Microbiology Case Studies Human Diseases: An Introduction to Differential Diagnosis

During the final unit of this microbiology course, you will be engaging in active learning. Rather than listening to lecture and taking notes, you will be placed into groups and as a group you will diagnose various human diseases using a technique called differential diagnosis. This process allows medical professionals to "rule out" diseases and make a probable diagnosis when a patient presents the signs and symptoms indicative of a certain disease. In this way, you will be using the information you have learned throughout the semester to problem solve and diagnosis patients. Rather than spending time learning to memorize a list of diseases and their characteristics, you will learn how to determine the etiology, diagnosis, treatment and prognosis for diseases that some of you may encounter in your career, because you'll have learned how to find the relevant information needed to answer these questions.

You can expect to have between three to four case studies for each of the chapters listed in your course syllabus (chapters 21–26), and your responsibilities are as follows:

You are encouraged to work in your groups on this assignment, but it is not mandatory. However, your final exam will be based heavily on this material. If you miss classes or are not actively participating in the case studies, it will be reflected in your grade, not that of your group.

- 1. Prior to the corresponding lecture period, you should have read the chapter and taken general notes the diseases listed in your textbook. At the beginning of each lecture period, I will introduce the body systems you will be working with on that day.
- 2. Each case study packet will be emailed to you the day before it is assigned. You are responsible for downloading/printing the material and bringing it to class with you.
 - Figures demonstrating microscopic organism morphology are presented with many of the cases, as are key radiographic, laboratory, clinical, or pathologic findings. They provide important clues in helping you determine the etiology of the patient's infection. In some cases, the figures are in color, so it is best to at least note the colorations if you are printing in black and white.
 - A list of organisms is provided with each case study packet. Consider ONLY those organisms when making a diagnosis.
 - A table of normal values is provided. If you are unsure whether a specific laboratory or vital sign finding is abnormal, consult this table.
 - A glossary of medical terms which are frequently used in the cases is provided on WebCT. If you do not understand a specific medical term, consult the glossary. If the term is not there, you will have to consult a medical dictionary or other medical texts.
- 3. Your final exam will include information from the diseases covered in these case studies, as well as the information on body systems covered in the introductory lectures to Chapters 21-26.

Table of Normal Values

Albumin: 3.5–5.0 g/dl Alkaline phosphatase: 39–117 U/liter Blood pressure: 90–150/50–90; lower for infants and children Body temperature: 37°C CD4 count: 430–1,185/µl (adults) CSF glucose: 50–75 mg/dl CSF protein: 15–45 mg/dl CSF total nucleated cells: 0–3/µl Eosinophils: 40–400/µl Glucose (serum, fasting): 65–110 mg/dl Heart rate: 60–100/min; higher for infants and children Lactate dehydrogenase: 108–215 U/liter Neutrophils: 2,000–7,500/µl Platelets: 150,000–400,000/µl pO_{2:} 85–100 mm Hg Respiratory rate: 9–18/min; higher for infants and children Total bilirubin: 0–1.2 mg/dl WBC: 4,000-12,000/µl

	Male	Female
Hemoglobin	13.4–17.4 g/dl	12.3–15.7 g/dl
Hematocrit	40-54%	38–47%
Erythrocyte sedimentation rate	0–20 mm/h	0–30 mm/h

	Male	Female	Newborn	Age 1
ALT	10–52 U/liter	7–30 U/liter		
AST	11–40 U/liter	9–26 U/liter	35–140 U/liter	20–60 U/liter
creatinine	0.8–1.5 mg/dl	0.6–1.2 mg/dl	Lower for children	
creatinine kinase	61–200 U/liter	30–125 U/liter		