Case Study: Anti-infective Agents

Introduction:
Many people are affected by infections every day. This case study will allow the learner to evaluate potential client teaching and general drug considerations when using medications like antibiotics that treat infections.

Case Study: Phyllis Martin

History & Physical:
You are a travel nurse who has been asked to work in a very busy rural urgent care clinic. Mrs. Martin, your first patient of the day, arrives with complaints of sinus congestion, headache, thick green nasal discharge, and increasing ear pressure. Her upper teeth started to ache about one week ago. She denies having a sore throat, fever, or cough. Mrs. Martin is in her third trimester of pregnancy and does not want to be ill when she delivers. Mrs. Martin is evaluated by the physician assistant on duty and diagnosed with acute frontal/maxillary sinusitis secondary to recent upper respiratory infection and seasonal allergies. You are asked to administer the first dose of an antibiotic before Mrs. Martin leaves the clinic.

You review Mrs. Martin's record in preparation for drug administration.

PATIENT HISTORY: Martin, Phyllis J.  MR# 085321  DOB: 2-17-1976  PCP: David Lutz, MD

Drug allergies: Penicillin VK (anaphylaxis), Nitrofurantoin (upset stomach)

Current drugs: Zyrtec 10 mg daily for seasonal allergies

History of Primary Illness: 28-year-old, pregnant female in her third trimester of pregnancy who came to the urgent care clinic today after developing facial discomfort 4 weeks after having an upper respiratory infection. She is complaining of sinus congestion, headache, thick green nasal discharge, ear pressure, and a sporadic cough. She has noticed a bad taste in her mouth and bad breath. Symptoms seemed to improve for a time and then worsened. In addition, her upper teeth started to ache about 1 week ago. She denies having a sore throat, fever, or cough and has done nothing to self-treat her symptoms. Her pregnancy has been progressing nicely.

Past Health History: Upper respiratory infections: 3-4 per year; usually do not impair ADLs. Seasonal allergies: most often a problem during the spring and early summer. Gravida 1; para 0.

Social History: Married, 3 years; husband, Mark, teaches math at the local community college. Smoker: 6 pack years; Alcohol intake: 3-4 drinks/year; Pets: 1 longhaired dog and 2 cats; Teaches advanced placement English at a rural middle school; works at local garden center during the summers
Family History: Mother, living, age 60, seasonal allergies, asthma; Father, living, age 64, coronary artery disease, hypertension; Brother, living, age 30, alcohol abuse, gout

Physical Exam: T 99.8°F P 88 bpm R 20 breaths/min BP 130/89; Skin warm and dry.
Brief neuro exam is nonfocal. Nasal shows mucosa, with purulent green nasal discharge present.
Sinuses: Tender over maxillary and frontal sinuses. Fluid levels visible with transillumination. Nodes: No cervical or supraclavicular lymphadenopathy. Respiratory: Breath sounds clear to auscultation all lobes. No E>A changes or fremitus. Sinus opacities seen on standard radiography.

Assessment: Acute frontal/maxillary sinusitis secondary to recent URI and seasonal allergies.

Plan: 8-10 glasses of water daily. Steam inhalation 20-30 minutes followed by saline nasal irrigations TID.
Sleep with HOB elevated. Minimize intake of alcohol and caffeine. Fluticasone nasal spray: 2 sprays in each nostril after saline irrigations. Augmentin 875 mg/125 mg every 12 hours for 10 days. First dose before leaving clinic. OTC pseudoephedrine HCL 60 mg every 4-6 hours; not to exceed 4 doses in 24 hours. Acetaminophen 500 mg, 2 tablets by mouth every 4 hours as needed for headache. Return to clinic if no improvement after antibiotic therapy is completed or symptoms worsen.

Provider: Jerry Johnston, ANP

**Treatment Options**

You begin preparation for administration by reviewing the chart. You find that Mrs. Martin has declared an allergy to penicillin and nitrofurantoin. You clarify with Mrs. Martin that she has no other drug or food allergies and then return to the drug room to prepare the medication.

As you open the drug cupboard, you notice all of the drugs are supplied in stock bottles and identified only by generic names. Four different antibiotics are in stock:

- amoxicillin/clavulanate
- cephalexin
- azithromycin
- trimethoprim/sulfamethoxazole

Upon reviewing the drugs in the drug cabinet, you find that indeed one is the drug prescribed, Augmentin. The generic name is amoxicillin/clavulanate. But you remember that Mrs. Martin is allergic to penicillin. You go to the physician's assistant to report that Mrs. Martin has an allergy to penicillin. He instructs you to give the drug regardless, stating that Augmentin and penicillin "are not the same drug."

You discuss Mrs. Martin's drug allergy with the physician's assistant, noting her penicillin allergy, and ask that another drug be prescribed.

Recognizing the error in his original drug order for amoxicillin/clavulanate, the physician's assistant changes Mrs. Martin's prescription to azithromycin, and you prepare the drug for administration. While doing so, you note that there are no patient teaching materials available for azithromycin, so you will need to teach Mrs. Martin about the drug.