

PCT-Guided Algorithms Effectively Reduce Antibiotic Use in LRTI

Saura O, Luyt CE.

[Procalcitonin as a biomarker to guide treatments for patients with lower respiratory tract infections.](#)
[Expert Rev Respir Med. 2023;17\(8\):651-661. doi:10.1080/17476348.2023.2251394](#)



[READ THE PUBLICATION](#)

Antimicrobial resistance is a global public health issue, and antibiotic stewardship is one of the best ways to reduce antimicrobial exposure in the Intensive Care Unit (ICU). PCT-guided algorithms have proven effective in reducing unnecessary antibiotic use in lower respiratory tract infections (LRTIs).

A recent review discusses the role of procalcitonin (PCT) in diagnosing and managing community-acquired (CAP) and ventilator-associated pneumonia (VAP).

The review provides up-to-date evidence and clear recommendations regarding the utility of PCT to reduce unnecessary antimicrobial exposure.

PCT to Detect Bacterial CAP and Guide Antibiotic Use

- In suspected cases of CAP, PCT levels can aid in determining the need for antibiotics.
 - If a patient's serum PCT level is $<0.25 \mu\text{g/L}$, physicians may opt to withhold antibiotics, particularly in viral CAP cases.
- PCT can guide antimicrobial duration in patients with CAP.
 - Stop antimicrobials if serum PCT is $<0.25 \mu\text{g/L}$ or has decreased by 80% compared to its highest value.

PCT to Detect Bacterial VAP/HAP and Initiate Antibiotics

- PCT has low diagnostic performance for confirming bacterial hospital-acquired pneumonia (HAP)/VAP and is therefore not recommended to guide antibiotic initiation in this situation.

PCT to Guide Antimicrobial Discontinuation in HAP/VAP

- PCT-guided algorithms can be used to discontinue antimicrobials in patients with HAP/VAP when serum PCT is $<0.5 \mu\text{g/L}$ or decreased by 80% compared to its highest value.

PCT Kinetics for Escalation

- Antimicrobial escalation should not be initiated solely based on PCT rise in ICU patients, regardless of whether they receive ongoing antibiotic therapy.

In conclusion:

- PCT-guided antibiotic administration can help physicians optimize antimicrobial prescribing.
- PCT-guided algorithms can effectively reduce unnecessary antibiotic use in LRTIs, but performance depends on the setting (CAP vs. HAP/VAP), whether initiating or discontinuing antibiotics, and the patient's condition. Physicians should be aware of these limitations.
- Future perspectives to improve timely, accurate diagnosis of LRTI include use of combined diagnostic solutions (Gram stain, rapid multiplex respiratory PCR, biomarkers, point-of-care devices...) to rapidly rule in or rule out bacterial LRTI in the ICU and treat appropriately.



“Procalcitonin-guided antibiotic administration has proven its efficacy in reducing unnecessary antibiotic use in lower respiratory tract infections without excess in mortality, hospital length of stay or disease relapse.”