

CA FIRST Protocol: a Modified Roseville Protocol

for the evaluation and management
of febrile young infants

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AAP Clinical Practice Guidelines (CPG)

- In August 2021, AAP released CPG on the approach to febrile, well appearing infants
- Pros
 - CPG agreed upon by experts in many fields
 - Uses guidance based on studies over decades
- Cons
 - Has not been validated
 - Narrow scope of infants included

AAP CPG

■ Inclusions:

- 8-60 days old
- Well appearance
- Fever $\geq 38^{\circ}\text{C}$ (100.4°F)

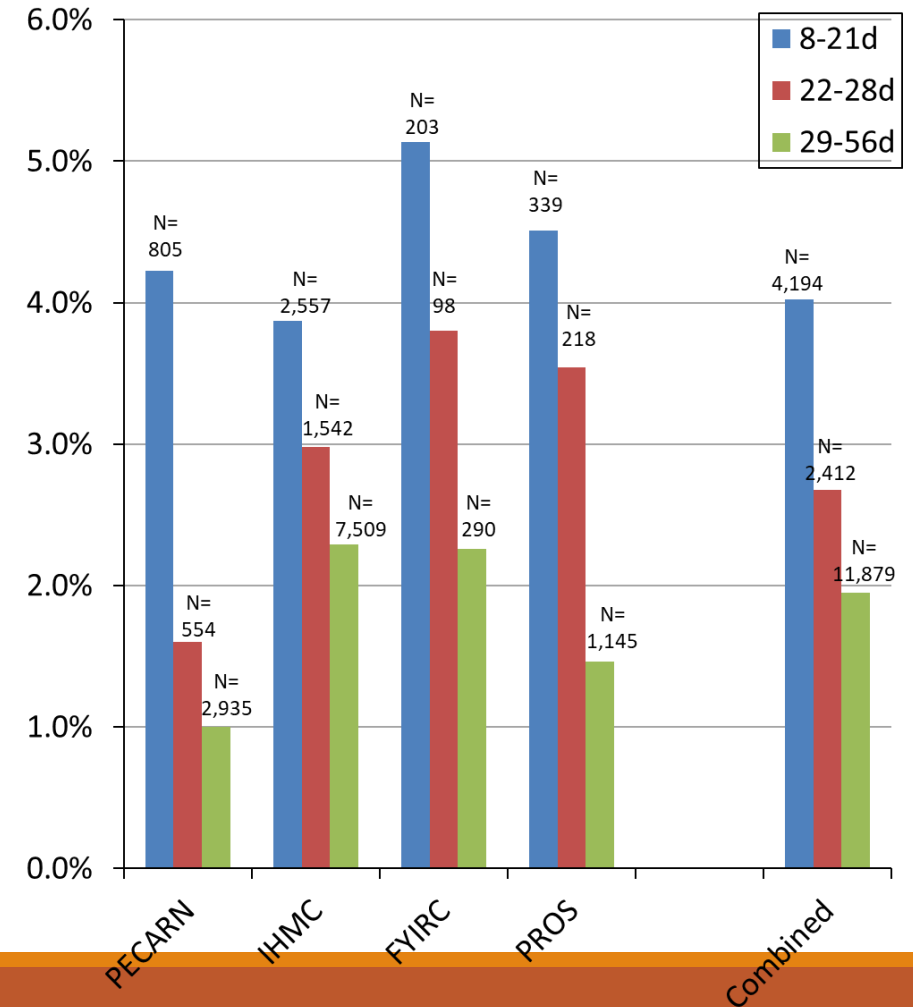
■ Exclusions:

- Preterm infants (<37 weeks)
- Infants younger than 2 weeks of age whose perinatal courses were complicated by maternal fever, infection, and/or antimicrobial use.
- Febrile infants with high suspicion of HSV infection (eg, vesicles).
- Infants with a focal bacterial infections
- Infants with clinical bronchiolitis, with or without positive test results for RSV.
- Infants with documented or suspected immune compromise.
- Infants whose neonatal course was complicated by surgery or infection.
- Infants with congenital or chromosomal abnormalities.
- Medically fragile infants requiring some form of technology or ongoing therapeutic intervention to sustain life.
- Infants who have received immunizations within the last 48 hours.

AAP CPG 8-21 Days

- All infants are considered 'high risk' and full sepsis evaluation including LP is recommended
- Assess HSV risk
- All infants treated with antibiotics and observed in the hospital (regardless of labs)

Rate of bacteremia by age



Roseville Protocol

■ Inclusions:

- 7-60 days old
- Well appearance
- Fever $\geq 38^{\circ}\text{C}$ (100.4°F)
- Full term (37-43 weeks gestation)

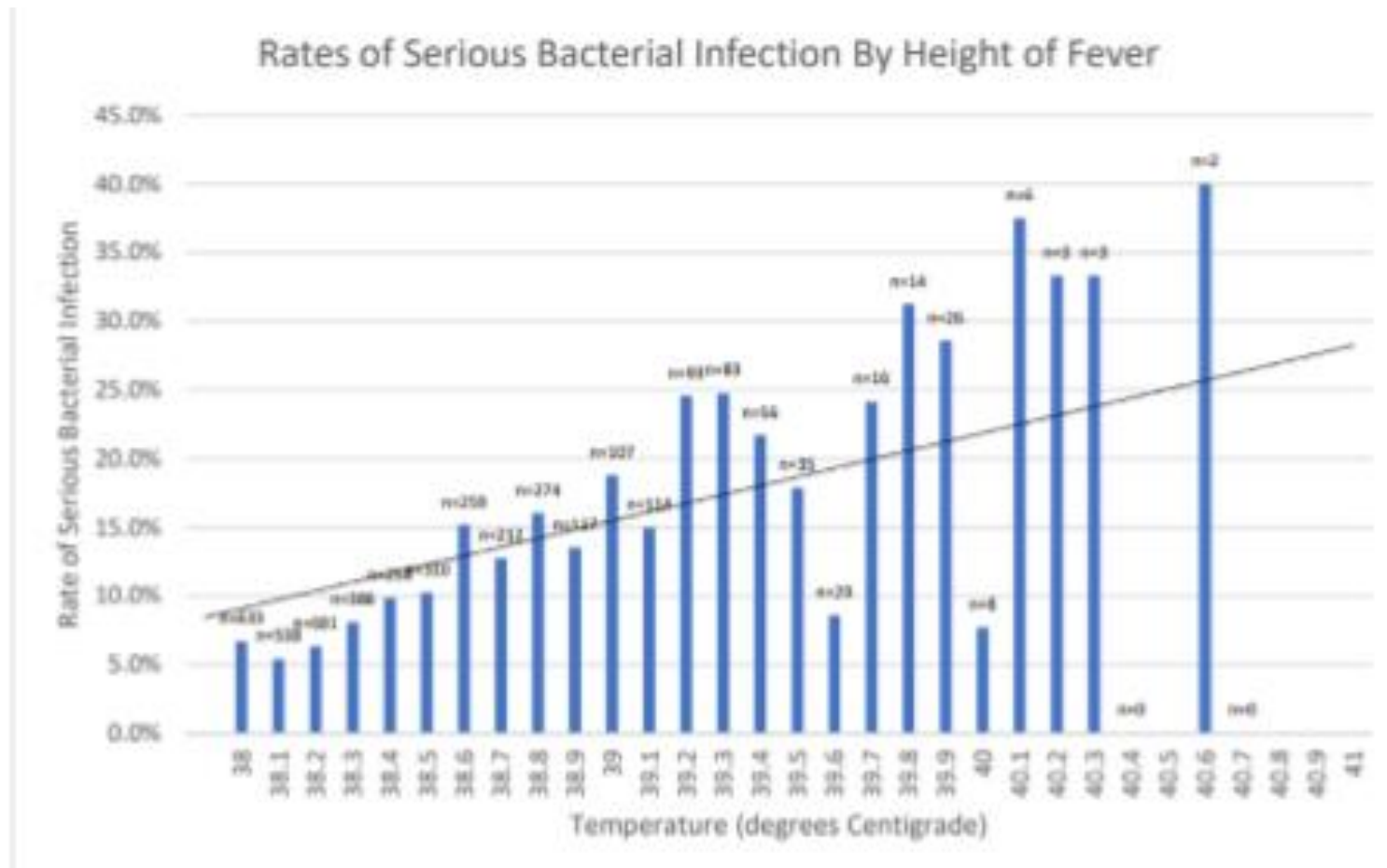
■ Exclusions:

- Ill appearance
- Evident infection INCLUDING BRONCHIOLITIS
- Neonatal / perinatal maternal fever OR antimicrobial treatment (newborn sepsis, maternal chorioamnionitis)
- Technology dependence, congenital anomalies

■ Major differences compared to Rochester:

- Temperature $>38.5^{\circ}\text{C}$ confers high risk designation in infants 7-28 days old
- Infants 29-60 days old with abnormal UA but normal blood work can be discharged home on oral antibiotics without a LP

Higher Fever Associated with Higher Risk of SBI



635 infants 7-28 days old

UA, Ucx
CBC w diff, blood cx

627

UA+
Or WBC <5K or >15K
Or bands > 1.5K
Or T >38.5C

YES

437

LP, Admit

Abnl UA,
CSF or WBC

Yes

353

Administer abx

UTI (150)

Bacteremia (25)

Meningitis (4)

6.6% IBI

No

84

May withhold abx

UTI (4)

Bacteremia (1)

Meningitis (0)

NO

198

D/C
No abx

UTI (5)

Bacteremia (1)

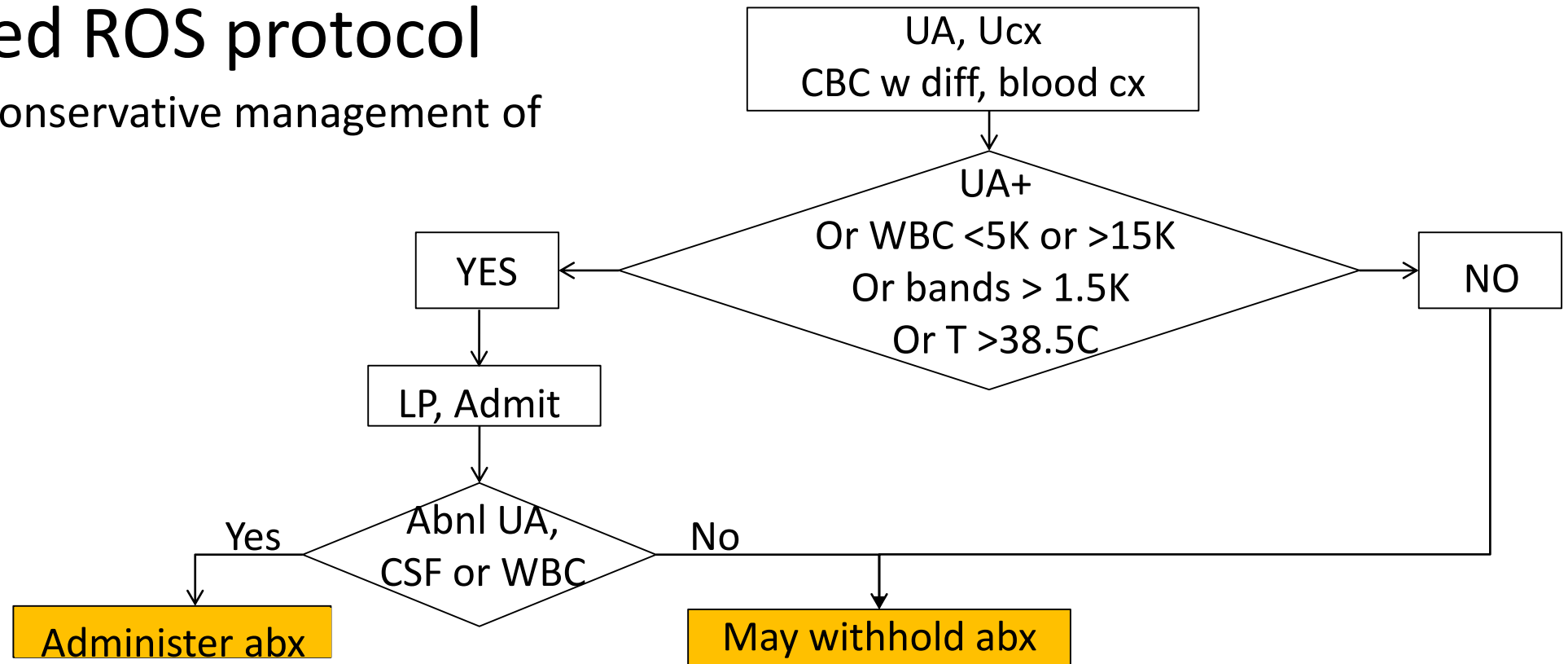
Meningitis (0)

0.5% IBI

CA FIRST (Febrile Infant Risk Stratification Team)

■ Modified ROS protocol

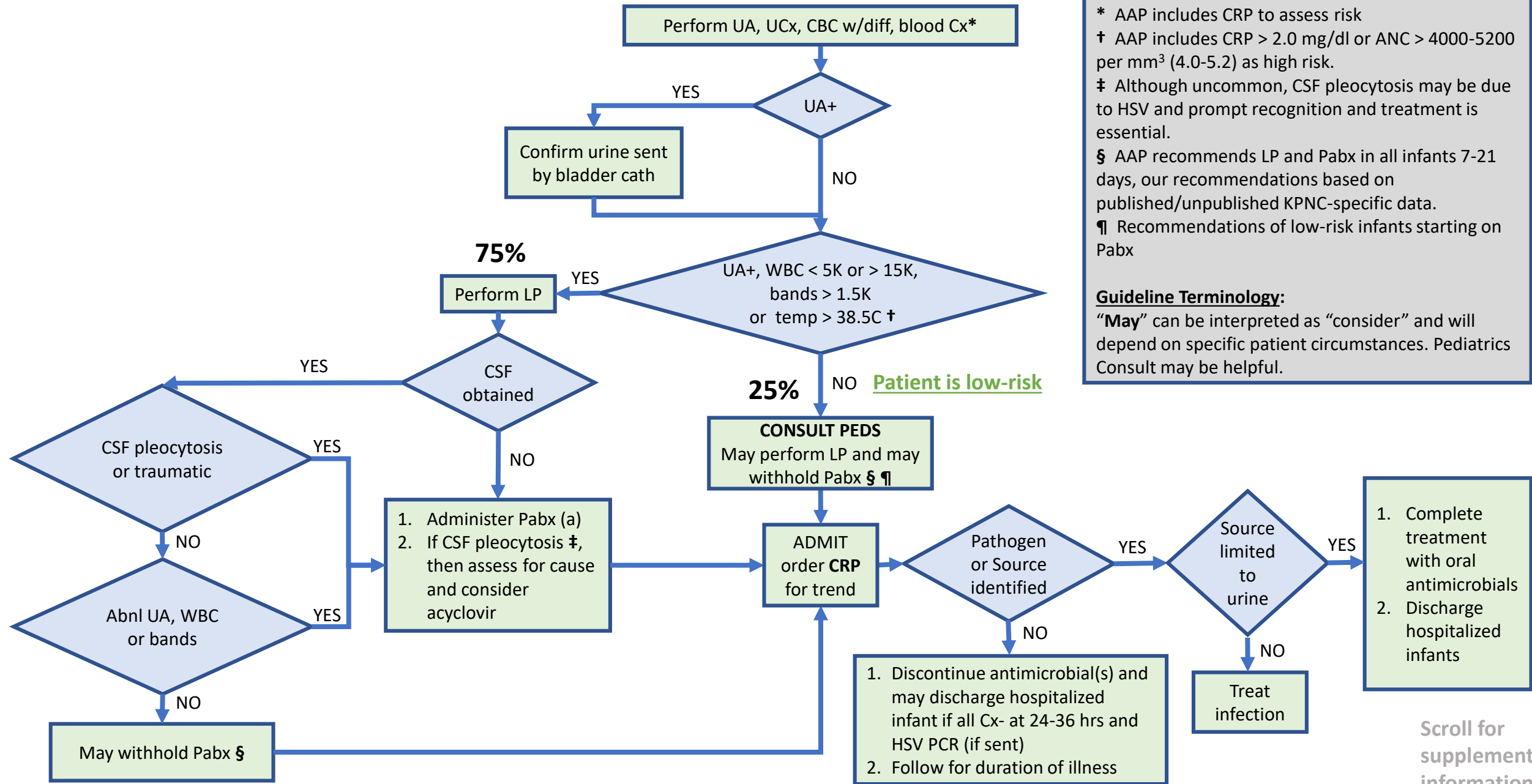
- More conservative management of infants



Algorithm for Well-Appearing Febrile Infant: 7-21 days of age, temp $\geq 38C$

Footnotes:
 * AAP includes CRP to assess risk
 † AAP includes CRP > 2.0 mg/dl or ANC > 4000-5200 per mm³ (4.0-5.2) as high risk.
 ‡ Although uncommon, CSF pleocytosis may be due to HSV and prompt recognition and treatment is essential.
 § AAP recommends LP and Pabx in all infants 7-21 days, our recommendations based on published/unpublished KPNC-specific data.
 ¶ Recommendations of low-risk infants starting on Pabx

Guideline Terminology:
 "May" can be interpreted as "consider" and will depend on specific patient circumstances. Pediatrics Consult may be helpful.



Scroll for supplemental information

Low Risk & Normal Labs 7-21 Days

This infant is lower risk

- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 7-21 days who had no high-risk criteria and normal inflammatory markers (temp < 101.3F, WBC 5-15K, Bands < 1.5k):

2/85 had bacteremia without meningitis

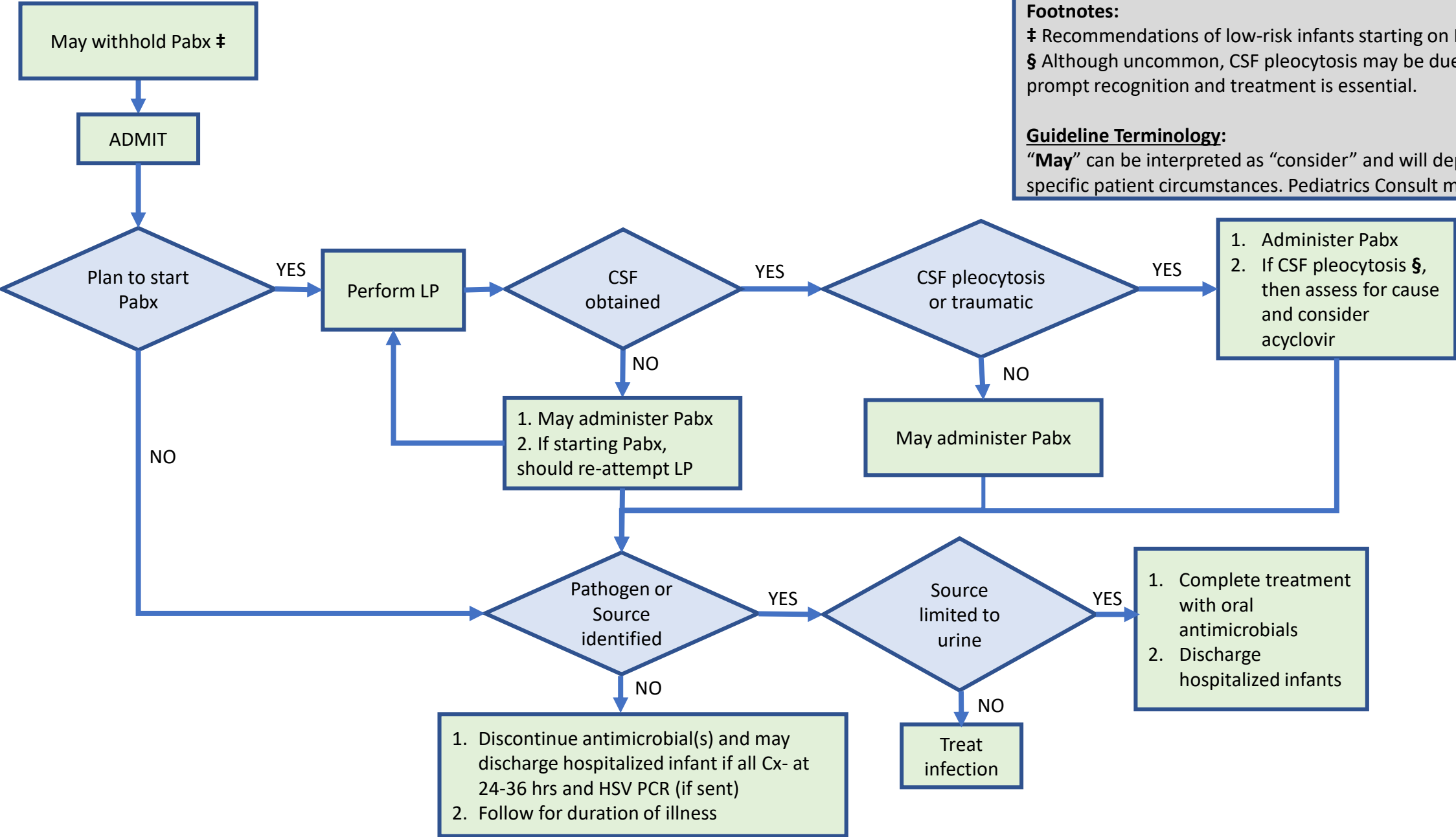
0/85 had meningitis

Recommendations for this infant

- Consult with Pediatrics
- Admission
- May perform LP
- May administer parenteral antibiotic

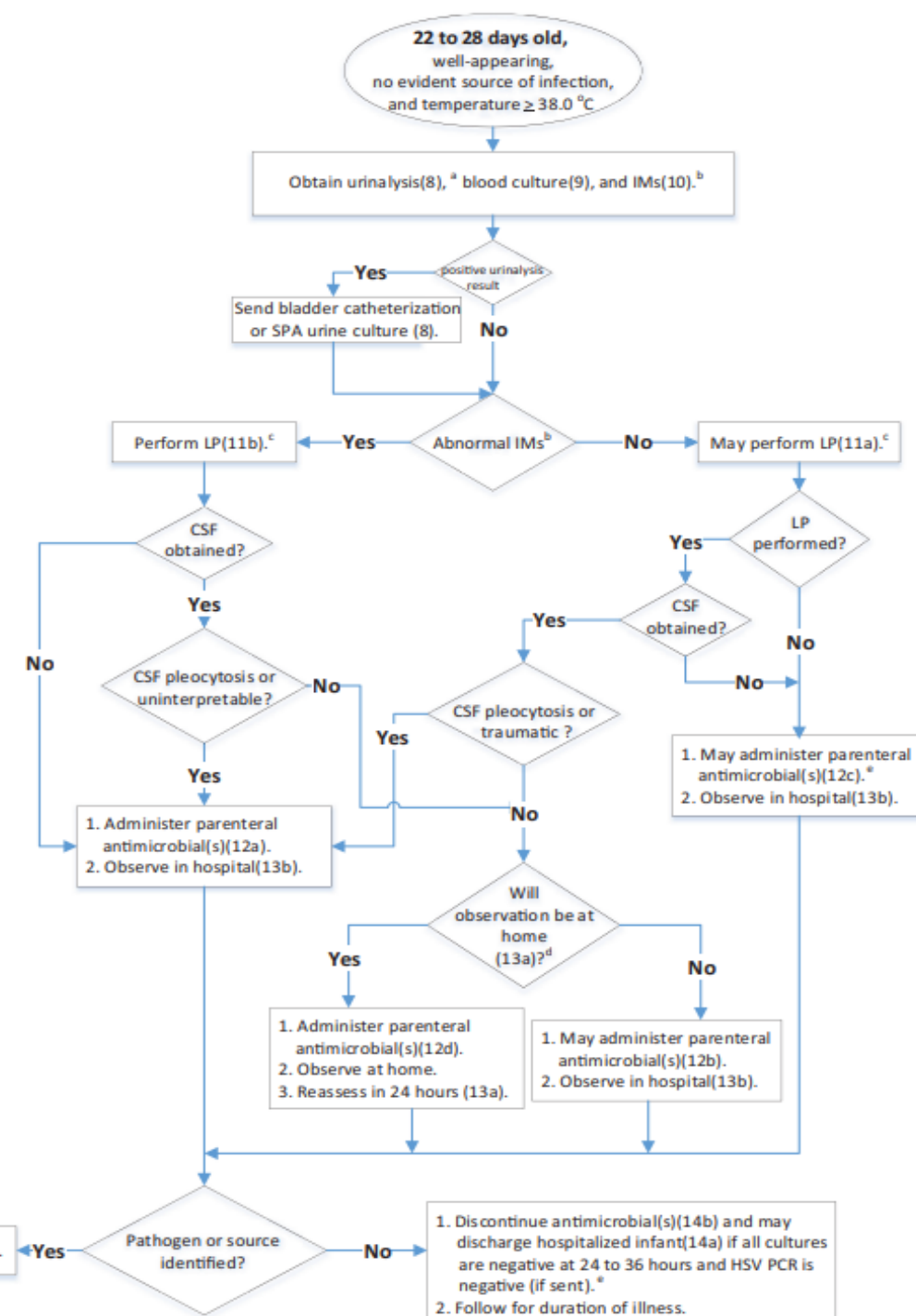
Footnotes:
 ‡ Recommendations of low-risk infants starting on Pabx
 § Although uncommon, CSF pleocytosis may be due to HSV and prompt recognition and treatment is essential.

Guideline Terminology:
 “May” can be interpreted as “consider” and will depend on specific patient circumstances. Pediatrics Consult may be helpful.



AAP CPG 22-28 Days Old

- Definition of elevated inflammatory markers (IM):
 - T > 38.5°, OR
 - ANC > 4,000-5200/ mm³, OR
 - CRP ≥ 20 mg/L, OR
 - PCT > 0.5 ng/mL
- Not included
 - UA, OR
 - WBC count < 5000 or > 15000
- Guidance on next steps with CSF pleocytosis
- Only observed outside the hospital if CSF was obtained and all factors negative with follow-up in 24 hours
- If IM abnormal and no CSF obtained, AAP recommends observation in the hospital



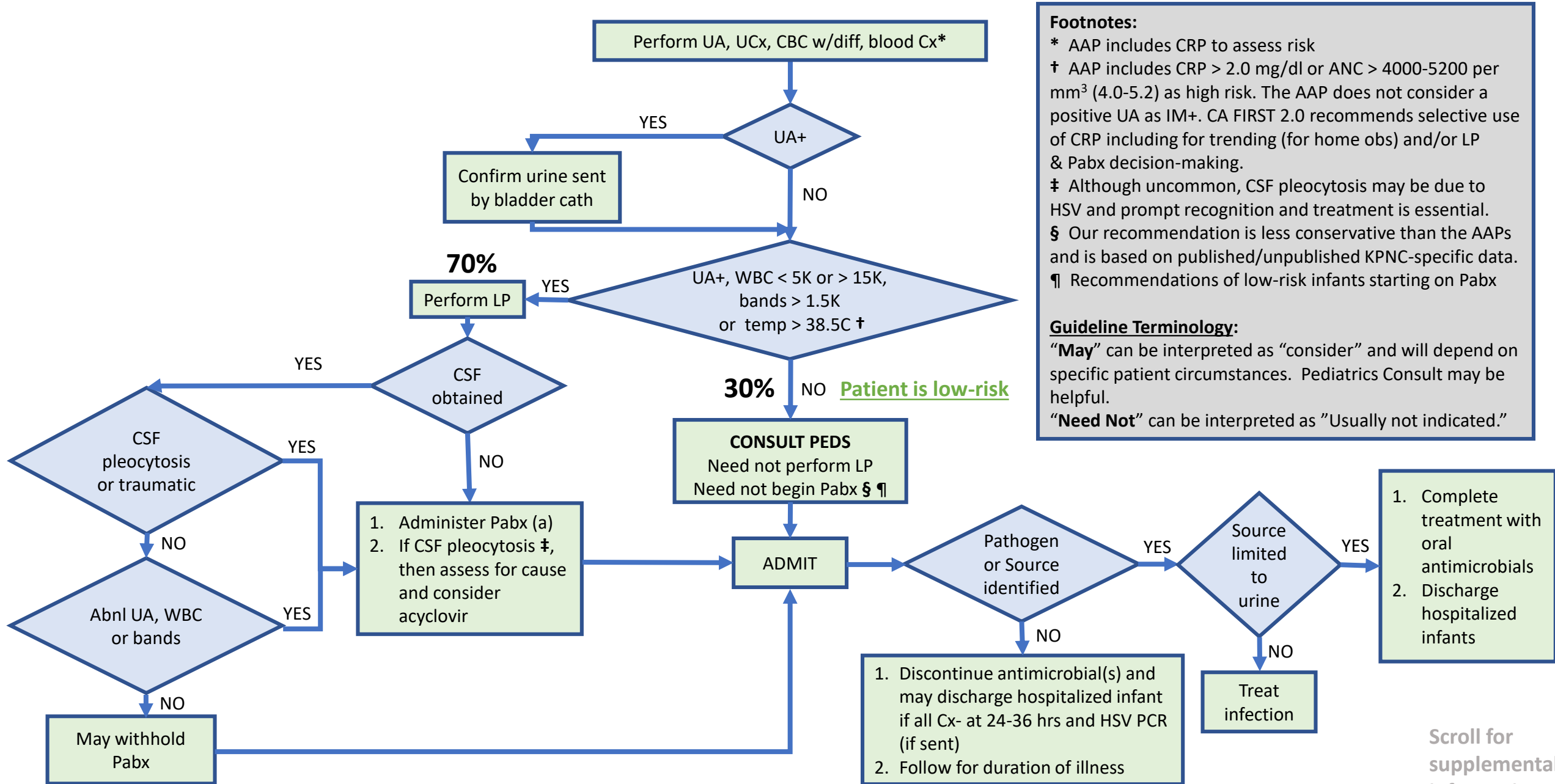
Risk of Meningitis in Infants with UTI

Study population PEM CRC 2017

- Infants aged ≤ 60 days in the ED between 2005-2013 with CSF culture obtained and UTI

Outcome

- Concomitant bacterial meningitis
 - 0-28 days of age: n=7/803; 0.9% (95% CI: 0.4–1.8)
 - 29-60 days of age: n=2/934; 0.2%; (95% CI: 0–0.7)



Footnotes:
 * AAP includes CRP to assess risk
 † AAP includes CRP > 2.0 mg/dl or ANC > 4000-5200 per mm³ (4.0-5.2) as high risk. The AAP does not consider a positive UA as IM+. CA FIRST 2.0 recommends selective use of CRP including for trending (for home obs) and/or LP & Pabx decision-making.
 ‡ Although uncommon, CSF pleocytosis may be due to HSV and prompt recognition and treatment is essential.
 § Our recommendation is less conservative than the AAPs and is based on published/unpublished KPNC-specific data.
 ¶ Recommendations of low-risk infants starting on Pabx

Guideline Terminology:
 “May” can be interpreted as “consider” and will depend on specific patient circumstances. Pediatrics Consult may be helpful.
 “Need Not” can be interpreted as “Usually not indicated.”

Scroll for supplemental information

Low-risk & Normal Labs 22-28 Days

This infant is lower risk

- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 22-28 days who had no high-risk criteria and normal inflammatory markers (temp < 101.3F, WBC 5-15K, Bands < 1.5k):

0/60 had bacteremia without meningitis

0/60 had meningitis

Recommendations for this infant

- Consult with Pediatrics
- Admission
- Need not perform LP
- Need not administer parenteral antibiotic

AAP CPG 29-60 Days Old

■ Definition of elevated inflammatory markers (IMs):

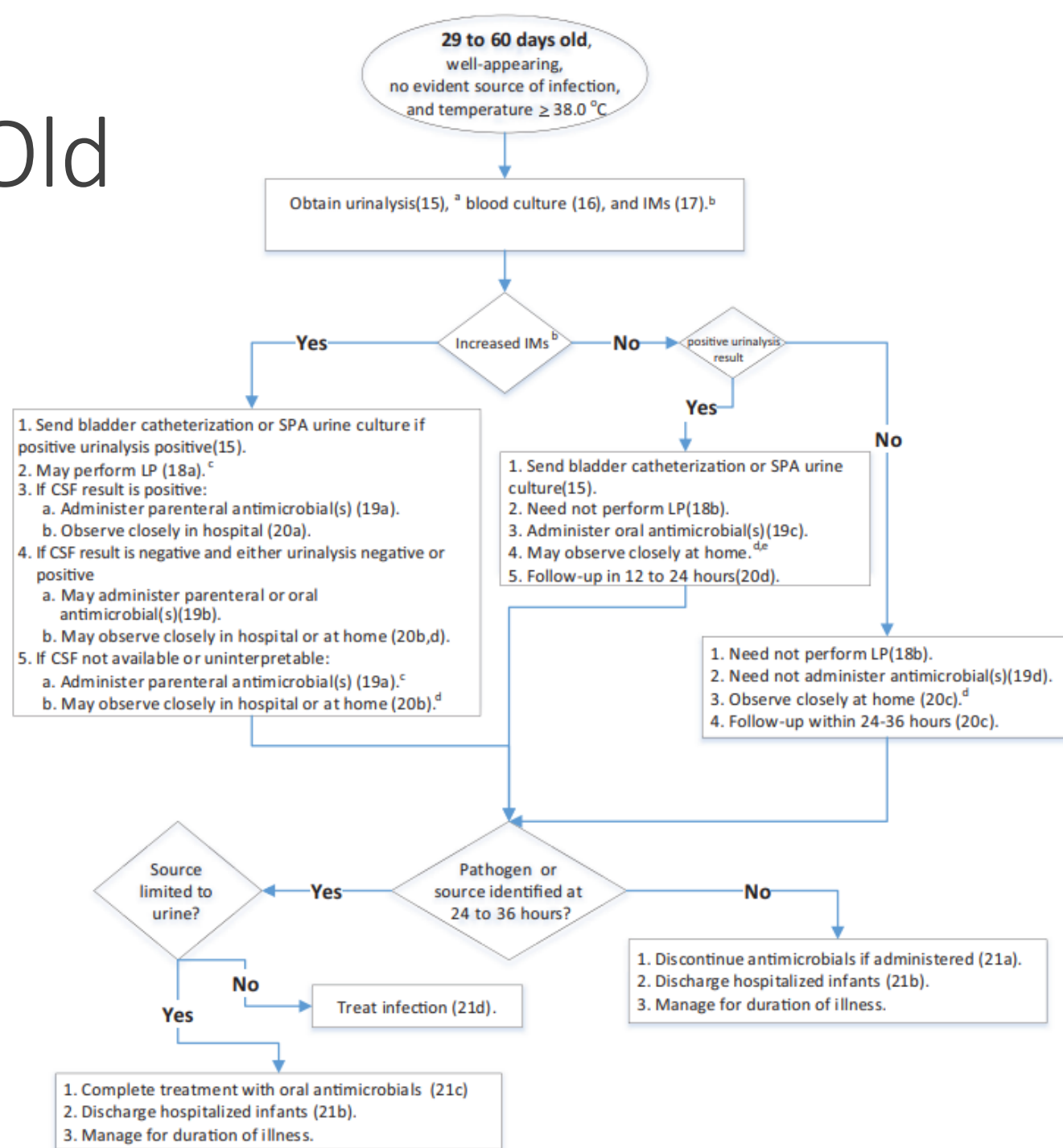
- $T > 38.5^{\circ}\text{C}$ (ROS only included 7-28 days), OR
- $\text{ANC} > 4,000\text{-}5200/\text{mm}^3$, OR
- $\text{CRP} \geq 20\text{ mg/L}$, OR
- $\text{PCT} > 0.5\text{ ng/mL}$

■ Not included

- UA OR
- $\text{WBC count} < 5000$ or > 15000

■ Positive UA and negative inflammatory markers were discharged with follow-up in 12-24 hours and received oral antibiotics

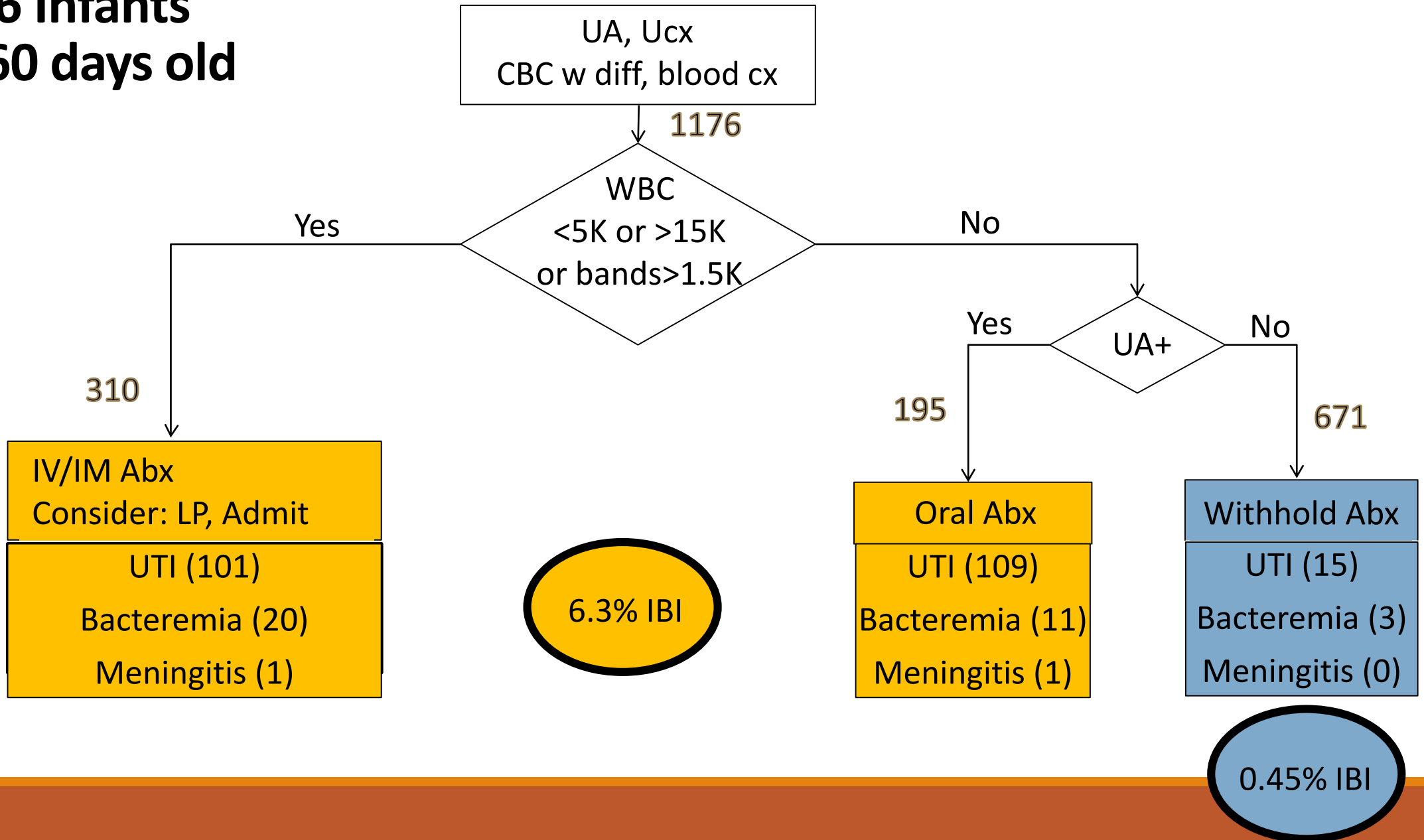
■ If IM abnormal and no CSF obtained, AAP recommends parenteral antibiotics and observation at home or hospital



A Positive UA Alone Should Not Drive LP in Infants 29-60 Days

- UTI safely treated with PO antibiotics in as young as 1 month
(Hoberman et al, 1999)
- Well appearing 29-60d with febrile UTI – 0.1% risk of adverse event (including meningitis)
 - 1895 infants
 - No adverse events if not admitted, *even with bacteremia*
(PEM-CRC, Schnadower et al, 2010)
- Meningitis rate same in 29-60 days regardless of UA result
- 341 infants 29-60d with febrile UTI, treated with antibiotics and *no LP* → no adverse outcomes
(Young, Nguyen, et al, 2018)

1176 Infants 29-60 days old



Algorithm for Well-Appearing Febrile Infant: 29-60 days of age, temp $\geq 38C$

Footnotes:

* AAP includes temp $> 38.5C$, CRP > 2.0 mg/dl or ANC $> 4000-5200$ per mm^3 (4.0-5.2) as high risk. CA FIRST 2.0 recommends selective use of CRP including for trending (for home obs) and/or LP & Pabx decision-making.

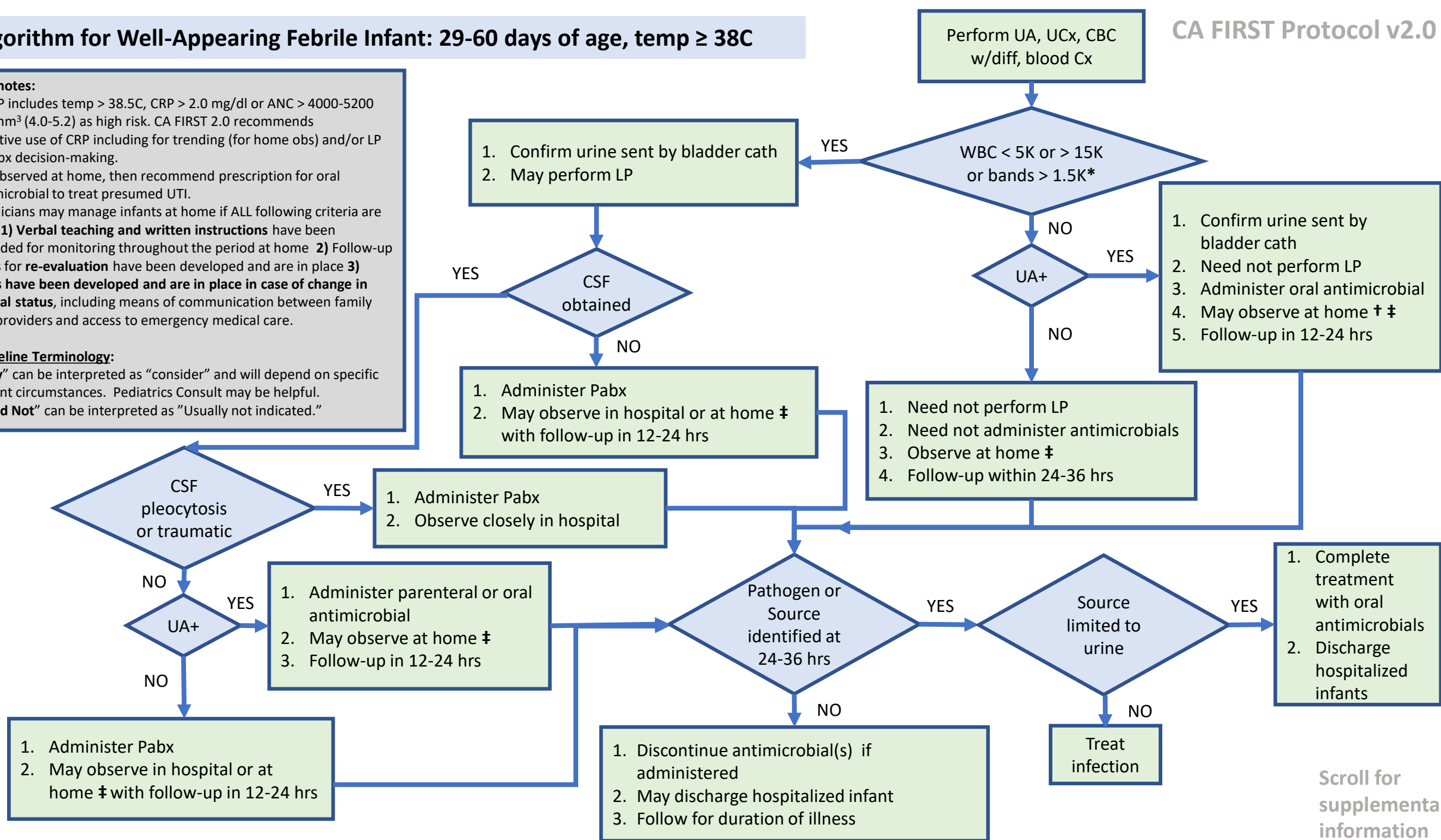
† If observed at home, then recommend prescription for oral antimicrobial to treat presumed UTI.

‡ Clinicians may manage infants at home if ALL following criteria are met: **1) Verbal teaching and written instructions** have been provided for monitoring throughout the period at home **2) Follow-up plans for re-evaluation** have been developed and are in place **3) Plans have been developed and are in place in case of change in clinical status**, including means of communication between family and providers and access to emergency medical care.

Guideline Terminology:

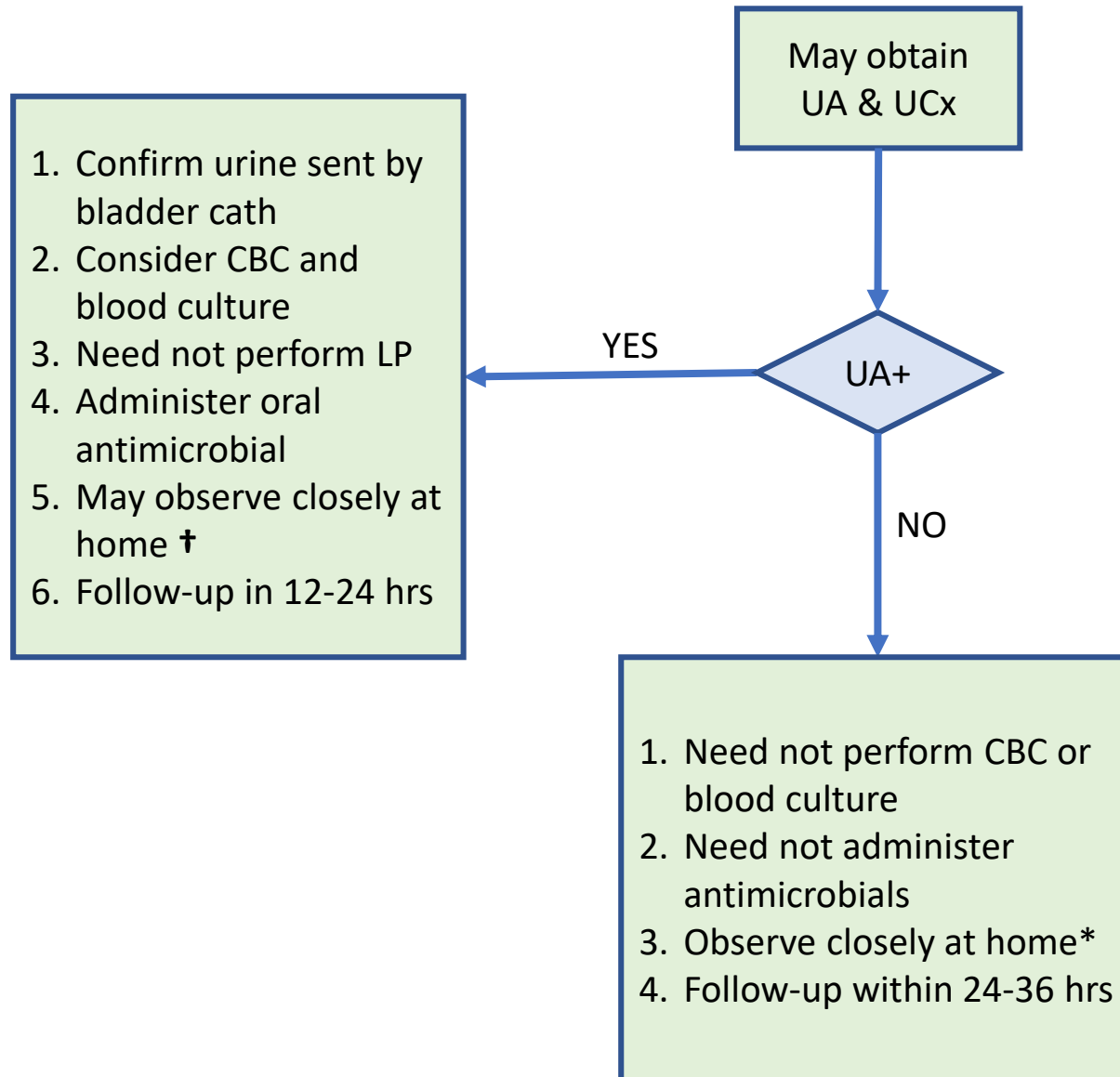
“May” can be interpreted as “consider” and will depend on specific patient circumstances. Pediatrics Consult may be helpful.

“Need Not” can be interpreted as “Usually not indicated.”



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Expanded Guidance

Algorithm for Well-Appearing Febrile Infant: 61-90 days of age, temp $\geq 38C^*$ **Footnotes:**

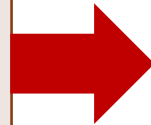
* The AAP does not include infants age > 60 days

† If observed at home, then recommend oral antimicrobials to treat presumed UTI if UA positive. Clinicians may manage infants at home if ALL following criteria are met: **1) Verbal teaching and written instructions** have been provided for monitoring throughout the period at home **2) Follow-up plans for re-evaluation** have been developed and are in place **3) Plans have been developed and are in place in case of change in clinical status**, including means of communication between family and providers and access to emergency medical care.

Algorithm for Well-Appearing Febrile Infant: 61-90 days of age, temp $\geq 38\text{C}^*$

Exclusion criteria

1. Premature infants < 40 wks corrected gestational age
2. Infants with a focal bacterial infection (e.g., cellulitis, omphalitis, septic arthritis, osteomyelitis). These infections should be managed according to accepted standards.
3. Infants with documented or suspected immune compromise
4. Infants whose neonatal course was complicated by surgery or infection.
5. Infants with congenital or chromosomal abnormalities
6. Medically fragile infants requiring some form of technology or ongoing therapeutic intervention to sustain life
7. Infants who have received immunizations within the last 48 hrs
8. Infants with clinical bronchiolitis, with or without positive tests for RSV
9. Infants with COVID-19



Exclusion criteria

Infants in categories 1-6:

1. CBC and blood culture
2. May perform LP
3. Pabx and disposition in discussion with Pediatrics

Infants in categories 7-8 (categories 1-6 take priority over 7-8):

1. No studies needed

Infants in categories 9 (categories 1-6 take priority over 9):

1. Need not perform UA and urine culture

CA FIRST Protocol v2.0

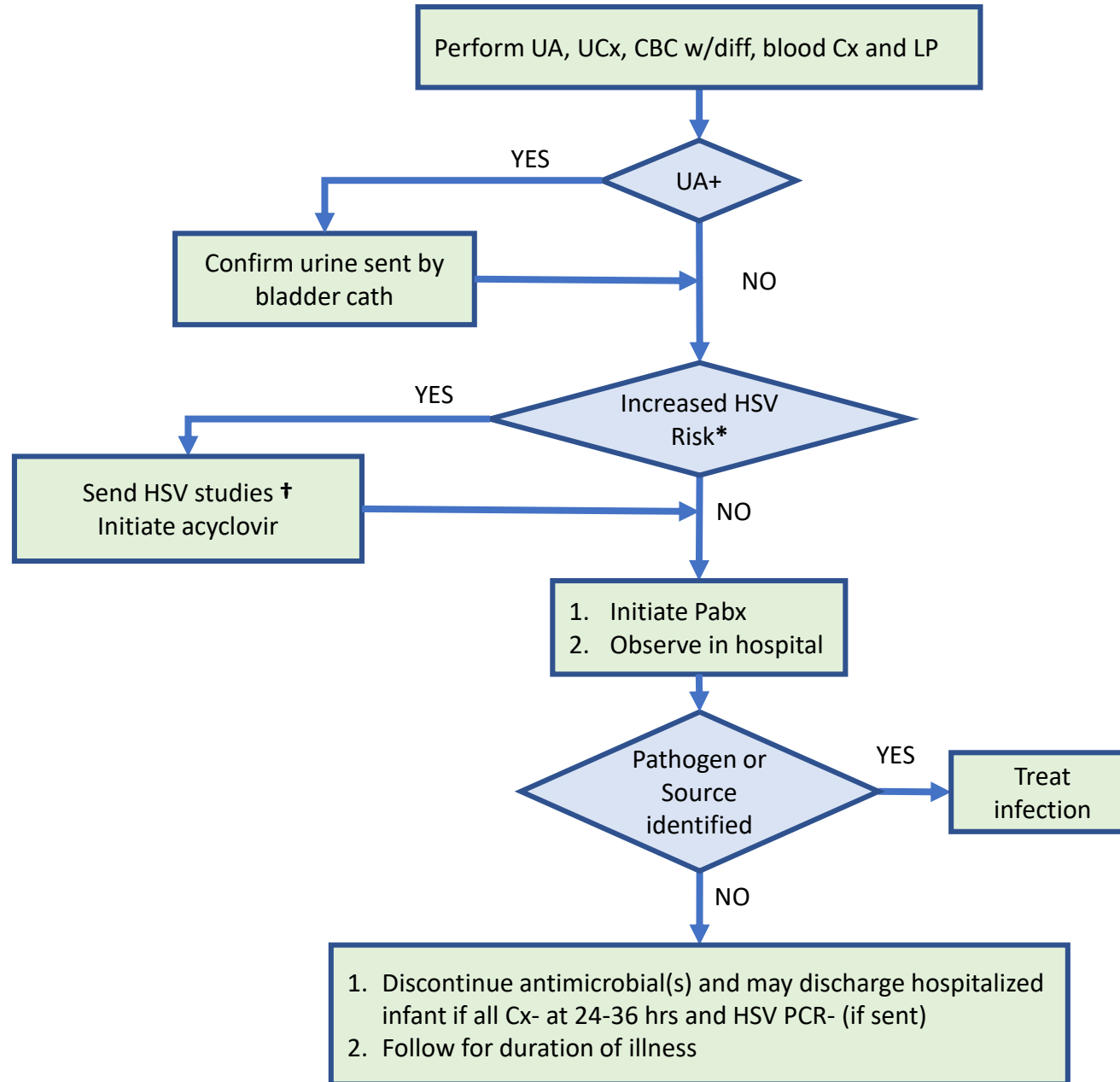
Supplemental Information

Inclusion criteria

Infants 61-90 days of age*, well-appearing, temp $\geq 38\text{C}$

Footnote

* The AAP does not include infants age > 60 days
† If observed at home, then recommend oral antimicrobials to treat presumed UTI if UA positive. Clinicians may manage infants at home if ALL following criteria are met: **1) Verbal teaching and written instructions** have been provided for monitoring throughout the period at home **2) Follow-up plans for re-evaluation** have been developed and are in place **3) Plans have been developed and are in place in case of change in clinical status**, including means of communication between family and providers and access to emergency medical care.



Footnotes:
 * In addition to the presence of vesicles and/or seizures, infants should be considered at increased risk of HSV if any of the following are present: CSF pleocytosis with a negative gram stain, leukopenia, thrombocytopenia, hypothermia, mucous membrane ulcers, or maternal history of genital HSV lesions or fever from 48 hrs before to 48 hrs after delivery. If liver function tests were obtained, then an elevated ALT also indicates a higher risk of HSV. For further details of evaluation and management of HSV see AAP Redbook.
 † HSV studies: CSF for HSV PCR, HSV PCR of serum and surface swabs: conjunctiva, NP, skin (vesicles if present), and rectal

Ill-appearance

- Strongest risk factor associated with IBI
 - 7-28 days old: 14/94 ill-appearing have IBI (14.9%)
53/1002 well-appearing have IBI (5.3%)
 $p = 0.0002$
 - 29-60 days old: 18/136 ill-appearing have IBI (13.2%)
54/1865 well-appearing have IBI (2.9%)
 $p = <0.0001$

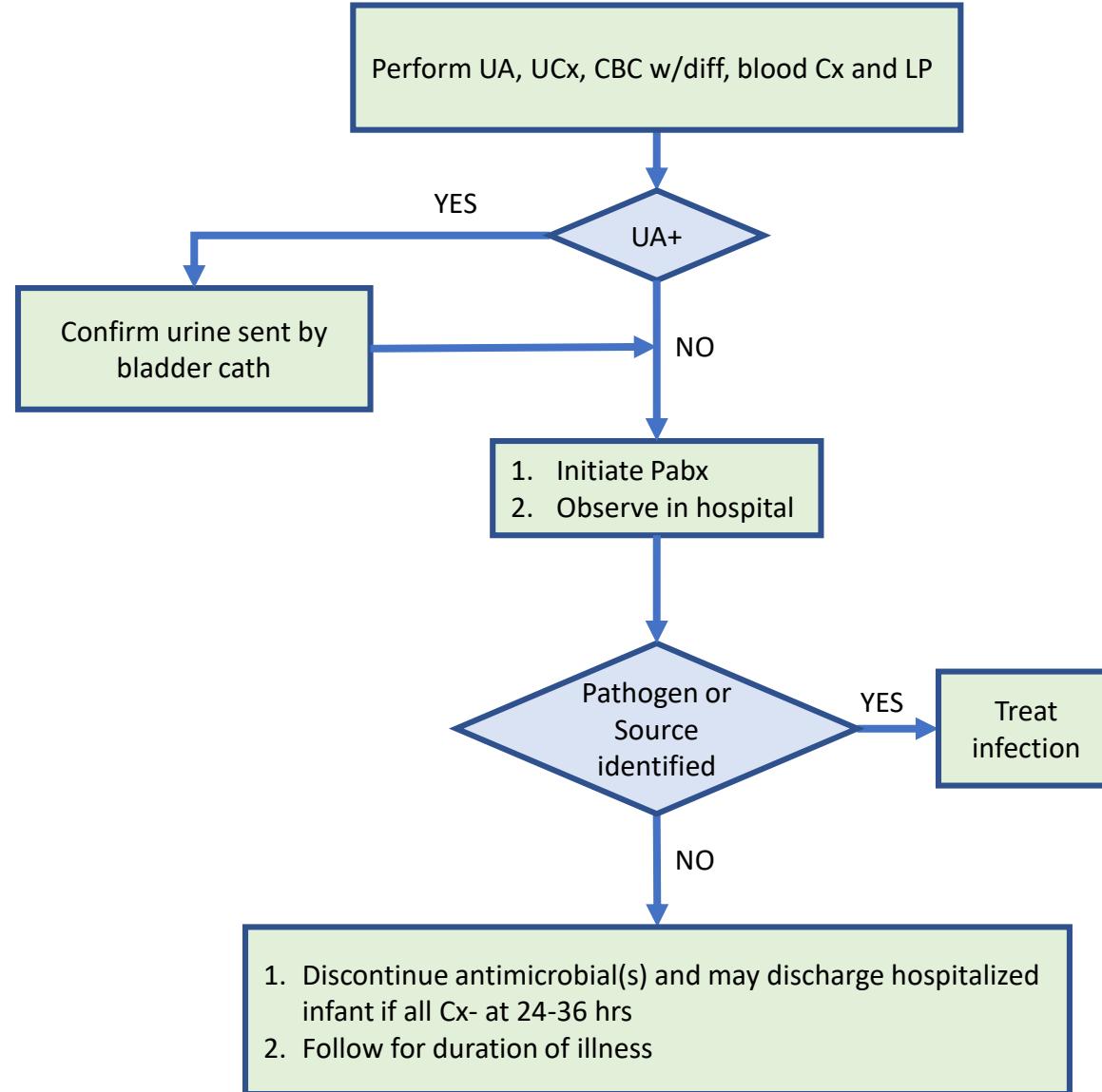
Ill-Appearing Infant 7-28 Days

Ill-appearing infants are very high risk

- The **AAP guideline and Roseville Protocol** exclude ill-appearing infants because they are very high risk
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 7-21 days with isolated ill-appearance: *4/34 (12%) had bacteremia without meningitis*
1/34 (3%) had meningitis

Recommendations for this infant

- Admission
- A full septic work-up
 - CBC, UA, CSF studies, and Blood, Urine, and CSF Cultures
- Parenteral antibiotics

Algorithm for High-Risk Febrile Infant: 29-60 days of age, temp $\geq 38\text{C}^*$ 

Ill-Appearing Infant 22-60 Days

Ill-appearing infants are very high risk

- The **AAP guideline and Roseville Protocol** exclude ill-appearing infants because they are very high risk
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 22-60 days with isolated ill-appearance: *13/134 (10%) had bacteremia without meningitis*
4/127 (3%) had meningitis

Recommendations for this infant

- Admission
- A full septic work-up
 - CBC, UA, CSF studies, and Blood, Urine and CSF cultures
- Parenteral antibiotics

Algorithm for High-Risk Febrile Infant: 29-60 days of age, temp \geq 38C

Exclusion criteria

1. Infants with clinical bronchiolitis, with or without positive tests for RSV
2. Infants with COVID-19
3. Infants who have received immunizations within the last 48 hrs



Consult Pediatrics

Inclusion criteria

- Infants 29-60 days of age, temp \geq 38C:
1. Premature infants (< 37 wks gestation)
 2. Infants with documented or suspected immune compromise
 3. Infants whose neonatal course was complicated by surgery or infection
 4. Infants with congenital or chromosomal abnormalities
 5. Medically fragile infants requiring some form of technology or ongoing therapeutic intervention to sustain life
 6. Ill appearance

CA FIRST Protocol v2.0

Supplemental Information

Abbreviations

1. Cath: catheter
2. CBC w/diff: complete blood count with differential
3. CSF: cerebrospinal fluid
4. Cx: culture
5. HSV: herpes simplex virus
6. LP: lumbar puncture
7. RSV: respiratory syncytial virus
8. UA: urinalysis
9. UCx: urine culture
10. Pabx: parenteral antibiotics

Ill-Appearing Infant 61-90 Days

Ill-appearing infants are very high risk

- The **AAP guideline and Roseville Protocol** exclude ill-appearing infants because they are very high risk
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 22-60 days with isolated ill-appearance: *4/53 (8%) had bacteremia without meningitis*
2/53 (4%) had meningitis

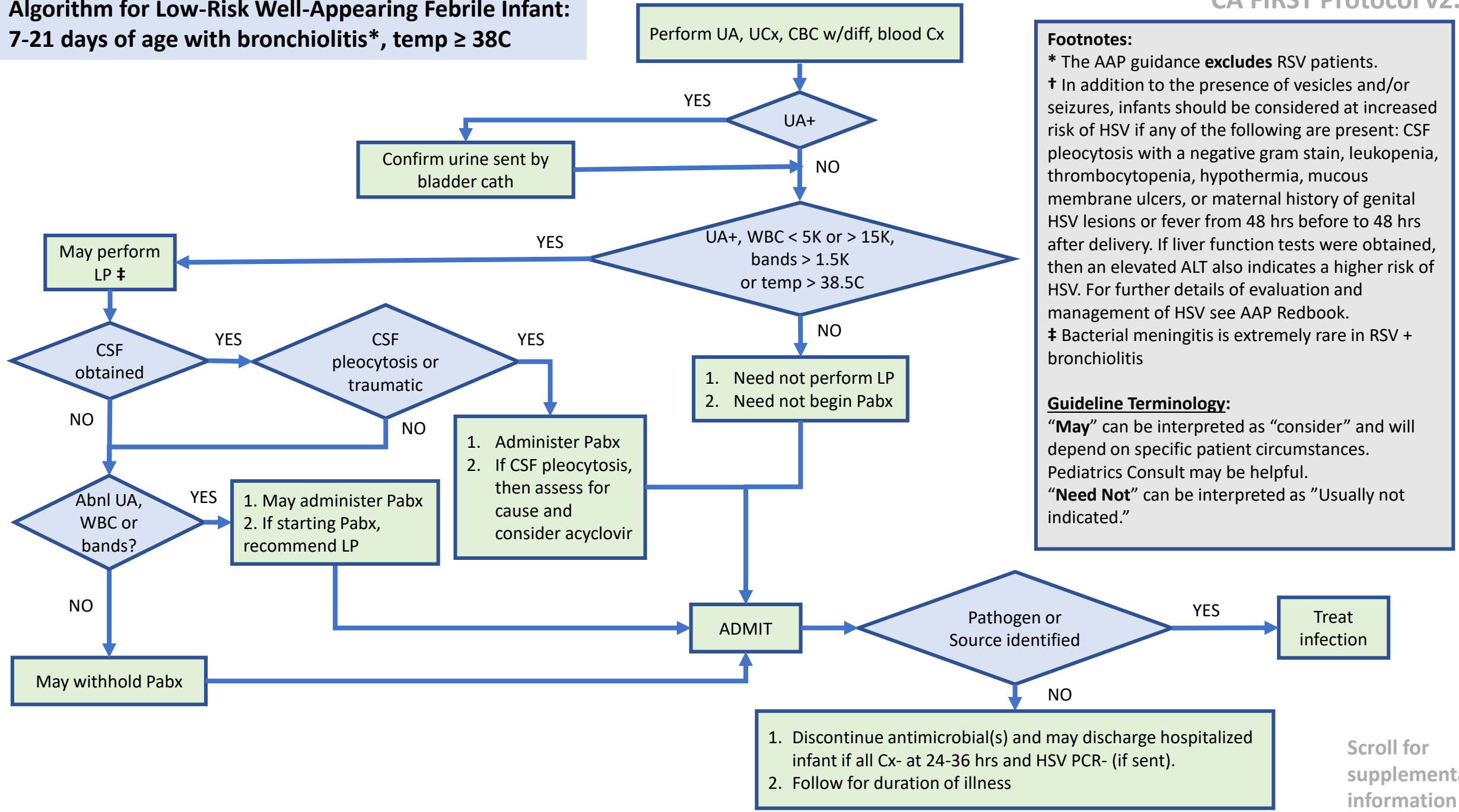
Recommendations for this infant

- Consult with Pediatrics and admission
- A full septic work-up
 - CBC, UA, CSF studies, and Blood, Urine, and CSF cultures
- LP in discussion with pediatrics
- Parenteral antibiotic

Bronchiolitis

- Meta-analysis of 11 studies of occult SBI in infants <60-90 days old with bronchiolitis
 - Bacteremia 0.3% (5/1749)
 - UTI 3.3% (RSV positive 5.1%, clinical bronchiolitis 2%)
 - Meningitis 0%

**Algorithm for Low-Risk Well-Appearing Febrile Infant:
7-21 days of age with bronchiolitis*, temp ≥ 38C**



Footnotes:
 * The AAP guidance **excludes** RSV patients.
 † In addition to the presence of vesicles and/or seizures, infants should be considered at increased risk of HSV if any of the following are present: CSF pleocytosis with a negative gram stain, leukopenia, thrombocytopenia, hypothermia, mucous membrane ulcers, or maternal history of genital HSV lesions or fever from 48 hrs before to 48 hrs after delivery. If liver function tests were obtained, then an elevated ALT also indicates a higher risk of HSV. For further details of evaluation and management of HSV see AAP Redbook.
 ‡ Bacterial meningitis is extremely rare in RSV + bronchiolitis

Guideline Terminology:
 “**May**” can be interpreted as “consider” and will depend on specific patient circumstances. Pediatrics Consult may be helpful.
 “**Need Not**” can be interpreted as “Usually not indicated.”

Scroll for supplemental information

Well-Appearing Infant 7-21 Days Bronchiolitis

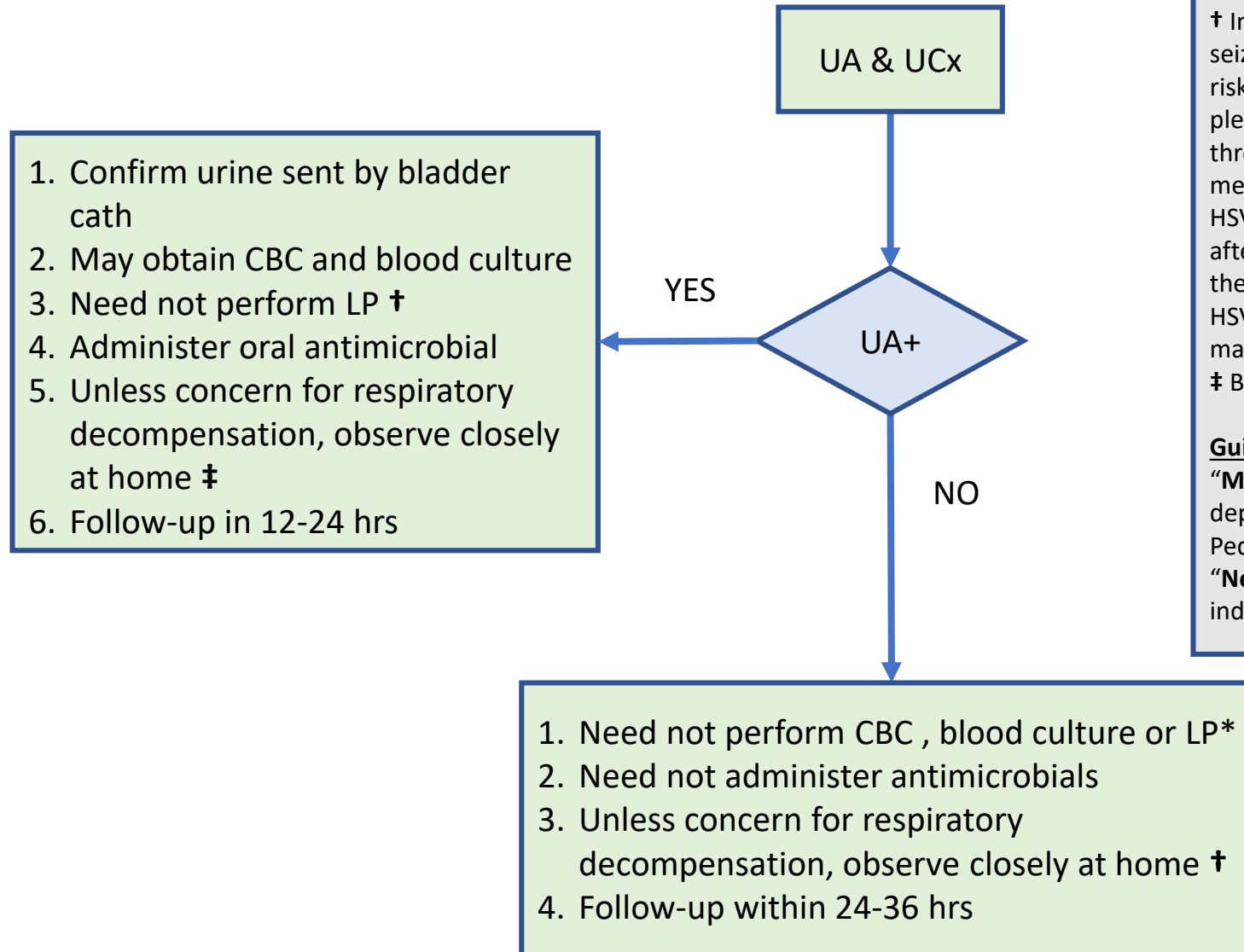
Infants with known bronchiolitis are low-risk

- The **AAP guideline** excludes infants with clinical bronchiolitis from their algorithms because they are lower risk
- **A review** (Ralston et al) of 11 studies of febrile infants with clinical bronchiolitis found no cases of meningitis
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 7-21 days who were well-appearing and RSV+:
1/18 had bacteremia without meningitis
0/18 had meningitis

Recommendations for this infant

- CBC, Blood culture, UA, and Urine cultures
- Need not perform an LP if inflammatory markers are normal

**Algorithm for Low-Risk Well-Appearing Febrile Infant:
22-60 days of age with bronchiolitis*, temp $\geq 38\text{C}$**

**Footnotes:**

- * The AAP guidance **excludes** RSV patients.
- † In addition to the presence of vesicles and/or seizures, infants should be considered at increased risk of HSV if any of the following are present: CSF pleocytosis with a negative gram stain, leukopenia, thrombocytopenia, hypothermia, mucous membrane ulcers, or maternal history of genital HSV lesions or fever from 48 hrs before to 48 hrs after delivery. If liver function tests were obtained, then an elevated ALT also indicates a higher risk of HSV. For further details of evaluation and management of HSV see AAP Redbook.
- ‡ Bacterial meningitis is rare in RSV + bronchiolitis

Guideline Terminology:

- “**May**” can be interpreted as “consider” and will depend on specific patient circumstances. Pediatrics Consult may be helpful.
- “**Need Not**” can be interpreted as “Usually not indicated.”

Well-Appearing Infant 22-60 Days with Bronchiolitis

Infants with known bronchiolitis are low-risk

- The **AAP guideline** excludes infants with clinical bronchiolitis from their algorithms because they are lower risk
- **A review** (Ralston et al) of 11 studies of febrile infants with clinical bronchiolitis found no cases of meningitis
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 22-60 days who were well-appearing and RSV+:
0/119 had bacteremia without meningitis
0/119 had meningitis

Recommendation for this infant

- UA and culture only

**Algorithm for Low-Risk Well-Appearing Febrile Infant:
22-60 days of age with bronchiolitis, temp \geq 38C**

Exclusion criteria

1. Premature infants < 37 wks gestational age
2. Infants with a focal bacterial infection (e.g., cellulitis, omphalitis, septic arthritis, osteomyelitis). These infections should be managed according to accepted standards.
3. Infants with documented or suspected immune compromise
4. Infants whose neonatal course was complicated by surgery or infection
5. Infants with congenital or chromosomal abnormalities
6. Medically fragile infants requiring some form of technology or ongoing therapeutic intervention to sustain life
7. Infants who have received immunizations within the last 48 hrs
8. Infants with COVID-19



Exclusion criteria

Infants in categories 1-6:

1. CBC and blood culture
2. LP, Pabx and disposition in discussion with Pediatrics

Infants in category 7

(categories 1-6 take priority over 7):

1. No studies needed

Infants in category 8

(categories 1-6 take priority over 8):

1. CBC and blood culture, UA and urine culture
2. Disposition in discussion with Pediatrics

Inclusion criteria

Infants 22-60 days, well-appearing, temp \geq 38C, with clinical bronchiolitis (with or without a positive test for RSV)

Well-Appearing Infant 61-90 Days with Bronchiolitis

Infants with known bronchiolitis are low-risk

- The **AAP guideline** excludes infants with clinical bronchiolitis from their algorithms because they are lower risk
- **A review** (Ralston et al) of 11 studies of febrile infants with clinical bronchiolitis found no cases of meningitis
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 22-60 days who were well-appearing and RSV+:
0/116 had bacteremia without meningitis
0/116 had meningitis

Recommendation for this infant

- May go home without further testing

Vaccination within 48 hours and 29-60 Days

Infants with recent vaccinations are low-risk

- The **AAP guideline** excludes infants with vaccinations within 48 hours of presentation from their algorithms because they are low-risk
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 61-90 days with no high-risk criteria and vaccination within 48 hours:

0/94 had bacteremia without meningitis

0/94 had meningitis

Recommendations for this infant

- May go home without further testing
- Need not perform UA and urine culture

Vaccination within 48 hours and 61-90 Days

Infants with recent vaccinations are low-risk

- The **AAP guideline** excludes infants with vaccinations within 48 hours of presentation from their algorithms because they are low-risk
- **Data and analysis** from KPNC febrile infants seen in the ED from 2010-2019 found that of those age 61-90 days with no high-risk criteria and vaccination within 48 hours:

0/127 had bacteremia without meningitis

0/127 had meningitis

Recommendations for this infant

- May go home without further testing
- Need not perform UA and urine culture

ISOLATED COVID-19 POSITIVE

Known COVID+ infant

- **No data** are currently available to inform management
- Until additional data are obtained, **test and treat based on other age and risk matched criteria**

Recommendations for this infant

For those at **baseline low-risk:**

- **Age 7-21 days:** Consult with Pediatrics
- **Age 22-60 days:**
 - CBC and blood culture, UA and urine culture
 - Disposition in discussion with Pediatrics
- **61-90 days:** Need not perform UA and urine culture

High-risk baseline: Consult with Pediatrics

Antibiotics

7-21 days

UTI

Ampicillin IV or IM (150mg/kg/day divided q8hr)

AND EITHER

Gentamicin IV or IM (5mg/kg/dose q24hr)

OR

Ceftazidime IV or IM (150mg/kg/day divided q8hr)

No focus identified

Ampicillin IV or IM (150mg/kg/day divided q8hr)

AND EITHER

Gentamicin IV or IM (5mg/kg/dose q24hr)

OR

Ceftazidime IV or IM (150mg/kg/day divided q8hr)

**Bacterial meningitis /
meningitis suspected**

Ampicillin IV or IM (300mg/kg/day divided q8hr)

AND

Ceftazidime IV or IM (150mg/kg/day divided q8hr)

+/-

Gentamicin IV or IM (5mg/kg/dose q24hr)

22-28 days	
UTI	<p>Ampicillin IV or IM (150mg/kg/day divided q8hr) <i>AND EITHER</i> Gentamicin IV or IM (5mg/kg/dose q24hr) <i>OR</i> Ceftazidime IV or IM (150mg/kg/day divided q8hr) <i>OR</i> Ceftriaxone* 50mg/kg/dose q24hr</p>
No focus identified	<p>Ceftriaxone* 50mg/kg/dose q24hr</p>
Bacterial meningitis / meningitis suspected	<p>Ampicillin IV or IM (300mg/kg/day divided q8hr) <i>AND</i> Ceftazidime IV or IM (150mg/kg/day divided q8hr) <i>+/-</i> Gentamicin IV or IM (5mg/kg/dose q24hr) <i>OR</i></p>

Footnotes

* Neonatal candidates must meet ALL the following criteria to receive Ceftriaxone: (1) postnatal age ≥ 14 days, (2) CGA † ≥ 41 wks, (3) total bilirubin ≤ 5 mg/dL, (4) will not receive IV calcium-containing solutions within 48 hours of Ceftriaxone, AND (5) has not received IV calcium-containing solutions within 48 hours prior to Ceftriaxone.

Contraindications to neonatal candidates receiving Ceftriaxone (do not administer if neonates meet ANY criteria) are: (1) unconjugated hyperbilirubinemia, (2) receipt of any IV calcium-containing solutions within 48 hours of Ceftriaxone, (3) critical illness (acidosis, hypotension, etc.) due to possibility of requiring IV calcium administration, OR (4) patients with acute hypocalcemia who may require IV calcium administration.

† CGA = gestational age + chronological age

	29-60 days
UTI	Ceftriaxone 50mg/kg/dose q24hr Oral antibiotics: Cephalexin 50-100mg/kg/day divided TID
No focus identified	Ceftriaxone 50mg/kg/dose q24hr
Bacterial meningitis / meningitis suspected	Ceftriaxone 50mg/kg/dose q12hr <i>AND</i> Vancomycin 60mg/kg/day q6 or 8hr (interval based on CGA**)

	61-90 days
UTI	Ceftriaxone 50mg/kg/dose q24hr Oral antibiotics: Cephalexin 50-100mg/kg/day divided TID
No focus identified	Ceftriaxone 50mg/kg/dose q24hr
Bacterial meningitis / meningitis suspected	Ceftriaxone 50mg/kg/dose q12hr <i>AND</i> Vancomycin 60mg/kg/day q6 or 8hr (interval based on CGA**)

Best Practices for Febrile Infant 91-365 Days

In the healthy and immunized infant > 90 days of age

- **Fever below 39°C (102.2°F)** is rarely due to an invasive bacterial infection (IBI) and **routine** blood cultures are not recommended
- An **IBI work-up** (CBC, CRP, blood cultures) is recommended only in those who are ill-appearing and/or with high fever > 5 days without clear source (URI = source in age > 90 days) and/or have a significant focal bacterial infection (e.g., abscess/cellulitis)
- **Order a UA if fever > 3 days without known source** and/or known risk factors (e.g., prior UTI, hydronephrosis, uncircumcised male < 6 months)
- **Order Chest X-ray if:** COVID workflow and/or fever > 5 days with respiratory symptoms and/or focal lung exam findings and presentation not consistent with bronchiolitis
- Undifferentiated fever **after routine immunization** within 48 hrs does not routinely require further work-up
- Click [here](#) for UpToDate guidance on management of fever in age 3-36 months
- Click [here](#) for UpToDate guidance on COVID-19 in children

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