Fever Without Source in Infants < 28 Days Care Guidelines For Emergency Department Management

CHOC Children's

Inclusion Criteria: Previously healthy children 0-28 days of age who have:
- Fever 38.0 ° C or greater
- No Apparent focus of infection

Exclusion Criteria: PICU status, < 37 weeks gestation

Assessment
- **ESI level 2**
- Vital signs
- Hemodynamic stability
- Signs of sepsis
- Determination of risk for SBI
- Continuous pulse oximetry if respiratory distress, hypoxia present or **pneumonia** is suspected

Interventions
- Blood and urine cultures
- CBC with diff, U/A
- Lumbar puncture/send CSF
- CXR if signs of pneumonia
- Apnea monitor
- Stool culture if diarrhea **plus** blood or mucus

Antibiotics
Ampicillin **AND** Cefotaxime

Antibiotic Dosing Guidance

Ampicillin
- 50 mg/kg IV q 12 hours
- < 7 days, <2000g
- > 7 days, <1200g

OR
- 50 mg/kg IV q 8 hours
- < 7 days, > 2000g
- > 7 days, 1200g-2000g
- > 7 days, > 2000g, non-meningitis

OR
- 100 mg/kg IV q 8 hours
- < 7 days any weight, GBS meningitis

OR
- 100 mg/kg IV q 6 hours
- > 7 days any weight, GBS meningitis

and

Cefotaxime
- 50 mg/kg IV q 12 hours
- < 7 days, < 2000g
- > 7 days, < 1200g

OR
- 50 mg/kg IV q 8 hours
- < 7 days, > 2000g
- > 7 days, 1200-2000g

OR
- 50 mg/kg IV q 6 hours
- > 7 days, > 2000g, non-meningitis

OR
- 75 mg/kg IV q 6 hours

Signs of Pneumonia
- Respiratory signs (i.e. abnormal breath sounds, tachypnea)
- Respiratory symptoms (i.e. cough)
- Respiratory distress
- SA02 < 95%

Recommendations/Considerations
- **Serious bacterial infections** include bacterial sepsis, pneumonia, meningitis, UTI/pyelonephritis, cellulitis, septic arthritis, osteomyelitis, and bacterial enteritis.
- **In general, febrile infants < 28 days should be considered at high risk for SBI** and thus undergo a full septic work-up, hospital admission, and empiric antibiotics.
- **Always consider evaluation and treatment for possible herpes simplex infection (**HSV PCR and intravenous acyclovir) in meningitis or sepsis syndrome especially in infants 0-6 weeks **(See statement on Acyclovir Therapy I Neonates on next page).**
- **Consider viral studies** (VRP, rapid viral screen, CSF/ blood PCR, viral culture) in the febrile infant especially during the enteroviral season and respiratory viral season. **Keep in mind that a positive viral test does not preclude the possibility of SBI.**

Significant Additional Management for Suspected Bacterial Meningitis
- ICU monitoring
- Conservative fluid management
- Electrolyte monitoring
- Frequent neuro checks, serial head circumference

Admission Criteria Medical Surgical Unit
- Hemodynamically stable
- No suspicion for bacterial meningitis

Link to Inpatient Fever < 90 days guideline

Reassess the appropriateness of Care Guidelines as condition changes and 24 hours after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.

Approved Evidence Based Medicine Committee 5-20-15

Fever Without Source in Infants < 90 Days Care Guideline

CHOC Children's

Inclusion Criteria: Previously healthy children 0-90 days of age who have:
- Fever 38.0° C or greater
- No apparent focus of infection
- Require hospitalization for concern for serious bacterial infection (SBI) or not meeting criteria for outpatient management

Exclusion Criteria: PICU status

*** Signs of pneumonia**
- Respiratory signs (i.e. abnormal breath sounds, tachypnea)
- Respiratory symptoms (i.e. cough)
- Respiratory distress
- SaO_2 < 95%

Assessment
- Vital signs
- Hemodynamic stability
- Signs of sepsis
- Determination of risk for SBI
- Continuous pulse oximetry if respiratory distress, hypoxia present or pneumonia is suspected

<28 days old

Interventions
- Blood & urine cultures
- CBC with diff, u/a
- Lumbar puncture
- CXR if signs of pneumonia*
- Apnea monitor
- Stool Culture if diarrhea *plus* blood or mucus

Antibiotics
- Ampicillin AND Cefotaxime

28 – 90 days old

Interventions
- CBC with diff, u/a
- Stool Culture if diarrhea *plus* blood or mucus
- CXR if signs of pneumonia*
- Consider Lumbar Puncture

Does Patient Meet Low Risk Criteria?
- Non-toxic appearing
- Previously healthy term infant with uncomplicated nursery stay
- No focal bacterial infection apparent on exam
- WBC 5-15,000/mm^3
- < 1500 bands/mm^3
- Urinalysis: < 5 WBC/hpf and negative leukocyte esterase and nitrite
- Stool with negative blood, negative mucus: < 5 WBC/hpf stool, if done
- CSF < 8 WBC/ul and negative Gram stain (if done)
- CXR negative (if done)

No

Interventions
- Blood & urine cultures
- Lumbar puncture
- CXR if signs of pneumonia*

Antibiotics
- Ceftriaxone 50 mg/kg IV q 12 hr

Yes

Interventions - Option 1
- Blood & urine cultures
- Lumbar puncture
- CXR if signs of pneumonia*

Antibiotics
- Ceftriaxone 50 mg/kg IV q 12 hr

Interventions - Option 2
- Blood & urine cultures
- +/- Lumbar puncture
- CXR if signs of pneumonia*
- Observation: no antibiotics

Suspected bacterial meningitis requires significant additional management

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Antibiotic Dosing Guidance

- **Ampicillin**

50 mg/kg IV q 12 h
< 7 days, < 2000g
> 7 days, < 1200g

OR

50 mg/kg IV q 8 h
<7 days, > 2000g
> 7 days,1200g-2000g
> 7 days, > 2000g, non-meningitis

OR

100 mg/kg IV q 8 h
<7 days any weight, GBS meningitis

OR

100 mg/kgIV q 6 h
>7 days any weight, GBS meningitis

AND

- **Cefotaxime**

50 mg/kg IV q 12 h
< 7 days, < 2000g
> 7 days, < 1200g

OR

50 mg/kg IV q 8 h
<7 days, > 2000g
> 7 days, 1200-2000g

OR

50 mg/kg IV q 6 h
> 7 days, > 2000g, non- meningitis

OR

75 mg/kg IV q 6 h
>1 month; pneumococcal meningitis

Approved Care Guidelines Committee 5-20-15
Prior versions: 12-16-09, 1-20-10 and 09-18-2013

Reassess the appropriateness of Care Guidelines as condition changes and 24 hrs after admission. This guideline is a tool to aid clinical decision making. It is not a standard of care. The physician should deviate from the guideline when clinical judgment so indicates.

Fever Without Source in Infants < 90 Days Care Guideline

Continued from page 1

Continued Considerations

- When meningitis can be excluded, adjust antibiotics to non-meningitic dosing
- Adjust antibiotics per culture results, LP results, and clinical status
- D/C antibiotics if cultures negative or VRP/viral study positive and no other high risk criteria met
- Re-evaluate if worsening signs & symptoms

Discharge Criteria

- Vital signs & clinical status are stable
- Bacterial cultures are negative
- Follow-up care is coordinated

28 – 90 days old

May discharge at 36 hrs if:

- Cultures negative
- Afebrile
- Good follow-up available

Parent Education

- Fever in Infants 0-90 days old (located Patient in Family Education on PAWS)

Recommendations/Considerations

- If planning to treat with antibiotics, would obtain all cultures, including Lumbar Puncture, beforehand.
- Due to difficulty in evaluation of behavioral state, decreased immune function, potential pathogens, & higher frequency of SBI in infants < 90 days of age, a structured clinical approach is mandated.
- Serious bacterial infections include bacterial sepsis, pneumonia, meningitis, UTI/ pyelonephritis, cellulitis, septic arthritis, osteomyelitis, & bacterial enteritis.
- Goal of management strategy is to identify those at low risk for SBI & thus reduce the need for either or both hospital admission & antibiotic exposure.
- Infants < 90 days with an apparent focus of bacterial infection should, in general, be considered as high risk, i.e., full septic evaluation, hospital admission, & appropriate antibiotics. These patients should not be included in this guideline.
- In general, febrile infants <28 days should be considered at high risk for SBI & thus undergo a full septic work-up, hospital admission, & empiric antibiotics.
- Always consider evaluation and treatment for possible herpes simplex infection (HSV PCR and intravenous acyclovir) in meningitis or sepsis syndrome especially in infants 0-6 wks (**see Statement on Acyclovir Therapy in Neonates on next page).**
- Consider viral studies (VRP, rapid viral screen, CSF/blood PCR, viral culture) in the febrile infant especially during the enteroviral season and respiratory viral season. Keep in mind that a positive viral test does not preclude the possibility of SBI.
- Criteria for outpatient management include age 28-90 days, non-toxic appearance, meeting low risk criteria, reliable parents, secure follow-up, & access to timely medical care.

Significant Additional Management for Suspected Bacterial Meningitis

- ICU monitoring
- Conservative fluid management
- Vancomycin
- Electrolyte monitoring
- Frequent neuro checks, serial head circumference

References
Fever Without Source in Infants < 90 Days
Care Guideline

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