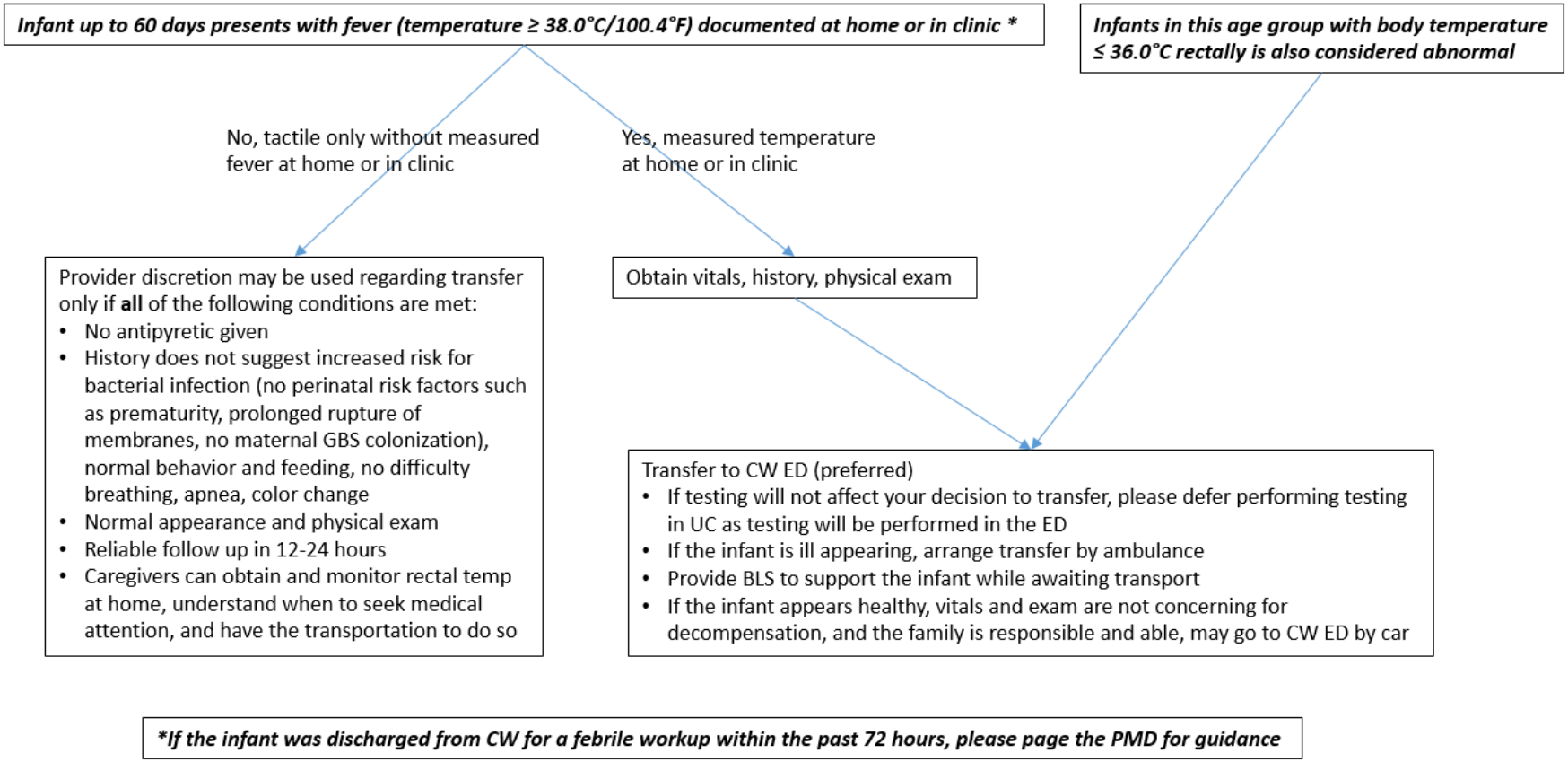
**Children's Hospital and Health System, Inc.**
**Patient Care Evidence Based Guideline**
**CW Urgent Care**

## SUBJECT: Febrile Neonate (up to 60 days of age)




Supersedes 6/2015, 7/2018, 12/2021
Approved by UC Clinical Practice Council and Medical Director 10/2024
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**Purpose:** To evaluate and initiate treatment of the febrile neonate (up to 60 days).

**Background:** Fever in very young infants may be a sign of serious illness. Neonates have unique vulnerabilities to infection because of their immature immune systems and incomplete barriers to invasion. Unlike older infants and children, even well appearing young infants are at increased risk for invasive infections due to bacteria or HSV. Repeated studies have shown that clinical exam alone is unreliable in predicting serious illness in this age group. Therefore, the combination of history, exam, and diagnostic tests must be utilized for all febrile young infants to determine the infant's risk of serious infection. All infants less than 60 days of age with fever require additional evaluation, beyond the scope of care provided in urgent care, to determine appropriate management. Infants 0-60 days with fever or hypothermia may have serious infection (Perry et al., 2021).

Definition: According to Children's Wisconsin EDTC/Acute Care Febrile Neonate Guideline, febrile neonates are defined as infants 0-60 days old with temperatures ≥ 38.0 C. Infant body temperatures ≤ 36.0 C rectally is also considered abnormal.

**Etiology:** Young infants are at increased risk for invasive bacterial infections (IBIs). The causative organisms involved in bacterial infections in young infants have changed over the last 40 years. Prenatal GBS screening has led to a decline in Group B Strep as a causative agent, immunization against *S pneumoniae* has reduced the incidence of invasive pneumococcal disease due to herd immunity, and improved food safety has led to a decline in *Listeria monocytogenes* infections in this age group. *Escherichia coli* is now the leading cause of bacteremia and either the leading or second most common cause (behind GBS) of bacterial meningitis.

Fever in young infants can also be caused by viral infections. Herpes Simplex Virus (HSV) can cause serious morbidity and mortality in this age group. Affected infants may present with cutaneous findings (skin, eye, mouth), meningoencephalitis, or disseminated disease.

**Differential Diagnosis** (for Invasive Bacterial Infections)

- UTI (most common IBI in this age group)
- Bacteremia
- Meningitis
- Bacterial diarrhea
- Pneumonia

## Guideline

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**Subjective Data/History**

- Onset of fever
- T-max of fever
- Route temperature taken
- Associated symptoms
- Use of antipyretic medication
- Birth history
- Bundling
    - Bundling does not cause significant temperature elevation
    - History of bundling should not affect decision to refer patient to CW ED.

**Objective Data/Physical Exam**

- Assess for signs/symptoms to suggest serious illness
- Complete vital signs, including rectal temperature, pulse oximetry, and blood pressure are necessary on these infants to aid in determining appropriate method of transfer to the emergency department.
- Hydration status
- Respiratory effort

**Diagnostic Studies:** Diagnostic studies will be performed in the CW ED. Results will be utilized to aid in clinical decision making. The exact testing recommended will vary based on the infant's age and clinical presentation. Diagnostic studies as indicated by Children's Wisconsin Clinical Practice Guideline (2022) for febrile neonates may include:

- Urinalysis and urine culture
- Blood culture
- CBC with differential and possibly inflammatory markers
- Lumbar puncture (CSF studies: cell count, differential, glucose, total protein, and culture)
- HSV studies (CSF PCR, swabs of mouth, nasopharynx, conjunctivae, anus), and blood PCR
- Additional testing may also include if indicated: viral testing including influenza, COVID, RSV, and others, chest x-ray, stool studies, blood glucose
- Research shows that all infants < 21 days with positive viral PCR still require full sepsis evaluation and febrile infants with known focal infection still require some sort of sepsis evaluation (Smitherman, H.F., Macias, C.G., & Mahajan, P., 2024).

**Treatment (see algorithm): f**ebrile infants (temperature ≥ 38.0°C/100.4°F (either documented at home or in clinic) up to 60 days of age evaluated in Children's Urgent Care (including Online Urgent Care) should be referred to the CW Emergency Department.* Infants in this age group with body temperature ≤ 36.0°C rectally should also be referred to the CW ED.

**Education of Patient/Family:** The evaluation and management plan for infants with fever will vary based on infant's age, history and appearance, as well as current emergency department protocols. Infants less than 21 days of age will always be admitted to the hospital. Infants 22-28 days of age are also almost always admitted, although rarely may be managed as outpatients if all diagnostic testing is reassuring and close follow up can be ensured. Infants 29-60 days old may be managed as inpatient or outpatient (with close follow up), with shared decision making after testing is performed and interpreted.

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*Treatment information also provided by Michael Levas, MD, Emergency Department, Children's Wisconsin (personal communication, April 2015).*

*Treatment information also provided by Julie Kolinski, MD, Hospital Medicine, Children's Wisconsin (personal communication, September 2017)*

*Treatment information also provided by John Cox, MD, Emergency Department, Children's Wisconsin (personal communication, July 2018).*

*Treatment information also provided by Amy Drendel, DO, Medical Director, Emergency Department, Children's Wisconsin (personal communication, July 2018 and January 2022).*

*Treatment information also provided by Jean Pearce, MD, Medical Director, Emergency Department, Children's Wisconsin (personal communication, September 2024).*