

Emergency Medicine/Urgent Care Small Group Activity

Curriculum for Antimicrobial Stewardship

Objectives:

At the completion of this small group activity, the learner should be able to:

1. Describe the appropriate treatment of community-acquired pneumonia
2. Describe the appropriate treatment of hospital-acquired pneumonia
3. Locate pneumonia treatment guidelines and apply to a clinical case scenario
4. Describe the appropriate use of antibiotics in the treatment of COPD exacerbation
5. Distinguish respiratory colonization from infection

Case Scenario #1: Ms. Reynolds is a 22-year-old college student. She presents to the campus acute care clinic with a 5-day history of malaise, fever and productive cough. She is otherwise healthy, has no known allergies and is not on any medications. On physical examination, the patient has a temperature of 101.9°F, blood pressure of 96/64 mmHg, pulse of 105, respiratory rate of 22 and oxygen saturation of 95% on room air. She has râles, dullness to percussion and increased resonance over her right lung base. A chest x-ray reveals a right lower lobe consolidation. What clinical condition does this patient have? How would you manage this patient? Would you prescribe antibiotics, if so, which one(s) and for how long?

Case Scenario #2: Mr. Adams is a 21-year-old college student who presents to the campus acute care clinic with a 3-day history of malaise, sore throat, fever, nasal congestion, post-nasal drainage and productive cough. On physical examination, the patient has a temperature of 100.1°F, blood pressure of 98/72 mmHg, pulse of 100, respiratory rate of 16 and oxygen saturation of 97% on room air. His nasal turbinates are erythematous and swollen bilaterally, his oropharynx is erythematous without exudates, his lung exam is benign. He smokes 1 pack of cigarettes per day. Should antibiotics be prescribed for this patient? What clinical parameters would prompt you to consider antibiotics?

Case Scenario #3: You are in the Emergency Department seeing Mr. Jeffries, an 83-year-old male who was discharged to a ventilator-weaning facility 2 days ago after a 3-week hospitalization for a cerebrovascular accident. The patient is not able to provide a history, but has a fever, cough, purulent respiratory secretions and increased ventilator requirements. His physical examination is remarkable for a temperature 101.1°F and scattered rhonchi throughout bilateral lung fields. His white blood cell count is 16,000 cells/mm³ and a chest x-ray reveals a left upper lobe consolidation. What clinical condition does this patient have? What antibiotic regimen would you start him on?

Case Scenario #4: Ms. Grey is a 72-year-old female with a history of Chronic Obstructive Pulmonary Disease (COPD) who presents to the Emergency Department with a 3-day history of cough, wheezing and shortness of breath. She denies fevers or chills. She has not noticed any change in her sputum production. The patient states that she ran out of her inhalers 1 week ago. Physical examination is remarkable for mild tachypnea, an increased anterior-posterior diameter of her chest, decreased breath sounds bilaterally with scattered wheezes. A chest x-ray reveals no acute cardiopulmonary disease. Your attending does not feel the patient needs to be admitted to the hospital. In addition to refilling her inhalers and giving her a short steroid taper, your attending asks you if you would like to give the patient a prescription for antibiotics. How do you reply? Would this change if the patient warranted inpatient hospitalization?

Case Scenario #5: You are in the Emergency Department seeing Mr. Best, a 53-year-old quadriplegic male who is ventilator-dependent after a c-spine injury. The patient had a fever to 102.3°F at his nursing facility. He is accompanied by medical records which show sputum culture results from one week ago. At that time, the patient grew out a pan-resistant strain of *Pseudomonas aeruginosa*. The patient has not been treated with antibiotics for this. He is normotensive. A chest x-ray is performed and is unremarkable. His white blood cell count is 8,300 cells/mm³. In addition to obtaining blood cultures and urine cultures, your attending asks if you would like to initiate antibiotic treatment to target the patient's sputum culture results. What is your reply?

Resources:

- Mandell LA, Wunderink RG, Anzueto A, Bartlett JG, Campbell GD, Dean NC, Dowell SF, File TM, Musher DM, Niederman MS, Torres A, Whitney CG. Community-Acquired Pneumonia in Adults: Guidelines for Management. *Clinical Infectious Diseases* 2007;44:S27–S72. Also available at: www.idsociety.org
- Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated Pneumonia. *American Journal of Respiratory and Critical Care Medicine* 2005; 171:388–416. Also available at: www.idsociety.org
- Rothberg MB, Pekow PS, Lahti M, Brody O, Skiest DJ, Lindenauer PK. Antibiotic Therapy and Treatment Failure in Patients Hospitalized for Acute Exacerbations of Chronic Obstructive Pulmonary Disease. *JAMA* 2010;303(20):2035-2042.
- Gonzales R, Bartlett JG, Besser RE, Cooper RJ, Hickner JM, Hoffman JR, Sande MA. Principles of Appropriate Antibiotic Use for Treatment of Uncomplicated Acute Bronchitis: Background. *Annals of Internal Medicine*. 2001;134:521-529.
- Schurink CA, Van Nieuwenhoven CA, Jacobs JA, Rozenberg-Arska M, Joore HC, Buskens E, Hoepelman AI, Bonten MJ. Clinical pulmonary infection score for ventilator-associated pneumonia: accuracy and inter-observer variability. *Intensive Care Medicine* 2004;30(2):217-24.