



## Adult Procalcitonin (PCT) Testing Guidelines

### Background

- Procalcitonin (PCT) is an amino acid precursor of calcitonin, which under normal circumstances is produced by thyroid C-cells
- In bacterial infections, PCT is produced by different body tissues resulting in increased PCT levels in the blood
  - Higher specificity compared to other tests such as CRP
- PCT levels generally do not increase in pure viral infections
- PCT is detectable within 2-4 hours and peaks within 6-24 hours; it has a half-life of 24 hours
- PCT levels decrease rapidly as infections are treated
- PCT levels are elevated in proportion to the severity of the bacterial infection giving it utility as a prognostic indicator
- PCT guidance has been shown in studies to reduce antibiotic utilization without affecting patient outcomes

### Limitations

- **PCT may be elevated without bacterial infection** in the following situations
  - **Massive stress** (such as severe trauma, surgery, burns) – PCT levels trend downwards after the inciting event in the absence of infection
  - Prolonged, severe cardiogenic **shock** or organ perfusion abnormalities causing profound hypotension
  - Significantly **compromised renal function**, especially ESRD/hemodialysis
  - Some forms of **vasculitis** and acute graft versus host disease
  - **Paraneoplastic syndromes** due to medullary thyroid and small cell lung cancer
  - **Malaria**
  - Some **fungal** infections
- **PCT may not be elevated in site-specific bacterial disease and localized infections**

*Decisions regarding antimicrobial therapy should NOT be based solely on PCT serum levels.*

## **Indications for ordering PCT at SUNY Downstate Medical Center**

- Differentiation of bacterial versus viral respiratory tract infection
- Differentiation of pneumonia versus other causes of respiratory distress such as CHF or COPD exacerbation
- Determination of duration of antibiotic treatment in respiratory infections
- Diagnosis of sepsis
- Determination of duration of antibiotic treatment in sepsis
- There are limited data and no official recommendations in the following conditions:
  - Diagnosis of bacterial skin and soft tissue infections
  - Differentiating bacterial versus viral meningitis
  - Diagnosis of bacterial infection in neutropenic patients
  - Diagnosis of bacterial infection in sickle cell disease crisis patients
  - Patients on hemodialysis

Procalcitonin will be available 24 hours a day and will be run as needed. STAT order results should be available within 90 minutes, while results of routine testing should be available during the same shift. A value of 0.1 ng/mL will be flagged as elevated. Interpretation should be based upon clinical context and protocols provided below.

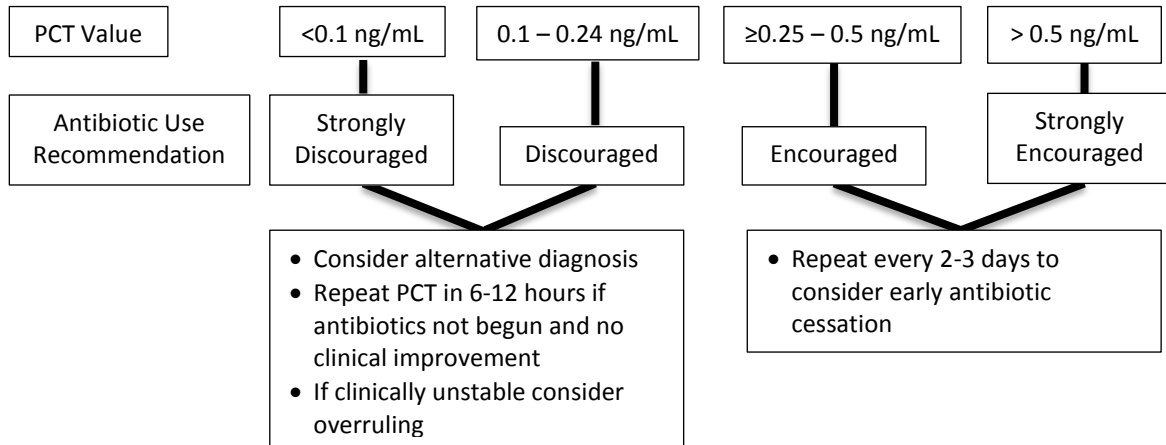
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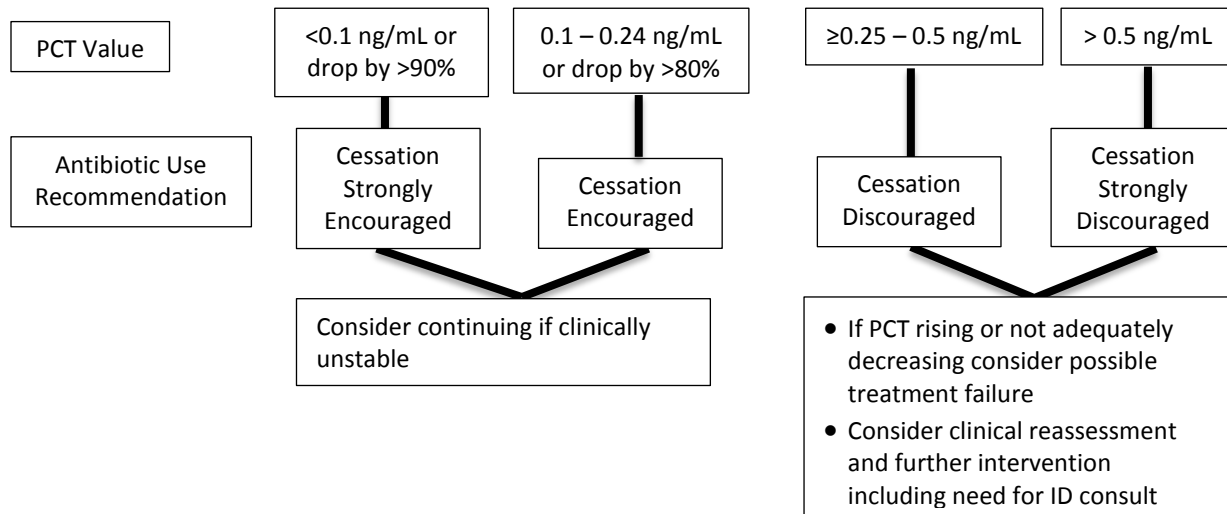
# Procalcitonin Algorithm for Management of Lower Respiratory Tract Infections (LRTI)

## Initial Level

**STRONGLY CONSIDER ANTIBIOTIC INITIATION IN ALL PATIENTS WITH SUSPICION OF INFECTION**



## Follow Up Level

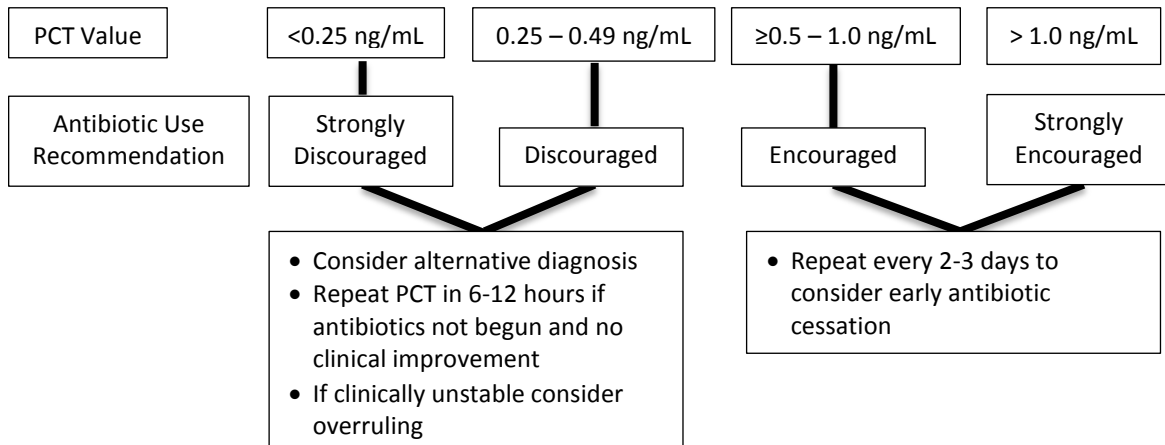


# Procalcitonin Algorithm for Management of Sepsis

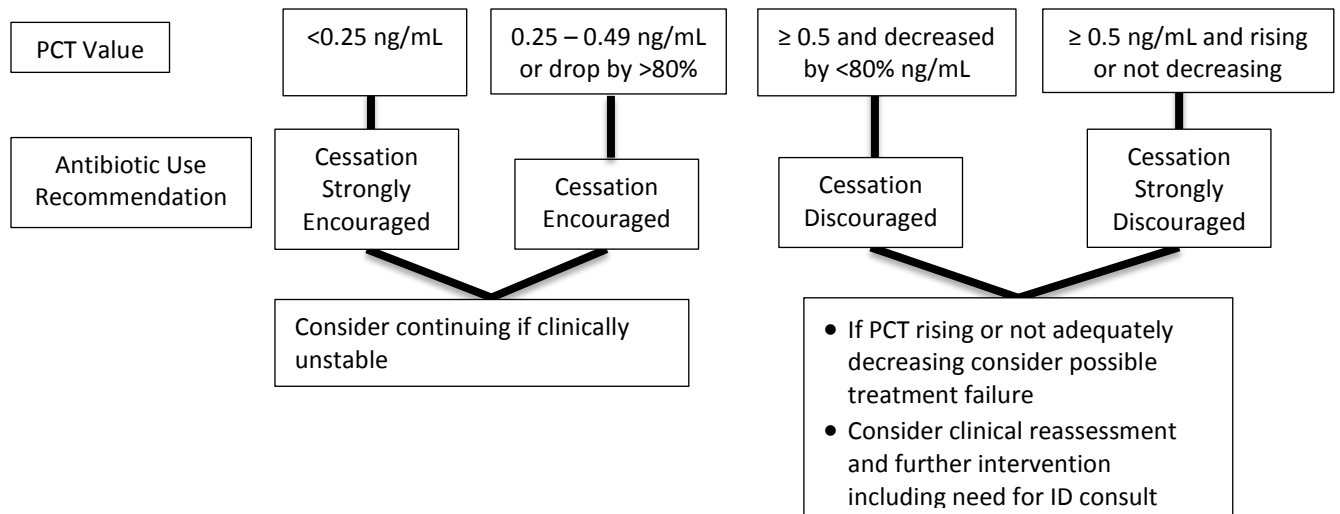
## Initial Level

**STRONGLY CONSIDER ANTIBIOTIC INITIATION IN ALL PATIENTS WITH SUSPICION OF INFECTION**

**FIRST DOSE OF ANTIBIOTICS SHOULD NOT BE DELAYED BY PENDING PROCALCITONIN LEVELS**



## Follow Up Level



Approved by P&T Committee 11/2016