

# **Madigan Army Medical Center Clinical Practice Guidelines**

## **Febrile Infant Management**

Department of Pediatrics  
Madigan Army Medical Center  
Maintained by Quality Services Division  
Clinical Practice and Referral Guidelines Administrator

Last Review for this Guideline: **August 2010**  
Clinical Guidelines require review every three years

**TITLE:** CLINICAL GUIDELINE FOR MANAGEMENT AND EVALUATION OF INFANTS < 90 DAYS OF AGE WITH FEVER\* WITHOUT AN EVIDENT SOURCE. (Febrile Infant Management)

**INDICATIONS FOR THE CLINICAL GUIDELINE:** Fever without an identified focus for infection is a common complaint in infants < 90 days of age, and may be the first sign of a serious infection with the potential for adverse outcome. A wide variation in the approach to the evaluation and management of these infants exists currently in clinical practice at Madigan. Published guidelines on this topic, however, are available and represent a consensus of expert opinion. Providers at Madigan should be uniform in their approach to this potentially serious presentation. \*A recording of > 100.4 by any of these methods is considered to be a fever.

**METRICS:** THE KEY ELEMENTS OF THE CLINICAL GUIDELINE THAT WILL BE USED TO MONITOR PROVIDER ADHERENCE TO THE CLINICAL GUIDELINE:

1. \*The infant's temperature can initially be obtained by axillary, rectal or tympanic thermometry. A recording of > 100.4 by any of these methods is considered to be a fever.
2. Hospital admission with inpatient evaluation and therapy for all infants < 28 days of age with a temperature of > 100.4 F.
3. A urine culture will be obtained on all infants < 90 days of age presenting to Madigan with fever > 100.4 F without identified focus. This culture will be obtained by catheterization or suprapubic aspirate.
4. A lumbar puncture will be obtained on all infants < 90 days of age presenting to Madigan with fever > 100.4 F who receives parenteral antimicrobials.
5. A follow-up examination and review of cultures will be documented for each of the above infants no longer than 36 hours after the initial presentation with fever.

**DATE:** Published: August 1999, Revised: April 2000, May 2003, May 2007, August 2010

**AUTHORS:**

Please contact the administrator at 253-968-3013 for information regarding the authors of this clinical guideline.

**AREAS OF DISAGREEMENT:** There were no significant areas of disagreement among the authors.

**PUBLISHED GUIDELINES OF CARE AND OTHER REFERENCES UPON WHICH THE CLINICAL GUIDELINE IS BASED:**

1. The guideline was based upon the consensus practice guideline published in 1993: Baraff LJ, Bass JW, Fleisher GR, Klein JO, McCracken GH, Powell KR, Schriger DL. Practice guideline for the management of infants and children 0 to 36 months of age with fever without source. Pediatrics 1993;92:1-12.

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2. Baker MD, Bell CM, Avner JR. Outpatient management without antibiotics of fever in selected infants. NEJM 1993;329:1437-1441.
3. Baskin MN, Fleisher GR, O'Rourke EJ. Outpatient management of febrile infants 28 to 90 days of age with intramuscular Ceftriaxone. J Pediatr 1992;120:22-26.
4. Ishimine P, Fever without source in children 0 to 36 months of age. Pediatr Clin North, 2006;53(2) :167-94.

**CLINICAL PRACTICE RECOMMENDATIONS:** Please refer to the Clinical Practice Recommendation for infants age < 90 days with fever without a source.

**KEY POINTS:**

1. Non focal fever in an infant under 90 days of age can be the only sign of a serious bacterial infection.
2. Infants under 90 days of age do not reliably have meningeal signs with meningitis.
3. Urine cultures should ALWAYS be obtained by either suprapubic tap or catheterization in febrile infants under 90 days of age.
4. All febrile infants < 90 days of age need a thorough evaluation including CBC, Diff, BC and UC, but some can be managed as outpatients following the initial evaluation.

**IMPACT STATEMENT TO INSTITUTION:** This clinical guideline impacts many areas of the hospital and all providers who care for infants with fever. This includes all of the primary care providers and the providers in the emergency department. It will also impact upon the Department of Nursing.

**LINKS WITHIN THE MAMC INTRANET:** This clinical guideline is published on the MAMC Internet under the heading of: Clinical Guideline - Febrile Infant Management. The guideline may be installed in CIS in the future to be used in the Emergency Department, observation units, and inpatient areas.

**METHODS OF PROVIDER EDUCATION:**

1. Physicians and nurses providing pediatric care at Madigan will receive inservices on the importance and the use of this guideline. These inservices should occur with the initial implementation of the guideline and then repeated annually. For this guideline to be effective and universally implemented, staff physicians in the primary care areas must not only be aware of it, but they must also emphasize its use. Department Chiefs must be aware of the guideline and emphasize its' use. Each time that an infant age < 90 days with fever without an identified source is presented at morning report, the guideline should be mentioned.
2. Hard copies of the guideline should be readily available at the time an infant is being evaluated for fever without a source.

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3. A future goal would be to make the guideline a part of the electronic note for admitted infants in such a manner that it can be used to chart a patient's course, with prompts for giving antimicrobials, checking cultures, and planning discharge. Having the guideline available as an electronic note so that providers can refer to it when a patient is admitted to an observation unit or the hospital would be ideal. These methods should include as many automated reminders as possible, such as key laboratory tests, or a diagnosis field which would initiate reminders on the monitor. Such reminders might say "Are you aware of the MAMC Clinical Guideline for management of infants < 90 days of age with fever without a source"?

**METHODS OF PATIENT EDUCATION:** Link to the [Children's Hospital Medical Center of Cincinnati](#) that serves patients and families, healthcare professionals, researchers, job seekers and news media seeking pediatric healthcare information.

**REVISION FREQUENCY:** This guideline will be reviewed and updated by the POC every three years. If the changes are substantial the guideline will be subject to review and approval by the Clinical Guidelines Committee. Changes not deemed "substantial" will be approved by the Chair, Clinical Guidelines Committee.

## **REFERENCES**

1. The guideline was based upon the consensus practice guideline published in 1993: Baraff LJ, Bass JW, Fleisher GR, Klein JO, McCracken GH, Powell KR, Schriger DL. Practice guideline for the management of infants and children 0 to 36 months of age with fever without source. *Pediatrics* 1993;92:1-12.
2. Baker MD, Bell CM, Avner JR. Outpatient management without antibiotics of fever in selected infants. *NEJM* 1993;329:1437-1441.
3. Baskin MN, Fleisher GR, O'Rourke EJ. Outpatient management of febrile infants 28 to 90 days of age with intramuscular Ceftriaxone. *J Pediatr* 1992;120:22-26.
4. Ishimine P. Fever without source in children 0 to 36 months of age. *Pediatr Clin North*, 2006;53(2):167-94

### Clinical Guideline

#### CLINICAL GUIDELINE FOR INFANTS AGE $\leq$ 90 DAYS WITH FEVER WITHOUT AN EVIDENT SOURCE

**DEFINITION:** Infant < 90 days of age with rectal temperature of > 100.4 F whose examination does not reveal an obvious focus for infection. (Signs and/or symptoms of the Upper Respiratory Tract, to include otitis media are not considered to be a focus). This guideline does not address the approach to focal bacterial infections in this age group.

	TOXIC APPEARANCE / ABNORMAL VITAL SIGNS OR AGE<30 DAYS	AGE 30-59 DAYS, NON-TOXIC
<b>ASSESSMENT</b>	-History -Vital Signs/Physical Examination -Blood Cultures -CBC with manual differential -Urinalysis -Urine Culture (catheterized) -Lumbar Puncture with cell count, gram stain, glucose, protein and culture -Chest radiograph if respiratory signs or symptoms present -Stool Culture and gram stain if diarrhea present	-History -Vital Signs/Physical Examination -Blood Cultures -CBC with manual differential -Urinalysis -Urine Culture (catheterized) -Lumbar Puncture with cell count, gram stain, glucose, protein and culture is strongly recommended -Chest radiograph if respiratory signs or symptoms are present -Stool Culture and gram stain if diarrhea present.
<b>THERAPY</b>	Supportive care as indicated Admission to the hospital. Antimicrobials: ----Ampicillin and Gentamicin or Ampicillin and Cefotaxime if <30do ----Ceftriaxone +/- Vancomycin if > 30 do ----Consider Acyclovir if less than 6 weeks and abnormal exam/labs or VS	I. Positive Labs or concerning history/social factors: ----Admission to hospital ----Antimicrobials: Ceftriaxone Add Vancomycin if gram + cocci present on L.P. II. Normal Screening Labs and no concerns on history/social factors: OPTION A: ----Ceftriaxone Lumbar puncture if not done previously. -----Return for re-eval in 24 hours OPTION B (preferred option by authors): -----No antimicrobials -----Return for re-evaluation within 8-16 hours or admit to pediatric observation unit.
<b>CONSULTS</b>	Pediatrics or Family Practice as soon as possible	<u>Communication with the Pediatrics or Family Practice resident on call prior to disposition to ensure follow-up is provided.</u>
<b>EDUCATION</b>	Procedures done Medications Signs and symptoms of infection in infant	Procedures done Medications Signs and symptoms of infection in infant
<b>DISCHARGE PLANNING</b>	All cultures negative at 48 hours and infant otherwise stable, stop antimicrobials and release to home	<u>Admitted infants:</u> All cultures negative at 48 hours and infant otherwise stable, stop antimicrobials and release to home. <u>Infants sent home:</u> Serial observation daily over 48 hours. If remain stable and cultures are negative, no further intervention.

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	AGE 60-90 DAYS, NON-TOXIC
<b>ASSESSMENT</b>	<ul style="list-style-type: none"> <li>-History</li> <li>-Vital Signs/Physical Examination</li> <li>-Blood Cultures</li> <li>-CBC with manual differential</li> <li>-Urinalysis</li> <li>-Urine Culture (catheterized)</li> <li>-Chest radiograph if respiratory signs or symptoms are present</li> <li>-Stool Culture and gram stain if diarrhea present</li> </ul>
<b>THERAPY</b>	<p><b>I. Positive Labs, or concerning history/social factors:</b></p> <ul style="list-style-type: none"> <li>-Admission to hospital</li> <li>-Lumbar Puncture with cell count, gram stain, glucose, protein and culture.</li> <li>-Antimicrobials:               <ul style="list-style-type: none"> <li>-----Ceftriaxone</li> <li>-----Add Vancomycin if gram + cocci present on Lumbar Puncture.</li> </ul> </li> </ul> <p><b>II. Low risk based on screening labs and history:</b></p> <p><b>OPTION A:</b></p> <ul style="list-style-type: none"> <li>-Lumbar Puncture with cell count, gram stain, glucose, protein and culture. --If CSF low risk: Ceftriaxone or no antimicrobials</li> <li>-Return for re-evaluate in 24 hours or admission to POBS</li> </ul> <p><b>OPTION B (preferred by authors):</b></p> <ul style="list-style-type: none"> <li>-No antimicrobials or lumbar puncture</li> <li>-Return for re-evaluation within 24 hours or admit to POBS</li> </ul>
<b>CONSULTS</b>	<u>Communication with the Pediatrics or Family Practice resident on call prior to disposition to ensure follow-up is provided.</u>
<b>EDUCATION</b>	<ul style="list-style-type: none"> <li>Procedures done</li> <li>Medications</li> <li>Signs and symptoms of infection in infant</li> </ul>
<b>DISCHARGE PLANNING</b>	<p><u>Admitted infants:</u> All cultures negative at 48 hours and infant otherwise stable, stop antimicrobials and release to home.</p> <p><u>Infants sent home:</u> Serial observation daily over 48 hours. If remain stable and cultures are negative, no further intervention.</p>

<sup>1</sup>Positive screening laboratory evaluation is defined as WBC < 5,000 or >15,000; Urinalysis (spun) with > 10 WBC/hpf or positive urine gram stain; Stool gram stain > 5 WBC/hpf. Infiltrate on chest radiograph (if obtained).

<sup>2</sup>Concerning history/social factors would include history of prematurity, underlying serious disease, prior admission or treatment for suspected bacterial infection, unreliable caretaker, lack of ready access to follow-up check with healthcare provider

### **Key Points**

1. Non focal fever in an infant under 90 days of age can be the only sign of a serious bacterial infection.
2. Infants under 90 days of age do not reliably have meningeal signs with meningitis.
3. Urine cultures should ALWAYS be obtained by either suprapubic tap or catheterization in febrile infants under 90 days of age.
4. All febrile infants < 90 days of age need a thorough evaluation including CBC, Diff, BC and UC, but some can be managed as outpatients following the initial evaluation.

### **Patient Education**

[Children's Hospital Medical Center of Cincinnati](#) - This Web site serves patients and families, healthcare professionals, researchers, job seekers and news media seeking pediatric healthcare information.