ICU Patient with new lung infiltrate, fever > 38 °C and clinical signs of infection: unlikely abdominal source

Cefepime^ ± Aminoglycoside* ± Vancomycin†

Obtain blood and respiratory cultures
Consider Legionella/Strep UrAg and procalcitonin

Day #3 Review cultures and need to continue antibiotics for nosocomial pneumonia
Reobtain procalcitonin

STOP
(e.g. culture negative, stable, PCT ≤ 0.25 or 80-90% decrease from peak PCT)

Continue antibiotic course for 7 days
Add stop date to order
Modify regimen based on Culture & Susceptibility Results

PCT > 0.25

Empiric Treatment of Hospital Acquired Pneumonia

| Early hospital-acquired pneumonia (< 5 days and No RFs for MDR^) | Ceftriaxone |
| Late hospital-acquired pneumonia (≥ 5 days or risk for MDR pathogens◊) | AP β-lactam^ ± | Aminoglycoside* ± | Anti-MRSA |
| MDR = multi-drug resistant AP = antipseudomonal | Cefepime | Gentamicin | Tobramycin | Amikacin | Vancomycin |
| Late hospital-acquired Pneumonia (> 5 days, recent antibiotics): | Hospital acquired organisms: colonization of more resistant bugs | As above plus | Pseudomonas aeruginosa | Acinetobacter baumannii | ESBL-producing Klebsiella & E. coli | Staphylococcus aureus (MRSA > MSSA) |

Manifestation (early vs. late) | Common Pathogens

| Early hospital-acquired Pneumonia (< 5 days): | Streptococcus pneumoniae | H. influenzae |
| Community-acquired organisms: colonizing pt at hospital admission | S. aureus (MSSA > MRSA) | E. coli, Klebsiella, Proteus, Enterobacter |

Severe β-lactam allergy: Early onset: Levofoxacin§ | Late onset: (Aztreonam or Levofoxacin§) ± Aminoglycoside* + (Vancomycin or Linezolid)§

Duration of Treatment: Generally treat for 7 days in responding patients

◊Risk factors for multi-drug resistant pathogens: hospitalization or broad spectrum antibiotics in last 90 days, septic shock at the time of VAP, ARDS or renal replacement therapy prior to VAP

§Requires Antibiotic Stewardship authorization

^Levofoxacin is an alternative for severe β-lactam allergy (requires Antibiotic Stewardship authorization)

* If patient is in septic shock, aminoglycoside therapy is encouraged until cultures/susceptibilities are available and is rarely associated with nephrotoxicity at appropriate doses.

†For HAP, reserve vancomycin for patients with increased risk of MRSA: abx treatment within 90 days, known MRSA colonization, respiratory gram stain with gram positive coci.

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