
بسم الله الرحمن الرحیم
الله
تبارک الله رب العالمین

Fever without localizing signs (**FWLS**)
OR
Fever without Source (**FWS**)

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ever

re body temperature is normally maintained within 1–1.5°C in a range of 37–38°C
ormal body temperature is generally considered to be 37°C.

ormal diurnal variation exists, so that the highest point is reached in the early even
d the lowest point is reached in the morning.

ctal temperatures higher than 38°C generally are considered abnormal, **especiall**
sociated with other symptoms.

yperpyrexia is defined as a rectal temperature >40°C.

ost febrile illnesses in children may be categorized as follows:

ever of short duration with localizing signs and symptoms, in which a diagnosis ca
ften be established by clinical history and physical examination

ever without localizing signs (fever without a focus), frequently occurring in children
ounger than 3 years of age, in which a history and physical examination fail to establish a ca

ever of unknown origin (FUO), defined as daily fever for more than 14 days witho
lentified etiology despite history, physical examination, and routine laboratory tes
fter 1 week of intense evaluation.

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Management of Fever Without Source in Infants 1-36 Months Old

ny toxic-appearing child 0-36 mo and temperature ≥38°C

ospitalize, **cultures** (blood, urine, CSF) plus other tests*,**parenteral antibiotics**

Other tests may include chest radiograph, stool studies, herpes simplex and other virus PCR.

oxic appearing or septic patients

psis is the **systemic response to infection** that is manifested by hypertherm
hypothermia, tachycardia, tachypnea, and shock.

xic appearing or **septic Children,** those with …

epticemia and **signs of**

- **central nervous system (CNS) dysfunction** (**irritability, lethargy**),
- **or cardiovascular impairment** (**cyanosis, poor perfusion**),
- **or disseminated intravascular coagulation** (**petechiae, ecchymosis**)

American Academy of Pediatrics

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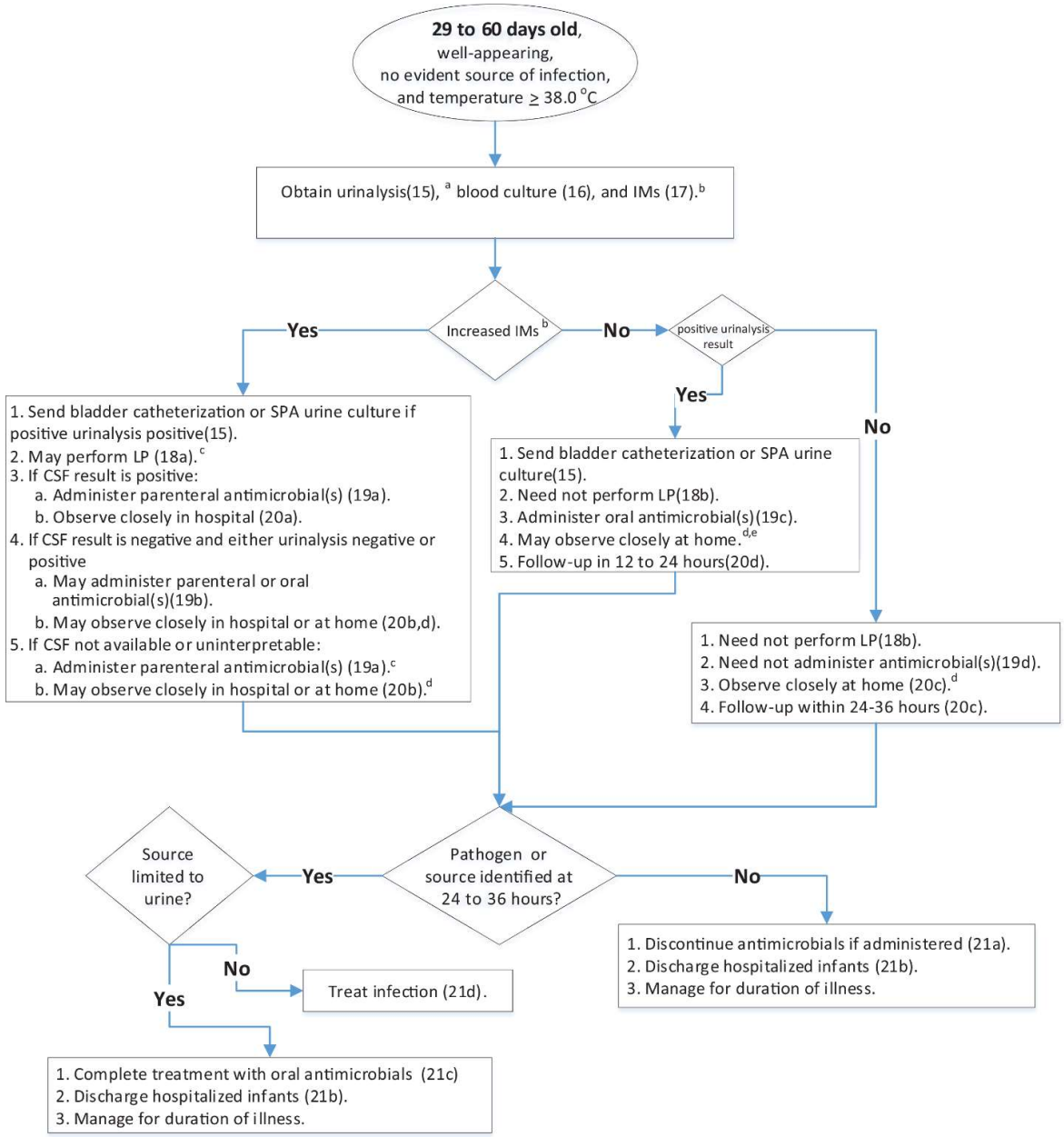


Clinical Practice Guideline: Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old

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Well-Appearing

29 to 60 -day-Old-Infants



Algorithm for 29 to 60-day-o infants

l Practice Guideline: Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old. 2021

xclusion

e following merit additional consideration specific to their condition and are intended to b
cluded from the algorithms:

reterm infants (<37 weeks' gestation).

ebrile infants with **high suspicion of HSV** infection (eg, vesicles).

nfants with a **focal bacterial infection** (eg, cellulitis, omphalitis, septic arthritis, osteomyelitis).

nfants with clinical **bronchiolitis**, with or without positive test results for RSV.

nfants with documented or suspected **immune compromise**.

nfants whose neonatal course was **complicated by surgery or infection**.

nfants with **congenital or chromosomal abnormalities**.

Medically fragile infants requiring some form of technology or ongoing therapeutic intervention to susta

nfants who have received **immunizations within the last 48 hours**.

clusion

nts with the following may be included:

spiratory symptoms: the presence of upper respiratory tract infection symptoms or other respirat
mptoms **not diagnostic of bronchiolitis** should not exclude infants from inclusion in the pathway.

arrhea: Loose stools do not exclude infants from the pathway.

itis media: diagnosing infants with presumed otitis media does not preclude their entry into the p

rrent or recent use of anti-microbial agents in infants older than 2 weeks of age requires individu
erpretation for febrile infants who enter the pathway.

sitive viral test results: the availability of rapid respiratory molecular testing for a variety of viruse
creasing, outpacing the availability of evidence for how such testing should be used.



Diagnostic Evaluation

btain urinalysis

nicians should obtain urine specimen by bag, spontaneous void, or stimulated void for nalysis and, if urinalysis result is positive, obtain a catheterization or SPA specimen for cul

obtain urine specimen by catheterization or SPA of bladder for urinalysis and, if result is sitive, for culture.

cumcised boys have a likelihood of UTI <1% and may be exempted from this recommenda

positive urinalysis result is defined as the presence of any

- **leukocyte esterase (LE) on dipstick,**
- **>5 WBCs per high-powered field (hpf) in centrifuged urine, (or >10 WBCs/mm^3 in uncentrifuged urine on microscopic urinalysis using a hemocytometer.)**

btain a blood culture

nicians should obtain a blood culture.

dentification of bacteremia: 1.1%–2.2% of all febrile infants in this age group and 5%–10% in infant
ith UTI.

dentification of organism (and sensitivities) for directed antimicrobial treatment.

arly detection and treatment may prevent progression of infection.

ssess Inflammatory Markers (IMs)

nicians should assess IMs.

ls are considered abnormal at the following levels:

emperature >38.5°C

NC >5200 per mm^3

RP >20 mg/L

NC >4000 per mm^3

rocalcitonin >0.5 ng/mL

e committee recommends procalcitonin in all age groups.

erform LP

any IM obtained is abnormal; Clinicians may obtain CSF for analysis (WBC count, fferential, protein, glucose, Gram stain), culture for bacteria, **and test for enterovir hen CSF pleocytosis is detected or during enterovirus season**.

s are considered abnormal at the following levels:

emperature >38.5°C

NC >5200 per mm^3

RP >20 mg/L

NC >4000 per mm^3

rocalcitonin >0.5 ng/mL

SF evaluation for HSV

SF with pleocytosis or from infants with HSV risk factors should be valuated for HSV if…

- ypothermia,
- resence of vesicles and/or seizures,
- mucous membrane ulcers,
- maternal history of genital HSV lesions or fever from 48 hours before to 48 hours af elivery,
- CSF pleocytosis with a negative Gram stain,
- eukopenia and/or thrombocytopenia,
- levated ALT

on't need obtain CSF if …

well-appearing infants, **If all IMs obtained are normal**; Clinicians

eed not obtain CSF for analysis and culture

no IM is abnormal, a positive urinalysis result does not include as an indicator fo
rforming an LP.

SF Values in Febrile Infants (29–60 days

	Mean	Median	Range
WBCs /mm^3	3	3	0 – 8
Protein mg/dL	58	54	5 – 105
Glucose	48	48	20 – 65
RBCs /mm^3	75	2	0 – 64

Initial Treatment

eatment of **bacterial meningitis** (suspected / documente

inicians should use **parenteral** antimicrobial therapy

f CSF analysis suggests bacterial meningitis

f CSF is not available or is uninterpretable

nicians should hospitalize infants in a unit with nurses and staff experienced in the

re of 29- to 60-day-old infants if CSF analysis, if CSF obtained, is abnormal.

Treatment of of **Bacteremia** (suspected / documented)

nicians may use **parenteral** antimicrobial therapy if both of the following

. **CSF analysis (if CSF obtained) is normal; and**

. **any IM obtained is abnormal.**

nicians may hospitalize infants in a unit with nurses and staff experienced in the ca

- to 60-day-old-infants if any IM obtained is abnormal.

Treatment of of **UTI** (suspected / documented)

nicians should initiate **oral** antimicrobial therapy if all of the following apply:

. **CSF analysis (if CSF obtained) is normal;**

. **urinalysis result is positive; and**

. **no IM obtained is abnormal.**

Initial Empirical Antibacterial Therapy for Well-Appearing Febrile Infants **29 - 60 Days Old**

pected Source of Infection	29–60 d Old
	Ceftriaxone IV or IM (50 mg/kg/dose every 24 h). Oral medications[b] Cephalexin 50–100 mg/kg/d in 4 doses **or** Cefixime 8 mg/kg/d in 1 dose
ocus identified	Ceftriaxone IV or IM (50 mg/kg/dose every 24 h)
erial meningitis	Ceftriaxone IV (100 mg/kg per d once daily or divided every 12 Ceftazidime IV (150 mg/kg per d divided every 8 h) **and** vancomycin[f] IV (60 mg/kg per d divided every 8 h)

ut-patient Close observation

nicians need **not use antimicrobial therapy** while awaiting bacterial culture result

of the following are met:

. **CSF analysis, if CSF obtained, is normal or enterovirus-positive;**

. **urinalysis is negative; and**

. **no IM obtained is abnormal.**

e risk for well-appearing infants with these negative findings having bacteremia

1% for infants 29 to 60 days of age.

ut-patient Close observation

nicians should manage patients at home if all of the following criteria are met:

. **CSF analysis, if CSF obtained, is normal;**

. **urinalysis is negative;**

. **all IMs obtained are normal;**

- **4. appropriate parental education has been provided;**
- **5. follow-up plans for reevaluation in 24 hours have been developed and are in place; and**
- **6. plans have been developed and are in place in case of change in clinical status, including me of communication between family and providers and access to emergency medical care.**

Further Management and Monitoring

nicians should **discontinue** antimicrobial agents **when all of the following are met**

. **all bacterial cultures are negative at 24 to 36 hours;**

. **infant is clinically well or improving (eg, fever, feeding); and**

. **there is no other infection requiring treatment (eg, otitis media).**

nicians should **discharge hospitalized** patients with positive **UTI** (Positive urine lture) **if all of the following are met**:

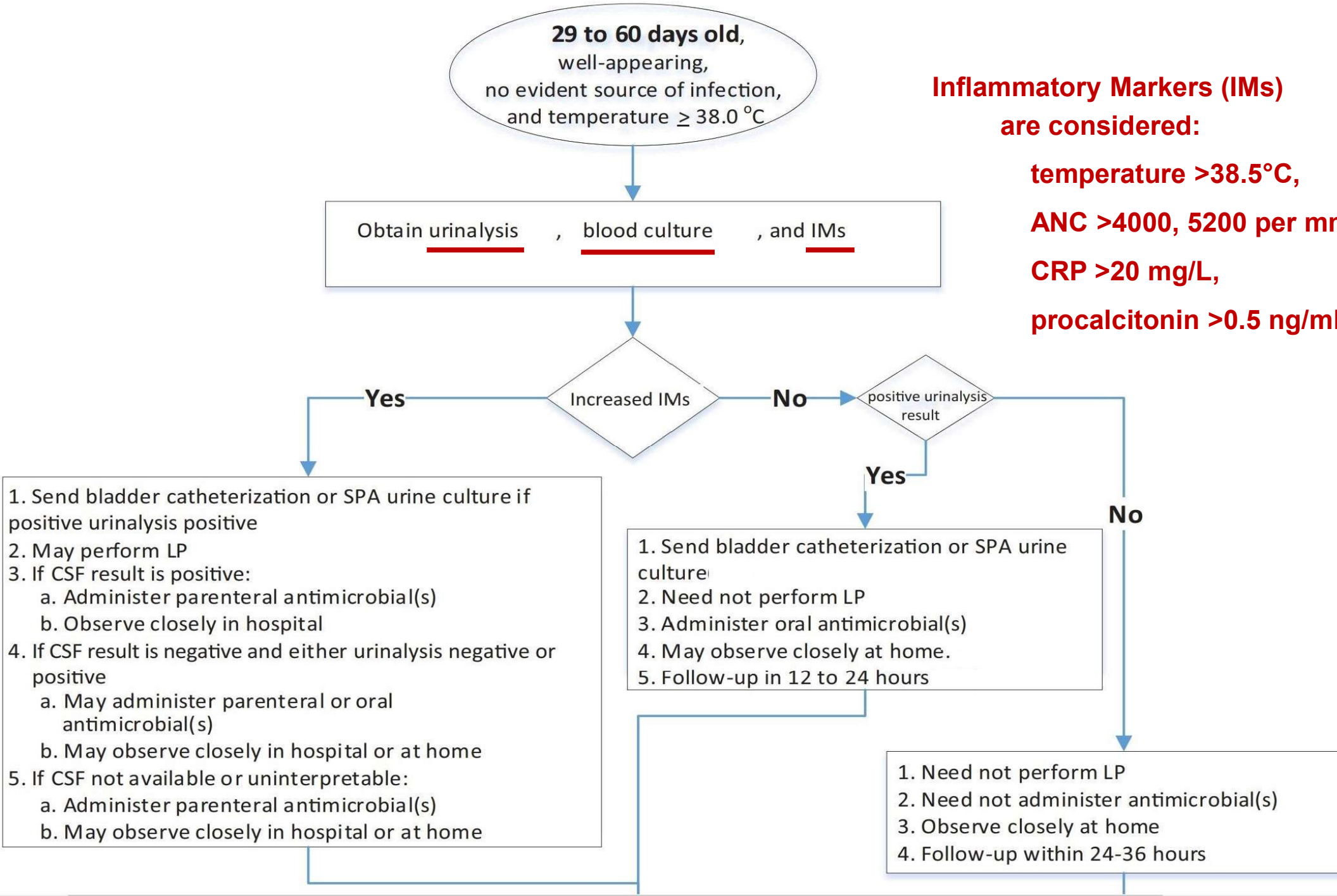
. **blood culture is negative;**

. **CSF culture, if CSF obtained, is negative;**

. **infant is clinically well or improving (eg, fever, feeding); and**

. **there are no other reasons for hospitalization.**

nicians should treat infants' positive bacterial pathogens in urine, blood, or CSF wi
rgeted antimicrobial therapy for the duration of time consistent with the nature of
sease, responsible organism, and response of the infant to treatment.



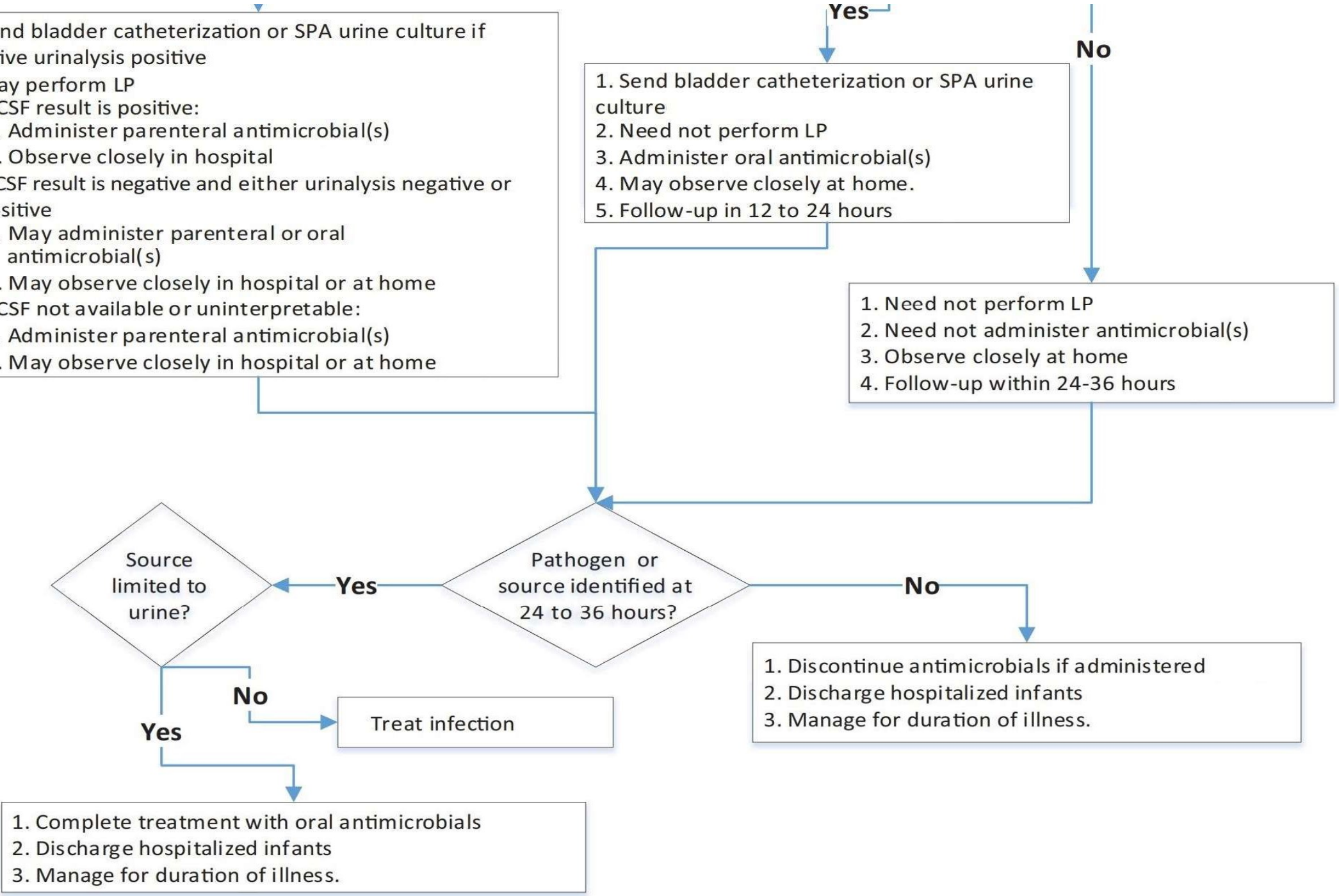
Inflammatory Markers (IMs) are considered:

temperature >38.5°C,

ANC >4000, 5200 per mr

CRP >20 mg/L,

procalcitonin >0.5 ng/ml


nd bladder catheterization or SPA urine culture if
ive urinalysis positive
ay perform LP
CSF result is positive:
Administer parenteral antimicrobial(s)
Observe closely in hospital
CSF result is negative and either urinalysis negative or
sitive
May administer parenteral or oral
antimicrobial(s)
May observe closely in hospital or at home
CSF not available or uninterpretable:
Administer parenteral antimicrobial(s)
May observe closely in hospital or at home
Yes
No
1. Send bladder catheterization or SPA urine culture
2. Need not perform LP
3. Administer oral antimicrobial(s)
4. May observe closely at home.
5. Follow-up in 12 to 24 hours
1. Need not perform LP
2. Need not administer antimicrobial(s)
3. Observe closely at home
4. Follow-up within 24-36 hours
Pathogen or source identified at 24 to 36 hours?
Yes
No
Source limited to urine?
No
Yes
Treat infection
1. Discontinue antimicrobials if administered
2. Discharge hospitalized infants
3. Manage for duration of illness.
1. Complete treatment with oral antimicrobials
2. Discharge hospitalized infants
3. Manage for duration of illness.

Fever in the Older Child (>2-month-old)

ver is the most common reason for a child to seek medical care. While most infants and ldren have benign viral causes of fever, a small percentage will have more serious infectio

like fever in young infants, pediatricians can rely more readily on symptoms and physica amination findings to establish a diagnosis in older children.

ants and children age 2-24 mo merit special consideration because they have **limited verb lls**, are **at risk for occult bacterial infections**, and may be otherwise asymptomatic except ver.

agnostic testing, including laboratory testing and radiographic studies, is not routinely licated unless diagnostic uncertainty exists after examination or the patient appears critic

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ccult Urinary Tract Infection

hong children 2-24 mo old without symptoms or physical examination findings tha
entify another focal source of infection, the prevalence of urinary tract infection (U
ay be as high as 5–10%.

e highest risk of UTI occurs in females and uncircumcised males, with a very low ra
infection (<0.5%) in circumcised males.

Risk Factor for UTI in Children 2-2 Mo of Age

nerican Academy of Pediatrics Clinical Practice Guideline

HILDREN 2-24 MO OF AGE

male

ge <1 yr
mperature ≥39°C (102.2°F)
ver duration ≥2 days
o obvious source of infection

ale

ncircumcised males at higher risk
mperature ≥39°C (102.2°F)
ver duration >1 day
o obvious source of infection

iversity of Pittsburgh UTICalc

HILDREN 2-23 MO OF AGE

ge <12 mo
aximum temperature ≥39°C
story of UTI
male or uncircumcised male
uration of fever ≥48 hr
o other source of fever

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acterial Infections

vasive bacterial infections, including **sepsis** and **bacterial meningitis**, m
e considered in young children presenting with fever.

ncommon

ed Flags:

- **Ill appearance**, **lethargy**, and **tachycardia** are typically present among children with severe sepsis
  petechiae may be an early finding among children with meningococcemia or other invasive bacte
  diseases.
- Children with fever who are **immunosuppressed**, such as children receiving **chemotherapy** or th
  with **sickle cell disease**, are at higher risk for invasive bacterial infection.
- **Unimmunized** and **incompletely immunized young children**

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ccult Bacteremia

cult bacteremia is defined as a positive blood culture for a pathogen in a ell-appearing child without an obvious source of infection.

fore vaccination programs against Hib and Streptococcus pneumoniae , **up to 5%** o ung children age 2 mo to 24 (up to 36) mo with fever ≥39°C had occult bacteremia ost often caused by S. pneumoniae. Currently, the prevalence of occult bacteremia **%** in febrile, well-appearing young children.

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awasaki disease

wasaki disease and **multisystem inflammatory syndrome in children (MIS-C)** sho
considered among children with prolonged fever, and a careful evaluation for oth
gmata associated with these conditions is warranted

complete KD …

Any age (esp.<5 years old) **&** Fever >5 days **&** 2-3 signs & Symptoms

6 months old **&** fever >7 days

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eneral Approach

e general approach to fever in the older child begins with an assessment of the ch
erall appearance and **vital signs**. A detailed history of the **present illness** and a
prough **physical examination** should be performed to identify the cause of the fev

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valuation - ill or toxic appearance

ildren who are **ill or appear toxic** or who have **abnormal vital signs (e.g., tachycar chypnea, hypotension)** require rapid assessment, including a focused physical amination to evaluate for the presence of an invasive bacterial infection.

esting should include a **complete blood count (CBC)** and **blood culture** and **possibly urine and erebrospinal fluid (CSF) cultures**, depending on the age of the child and the presence or absence o hysical exam findings indicative of UTI or bacterial meningitis.

hildren who are **immunosuppressed** or who have a **central venous catheter** should also undergo iagnostic testing and receive prompt antimicrobial therapy, given their higher risk of invasive bacte nfection.

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bservational assessment

criptions of **normal appearance and alertness** include child looking at the observer and lo
und the room, with eyes that are shiny or bright.

vere impairment include: glassy eyes and stares vacantly into space

ervations, such as sitting, moving arms and legs on table or lap, and sits without support
mal motor ability.

vere impairment include: no movement in caregiver's arms and lies limply on table

mal behaviors, such as vocalizing spontaneously, playing with objects, reaching for objects
ing, and crying with noxious stimuli, reflect **playfulness**;

vere impairment include: abnormal behaviors

mally, crying children are **consolable** and stop crying when held by the caregiver

vere impairment include: continual cry despite being held and comforted

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ell-appearing child - Symptoms

more detailed history and physical exam can be performed in the **well-appearing c**

he **degree and duration of the fever** should be assessed, and the **method of taking the temperatu** hould be ascertained (e.g., rectal, oral, axillary).

ollowing characterization of the fever, it is important to **ask systematically about the presence of ymptoms** that may indicate an etiology for the fever, including symptoms of common viral infectio uch as rhinorrhea, cough, vomiting, and diarrhea. Additionally, symptoms should be elicited for ea ody system…

ssessment of **oral intake and urine output** is also critical.

resence of **weight loss or night sweats** may indicate leukemia, lymphoma, or tuberculosis.

thorough social history should be performed, inquiring about attendance at daycare, any travel, a ny sick contacts at daycare, school, or in the household.

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ell-appearing child - Physical Examinatio

complete physical examination is **particularly important in young children <24 m**
d who have limited verbal skills to communicate localized pain.

complete physical examination should be performed, with **particular attention giv**
body systems with associated symptoms (e.g., thorough exam of oropharynx for
ild with sore throat).

addition to a **careful evaluation of each body system**, a complete examination sh
clude an **assessment of neck pain and mobility**, which may be limited in children
th meningitis . Additionally, the examiner should palpate carefully for the **presenc**
lymphadenopathy , which may be present with infectious as well as oncologic cau
fever.

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ell-appearing child - Laboratory Testing

general, the decision to perform laboratory testing should be guided by the overal
pearance and vital signs of the child, the presence of specific symptoms or physica
amination findings, and the child's age.

boratory testing is **not routinely indicated** in the well-appearing child without a fo
infection on examination.

r well-appearing children with symptoms or signs indicative of a viral upper respira
GI infection, routine viral testing is not generally indicated.

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ell-appearing child - Laboratory Testing

brile children 2-24 mo old with 2 or 3 of the risk factors for UTI, particularly females
circumcised males, should undergo evaluation with urine dipstick, urine microscopy,
ne culture.

ven the very low risk of occult bacteremia, routine performance of blood testing (e
C, blood culture) is not indicated in the vast majority of immunized children with f

immunized and **underimmunized children <2 yr** old remain at higher risk of occul
eumococcal bacteremia, and **CBC** and **blood culture** may be considered in this
pulation in the absence of another source of infection.

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naging

e performance of imaging should be dictated by physical exam findings.

anagement

eneral Management Principles

pportive care, including the use of **antipyretics and adequate hydration**, should b
viewed with the patient and caregiver for all children with fever.

ildren with viral infections generally require supportive care only, **except for childr**
higher risk of severe or complicated disease with influenza virus or SARS-CoV-2.

tibiotics should be reserved for children with evidence of bacterial infection on
ysical examination.

wait-and-see approach can be considered for children with acute otitis media

ral antibiotics can be prescribed to young children with UTI, although children who cannot tolerat
ntake, are vomiting or dehydrated, or appear toxic require parenteral antibiotics and hospitalizatio

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anagement

ood tests, including CBC and blood culture, should be considered to evaluate for cult bacteremia in the **unimmunized child**. One management strategy for these ildren is to **administer a parenteral antibiotic (e.g., ceftriaxone) if leukocytosis (w ood cell count ≥15,000/µL), elevated absolute neutrophil count (≥10,000/µL), or evated inflammatory markers (procalcitonin >0.5 ng/mL)** are present while await sults of blood culture.

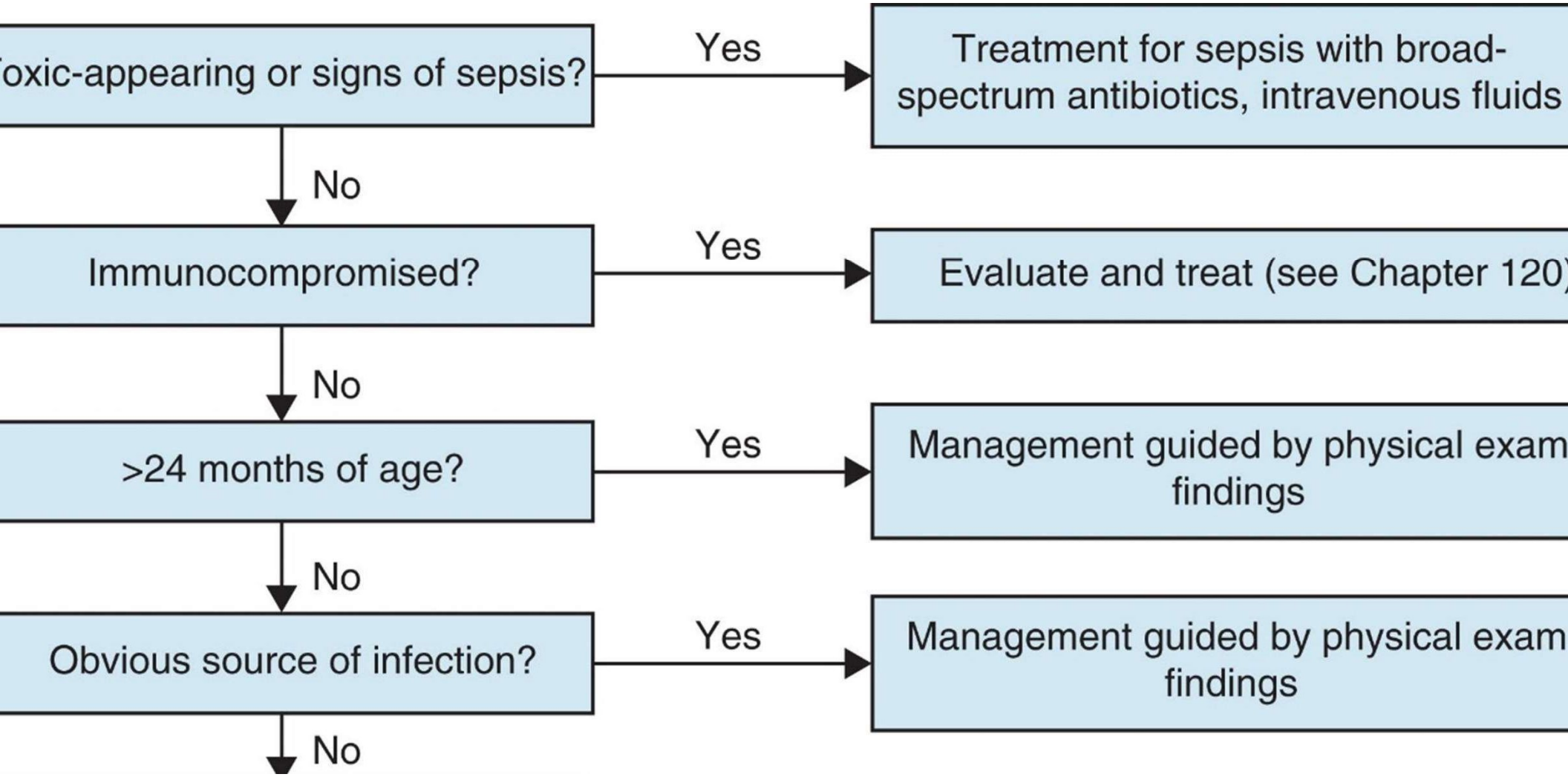
ell-appearing children usually are followed as outpatients without empirical antibi eatment.

anagement

gardless of antibiotic treatment, close follow-up for at least 72 hours, including re-
aluation in 24 hours or immediately with any clinical change, is essential.

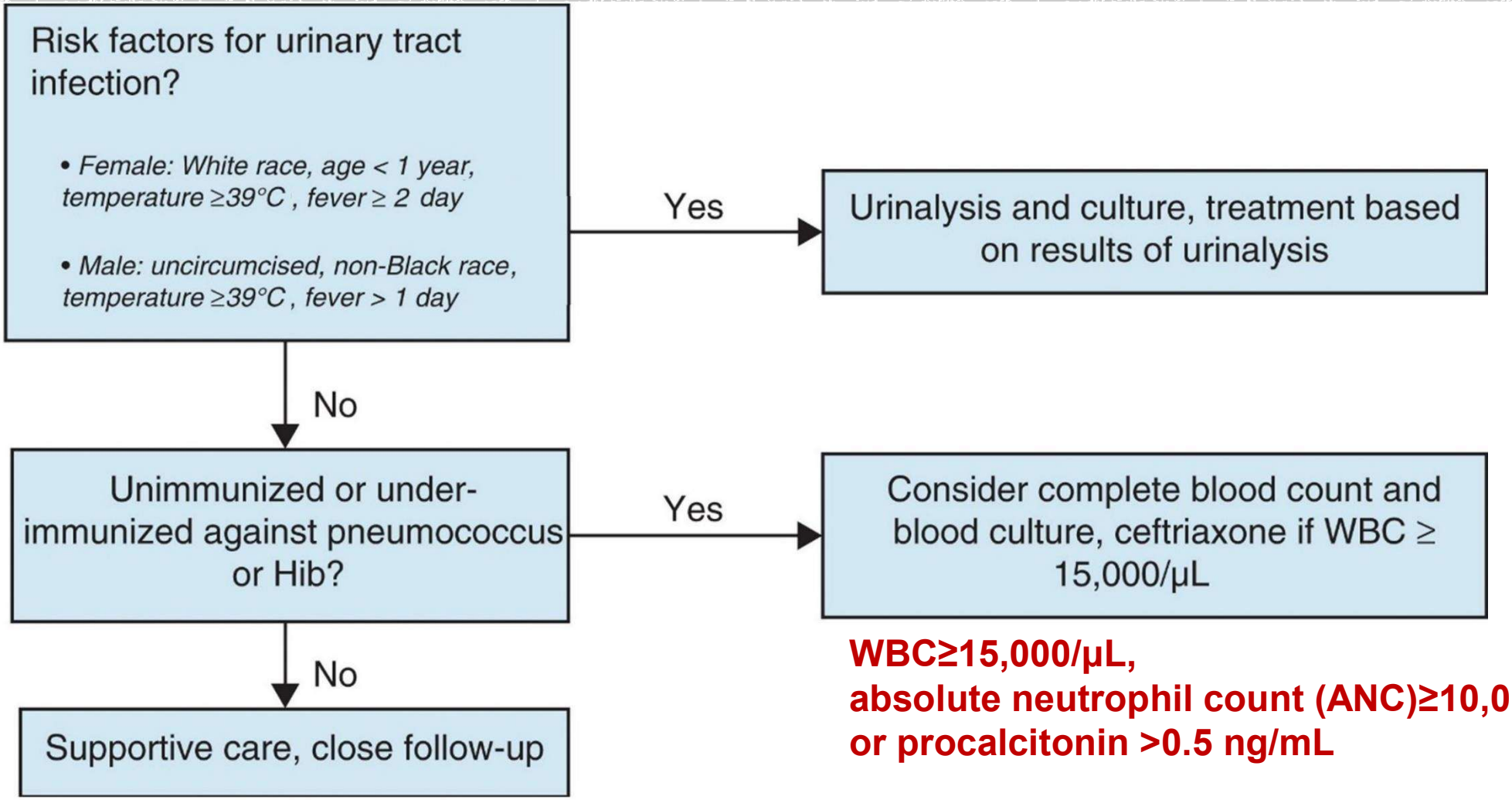
portantly, **anticipatory guidance** should be provided to all families of children with
ver, including the **criteria to return** to care and the **importance of fever control** an
equate hydration.

gorithm for evaluation and management of fever in infan and children >2 months



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gorithm for evaluation and management of fever in infan and children >2 months



WBC≥15,000/μL,
absolute neutrophil count (ANC)≥10,000/μ
or procalcitonin >0.5 ng/mL

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