EMERGING INFECTIONS

Date: Tuesday, August 21, 2018 – 10:30AM am


KEY CONCEPTS AND LEARNING OBJECTIVES:

A. EDUCATIONAL GOALS

After completing the assigned readings and attending the lecture, you will understand some of the broad reasons why new bacterial diseases are emerging now and how this may affect treatment in the future. You will understand the significance of antibiotic resistance and how you can help to reduce the appearance of resistant organisms. You will also appreciate the role that the pharmaceutical industry plays in this process.

B. EDUCATIONAL OBJECTIVES

1. Students will be able to define the term "emerging pathogen" and provide specific examples.

2. Students will be able to describe the history of the appearance of antimicrobial resistance and its causes. Specifically, they will be able to list societal and ecological causes as well as describe the evolutionary forces driving antibiotic resistance. Students will be able to describe the evolutionary forces at a conceptual level as well as describe in specific terms how misapplication of drugs facilitates evolution of antibiotic resistance.

3. Students will be able to describe how the specific features of P. aeruginosa infection in a CF lung can lead to rapid evolution of resistance.

4. Students will understand the impact of multidrug efflux pumps on antimicrobial treatment and why these pumps appear so often when antibiotic resistance evolves.

5. Students will be aware of multiple ways in which the physician can reduce the danger of emerging infections, including especially proper use of antibiotics and patient education.

6. Students will be able to describe the general approaches (old and new) to antibiotic drug discovery including the "attack intrinsic resistance" approach.
CONTENT SUMMARY

I. The problem: resistant bacteria

II. Patterns of emergence of resistance

III. Causes of resistance
   1. Why are we seeing emerging pathogens now?
   2. Mechanisms of resistance acquisition

IV. Solutions
   1. The physician
   2. Public policy
   3. The pharmaceutical/biotech industry