations which prevent CAP be kept up-to-date, including:
    - heptavalent conjugated pneumococcal vaccine (PCV7, Prevnar®), (American Academy of Pediatrics [AAP], 2003 [O]); and
    - annual influenza vaccine for
        - all children 6 to 23 months of age, and
        - children aged ≥6 months with certain risk factors (including but not limited to asthma, cardiac disease, sickle cell disease, human immunodeficiency virus [HIV] and diabetes)

    (Harper et al., 2005 [S]).

24. It is recommended that measures to prevent pneumonia infections be discussed with families, including:
    - handwashing, especially when exposed to individuals with respiratory infections (Morton & Schultz, 2004 [A]; Roberts et al., 2000 [A])
    - breastfeeding (Levine et al., 1999 [C])
    - limiting exposure to other children (Levine et al., 1999 [C])

    Note: Spread of respiratory infections in daycare settings may be reduced by verifying the facility's handwashing policies and actual handwashing practices, selecting a setting with fewer children, and/or delaying entry into daycare (Roberts et al., 2000 [A]; Local Expert Consensus [E]).
    - reducing exposure to smoke (Almirall et al., 1999 [D]).

Definitions:

Evidence Grading Scale:

A: Randomized controlled trial: large sample

B: Randomized controlled trial: small sample

C: Prospective trial or large case series

D: Retrospective analysis

E: Expert opinion or consensus

F: Basic laboratory research

S: Review article

M: Meta-analysis or systematic review

Q: Decision analysis

L: Legal requirement

O: Other evidence

X: No evidence

Clinical Algorithm(s)

An algorithm is provided in the original guideline document for the medical management of children 60 days through 17 years of age with community acquired pneumonia (CAP).

Evidence Supporting the Recommendations

References Supporting the Recommendations

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Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified for the recommendations (see "Major Recommendations" field).

Evidence Grading Scale:

A: Randomized controlled trial: large sample

B: Randomized controlled trial: small sample

C: Prospective trial or large case series

D: Retrospective analysis

E: Expert opinion or consensus

F: Basic laboratory research

S: Review article

M: Meta-analysis or systematic review

Q: Decision analysis

L: Legal requirement

O: Other evidence

X: No evidence

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Effective medical assessment and management of children aged 60 days to 17 years with community acquired pneumonia
- Appropriate use of diagnostic studies
- Appropriate use of antibiotics

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

These recommendations result from the review of literature and practices current at the time of their formulations. This protocol does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the guidelines to meet the specific and unique requirements of individual patients. Adherence to this pathway is voluntary. The physician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

Appropriate companion documents have been developed to assist in the effective dissemination and implementation of the guideline. Experience with implementation of the original publication of this guideline has provided learnings which have been incorporated into this revision. The outcome measure monitored as of the revision publication date is: percent of guideline-eligible community acquired pneumonia (CAP patients) receiving antibiotics in the Emergency Department who receive an etiology-appropriate antibiotic (age-dependent).

Implementation Tools

Clinical Algorithm

Patient Resources

Quick Reference Guides/Physician Guides

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

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)

Cincinnati Children's Hospital Medical Center. Evidence based care guideline for community acquired pneumonia in children 60 days through 17 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2006 Jul. 16 p. [80 references]

Adaptation

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

Date Released

2000 Jul (revised 2005 Dec 22; reviewed 2006 Jul)

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Community Acquired Pneumonia Team 2005

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Financial Disclosures/Conflicts of Interest

All Team Members and Clinical Effectiveness support staff listed have declared whether they have any conflict of interest and none were identified.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Cincinnati Children's Hospital Medical Center. Evidence-based clinical practice guideline of community-acquired pneumonia in children 60 days to 17 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2000. 11 p.

The guideline was reviewed for currency in July 2006, using updated literature searches, and was determined to be current.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site.

For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Children's Hospital Medical Center Health Policy and Clinical Effectiveness Department at HPCEInfo@chmcc.org.

Availability of Companion Documents

The following is available:

- Community acquired pneumonia (CAP). Guideline highlights. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2005 Dec. 1 p. Electronic copies: Available in Portable Document Format (PDF) from the Cincinnati Children's Hospital Medical Center Web site.

Patient Resources

The following is available:

- Pneumonia, community acquired. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2005 Dec. 1 p.

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI on March 15, 2001. The information was verified by the guideline developer as of June 15, 2001. This summary was updated by ECRI on February 3, 2006. The information was verified by the guideline developer on February 17, 2006. This summary was updated by ECRI on August 24, 2006. The updated information was verified by the guideline developer on September 5, 2006. This summary was updated by ECRI Institute on October 3, 2007 following the U.S. Food and Drug Administration (FDA) advisory on Rocephin (ceftriaxone sodium). This summary was updated by ECRI Institute on May 5, 2009, following the U.S. Food and Drug Administration (FDA) advisory on Rocephin (ceftriaxone sodium). This summary was updated by ECRI Institute on November 12, 2010 following the U.S. Food and Drug Administration (FDA) advisory on Afluria (influenza virus vaccine).

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