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Hospital-Acquired Pneumonia

# Diagnosis

* Clinical symptoms of pneumonia (e.g., fever, cough, dyspnea, pleuritic chest pain) PLUS hypoxia PLUS a new radiographic infiltrate that develops at least 48 hours after hospitalization
* Microbiology: either community-associated (e.g., *Streptococcus pneumoniae*, *Haemophilus* *influenzae*) or healthcare-associated pathogens (e.g., *Enterobacteriaceae*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*); *Legionella* is less common but should be considered when indicated
* *Enterococcus* species and *Candida* species that grow in sputum cultures are highly likely to be colonizers and do not require treatment
* Obtain sputum Gram stain and culture whenever possible
* Obtain blood cultures for severely ill patients
* Consider obtaining *Legionella* urine antigen in immunocompromised patients or if severely ill
* Consider obtaining viral respiratory testing during respiratory virus season
* Consider noninfectious causes such as pulmonary embolism, volume overload, atelectasis

# Treatment

* **Empiric therapy**
* Coverage for *Enterobacteriaceae*, *P. aeruginosa*, streptococci, and *S. aureus* with an anti-pseudomonal beta-lactam; consider combination therapy if severely ill
* Avoid routine fluoroquinolone use given association with *Clostridioides difficile* infection
* Coverage for methicillin-resistant *S. aureus* (MRSA) should be considered if the hospital prevalence of MRSA is high, or the patient has a known history of MRSA colonization or infection, intravenous drug use, necrotizing pneumonia, a recent stay in a skilled nursing facility, or prolonged hospitalization with unknown MRSA colonization status
* [Place local treatment recommendations here]
* [Place local treatment recommendations here]
* **Narrowing and oral therapy**
* If an alternate diagnosis is identified, stop therapy for hospital-acquired pneumonia
  + In most cases, stop antibiotics if viral respiratory testing is positive
* Use sputum culture results to narrow therapy
  + Stop antibiotics directed at MRSA and *Pseudomona*s spp. if not recovered
  + Stop the non-beta-lactam agent if combination therapy was started and the beta-lactam is active against respiratory pathogen recovered
* If no sputum cultures have been obtained, de-escalate therapy based on clinical judgment and individual patient risk factors
* After clinical improvement is observed and oral medications can be tolerated, consider conversion from intravenous to oral therapy
  + If no risk factors for resistant organisms, narrow to amoxicillin/clavulanate or oral second-/third-generation cephalosporins; reserve fluoroquinolones for patients at risk for *Pseudomonas* species or with severe penicillin allergies
* [Place local treatment recommendations here]
* [Place local treatment recommendations here]

# Duration

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* Seven days if clincial response by day 3

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