Suspected Bacterial Pneumonia in Adult Patients (Solid Tumors)

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**PRESENTATION**
- Outpatient
  - History, exam, lab data, imaging compatible with pneumonia
- Inpatient non-ICU
  - Patient not high risk or neutropenic
  - High risk or neutropenic
  - Suspicion of post-obstructive pneumonia, aspiration, or known structural lung abnormalities
- ICU
  - Ceftriaxone plus (doxycycline or azithromycin) or Levofloxacin
  - Cefepime plus (doxycycline or azithromycin) plus (vancomycin or linezolid) or Piperacillin-tazobactam plus (doxycycline or azithromycin) plus (vancomycin or linezolid)

**TREATMENT**
- Amoxicillin-clavulanate plus (doxycycline or azithromycin) or Cefpodoxime plus (doxycycline or azithromycin) or Levofloxacin
- Ceftriaxone plus (doxycycline or azithromycin) or Levofloxacin
- Cefepime plus (doxycycline or azithromycin) plus (vancomycin or linezolid) or Piperacillin-tazobactam plus (doxycycline or azithromycin) plus (vancomycin or linezolid)

**EVALUATION**
- Day 3 reassessment:
  - Negative MRSA swab without post-obstructive pneumonia: discontinue vancomycin or linezolid
  - Non-neutropenic only: if procalcitonin < 0.25 or decreased at least 80% from peak, positive viral swab and negative bacterial culture: consider discontinuing antibiotics (likely isolated viral pneumonia)
  - Modify beta lactam and stop aminoglycoside (if used) based on culture and susceptibility results
- Days 5-10 reassessment:
  - Non-neutropenic patients only:
    - If vital signs are normal or returned to baseline and clinically stable: discontinue antibiotics
    - If any of the vital signs are abnormal, but procalcitonin < 0.25 or decreased at least 80% from peak: consider discontinuing antibiotics
  - If proven post-obstructive pneumonia, cavitary abnormality, or neutropenic: treat according to clinical course.

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Notes:
1. Lab data: sputum culture, nasopharyngeal swab with multiplex viral PCR + COVID-19, serum procalcitonin for 3 days, blood cultures (from peripheral site and one from each lumen of existing CVC; two peripheral cultures if no CVC present). Legionella urine antigen and strep urine antigen for patients admitted in the ICU. MRSA nasal swab to potentially de-escalate MRSA coverage when started.
2. Chest X-ray (for all neutropenic patients or those with structural lung disease, substitute chest CT). Consider baseline EKG
3. Empiric treatment selection should take into account prior culture history, antibiotic exposure, and allergies. In case of carbapenem-resistant or other multidrug-resistant organism, infectious diseases consultation should be obtained.
4. Appropriate for outpatient treatment: clinically stable, sound mentation, non-neutropenic, ability to take oral medications, no history of drug-resistant pathogens and not treated for bacterial infection in last 90 days. Consider hospitalization for Community Acquired Pneumonia (CAP) patients based on clinical judgement and those with Pneumonia Severity Index (PSI) class 3-5 (≥ 71 points).
5. Refer to tertiary dosing references (e.g. Lexicomp®) or renal dosing guide (internal use only) for dosing recommendations
6. High risk: Hospitalization for ≥ 2 days in the last 90 days, treatment with parenteral antibiotics in the last 90 days, colonization with multidrug resistant organisms, or undergoing cytotoxic therapy within the last 30 days.
7. Atypical coverage is not required if pneumonia onset is > 48 hours after admission
8. Replace with meropenem for patients with history of ESBL-producing pathogens
9. Close monitoring of renal function with piperacillin-tazobactam and vancomycin combination

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SUGGESTED READINGS


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This practice consensus algorithm is based on majority expert opinion of the Pneumonia workgroup at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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