Supplemental Documents & Forms: "Effective Diagnosis & Management of Infantile Meningitis: A Risk Management Perspective"

We thank the Cincinnati Children's Hospital for graciously sharing their "Fever of Uncertain Source (0 – 60 days)" materials with us.

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Cincinnati Children's Hospital Medical Center

Health Policy & Clinical Effectiveness Program

Evidence Based Clinical Practice Guideline

FEVER OF UNCERTAIN SOURCE in infants 60 days of age or less

Original Publication Date: **5-15-98**
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Target Population

Inclusion:

- Infants, 60 days of age or less, presenting as outpatients with a fever of uncertain source.

Exclusion:

- Patients with underlying disorders that affect their immunity or might otherwise increase their risk for serious bacterial or viral infections.
- Child on current antibiotic therapy
- Child given DTaP immunization within 48 hours
- Child presenting with seizures
- Child requiring intensive care management

Target Users

Includes but is not limited to (in alphabetical order):

- Attending inpatient physicians
- Community physicians and practitioners
- Emergency Department physicians
- Patient / family (informational only)
- Patient Care staff
- Residents

Introduction

References in parentheses ( ), Evidence strengths in [ ] (See last page for definitions)

See Table 1 for definitions used in this guideline.

Fever of uncertain source (FUS) is defined as an acute febrile illness in which the etiology of the fever is not certain after a thorough history and physical examination.

The management of febrile illness in young infants is challenging because of the relatively high prevalence of serious bacterial infection (SBI) in this age group and the clinician's inability to distinguish it from viral illnesses.

The prevalence of SBI in children in this age group varies between reports because of inconsistencies in the population studied, initial evaluation, selective referral to hospital care by parents and private physicians, and the likelihood of diagnostic testing by the clinician--especially obtaining blood cultures or performing spinal taps and urine cultures. Because the clinical exam alone is unable to reliably predict SBI and culture results are not available immediately, clinicians must often approach management of these infants by relying on a combination of physical examination findings and diagnostic screening tests.

In the target population, the objectives of this guideline are to improve: the use of appropriate laboratory studies; the use of appropriate antibiotic therapy; the efficiency of care; and parental satisfaction and understanding of family-centered care.

Etiology

Systemic viral infections are the most common cause of FUS, followed by bacterial infections of the urinary tract, the upper and lower respiratory tracts, and the middle ear *(Long 1997 [S])*.

Several studies offer estimates of the prevalence of SBI in infants with FUS. For the infant less than one month of age, prevalence has been reported at rates of 8.8% to 13.7% *(Bachur 2001 [D], Kadish 2000 [D], Baker 1999 [D])*. For the infant between one and two months of age, prevalence has been reported at rates of 5% to 8.7% *(Baker 1993 [A], Bonadio 1991 [C], Bachur 2001 [D])*. Cincinnati Children's Hospital Medical Center (CCHMC) data show a two-year prevalence of 9% for infants less than one month of age, and 8% for the one to two month age group.

> **Note:** Among infants with SBI, the most common bacteria isolated are *Escherichia coli* (39%), Klebsiella (11%), Group B streptococcus (8%), Enterococcus (6%), *Enterobacter cloacae* (6%) and *Listeria monocytogenes* (6%) *(Baker 1999 [D])*.

There are several important viral pathogens that require consideration.

1. As many as 50% of infants evaluated between the months of August and October for FUS will have documented enteroviral infection *(Byington 1999 [C], Rotbart 1999 [C])*.
2. Evidence of HHV-6 infection has been reported in 10% of febrile infants ≤ 90 days of age *(Byington 2002 [C])*.
3. Neonatal herpes simplex virus (HSV) infection is a rare disease. Incidence is about

30/100,000 live births *(Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*; only 7% - 14% of these present with FUS *(Filippine 2001 [D], Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*. Still, it is an important infection to consider because early initiation of therapy improves outcome *(Kimberlin 2001 [C], Kimberlin 1996 [C], Whitley 1991 [C])*.

Guideline Recommendations

Clinical Assessment

1. It is recommended that rectal temperatures are preferred to axillary or other temperature measures *(Center for Reviews and Dissemination Reviewers 2002 [M], Hooker 1993 [C], Reisinger 1979 [C])*.

   Note 1: A parental report of fever detected only by touch is likely to be accurate (sensitivity 82-89%, specificity 76-86%) *(Graneto 1996 [C], Hooker 1996 [C], Singhi 1990 [C])*.
   Note 2: The magnitude of fever may not be useful for predicting illness source or severity *(Bonadio 1991 [C], Kluger 1992 [S])*.

2. It is recommended and essential that a thorough history and physical examination be performed. In the history and the physical examination it is important to elicit high risk clinical elements. See Table 1 for points of consideration.

Laboratory Studies

1. It is recommended that the following five laboratory tests be performed in all infants with FUS *(Klassen 1992 [M], Jaskiewicz 1994 [C], Dagan 1988 [C], Dagan 1985 [C], Kadish 2000 [D], Baraff 1993 [E])*.

Table 1: Definitions *(Baraff 1993 [E])* unless otherwise specified

Term	Definition
Fever	Rectal temperature ≥ 38° C (100.4° F) *(Bonadio 1994 [D])*
Fever of uncertain source (FUS)	An acute febrile illness in which the etiology of the fever is not apparent after a thorough history and physical exam
Serious bacterial infection (SBI)	Meningitis Bone and joint infections Soft tissue infections (cellulitis) Pneumonia Urinary tract infections (UTI) Sepsis/bacteremia Enteritis
Toxic appearance "Yale Observation Scale"* (see also *(Baker 1993 [A], McCarthy 1982 [C])*) *Study population ≤ 24 months of age	Lethargy Poor or absent eye contact Failure of child to recognize parents or failure to interact with persons or objects in the environment Poor perfusion of the extremities Acrocyanosis Mottling Slow capillary refill time of > 2 seconds in "warm" environment *(Gorelick 1993 [C], Schriger 1988 [C])* Hyperventilation or marked hypoventilation or cyanosis
Low risk for SBI "Rochester Criteria" (see also *(Baker 1993 [A], Jaskiewicz 1994 [C], McCarthy 1982 [C])*)	Prior history of being healthy • born at term (≥ 37 weeks gestation) • has not been previously hospitalized • has no chronic or underlying illness • was not hospitalized longer than mother • was not treated for unexplained hyperbilirubinemia • has not received and was not receiving antimicrobial agents • no intrapartum history of mother for fever, Group B streptococcus, nor antibiotic treatment No focal bacterial infection on physical exam No evidence of purulent otitis media, skin or soft tissue infection, or bone or joint skeletal infection Negative laboratory screen

A. CBC with differential

Note 1: An abnormal CBC is defined as: WBC >15,000/µl or < 5,000/µl; WBC band forms > 1,500/µl *(Dagan 1988 [C], Dagan 1985 [C], Bonadio 1992 [D])*.

Note 2: WBC lab values have no predictive value in determining the risk of meningitis *(Bonsu 2003 [Q])*.

Note 3: A band-to-neutrophil ratio < 0.2 improves the negative predictive value for SBI to 98% or greater when added to the screening criteria *(Baker 1993 [A])*.

B. Blood culture

C. Urinalysis *(Herr 2001 [D])*

Note 1: Abnormal microscopy defined as spun urine > 10 WBC/hpf.

Note 2: Gram stain of sample for organisms is more sensitive (94%), and specific (92%) than simple urinalysis or "dip sticks" as quick indicator of infection *(Lockhart 1995 [C])*.

D. Urine culture

It is recommended that urine samples be collected by catheter, as they are less likely to be contaminated than "clean catch" urine samples *(Weinberg 1991 [D])*.

E. Lumbar puncture (LP)

a. It is recommended that all infants receive a lumbar puncture.

b. *Exception*: In infants 31-60 days AND with the presence of **all** of the following, delaying or omitting a lumbar puncture may be considered *(Jaskiewicz 1994 [C], Dagan 1988 [C], Local Expert Consensus [E])*:
- low risk as identified with strict screening criteria utilizing both clinical assessment and diagnostic testing (see Table 1);
- available reliable follow-up in 12-24 hours;
- healthcare provider(s) confident that parent will use appropriate observational and follow-up skills;
- primary care physician (PCP) and family agree with plan of care;
- antibiotic therapy will not be initiated.

c. It is recognized that an acceptable CSF specimen might not be obtained secondary to failed procedure, traumatic LP or parental refusal. If the decision to start antibiotics has already been made, then it is recommended that treatment be initiated *(Local Expert Consensus [E])*.

2. It is recommended that the following also be considered:
- Stool culture (if child has diarrhea)
- Viral cultures in selected patients and as appropriate to season
- Chest x-ray (if respiratory signs)

3. **A.** For infants 0-30 days with FUS, it is recommended that a laboratory evaluation for neonatal HSV infections be considered:
- if risk factor(s) are present (see Appendix), or
- if the patient is not improving on antibiotic therapy *(Local Expert Consensus [E])*.

The following laboratory tests are recommended if an evaluation for neonatal HSV infection is performed.
- Blood viral culture
- CSF viral culture
- CSF PCR
- Conjunctiva viral culture
- Skin lesion viral culture
- Nasopharyngeal (NP) viral culture
- Rectal viral culture
- Also consider
  - chest x-ray
  - liver function studies

B. For infants 31-60 days with FUS, it is recommended that laboratory evaluation for neonatal HSV infections be reserved primarily for those with clinical findings suggestive of an HSV infection or a prior history of HSV.

Note: In the infant beyond one month of age there is a considerably reduced risk for neonatal HSV infection; 95% - 98% present prior to 22 days of age *(Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*.

See Appendix for information which may help when deciding on the appropriateness of evaluating for and treating neonatal HSV infections.

4. It is recommended that the following laboratory tests be considered selectively in non-low-risk infants:
- PCR. A positive PCR does not rule out SBI. Consider applicable specificity, sensitivity and turnaround time for specific PCR at the time of testing *(Local Expert Consensus [E])*.
  a. Enterovirus (summer and fall). At present, test results are available within 24 hours.

Note 1: CSF and blood sources for PCR are the most sensitive for diagnosis of EV infection *(Byington 1999 [C], Rotbart 1999 [C])*.
Note 2: PCR is more sensitive than viral culture in detecting enterovirus *(Rotbart 1999 [C])*.

b. HHV-6 *(Byington 2002 [C])*

- RPR

Admission Criteria

1. It is recommended that all infants 0-30 days of age with FUS be hospitalized *(Kadish 2000 [D])*.
   Note: 3.2% - 3.5% of febrile infants 0-30 days identified as low-risk [by the Philadelphia or Boston protocols] will have SBI *(Kadish 2000 [D])*.
2. It is recommended that any infant 31-60 days of age with FUS identified as high-risk clinically or by laboratory data be hospitalized *(Baraff 1993 [E])*.
3. It is recommended that low-risk infants 31-60 days may be managed as outpatients or inpatients *(Baker 1993 [A], Baker 1999 [C], Baskin 1992 [C], Dagan 1988 [C], Wasserman 1990 [D])*. This decision must take into consideration:
   - the needs of the family
   - the judgment of the primary care physician
   - excellent outpatient follow-up
   - excellent communication with care provider as an outpatient assured.

   Note: Low-risk infants may be identified using strict screening criteria utilizing both clinical assessment and diagnostic testing. Use of these criteria has 98.9-100% negative predictive value for SBI *(Baker 1993 [A], Jaskiewicz 1994 [C], Herr 2001 [D])*.

Medications

Antibiotics

1. It is recommended that all infants 0-30 days with FUS be treated with intravenous ampicillin plus a 3rd generation cephalosporin or gentamicin.
   Note 1: About 138 such infants need to be treated with ampicillin to prevent one case of *L. monocytogenes* or enterococcal infection (number needed to treat [NNT] = 138) *(Brown 2002 [M])*.
2. Recommendations for treatment of infants 31-60 with FUS vary depending on laboratory and clinical findings.
   a. It is recommended that the first line treatment for this group is intravenous 3rd generation cephalosporin alone *(Byington 2003 [D], Sadow 1999 [D])*.
   b. It is recommended that intravenous ampicillin be considered as an addition to the antibiotic regimen for febrile infants 31-60 days in severely ill infants or with findings suggestive of urinary tract infection (UTI) to assure coverage for rare organisms such as *Listeria monocytogenes,* gram-positive cocci or enterococcus *(Brown 2002 [M], Byington 2003 [D], Sadow 1999 [D])*.
      Note 1: About 527 infants 31-60 days with FUS need to be treated with ampicillin to prevent one case of *L. monocytogenes* or enterococcal infection (number needed to treat [NNT] = 527) *(Brown 2002 [M])*.
   c. Inpatient and outpatient low-risk infants may be managed without antibiotics pending culture results and/or a change in clinical status *(Baker 1993 [A], Baker 1999 [C], Jaskiewicz 1994 [C], Dagan 1988 [C])*.
   d. It is recommended that those infants managed as outpatients and treated with antibiotics receive parenteral ceftriaxone *(Baskin 1992 [C])*.

See Table 2 for summary of recommended doses for antibiotics.

3. It is recommended that the duration of initial antibiotic therapies cover a treatment period of 24 to 48 hours with discontinuance or continuation of therapy based on result of cultures or other tests and review of history and clinical response.

   Cultures must be checked after a true minimum incubation period of 36 hours, which begins when the inoculated culture is placed in the incubator.
   Note 1: The probability of identifying SBI in febrile infants (28-90 days) after 24 hours is about 1.1% among all patients and 0.3% among low risk patients *(Kaplan 2000 [D])*.
   Note 2: In blood cultures of infants 0-6 months, mean time to positivity for true pathogens is about 17.5 hours and for contaminants is about 27.9 hours *(McGowan 2000 [C])*. Median time to positivity for urine and CSF cultures are 16 and 18 hours, respectively, in febrile infants 28-90 days *(Kaplan 2000 [D])*.

Table 2 Antimicrobial doses for febrile infants age 0- 60 days

Antimicrobial	Dose	Comments
Inpatient antibiotics for presumed SBI		
Ampicillin sodium	50 mg/kg IV every 6 hours, non-CNS or meningitis Note: every 12 hours for < 7 days of age	See *(Brown 2002 [M])*.
Cefotaxime (Claforan)	50 mg/kg IV every 8 hours for bacteremia. 50 mg/kg IV every 6 hours for meningitis. Note: every 12 hours for < 7 days of age	
Ceftriaxone (Rocephin)	50 mg/kg IV or IM every 24 hours for bacteremia. 100 mg/kg IV or IM every 24 hours for meningitis.	Use with caution if infant is jaundiced.
Gentamicin	0-30 days: 3 mg/kg IV every 24 hours. 31-60 days: 2.5 mg/kg IV every 12 hours.	
Nafcillin	25 – 50 mg/kg IV every 6 hours.	Use instead of ampicillin if staphylococcal infection suspected.
Outpatient antibiotic for presumed SBI (same as above if home IV therapy preferred)		
Ceftriaxone (Rocephin)	50 mg/kg IM or IV every 24 hours	See *(Baskin 1992 [C])*.
Antiviral for presumed neonatal HSV infection		
Acyclovir	20 mg/kg/dose IV every 8 hours	See *(Kimberlin 2001 [C])*.

Antiviral

1. It is recommended that acyclovir **not** be added routinely to standard antimicrobial therapy for infants with FUS. Benefit is moderated by the rarity of neonatal HSV infection, especially with an FUS presentation, and drug therapy is not without risk *(Local Expert Consensus [E])*.
2. Acyclovir is recommended when the decision is made to initiate therapy for the treatment of possible neonatal HSV infection. Appropriate diagnostic specimens must be collected before therapy is initiated *(Kimberlin 2001 [C])*. See Table 2 for summary of recommended dose.

Nutrition

1. Diet for age as tolerated.
2. Supplemental hydration as required. This is especially recommended for < 1 week old breast-feeding infant with decreased urine output if on drugs (e.g. acyclovir) which are dependent on good renal function for excretion.

Infection Control

Follow infection control precautions (droplet, contact or standard) as appropriate to presumptive diagnosis.

Consults and Referrals

Consider consult with Infectious Diseases if:

1. diagnosis or clinical course of infection is unusual,
2. there are questions regarding continuation or discontinuation of acyclovir in situations where neither the cultures nor the PCR are positive for HSV, or
3. HSV culture or HSV PCR results are positive.

Education

Family education and review is recommended on the following topics.

A. fever:
- observing signs, including taking an accurate temperature measurement
- causes
- therapies

B. indications to call their physician

C. anticipated course of the illness

(O'Neill-Murphy 2001 [O])

DISCHARGE CRITERIA

(NOTE: Begin discharge planning on admission)

1. Well-appearing.
2. Eating well.
3. Antimicrobial therapies complete or can be continued in the home environment.
4. Culture results negative when checked after a true minimum incubation period of 36 hours (which begins when the inoculated culture is placed in the incubator).
5. Hospitalized infant observed without antibacterial treatment is well-appearing at 24 hours.
6. Family:
   - has participated in the discharge planning and decision processes
   - understands and agrees to any prescribed therapies or follow-up needs
   - confident in ability to care for infant at home.
7. Home environment considered appropriate for continuing care prescriptions.
8. Follow-up physician:
   - identified
   - has participated in generating the discharge plan
   - agrees with the discharge plan.

Appendix

Indicators for Possible Neonatal HSV Infection in FUS Infants *(Kimberlin 2001 [D], Fleming 1997 [O])*

Highest Risk Factor

- Primary maternal HSV infection at delivery
  Note: 64% of mothers who acquire HSV during pregnancy are asymptomatic *(Brown 1997 [C])*

Lower Risk Factors

The following additional indicators are documented risk factors for neonatal HSV infection in FUS infants. However, there are insufficient data to be able to quantify their individual or collective contribution to risk.

- Known exposure to HSV infected persons
  e.g. caregiver with oral herpes simplex or maternal history of recurrent genital herpes
- Less than 37 weeks gestation
- Fetal scalp electrodes
- Maternal history of STDs or unexplained fever at delivery
- CSF pleocytosis with a negative gram stain and negative bacterial cultures
- Failure of fever to abate within 24 – 48 hours after starting antibiotics
- Unexplained CNS signs
- Bacterial cultures negative

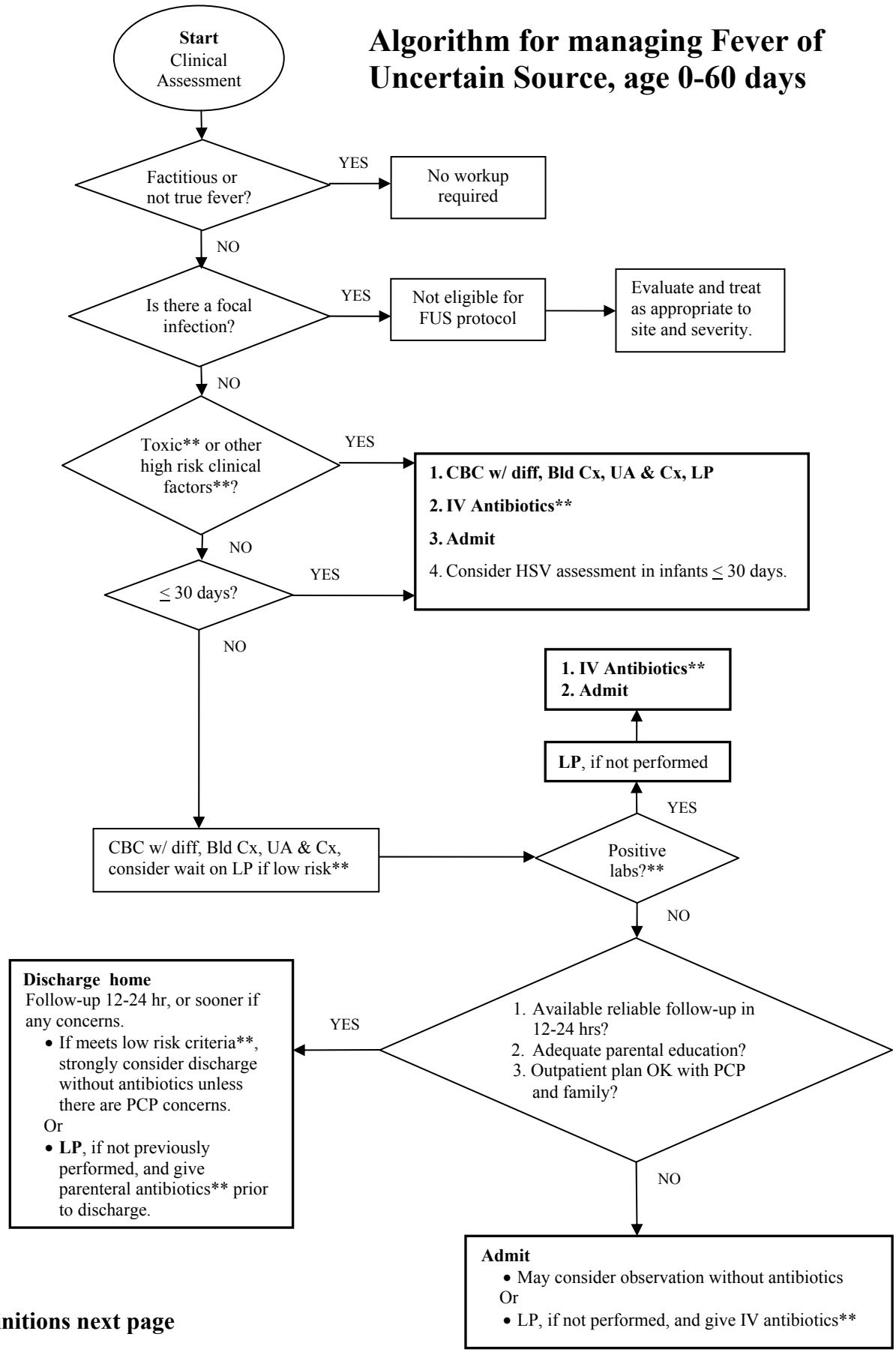
Presentation of Infants with Neonatal HSV Infection

- 7% - 14% present with FUS *(Filippine 2001 [D], Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*
- 61% present with no fever *(Kimberlin 2001 [D])*
- 95% - 98% present prior to 22 days of age *(Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*
- 68% present with a vesicular rash on either the skin or mucous membranes *(Kimberlin 2001 [D])*
- 27% present with seizures *(Kimberlin 2001 [D])*
- Incidence of neonatal HSV infection is about 30/100,000 live births *(Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*

CCHMC Experience with Infants with Neonatal HSV Infection

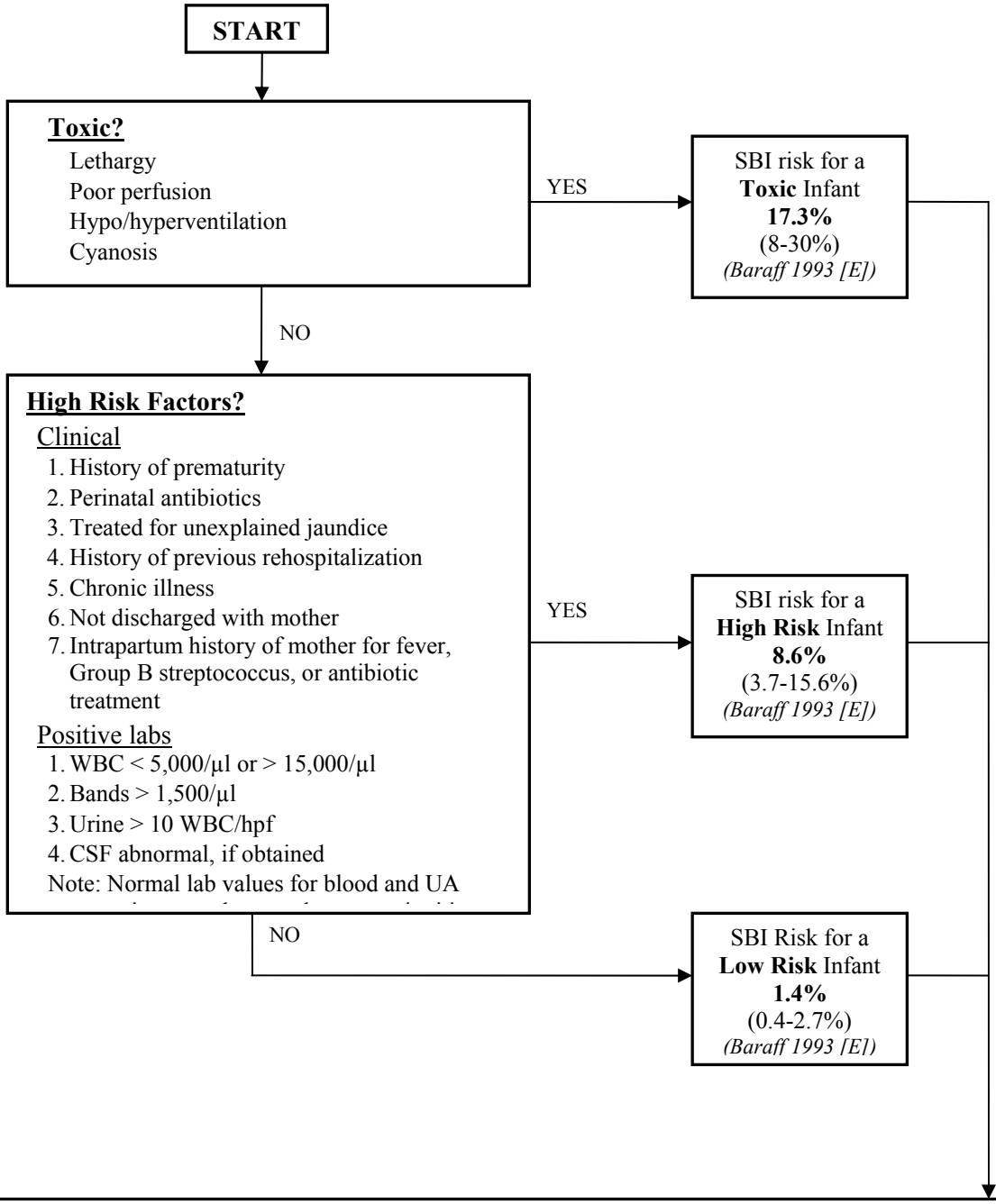
- Nine cases of neonatal HSV infections were admitted to CCHMC over a 2 year period (2001 – 2002).
  - ♦ One of these nine infants presented as an FUS.
- Only about 4-5 infants age 30 days or less each year are admitted to CCHMC and documented to have neonatal HSV infections without evidence of underlying immunocompromise (derived from 1983-2003 CCHMC patient database).
  - ♦ Over this 20 year period, all of the infants admitted to CCHMC with neonatal HSV infections were 31 days of age or younger.
- This experience in Cincinnati is consistent with the reported experiences in the literature *(Filippine 2001 [D], Kimberlin 2001 [D], Koskiniemi 1989 [D], Sullivan-Bolyai 1986 [D])*.

Algorithm for managing Fever of Uncertain Source, age 0-60 days



**** See definitions next page**

SBI Risk Assessment Algorithm and ****Definitions** for Algorithm (previous page)



Antibiotic Therapy:

0-30 days:
ampicillin 50 mg/kg AND
3rd gen. cephalosporin 50mg/kg
or
gentamicin 3 mg/kg

31-60 days:
3rd gen. cephalosporin 50mg/kg

See guideline for treatment recommendations for:
infants 31-60 days who:
- are severely ill
- have findings suggestive of UTI
- are low-risk

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Development Process

The process by which this guideline was developed is documented in the Guideline Development Process Manual; a Team Binder maintains minutes and other relevant development materials. The recommendations contained in this guideline were formulated by an interdisciplinary working group which performed systematic and critical literature reviews, using the grading scale that follows, and examined current local clinical practices. Appropriate companion documents have been developed to assist in the effective dissemination and implementation of the guideline.

Evidence Based Grading Scale			
A	Randomized controlled trial: large sample	S	Review article
B	Randomized controlled trial: small sample	M	Meta-analysis
C	Prospective trial or large case series	Q	Decision analysis
D	Retrospective analysis	L	Legal requirement
E	Expert opinion or consensus	O	Other evidence
F	Basic laboratory research	X	No evidence

Once the guideline has been in place for three years, the development team reconvenes to explore the continued validity of the guideline. This phase can be initiated at any point that evidence indicates a critical change is needed.

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.

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

The guideline was developed without external funding. All Team Members and Clinical Effectiveness support staff listed have declared whether they have any conflict of interest.

NOTE: These recommendations result from 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.

For more information about these guidelines, their supporting evidences and the guideline development process, contact the Health Policy & Clinical Effectiveness office at 513-636-2501 or HPCEInfo@cchmc.org.

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At Cincinnati Children's

What is a Fever of Uncertain Source?

A temperature above 100.4°F (38°C) is considered a fever. A fever is a symptom rather than a disease. A fever is from an "uncertain source" when the reason for the fever is not known. Many different things can cause a fever. The most common causes are bacterial or viral infections. This information is for babies less than 60 days old.

What to expect if your baby is seen for a Fever

Steps along your baby's pathway

In the Emergency Department

- Our doctors and nurses will examine your baby and ask questions to help determine what might be causing the fever.
- Your baby's temperature will be taken with a rectal thermometer and his weight will be measured. Ask for the measurement units that you understand best (see conversion tables on front and back).
- The following tests may be performed on your baby. It is your choice whether you want to stay in the room during the tests. You are encouraged to ask questions.
  - Urine test - a tube (catheter) is used to get a sample of urine
  - Blood test - a needle is inserted into a blood vessel, and a thin plastic tube, called an IV, will be left in the blood vessel in case your baby needs antibiotics
  - Spinal tap - performed to remove spinal fluid for testing; also called a lumbar puncture
  - *If acceptable to you, a nurse will get your child's blood and urine samples prior to the doctor's examination. This will help avoid delay, and hopefully make your emergency department visit shorter.*
- The Health Topic titled "Fever of Uncertain Source" describes how each test will be performed and what we are looking for with each test. Ask for a copy if you have not seen this information. Feel free to ask any questions that it does not answer.
- You and your baby will have a chance to relax, and breastfeed if needed, while you wait for your baby's early test results.

Admission to the Hospital

- If your baby is admitted to the hospital, it will be for antibiotic treatment or to wait for the results of culture tests. These tests take 24 to 48 hours to show results.
- If your baby is treated with antibiotics, a dose is usually given at this time.
- You will remain in the Emergency Department until a room is ready. Your baby will be in a private room with a fold-out bed so you may stay overnight.

While in the Hospital

- Your baby will continue to get antibiotics.
- Your baby's temperature will be checked every few hours by the nurse.
- More tests may be done.
- You may participate in your baby's care as much as you want. This includes being involved in morning discussions, or rounds, with your baby's health care team and writing about your baby's activities and comfort level in her medical chart.

Temperature

°C	°F
37.0	98.6
37.1	98.8
37.2	99.0
37.3	99.1
37.4	99.3
37.5	99.5
37.6	99.7
37.7	99.9
37.8	100.0
37.9	100.2
38.0	100.4
38.1	100.6
38.2	100.8
38.3	100.9
38.4	101.1
38.5	101.3
38.6	101.5
38.7	101.7
38.8	101.8
38.9	102.0

Cincinnati Children's® Hospital Medical Center

Caring for your baby at home

Going Home

You can plan on going home when:

- Your baby does not look ill and is feeding well.
- Results of the various tests are back and have been discussed with you.
- Antibiotic treatment is complete or can be completed at home.
- You are confident that you can provide the needed care at home.
- Your baby's temperature remains normal.

Information

- Information about fever, temperature taking and the use of acetaminophen, such as Tylenol®, will be available to you. We will make sure you have what you need to care for your baby at home. We also will provide many educational materials, such as the Health Topic handouts.

At Home

- You should expect your baby to return to normal activity levels, including feeding, sleeping and awake periods.
- Refer to the "Discharge Instructions" form, which has important information regarding your baby's recovery.
- Schedule a follow-up appointment with your baby's doctor for seven to 10 days after you get home from the hospital.

When to Call the Doctor

- Your baby has a fever greater than 100.4° F.
- Your baby shows increasing fussiness, no wet diapers in eight hours or takes a decreased number of bottles.
- Your doctor's phone number: _____

Commonly Used Words

- **Septic work-up** - tests on urine, blood or spinal fluid to determine the cause of a fever
- **Catheter** - a small, flexible tube inserted into the bladder to obtain a urine sample and removed after the sample is obtained
- **Saline well** - a thin plastic tube inserted in a vein; used for giving antibiotics or IV fluids; also called an IV catheter
- **Preliminary test results** - test results completed while you wait in the emergency room
- **Cultures** - tests that take 24 to 48 hours for results; used to see if bacteria or viruses grow from the blood, urine or spinal fluid samples

Weight

lb.	kg.
6	13.2
7	15.4
8	17.6
9	19.8
10	22.0
11	24.2
12	26.4
13	28.6
14	30.8
15	33.0
16	35.2
17	37.4
18	39.6
19	41.8
20	44.0
21	46.2
22	48.4
23	50.6
24	52.8
25	55.0

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PARENT / PATIENT ASSESSMENT OF CHILD

Fever of Uncertain Source 0-60 days

Parents are encouraged to document their assessments and observations regarding their child's health, but they are not required to do so.

Please ✓ One	7:00 A.M. - 3:30 P.M.	3:30 P.M. - 11:00 P.M.	11:00 P.M. - 7:00 A.M.
FEEDING ☐ Breastfeeding ☐ Bottle feeding	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None
URINE	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None
SLEEP	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None	☐ More than usual ☐ Less than usual ☐ Usual amount ☐ None
COMFORT	☐ Content ☐ Fussy but consolable ☐ Fussy and inconsolable	☐ Content ☐ Fussy but consolable ☐ Fussy and inconsolable	☐ Content ☐ Fussy but consolable ☐ Fussy and inconsolable
PAIN SCALE Type_____	Score _____	Score _____	Score _____
	Parent Signature: _____ Date ____ Time _____	Parent Signature: _____ Date ____ Time _____	Parent Signature: _____ Date ____ Time _____

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PARENT / PATIENT ASSESSMENT OF CHILD

Fever of Uncertain Source 0-60 days

Date / Time	Comments and Questions Regarding Your Child's Health

Cincinnati Children's Hospital Medical Center

Fever of Uncertain Source 0 - 60 days
DISCHARGE INSTRUCTIONS

PRIMARY CARE PHYSICIAN:_____

DISCHARGE TEACHING/INSTRUCTIONS:

Call your doctor for:
- Fever greater than 100.4° F (38° C)
- Increasing fussiness
- No wet diapers in 8 hours
- Decreased feedings
- Any other concerns

See Health Topics (formerly PEPs)
- Fever of Uncertain Source #1049
- Fever #1048
- Temperature Taking #4103

ACTIVITY RESTRICTIONS:

RETURN TO DAYCARE/BABYSITTER: Daycare at parent's discretion or according to facility policy.

DISCHARGE DIET: Breastmilk or formula of choice

DISCHARGE MEDICATIONS	DOSE	FREQUENCY	NEXT DOSE DUE AT	DURATION	ROUTE	DRUG INTERACTIONS DISCUSSED
						☐ N/A ☐ YES
						☐ N/A ☐ YES
						☐ N/A ☐ YES
						☐ N/A ☐ YES
						☐ N/A ☐ YES
						☐ N/A ☐ YES
						☐ N/A ☐ YES
						☐ N/A ☐ YES

FOLLOW UP APPOINTMENTS OR TESTS:

WHO:	WHERE:	PHONE NUMBER:	WHEN:	PARENT TO SCHEDULE?
				☐
				☐
				☐
				☐

EQUIPMENT LIST (LIST ONLY THE EQUIPMENT HERE)

I HAVE REVIEWED AND UNDERSTAND THESE INSTRUCTIONS:

PARENT/GUARDIAN SIGNATURE:	DATE:

NURSE SIGNATURE:	VERIFIED IDENTIFICATION OF PARENT/GUARDIAN:	TIME OF DISCHARGE	DATE:

Original - Patient's Medical Record Copy - Parent/Guardian

Fever of Uncertain Source
0-60 days
EDUCATION RECORD

Date: _____

1. Patient _____	2. Primary Caretaker _____	3. Other Caretaker _____
Special Considerations	**Special Considerations**	**Special Considerations**
☐ None	☐ None	☐ None
☐ Language Barriers	☐ Language Barriers	☐ Language Barriers
☐ Hearing/Vision/Speaking Impairment	☐ Hearing/Vision/Speaking Impairment	☐ Hearing/Vision/Speaking Impairment
☐ Cognitive Limitations	☐ Cognitive Limitations	☐ Cognitive Limitations
☐ Physical Limitations	☐ Physical Limitations	☐ Physical Limitations
☐ Developmental Level	☐ Developmental Level	☐ Developmental Level
☐ Emotional Factors	☐ Emotional Factors	☐ Emotional Factors
☐ Cultural Needs	☐ Cultural Needs	☐ Cultural Needs
Explain any factors identified:	Explain any factors identified:	Explain any factors identified:
Preferred Learning Style	**Preferred Learning Style**	**Preferred Learning Style**
☐ No Preference	☐ No Preference	☐ No Preference
☐ Written	☐ Written	☐ Written
☐ Verbal	☐ Verbal	☐ Verbal
☐ Pictures	☐ Pictures	☐ Pictures
☐ Participation	☐ Participation	☐ Participation
☐ Video	☐ Video	☐ Video
Previous Knowledge Level	**Previous Knowledge Level**	**Previous Knowledge Level**
Topic _____	Topic _____	Topic _____
☐ No Previous Knowledge/Skill	☐ No Previous Knowledge/Skill	☐ No Previous Knowledge/Skill
☐ Partial Knowledge	☐ Partial Knowledge	☐ Partial Knowledge
☐ Misinformation	☐ Misinformation	☐ Misinformation
☐ Competent Knowledge/Skill Level	☐ Competent Knowledge/Skill Level	☐ Competent Knowledge/Skill Level

UNIT EDUCATION

☐ Parent _____ Date:_____ By: _____ (Signature)
☐ Patient (If applicable) Date:_____ By: _____ (Signature)

CHECK ITEMS REVIEWED:

☐ Phone
☐ Bed Policy
☐ Controls explained
☐ Call light
☐ Side rails
☐ Visiting hours/Sibling visitation
☐ Meal times
☐ TV
☐ Quiet times
☐ Allergy band
☐ Medical restraints
☐ Play room
☐ Care of valuables _____
☐ Prosthetic device _____
☐ Unit information _____
☐ Isolation type _____

EQUIPMENT:

☐ IV pumps
☐ Medication pump
☐ Monitors
☐ Pulse oximeter
☐ Oxygen
☐ Suction
☐ Other _____
☐ Other _____

INIT.	SIGNATURE	INIT.	SIGNATURE	INIT.	SIGNATURE

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Fever of Uncertain Source 0-60 days
EDUCATION RECORD

DATE INITIATED/ INITIALS	ED CONTENT	LNR	E.O.	EVALUATION/DATE/INITIALS R – Reinforce P – Require More Practice Of Skill C – Need Verbal Cues/Coaching G – Needs Hands-On Guidance * -- See Progress Notes B – Begin Next Content Areas	DATE MET/ INITIALS
	Review Plan of Care, including family participation in rounds		I,V		
	Review Discharge Criteria				
	Review Health Topics (formerly PEPs)				
	Fever of Uncertain Source, #1049		V		
	Fever, #1048		I		
	Temperature Taking, #4103		I		
	Parent demonstrates competence taking temperature		D, if needed		
	Home care, if needed (complete as necessary)				
	•				
	•				
	•				

KEY: LNR – Learner E.O. – Expected Outcome (V - Verbalize Correctly) (D- Demonstrate Independently) (I – Information Reviewed)

INIT.	SIGNATURE	INIT.	SIGNATURE	INIT.	SIGNATURE