Procalcitonin in the Adult Patient Population

Authors: Suskriti Dixit, PharmD; Erin N. Deja, PharmD, BCPS, BCIDP; Brittany Hardek, PharmD;
Kristin Miller, MD; Sangeeta Sastry, MD
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BACKGROUND:
Procalcitonin (PCT) is a biomarker that exhibits greater specificity than other pro-inflammatory markers in identifying patients with bacterial infection. Under normal physiologic conditions, serum PCT levels are < 0.1 ug/L. During systemic inflammation from bacterial infection, PCT rises to detectable levels within 2-4 hours and peaks around 6-24 hours. PCT levels correlate well with severity of bacterial infection. The best evidence that exists for its use is in uncomplicated lower respiratory tract infection and sepsis. PCT levels are subject to limitation and should be interpreted within the clinical context of the patient presentation. **Decisions regarding antimicrobial therapy should NOT be based solely on PCT levels.**

False POSITIVES	False NEGATIVES
Massive stress (e.g., severe trauma, major surgery, burns)	Early infection
ARDS	Localized infection (e.g., osteomyelitis, abscess)
Significant renal dysfunction (e.g., CrCl < 15 mL/min)	Respiratory infection with atypical organism
Significant liver dysfunction	Subacute endocarditis
Prolonged shock or organ perfusion abnormalities	Post-hemodialysis or on CRRT
Systemic vasculitis	
Treatment with cytokine stimulating agents	
Treatment with monoclonal or polyclonal anti-thymocyte for acute rejection after transplant	
Chemical pneumonitis	

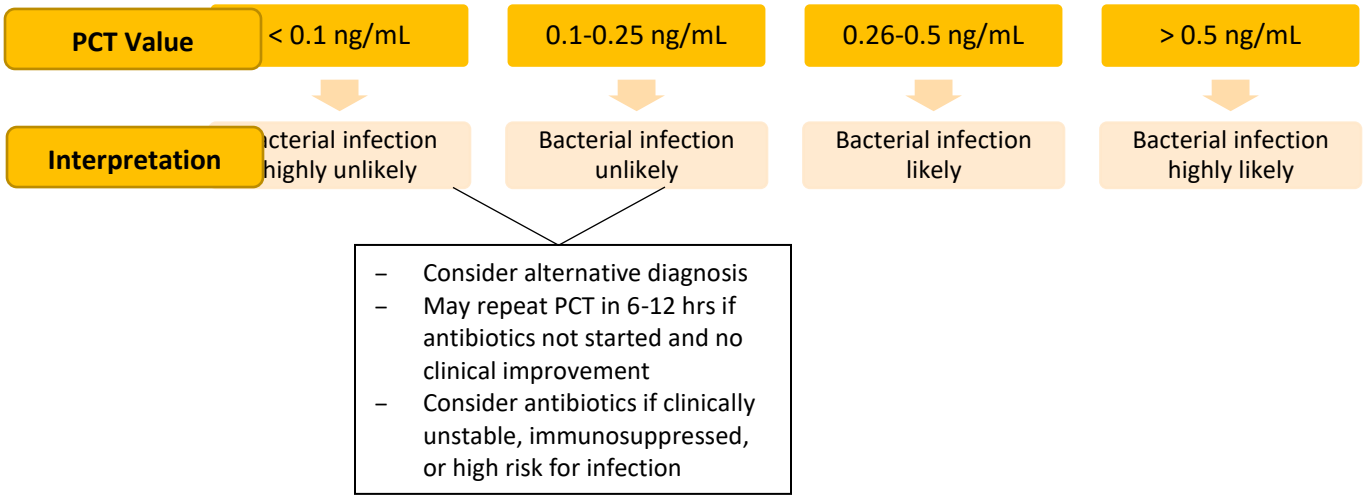
NOTES:

- **Serial PCT measurements are recommended as it is most useful when trends are analyzed over time in accompaniment with other clinical data**
    - If antibiotics are administered, repeat PCT testing may be obtained every 2-3 days to assist in early antibiotic cessation
- Single or repeat PCT levels should **NOT** be used to shorten the duration of antibiotic therapy in syndromes with defined or prolonged duration of therapy, such as bacteremia, endocarditis, meningitis, osteomyelitis, etc.
- Limited evidence exists for the use of PCT in immunocompromised patients. Interpret results with caution.

UNCOMPLICATED LOWER RESPIRATORY INFECTION (LRTI)

ANTIBIOTIC INITIATION:

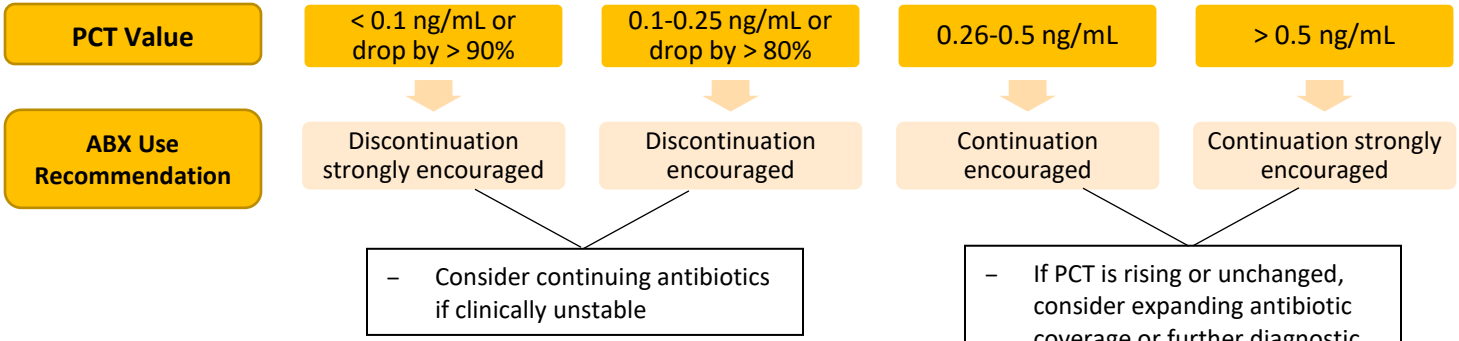
Check PCT for patients with suspected LRTI at admission



- Consider alternative diagnosis
- May repeat PCT in 6-12 hrs if antibiotics not started and no clinical improvement
- Consider antibiotics if clinically unstable, immunosuppressed, or high risk for infection

ANTIBIOTIC DISCONTINUATION:

Check PCT every 2-3 days and evaluate for antibiotic discontinuation



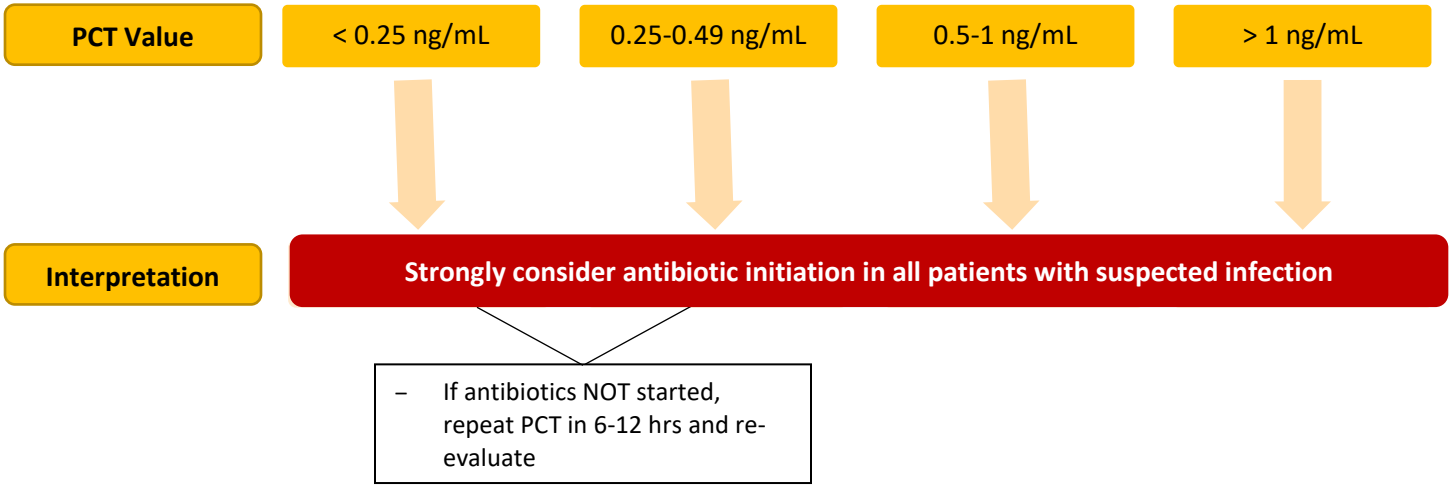
- Consider continuing antibiotics if clinically unstable

- If PCT is rising or unchanged, consider expanding antibiotic coverage or further diagnostic evaluation

SEPSIS

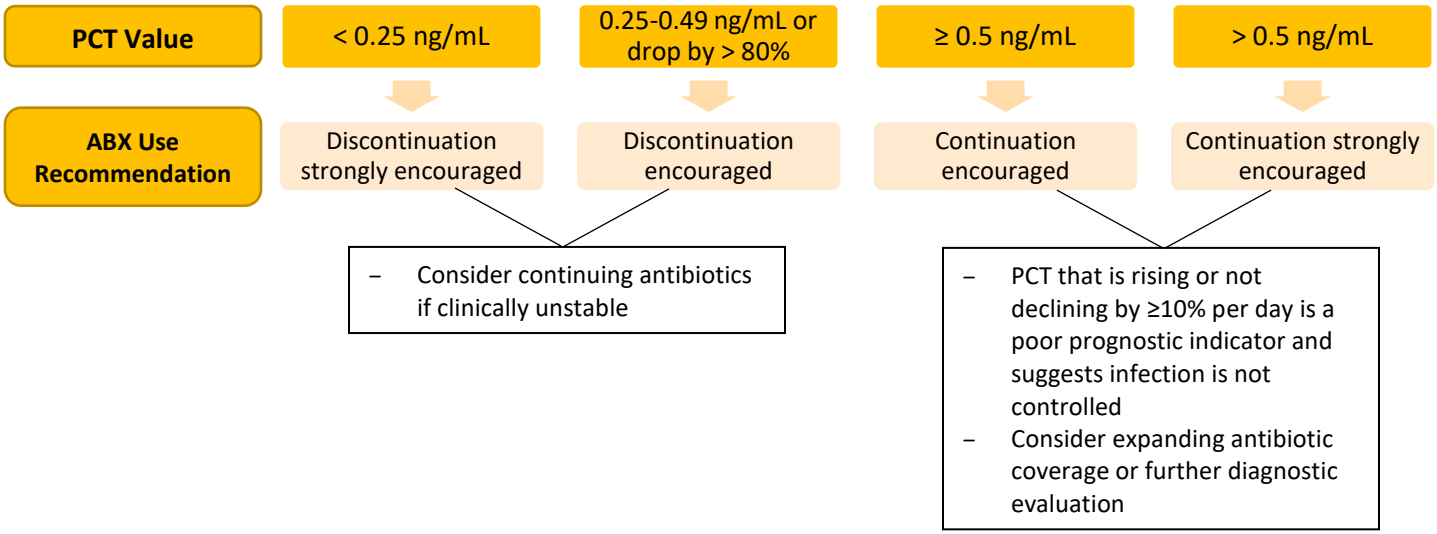
ANTIBIOTIC INITIATION:

Check PCT for patients with presumed sepsis or septic shock at admission but **do not withhold initiation of antibiotics** in patients with suspected infection and/or hemodynamic instability pending PCT result.



ANTIBIOTIC DISCONTINUATION:

Check PCT every 2-3 days and evaluate for antibiotic discontinuation in combination with assessment of patient clinical status and degree of source control



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