



BACK TO

BASICS

PNEUMONIA

BASICS: Usual Suspects

S.pneumoniae

H.influenzae

Legionella sp.

Viruses (*At least 20% of cases*)

BASICS: Signs & Symptoms

 Fever

 Chills

 Productive cough

 Shortness of breath

 Chest pain

AND

Positive radiographic findings (chest x-ray/CT scan)

BASICS: Diagnostic Imaging

- 📌 Chest x-ray
- 📌 CT Chest (\pm contrast)
 - 📌 Gold standard for diagnostic imaging

Significant findings

- 📌 **Consolidations, infiltrates, airspace disease** – Signify presence of possible pneumonia

BASICS: Clinical Conundrums

| | Commonalities | Differences |
|------------------------|--|---|
| Asthma exacerbation | Cough Wheeze | No radiographic changes |
| Bronchitis | Cough Wheeze Fever | No radiographic changes |
| Heart Failure | Shortness of breath Cough | CXR – Pulmonary venous congestion, interstitial edema, perihilar infiltrates, enlarged cardiac silhouette, effusions <i>(Clinically: Orthopnea, PND)</i> |
| Pulmonary Embolism | Fever Leukocytosis Shortness of breath Hemoptysis | CT – Clot(s) evident on CT (usually presents with parenchymal changes, e.g. airspace opacities/ground glass) |
| Lung disease (ILD,IPF) | Shortness of breath Cough Wheeze | CXR/CT – Various interstitial findings/chronic changes (e.g. Septal thickening, honeycombing, bronchiectasis) <i>(Clinically: Unlike CAP, onset is gradual but can exacerbate)</i> |

BASICS: In-Patient Treatment Options

Non-ICU patients

First line

- Amoxicillin-clavulanate
OR Cefuroxime
- Ceftriaxone

Anaphylaxis to beta-lactams

- Levofloxacin **750mg**

ICU patients

First line

- Ceftriaxone + Azithromycin IV/PO **500mg**

Anaphylaxis to beta-lactams

- Levofloxacin **750mg**

PO Step down

- ✓ Able to take PO meds
- ✓ Afebrile for 24-48 hours

BASICS: In-Patient Treatment Options

What's with ASP's obsession with amoxicillin-clavulanate?

Spectrum

Covers all typical CAP pathogens (*except atypicals!*)

Safety profile

Favourable compared to fluoroquinolones

Frequency

875 mg/125 mg PO BID (reduced clavulanate component)

What about Cefuroxime?

Reasonable alternative

Growing concern with resistance?

H. influenzae - 18-22%

S. pneumoniae – 12%

BASICS: Common Problems

- Empiric *Pseudomonas* coverage is **inappropriate**
 - Healthcare-associated (HCAP) & Nursing-home associated (NAP) pneumonia are **dead**
 - Not relevant in **overwhelming majority** of community cases
 - ✚ **Therapy should be switched to guideline driven agents (Clavulin, or ceftriaxone)**
- Beta-lactam + Fluoroquinolone combination is **inappropriate**
 - **Significant** overlap in spectrum
 - Poor evidence/justification for inclusion in old (2007) CAP guidelines for ICU patients
 - ✚ **Discontinue fluoroquinolone, continue beta-lactam monotherapy**
- Zpak dosing is problematic
 - Doses of 250 mg too low for *Legionella* (which is its **ONLY** role in CAP)
 - ✚ **Discontinue, or if *Legionella* is a serious consideration, increase to 500 mg daily**

BASICS: Treatment Duration

Guidelines: **5-7 days**

Treatment Discontinuation^(non-ICU)

Minimum of 5 days, afebrile (<37.8) x 48 hours

PLUS

No more than **one** sign of instability

- SBP < 90 mmHg
- HR > 100 /min
- RR > 24 /min
- O₂ sat $< 90\%$ / PaO₂ < 60 mmHg on room air

NOT BASIC: Legionella Pneumonia

- Uncommon (*but becoming more common*)
- “Severe pneumonia”
 - ICU admission (75% of cases)
- Increased incidence in summer months
 - Hot & humid weather (i.e. May-October)
- Presentation
 - ?GI symptoms
 - ?Hepatic insult (increased LFTs)
 - ?Elevated CK
 - ?Hyponatremia
 - ?Altered LOC
 - ?Elevated SCr
- Urine Legionella – Detects urinary antigen of *L. pneumophila* serotype 1
 - Responsible for majority (80%) of cases

NOT BASIC: Legionella Pneumonia

Treatment

Consider adding azithromycin IV/PO 500 mg daily if:

- Critically ill (i.e. ICU admission)
- Continued deterioration despite 48h-72h of standard therapy (i.e. beta-lactam)

In **confirmed** *Legionella* pneumonia

- Monotherapy with fluoroquinolone (i.e. Levofloxacin) or macrolides (i.e. azithromycin)

Duration

- 7-10 days
- Longer (i.e. 14-21 days) in severe disease or immunocompromised patients



BACK TO
BASICS

Patient Cases

CASE 1 – EF (75/F)

EF – 75 yo F

Presentation:

- 📌 Fever (39.3) and productive cough, requiring 2 L O2 via nasal prongs

Diagnostic Imaging

- 📌 CXR: Right basal consolidation

NKDA

Initial antibiotics:

- 📌 Ceftriaxone 1 g IV daily
- 📌 Azithromycin 500 mg PO daily then 250 mg PO x 4 days

Review (Day 3)

- 📌 Afebrile x 48 hours
- 📌 Hemodynamically stable
- 📌 Satting 98% on room air

CASE 2 – JP (62/M)

JP – 62 yo M

Presentation:

- 📌 Fever (38.6), productive cough, chills

Diagnostic Imaging

- 📌 CXR: Left middle lobe consolidation

NKDA

Initial antibiotics:

- 📌 Moxifloxacin 400 mg IV daily x 7 days

Review (Day 4)

- 📌 Afebrile x 48 hours
- 📌 Hemodynamically stable
- 📌 Satting 98% on room air
- 📌 Taking oral medications

CASE 3 – TW (64/F)

TW – 64 yo F

Presentation:

- 📌 2-week history of worsening shortness of breath (especially on exertion), pedal edema, requiring 2-3 pillows to sleep

Diagnostic Imaging

- 📌 CXR: Interstitial edema ± pneumonia in the right clinical context

PMHx: Atrial fibrillation, hypertension, dyslipidemia

NKDA

Initial antibiotics:

- 📌 Ceftriaxone 1 g IV daily

Review (Day 2)

- 📌 Afebrile since admission
- 📌 Hemodynamically stable
- 📌 Satting 95% on 3L NP

BASICS: Quick Tips

Quick References

Overall

Ontario Quality Based Practices (QBP) for Pneumonia

Duration

JAMA Intern Med. 2016;176(9):1257-1265

Avoidance of FQs

FDA Warning (July 26th 2016)