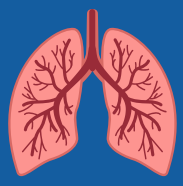
Appropriate Antibiotic De-Escalation in Culture-Negative Pneumonia




Background

- Patients frequently admitted for pneumonia will not have microbiologic growth[1]
- The rate of positive microbiologic cultures in septic patients is around 40%[2]
- When is it appropriate to de-escalate from antibiotics covering methicillin-resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas aeruginosa*?

Pathogens in Community Acquired Pneumonia vs. Ventilator Associated/Hospital Acquired Pneumonia

- CAP: *Streptococcus pneumoniae, Haemophilus Influenzae, Mycoplasma pneumoniae, Legionella pneumophilia, Chlamydia pneumoniae*
- VAP/HAP: MSSA/MRSA, *P. aeruginosa,* other gram-negative bacilli
- Incidence of MRSA or *P. aeruginosa* in community acquired infections was <2% in a study which included over 90,000 patients hospitalized with pneumonia.[3]

How can this be applied in practice?

- If a patient has pneumonia, respiratory cultures that grew only normal flora, did not grow MRSA or *P. aeruginosa,* and is clinically stable, it is appropriate to de-escalate.
- Appropriate de-escalation agents[4]
  - IV: ampicillin sulbactam or ceftriaxone
  - Oral: amoxicillin-clavulanate or cefuroxime
- MRSA nasal PCR can be utilized to discontinue vancomycin and has a very high negative predictive value.
- Refer to the VASP treatment guidelines for appropriate empiric antimicrobial prescribing.

What does the literature say?

- One study de-escalated antimicrobials active against MRSA and *P. aeruginosa* in patients that only grew normal flora on respiratory cultures.[4] This study found no difference in mortality, hospital length of stay, but did find a reduction in acute kidney injury.[5]
- Another study showed that culture-negative patients who were de-escalated from broad spectrum antibiotics for pneumonia had a shorter duration of hospitalization, lower mortality rates, and lower hospital costs.[6]

References

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