

A 20-day-old girl is brought to the emergency department due to jaundice and difficulty feeding. For the past 2 days, she has not been waking for feeds and seems much sleepier than usual. When the girl does awaken, she is fussy and difficult to console. On examination, her temperature is 35 C (95 F), blood pressure is 78/52 mm Hg, pulse is 150/min, and respirations are 72/min. The infant has a full fontanelle, scleral icterus, and dry mucous membranes. Cardiovascular, pulmonary, and abdominal examinations are normal. Neurologic examination shows a lethargic infant with slightly decreased tone. A complete blood count and total and direct bilirubin levels are pending. What is the most appropriate immediate step in management of this infant?

- ☐ A. Bacterial cultures and antibiotics
- ☐ B. CT scan of the head
- ☐ C. Peripheral smear and reticulocyte count
- ☐ D. Procalcitonin level
- ☐ E. Temporarily discontinue breastfeeding



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- ☒ A. Bacterial cultures and antibiotics [54%]
- ☐ B. CT scan of the head [14%]
- ☐ C. Peripheral smear and reticulocyte count [14%]
- ☐ D. Procalcitonin level [1%]
- ☐ E. Temporarily discontinue breastfeeding [17%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Clinical manifestations of neonatal sepsis (including meningitis)	
Present in >50% of cases	<ul style="list-style-type: none"><li>• Temperature instability (fever &gt;38 C [100.4 F] or hypothermia &lt;36 C [96.8 F])</li><li>• Poor feeding</li><li>• Irritability or lethargy</li></ul>
Present in 25%-50% of cases	<ul style="list-style-type: none"><li>• Respiratory distress</li><li>• Vomiting</li><li>• Seizures</li><li>• Jaundice</li></ul>
Present in <25% of	<ul style="list-style-type: none"><li>• Apnea</li><li>• Cyanosis</li></ul>



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The clinical manifestations of neonatal sepsis are often subtle and nonspecific. Sepsis should always be high on the differential for neonates (age  $\leq 28$  days) presenting with decreased activity, difficulty feeding, or not waking for feeds. **Poor feeding** and **decreased levels of alertness** are among the earliest signs of serious infection in a neonate. Although older children classically present with fever, neonatal sepsis can present with **fever** or **hypothermia** ( $<36^{\circ}\text{C}$  [ $96.8^{\circ}\text{F}$ ]), as in this case. Physical examination does not reliably distinguish between meningitis and sepsis in neonates. Unlike older children or adults, neonates with meningitis do not present with headache or neck stiffness, and Kernig and Brudzinski signs are not useful. Instead, neonates with meningitis generally are irritable, lethargic, or hypotonic.

Neonates with suspected infection require a full evaluation, including a **complete blood count**, **blood cultures**, **lumbar puncture**, **urinalysis**, and **urine cultures**. Neonates should also receive **empiric antibiotics** (eg, ampicillin and gentamicin, or ampicillin and cefotaxime) after cultures are obtained. Antibiotic administration before cultures should be avoided whenever possible as antibiotics can sterilize cultures and make definitive diagnosis difficult. However, infants who are critically ill or who cannot undergo lumbar puncture immediately should receive antibiotics first.



<25% of  
cases

- Cyanosis
- Bulging fontanelle

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Neonates with suspected infection require a full evaluation, including a **complete blood count, blood cultures, lumbar puncture, urinalysis, and urine cultures**. Neonates should also receive **empiric antibiotics** (eg, ampicillin and gentamicin, or ampicillin and cefotaxime) after cultures are obtained. Antibiotic administration before cultures should be avoided whenever possible as antibiotics can sterilize cultures and make definitive diagnosis difficult. However, infants who are critically ill or who cannot undergo lumbar puncture immediately should receive antibiotics first.

**(Choice B)** Neonates do not herniate after lumbar puncture, as their open fontanelles serve to relieve intracranial pressure. As a result, a head CT is not required before lumbar puncture in young infants. A head CT can identify an intracranial hemorrhage secondary to non-accidental trauma, which is less likely in this patient.

**(Choice C)** A peripheral smear and reticulocyte count should be obtained if hemolysis is the suspected cause of jaundice. However, these tests are of minimal utility in a neonate with suspected sepsis.

**(Choice D)** Procalcitonin is an acute phase reactant similar to C-reactive protein, and serum levels may be elevated due to infection or inflammation in the body. It has poor specificity and positive predictive value and would not change the management of this neonate.

**(Choice E)** Cessation of breastfeeding should be reserved for infants with suspected galactosemia, which presents with lethargy, jaundice, vomiting, and hepatomegaly. Galactosemia is less likely than sepsis in this patient.

**Educational objective:**

Neonatal sepsis classically presents with temperature instability (fever or hypothermia), poor feeding, and lethargy. Blood, urine, and cerebrospinal fluid cultures should be



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#### Educational objective:

Neonatal sepsis classically presents with temperature instability (fever or hypothermia), poor feeding, and lethargy. Blood, urine, and cerebrospinal fluid cultures should be obtained before providing antibiotics in most cases. Infants who are critically ill may require antibiotics before lumbar puncture.

#### References:

1. [Neonatal infectious diseases: evaluation of neonatal sepsis.](#)
2. [Serum procalcitonin as a diagnostic marker for neonatal sepsis: a systematic review and meta-analysis.](#)
3. [Empirical treatment of neonatal sepsis: are the current guidelines adequate?](#)