Complete Summary

GUIDELINE TITLE

Clinical policy for children younger than three years presenting to the emergency department with fever.

BIBLIOGRAPHIC SOURCE(S)

Clinical policy for children younger than three years presenting to the emergency department with fever. Ann Emerg Med 2003 Oct;42(4):530-45. [121 references] PubMed

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Fever (defined as a rectal temperature greater than 38 degrees C [>100.4 degrees F])

GUIDELINE CATEGORY

Evaluation
Risk Assessment
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Infectious Diseases
Internal Medicine
Pediatrics

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To provide recommendations (clinical policy) for the evaluation of children younger than three years presenting to the emergency department with fever.
- To address the following critical questions:
    - Are there useful age cutoffs for different diagnostic and treatment strategies in febrile children?
    - Does a response to antipyretic medication indicate a lower likelihood of serious bacterial infection in the pediatric patient with a fever?
    - What are the indications for a chest radiograph during the workup of pediatric fever?
    - Which children are at risk for urinary tract infection?
    - What are the best methods for obtaining urine for urinalysis and culture?
    - What is the appropriate role of urinalysis, microscopy, and urine cultures?
    - What is the prevalence of occult bacteremia in children aged 3 to 36 months, and how frequently does it result in significant sequelae?
    - What is the appropriate role of empiric antibiotics among previously healthy, well-appearing children aged 3 to 36 months with fever without a source?

TARGET POPULATION

Previously healthy term infants and children between the ages of 1 day and 36 months presenting to the Emergency Department with fever

These guidelines are not intended for use in high-risk children such as:

- children with congenital abnormalities
- children with serious illnesses preceding the onset of a fever
- children born prematurely
- children in an immunocompromised state

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation

1. Assessment of likelihood of serious bacterial infection based on response to antipyretic medication
2. Assessment of risk for urinary tract infection
3. Chest radiographs as indicated to evaluate for pneumonia
4. Methods (bag collection or clean catch, urethral catheterization or suprapubic aspiration, percutaneous bladder aspiration) to obtain urine for urinalysis and culture

5. Testing (urinalysis, microscopy, gram stain, urine culture) as indicated to evaluate for urinary tract infection

Treatment

Empiric antibiotic therapy in previously healthy, well-appearing children aged 3 to 36 months with fever without a source

MAJOR OUTCOMES CONSIDERED

Likelihood of missing a serious bacterial infection in the setting of a healthy child presenting to the emergency department with a fever

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A MEDLINE search of English-language articles published between 1985 and 2003 was performed using key words focused on in each critical question. Abstracts and articles were reviewed by subcommittee members, and pertinent articles were selected. These articles were evaluated, and those addressing the questions considered in this document were chosen for grading. Subcommittee members also supplied references from bibliographies of initially selected articles or from their own files.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Strength of Evidence

Class I – Interventional studies including clinical trials, observational studies including prospective cohort studies, and aggregate studies including meta-analyses of randomized clinical trials only

Class II – Observational studies including retrospective cohort studies, case-controlled studies, and aggregate studies including other meta-analyses

Class III – Descriptive cross-sectional studies; observational reports including case series and case reports; and consensus studies including published panel consensus by acknowledged groups of experts.

Strength of evidence Class I and II articles were rated on elements the committee believed were most important in creating a quality work. Class I and II articles with significant flaws or design bias were downgraded from 1 to 3 levels based on a set formula (see Appendix B in the original guideline document). Strength of evidence Class III articles were downgraded 1 level if they demonstrated significant flaws or bias. Articles down-graded below a Class III strength of evidence were given an "X" rating and were not used in formulating recommendations in this policy.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

All publications were graded by at least 2 of the subcommittee members into 1 of 3 categories of strength of evidence. Some articles were downgraded 1 or more levels based on a standardized formula that considers the size of test population, methodology, validity of conclusions, and potential sources of bias.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

This policy is a product of the American College of Emergency Physicians (ACEP) clinical policy development process, including expert review, and is based on the existing literature; where literature was not available, consensus of emergency physicians was used.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Recommendations regarding patient management were made according to the following criteria:

Strength of Recommendations

Level A recommendations. Generally accepted principles for patient management that reflect a high degree of clinical certainty (i.e., based on "strength of evidence Class I" or overwhelming evidence from "strength of evidence Class II" studies that directly address all the issues)

Level B recommendations. Recommendations for patient management that may identify a particular strategy or range of management strategies that reflect

moderate clinical certainty (i.e., based on "strength of evidence Class II" studies that directly address the issue, decision analysis that directly addresses the issue, or strong consensus of "strength of evidence Class III" studies)

Level C recommendations Other strategies for patient management based on preliminary, inconclusive, or conflicting evidence, or, in the absence of any published literature, based on panel consensus

There are certain circumstances in which the recommendations stemming from a body of evidence should not be rated as highly as the individual studies on which they are based. Factors such as heterogeneity of results, uncertainty about effect magnitude and consequences, strength of prior beliefs, and publication bias, among others, might lead to such a downgrading of recommendations.

COST ANALYSIS

In a published cost-analysis, the management of children aged 3 to 36 months with fever greater than 39 degrees C (>102.2 degrees F) without source of infection was studied. Given the current rate of occult bacteremia assumed by the analysis of 1.45%, "complete blood count (CBC) alone plus selective treatment" using a white blood count (WBC) cutoff of 15,000/mm^3 was the preferred strategy. However, the study concluded that if the future rate of occult bacteremia decreased to below 1%, then strategies using empiric testing and treatment would no longer be cost-effective.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Expert review comments were received from individual emergency physicians; members of the American College of Emergency Physician's (ACEP´s) Pediatric Emergency Medicine Committee and the Section of Pediatric Emergency Medicine; physicians from other specialties, such as pediatricians; and specialty societies, including individual members of the American Academy of Pediatrics and the American Academy of Family Physicians. Their responses were used to further refine and enhance this policy.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the strength of evidence (Class I-III) and strength of recommendations (A-C) are repeated at the end of the Major Recommendations.

Are there useful age cutoffs for different diagnostic and treatment strategies in febrile children?

- Level A recommendations. Infants between 1 and 28 days old with a fever should be presumed to have a serious bacterial infection.
- Level B recommendations. None specified.
- Level C recommendations. None specified.

Does a response to antipyretic medication indicate a lower likelihood of serious bacterial infection in the pediatric patient with a fever?

- Level A recommendations. A response to antipyretic medication does not change the likelihood of a child having serious bacterial infection and should not be used for clinical decision making.
- Level B recommendations. None specified.
- Level C recommendations. None specified.

What are the indications for a chest radiograph during the workup of pediatric fever?

- Level A recommendations. None specified.
- Level B recommendations. A chest radiograph should be obtained in febrile children aged younger than 3 months with evidence of acute respiratory illness.
- Level C recommendations. There is insufficient evidence to determine when a chest radiograph is required in a febrile child aged older than 3 months. Consider a chest radiograph in children older than 3 months with a temperature greater than 39 degrees C (>102.2 degrees F) and a white blood cell (WBC) count greater than 20,000/mm^3.

  A chest radiograph is usually not indicated in febrile children aged older than 3 months with temperature less than 39 degrees C (<102.2 degrees F) without clinical evidence of acute pulmonary disease.

Which children are at risk for urinary tract infection?

- Level A recommendations. Children aged younger than 1 year with fever without a source should be considered at risk for urinary tract infection.
- Level B recommendations. Females aged between 1 and 2 years presenting with fever without source should be considered at risk for having a urinary tract infection.
- Level C recommendations. None specified.

What are the best methods for obtaining urine for urinalysis and culture?

- Level A recommendations. None specified.
- Level B recommendations. Urethral catheterization or suprapubic aspiration are the best methods for diagnosing urinary tract infection.
- Level C recommendations. None specified.

What is the appropriate role of urinalysis, microscopy, and urine cultures?

- Level A recommendations. None specified.

- Level B recommendations. Obtain a urine culture in conjunction with other urine studies when urinary tract infection is suspected in a child aged younger than 2 years because a negative urine dipstick or urinalysis result in a febrile child does not always exclude urinary tract infection.
- Level C recommendations. None specified.

What is the appropriate role of empiric antibiotics among previously healthy, well-appearing children aged 3 to 36 months with fever without a source?

- Level A recommendations. None specified.
- Level B recommendations. Consider empiric antibiotic therapy for previously healthy, well-appearing children, aged 3 to 36 months, with fever without a source with a temperature of 39.0 degrees C or greater ($\geq$102.2 degrees F) when in association with a WBC count of 15,000/mm^3 or greater if obtained.
- Level C recommendations. In those cases when empiric antibiotics are not prescribed for children who have fever without a source, close follow-up must be ensured.

Definitions:

Strength of Evidence

Strength of evidence Class I – Interventional studies including clinical trials, observational studies including prospective cohort studies, and aggregate studies including meta-analyses of randomized clinical trials only

Strength of evidence Class II – Observational studies including retrospective cohort studies, case-controlled studies, and aggregate studies including other meta-analyses

Strength of evidence Class III – Descriptive cross-sectional studies; observational reports including case series and case reports; and consensus studies including published panel consensus by acknowledged groups of experts

Strength of Recommendation

Level A recommendations. Generally accepted principles for patient management that reflect a high degree of clinical certainty (i.e., based on "strength of evidence Class I" or overwhelming evidence from "strength of evidence Class II" studies that directly address all the issues)

Level B recommendations. Recommendations for patient management that may identify a particular strategy or range of management strategies that reflect moderate clinical certainty (i.e., based on "strength of evidence Class II" studies that directly address the issue, decision analysis that directly addresses the issue, or strong consensus of "strength of evidence Class III" studies)

Level C recommendations. Other strategies for patient management based on preliminary, inconclusive, or conflicting evidence, or, in the absence of any published literature, based on panel consensus

There are certain circumstances in which the recommendations stemming from a body of evidence should not be rated as highly as the individual studies on which they are based. Factors such as heterogeneity of results, uncertainty about effect magnitude and consequences, strength of prior beliefs, and publication bias, among others, might lead to such a downgrading of recommendations.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

This guideline may help physicians appropriately evaluate and manage children aged 1 day to 3 years presenting to the Emergency Department with a fever.

POTENTIAL HARMS

Urethral catheterization: The risk of introducing infection by the urethral catheterization method has not been well defined, but the consensus among experts is that the risk is low. Although believed to be very small, the risk of developing urethral strictures after catheterization has also not been well defined.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This policy is not intended to be all encompassing and is intended as a guideline. It represents evidence for answering important questions about these critical diagnostic and management issues. Recommendations in this policy are not intended to present the only diagnostic and management options that the emergency physician can consider. The American College of Emergency Physicians (ACEP) clearly recognizes the importance of the individual physician's judgment. Rather, this guideline defines for the physician those strategies for which medical literature exists to provide strong support for answers to the critical questions addressed in this policy.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Clinical policy for children younger than three years presenting to the emergency department with fever. Ann Emerg Med 2003 Oct;42(4):530-45. [121 references] PubMed

ADAPTATION

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

DATE RELEASED

2003 Oct

GUIDELINE DEVELOPER(S)

American College of Emergency Physicians - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Emergency Physicians

GUIDELINE COMMITTEE

American College of Emergency Physicians (ACEP) Clinical Policies Subcommittee on Pediatric Fever

ACEP Clinical Policies Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Members of the Subcommittee on Pediatric Fever: Wyatt W. Decker, MD (Chair); Maureen D. McCollough, MD; John H. Myers, MD; Scott M. Silvers, MD

Members of the Clinical Policies Committee: William C. Dalsey, MD (Chair 2000-2002, Co-Chair 2002-2003); Andy S. Jagoda, MD (Co-Chair 2002-2003); Wyatt W. Decker, MD; Francis M. Fesmire, MD; Steven A. Godwin, MD; John M. Howell, MD; Shkelzen Hoxhaj, MD (EMRA Representative 2002-2003); J. Stephen Huff, MD; Alan H. Itzkowitz, MD (EMRA Representative 2000-2001); Edwin K. Kuffner, MD; Thomas W. Lukens, MD, PhD; Benjamin E. Marett, RN, MSN, CEN, CNA, COHN-S (ENA Representative 2002-2003); Thomas P. Martin, MD; Jessie Moore, RN, MSN, CEN (ENA Representative 2001-2002); Barbara A. Murphy, MD; Devorah Nazarian, MD; Scott M. Silvers, MD; Bonnie Simmons, DO; Edward P. Sloan, MD, MPH; Suzanne Wall, RNC, MS, CEN (ENA Representative 1999-2000); Robert L. Wears, MD, MS; Stephen J. Wolf, MD (EMRA Representative 2001-2002); Robert E. Suter, DO, MHA (Board Liaison 2000-2001); Susan M. Nedza, MD (Board Liaison 2001-2003); Rhonda Whitson, RHIA, Staff Liaison, Clinical Policies Committee and Subcommittees

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

Clinical policies are scheduled for revision every 3 years; however, interim reviews are conducted when technology or the practice environment changes significantly.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Emergency Physicians Web site.

Print copies: Available from the American College of Emergency Physicians, ACEP Customer Service Department, P.O. Box 619911, Dallas, TX 75261-9911, or call toll free: (800) 798-1822, touch 6.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on April 21, 2004. The information was verified by the guideline developer on June 10, 2004.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions. For more information, please refer to the American College of Emergency Physicians (ACEP) Web site.

© 1998-2004 National Guideline Clearinghouse

Date Modified: 11/15/2004