Sore Throats and Pneumonia

By the way... What does a sore throat have to do with it?
Lower Airway and Common Diseases

- **Lower Airway Protection**
  - Cilia, mucous, and alveolar macrophages

- **Two common diseases**
  - Bronchitis
  - Pneumonia
What is Pneumonia?

• **Defined:**
  – An inflammation of the lungs
  – Most common cause of the inflammation is infection

• **Location:**
  – The lower respiratory tract
    • Small bronchi and alveoli
      ✓ Areas noted by the blue circles
Causes of Pneumonia

• There are three main causes:
  – Bacterial pneumonia
  – Viral pneumonia
  – Atypical pneumonia
    • Mycoplasmas
    • Chlamydias
    • Other agents
      ✴ “Walking” pneumonia

• Other causes:
  – Fungus
A Word About “Walking” Pneumonia

- **Mycoplasma bacteria**
  - Unusual bacteria
  - No cell wall
  - Buries itself between cilia of bronchioles
  - Irritates bronchiole
  - Paroxysmal coughing
    - Often severe
Pneumonia Is Also Known By Where It Was Acquired

- **Community acquired**
  - Acquired at school, work, gym, etc.

- **Nosocomial**
  - Acquired during hospitalization

- **Aspiration**
  - Happens when foreign matter, most frequently stomach contents, are inhaled
How Do We “Catch” Pneumonia??

• **Most Common**
  – Aspiration of oropharyngeal secretions during sleep
  – Occurs in healthy individuals

• **2nd Most Common**
  – Inhalation of aerosolized droplets
  – Takes an aggressive organism

• **Other**
  – Blood borne infection (staph sepsis) or right sided endocarditis
“Just A Sore Throat”

Normal Appearance

Uvula is swollen and red as are the edges of the tissues.

This young child has red and greatly swollen tonsils.
Take Home Message??

• If **you** have a sore throat:
  – Elevate the head of your bed
  – Don’t come to work

• If the patient is coughing
  – Put the O2 mask on the patient
  – Wear your mask
Who Gets Pneumonia?

• **Susceptible Groups**
  – > 65 yrs of age and < 5 yrs of age
  – Smokers and malnourished
  – Underlying lung disease or other medical problems
    • Such as heart disease, COPD, diabetes
  – Recent upper respiratory tract infection
    • especially viral

• **Contagiousness**
  – Depends on the organism
    • Certain viruses and bacteria are very contagious
  – Coughing, sneezing, kissing, etc.
Pathophysiology of Pneumonia

Normal alveoli: 1) open, 2) clear, 3) good elasticity

Pneumonia: 1) thickened alveolar wall, 2) secretions collect inside the alveoli, 3) secretions in the thoracic cavity (empyema)
# Recognizing Pneumonia

<table>
<thead>
<tr>
<th>Bacterial</th>
<th>Viral</th>
<th>Atypical</th>
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<tbody>
<tr>
<td>Fever</td>
<td>Fever</td>
<td>Fever, often low-grade</td>
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<tr>
<td>Shaking chills</td>
<td>Chills</td>
<td>Chills</td>
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<tr>
<td>Productive cough, green, yellow or rust colored mucous</td>
<td>Dry cough</td>
<td>Cough; may be violent at times, white mucous</td>
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<tr>
<td>Chest pain</td>
<td>Headache</td>
<td>Nausea/vomiting frequent</td>
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<tr>
<td>Profuse sweating</td>
<td>Muscle pain</td>
<td>Weakness</td>
</tr>
<tr>
<td>Cyanosis may occur</td>
<td>Cyanosis may occur</td>
<td></td>
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<tr>
<td>Confusion</td>
<td>Weakness</td>
<td>Fatigue</td>
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Recognizing and Treating Pneumonia

• **Assessment**
  
  – History
  

  – Physical
  
  • Lung sounds – all fields

• **Treatment**
  
  • O2, IV, Monitor
  
  • Albuterol, Nebulized saline
  
  • CPAP (with or without albuterol)
Lung Sounds in Pneumonia

- **Wheeze**
  - Chemicals of inflammation
  - Mucous containing dead WBCs
- **Rhonchi**
  - Thick mucous
- **Rales or Crackles**
  - Thin, watery secretions from inflammation
- **LS tend to be unilateral**
Ready to put this to practice??

Let’s look at some cases...
Case 1: 65 y/o with SOB

- **Dispatch:**
  1730 hrs, 345 West Bart Street, 65 y/o male, difficulty breathing, has been vomiting

- **On Arrival:**
  You find your patient lying supine in bed. He is awake, appears pale and looks sick. There is a glass of juice beside the bed with Robitussin and Theraflu™.
Case 1: 65 y/o with SOB

- He tells you he hasn’t felt well for the last two weeks with the last two days being “the worst”.
- His wife called you because she came home from work and he looked worse than when she went to work this morning.
- His illness started with a sore throat that gradually became worse until he was coughing so much he couldn’t sleep. That’s when he started taking his wife’s Robitussin that was left over from an illness last year.
- He has been running a fever of 101°F, taking ibuprofen for fever and Theraflu and Robitussin for his cough with little improvement.
- Started vomiting yesterday x 2 and today x 1
What Is In Your Differential???

Keep in mind that as you find out more information, you will likely change your differential. . .
Case 1: 65 y/o with SOB

- **Physical Assessment**
  - Mental Status – Awake, irritable, and confused,
    - keeps talking about how cold it is and asking if it snowed last night
  - Airway – open and clear
  - Breathing – rapid and shallow at 22
    - frequent productive cough and green mucous
  - Circulation – skin pale, warm and dry
- **VS:** P 98, R 22, BP 118/68
Case 1: 65 y/o with SOB

- **SAMPLE**
  
  S/S: confusion, fever, productive cough, vomiting yesterday & today, poor appetite, malaise
  Allergies – penicillin
  Medication – Atenolol, Glucophage, Robitussin, Theraflu, ibuprofen
  PMHx – HTN, non-insulin dependent diabetes
  Last meal – toast this afternoon, juice all day, nauseated
Case 1: 65 y/o with SOB

- What are all the secondary questions you want to know?
  
  When did he last take his medication? How much did he take? Has he been compliant with his medication? Change in bowel or bladder habits? When was the last time he urinated?
  
  How much water or juice has he been able to keep down?
  
  Has he been sick like this before?
  
  When did he become confused?
Case 1: 65 y/o with SOB

• Upon Further Questioning

He states he takes the following:

• Theraflu during the day & Robitussin at night
• Atenolol and Glucogage prescribed but he has vomited them up the last two days
• Water makes him nauseated so he has been trying to drink juice with little success
• Normal bowel habits, urinated this morning

His wife tells you:

• She noticed his confusion when she got home from work
Case 1: 65 y/o with SOB

• Physical Assessment
  Head: atraumatic, pupils 2-3 mm and reactive, mucous membranes pale and sticky
  Chest: symmetrical, LS clear on L, R mid-chest wheezes and rales, skin noticeably warmer than arms
  Abdomen: atraumatic, distended, tender R & L upper quadrants when palpated
  Legs: atraumatic, weak pedal pulses bilaterally

• Absence of rashes, edema, or any other abnormality
Case 1: 65 y/o with SOB

How would you begin treatment?

What diagnostic tests would you do?
Case 1: 65 y/o with SOB

- How would you begin treatment?
- BLS
  - Oxygen by NRM
  - IV with NS
  - Monitor

Diagnostic Tools: BGL 430 and SaO2 84%
Monitor and EtCO2
Monitor and EtCO2

What is his cardiac rhythm?

His EtCO2 is 54 – now what?
Case 1: 65 y/o with SOB

• **En Route**
  - CPAP with in-line albuterol begun
  - IV with 500 ml administered
  - Repeat VS: P 86, R 18, BP 126/78

• **On Arrival**
  - Continued fluid administration
  - Reassessed LS, DC’d CPAP, continuous albuterol by nebulizer
  - Labs and CXR
Case 1: 65 y/o with SOB

CXR showed pneumonia in R middle lobe
WBC 22,000, negative for bacteremia, IV antibiotics administered with fluids
Admitted to ICU for pneumonia, dehydration and adjustment of blood glucose levels.
Dismissed 4 days later.
Points to Take Home

• Pneumonia is very common
  – 6th leading cause of death

• Sore throats are not always benign
  – Most of us who get sore throats, then a “chest cold”, probably have bronchitis, a few get pneumonia

• Prevention is the best medicine
  – Elevate the head of the bed if you have a sore throat
  – Drink plenty of fluids and STAY HOME
  – Wash your hands!

• People who get pneumonia are very sick
  – Dehydration and thick mucous are the problem
  – Fluid, bronchodilators, and CPAP are the best tx options
  – Sepsis is a logical consequence of delayed treatment