

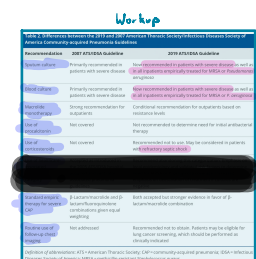
Pneumonia

* Defined in 2007 guidelines of CAP as
 "New lung infiltrate @ evidence that is due to
 infection origin, which can include:
 - Bacterial
 - Fungal
 - Eukaryotic
 - Parasitic
 - Unknown origin" } no golden standard

Community Acquired

* Pneumonia develops outside the hospital

Hospital-Acquired PNA (HAP)



Pneumonia Severity Index

- Age
- Sex
- comorbidities
- MOPH
- COPD
- CHF
- BUN
- WBC
- HR
- RR
- SpO2
- P/F

* Aspiration pneumonia - should follow general HAP CAP guidelines - only level of @ long-term in hospital

Outpatient

Inpatient

Uncomplicated

Complicated

1. Major Cx
 - Sputum
 - Urine
 - Blood
 - Pleural fluid

2. Minor Cx
 - Sputum
 - Urine
 - Blood
 - Pleural fluid

Atypical
 - Mycoplasma pneumoniae
 - Chlamydia pneumoniae
 - Legionella pneumophila

Typical
 - Streptococcus pneumoniae
 - Haemophilus influenzae
 - Moraxella catarrhalis

Severe
 - Systemic signs
 - Hypoxemia
 - Hemodynamic instability
 - Organ dysfunction

Amoxicillin + PCN
 - 500mg/125mg q6h
 - 1000mg/250mg q6h

Clarithromycin + PCN
 - 500mg/500mg q12h

Levofloxacin 750mg PO qd x 7-10 days

No Screen
 - Beta Lactam + Macrolide
 - Fluoroquinolone

Screened by
 - Systemic Cx
 - Urine
 - Blood Cx
 - Pleural Cx

Recent Hospitalization: 14 days with local MRSA risk factors
 - MRSA
 - PSAL

Prior MRSA or PNA
 - Sputum + Blood Cx + Pleural PCR

Add coverage + obtain culture PCR for de-escalation

HAP

⊕ Risk MRSA
 - Prior "Abx ≤ 90d"
 - Extended (longer PCN)
 - Hospitalized in a unit w/ 20% of beds are MRSA
 - Presence of MRSA in room
 - High risk of mortality
 - In need for antibiotic therapy
 - In need for MRSA therapy

MRSA Risk

- Prior "Abx ≤ 90d"
 - High mortality risk
 - High risk of mortality
 - All other pts
 - MRSA Risk
 - MRSA Risk
 - MRSA Risk

Vancomycin + Linezolid

Table 1. Recommended Initial Empiric Therapy for Hospital-Acquired Pneumonia (See Text for Recommended Regimens)	
Standard Regimen	β-Lactam + macrolide ^a or β-lactam + fluoroquinolone ^b
Prior Respiratory Isolation of MRSA	Add MRSA coverage ^c and obtain cultures to allow de-escalation or confirmation of need for continued therapy
Prior Respiratory Isolation of Pseudomonas aeruginosa	Add coverage for P. aeruginosa ^d and obtain cultures to allow de-escalation or confirmation of need for continued therapy
Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Obtain cultures but without MRSA coverage unless culture results are positive. If rapid nasal PCR is available, without additional empiric therapy against MRSA if rapid testing is negative or add coverage if PCR is positive and obtain cultures
Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Obtain cultures but initiate coverage for P. aeruginosa only if culture results are positive

VAP

⊕ Risk MRSA
 - Prior "Abx ≤ 90d"
 - Septic shock @ time of VAP
 - ARDS preceding VAP
 - 25d of Hospitalization Prior to Onset
 - CRP/ HD prior to VAP onset
 - (VAP) before being placed on ventilator
 - not ≥ 10% MRSA risk
 - Presence of MRSA in room

MRSA Risk

- Prior "Abx ≤ 90d"
 - High mortality risk
 - High risk of mortality
 - All other pts
 - MRSA Risk
 - MRSA Risk
 - MRSA Risk

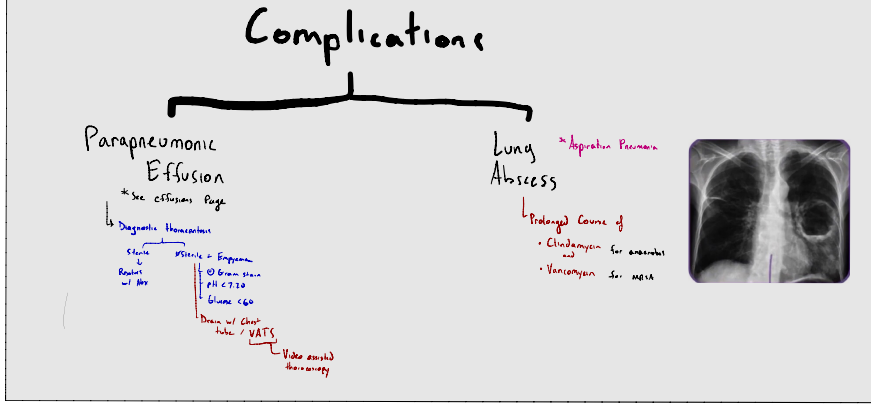
Vancomycin + Linezolid

Table 2. Recommended Initial Empiric Therapy for Hospital-Acquired Pneumonia in the Most Severely Ill Patients	
Standard Regimen	β-Lactam + macrolide ^a or β-lactam + fluoroquinolone ^b
Prior Respiratory Isolation of MRSA	Add MRSA coverage ^c and obtain cultures to allow de-escalation or confirmation of need for continued therapy
Prior Respiratory Isolation of Pseudomonas aeruginosa	Add coverage for P. aeruginosa ^d and obtain cultures to allow de-escalation or confirmation of need for continued therapy
Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Obtain cultures but without MRSA coverage unless culture results are positive. If rapid nasal PCR is available, without additional empiric therapy against MRSA if rapid testing is negative or add coverage if PCR is positive and obtain cultures
Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Obtain cultures but initiate coverage for P. aeruginosa only if culture results are positive

Table 4. Initial Treatment Strategies for Inpatients with Community-acquired Pneumonia by Level of Severity and Risk for Drug Resistance

Standard Regimen	Prior Respiratory Isolation of MRSA	Prior Respiratory Isolation of Pseudomonas aeruginosa	Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA	Recent Hospitalization and Parenteral Antibiotics and Locally Validated Risk Factors for MRSA
Nonsevere inpatient pneumonia ^a	β-Lactam + macrolide ^a or respiratory fluoroquinolone ^b	Add MRSA coverage ^c and obtain cultures to allow de-escalation or confirmation of need for continued therapy	Add coverage for P. aeruginosa ^d and obtain cultures to allow de-escalation or confirmation of need for continued therapy	Obtain cultures but without MRSA coverage unless culture results are positive. If rapid nasal PCR is available, without additional empiric therapy against MRSA if rapid testing is negative or add coverage if PCR is positive and obtain cultures
Severe inpatient pneumonia ^a	β-Lactam + macrolide ^a or β-lactam + fluoroquinolone ^b	Add MRSA coverage ^c and obtain cultures to allow de-escalation or confirmation of need for continued therapy	Add coverage for P. aeruginosa ^d and obtain cultures to allow de-escalation or confirmation of need for continued therapy	Add coverage for P. aeruginosa ^d and obtain cultures to allow de-escalation or confirmation of need for continued therapy

Definition of abbreviations: ATS = American Thoracic Society; CAP = community-acquired pneumonia; HAP = hospital-acquired pneumonia; IDSA = Infectious Diseases Society of America; MRSA = methicillin-resistant Staphylococcus aureus; VAP = ventilator-associated pneumonia.
^aAs defined by 2007 ATS/IDSA CAP severity criteria guidelines (see Table 1).
^bAmpicillin + sulbactam 1.5-3 g every 6 hours, cefotaxime 1-2 g every 8 hours, ceftazidime 1-2 g every 8 hours, ceftazidime 600 mg every 12 hours AND azithromycin 500 mg daily or clarithromycin 500 mg twice daily.
^cLevofloxacin 750 mg daily or moxifloxacin 400 mg daily.
^dPer the 2016 ATS/IDSA HAP/VAP guidelines: vancomycin (15 mg/kg every 12 h, adjust based on levels) or linezolid (600 mg every 12 h).
^ePer the 2016 ATS/IDSA HAP/VAP guidelines: piperacillin-tazobactam (4.5 g every 6 h), cefepime (2 g every 8 h), ceftazidime (2 g every 8 h), imipenem (500 mg every 6 h), meropenem (1 g every 8 h), or aztreonam (2 g every 8 h). Does not include coverage for extended-spectrum β-lactamase-producing Enterobacteriaceae, which should be considered only on the basis of patient or local microbiological data.



x 7 days