Procalcitonin (PCT) Clinical Decision Support Tool

For use in the inpatient adult population

Start here:

Do you suspect your patient has sepsis or a lower respiratory tract infection?

- **No – do not order PCT**
- Yes ↓

Is your patient pregnant, immunocompromised (not including steroids)* or already on chronic antibiotics for another bacterial infection?

**Includes:*

- Post-solid organ or bone marrow transplant
- On immunosuppression
- HIV/AIDS with CD4 <200
- Neutropenia <500

- **Yes – do not order PCT**
- No ↓

Order "Procalcitonin Order Set"

Follow algorithm for appropriate use (right) and risk stratify:

Does your patient meet **<u>any</u>** of the following criteria?

- Critical illness
- Meets criteria for sepsis
- Life threatening medical co-morbidity
- Supporting evidence of acute bacterial infection

Yes | No

HIGH RISK:
Start empiric antibiotics; do not delay for PCT testing

LOW RISK:
Use clinical judgment for initiation of empiric antibiotics

PCT #1 (time 0, baseline)

≤0.25 µg/L (negative):

- *If **low risk***, continue holding or consider discontinuing antibiotics
- *If **high risk***, continue empiric antibiotics pending repeat testing
- Evaluate for false negatives (below)

Repeat PCT qAM x1

PCT #2 ≤0.25 µg/L:

- Recommend **discontinuing antibiotics** if no false negatives present ***and*** there are no findings of invasive bacterial infection**

PCT #2 >0.25 µg/L:

- Recommend **starting or continuing antibiotics**; follow positive PCT algorithm (right***)***

*** PCT use is not indicated in patients with invasive bacterial infection for which literature-supported treatment duration is available (bacteremia, endocarditis, osteomyelitis, etc). Consider ID consultation for any uncertainty surrounding treatment duration for specific infections.*

False positives include:

- Major stressors: severe trauma, shock, surgery, burns
- Severe pancreatitis
- Receipt of certain immunomodulatory agents: granulocyte transfusions, antilymphocyte globulin, anti-CD3 antibodies
- Systemic fungal and parasitic infections
- Medullary thyroid tumors
- End-stage renal disease (if not yet on hemodialysis)
- Elderly (age >80)

>0.25 µg/L (positive):

- Start or continue antibiotics regardless of risk assessment
- Evaluate for false positives (below)

Repeat PCT qAM to trend

PCT uptrending from baseline:

- Recommend **continuing antibiotics**
- Consider additional diagnostic testing and/or adjustment of antibiotic selection
- Consider ID consult

PCT downtrending but > 0.25 µg/L :

- Recommend **continuing antibiotics**

PCT ≤0.25 µg/L or decreased by ≥ 80% from peak:

- Recommend **discontinuing antibiotics** if no false negatives present ***and*** there are no findings of invasive bacterial infection**

False negatives include:

- Contained infections (mediastinitis, empyema, or abscess)
- Intracellular bacteria (listeria, legionella, mycoplasma)
- PCT is drawn in the first 6-12 hours of infection