The Immune System

Prior to administration:
- Obtain a complete health history including allergies, drug history, and possible drug interactions.
- Obtain specimens for culture and sensitivity before initiating therapy.
- Perform infection-focused physical examination including vital signs, WBC count, and sedimentation rate.

Potential Nursing Diagnoses

Infection
Injury, Risk for
Knowledge, Deficient, related to disease process, transmission, and drug therapy
Noncompliance, related to therapeutic regimen

Planning: Client Goals and Expected Outcomes

The client will:
- Report reduction in symptoms related to the diagnosed infection and have negative results for laboratory and diagnostic tests for the presenting infection.
- Demonstrate an understanding of the drug’s action by accurately describing drug side effects and precautions.
- Immediately report rash, shortness of breath, swelling, fever, stomatitis, loose stools, vaginal discharge, or cough.
- Complete the full course of antibiotic therapy and comply with follow-up care.

Implementation

Interventions and (Rationales)

- Monitor vital signs and symptoms of infection to determine antibacterial effectiveness. (Another drug or different dosage may be required.)
- Monitor for hypersensitivity reaction. (Immediate hypersensitivity reaction may occur within 2 to 30 minutes; accelerated occurs in 1 to 72 hours, and delayed after 72 hours.)
- Monitor for severe diarrhea. (The condition may occur owing to superinfection or the possible adverse effect of antibiotic-associated pseudomembranous colitis, or AAPMC.)
- Administer drug around the clock. (Steady administration maintains effective blood levels.)
- Monitor for superinfection, especially in elderly, debilitated, or immunosuppressed clients. (Increased risk for superinfections is due to elimination of normal flora.)
- Monitor intake of OTC products such as antacids, calcium supplements, iron products, and laxatives containing magnesium. (These products interfere with absorption of many antibiotics.)

Client Education/Discharge Planning

- Instruct client to notify healthcare provider if symptoms persist or worsen.
- Instruct client to discontinue the medication and inform healthcare provider if symptoms of hypersensitivity reaction develop, such as wheezing; shortness of breath; swelling of face, tongue, or hands; and itching or rash.
- Instruct client to:
  - Take medication on schedule.
  - Complete the entire prescription even if feeling better, to prevent development of resistant bacteria.
  - Instruct client to report signs and symptoms of superinfection such as fever; black hairy tongue; stomatitis; loose, foul-smelling stools; vaginal discharge; or cough.

- Advise client to consult with healthcare provider before using OTC medications or herbal products.

TABLE 34.9 Selected Miscellaneous Antibacterials (Continued)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route and Adult Dose (max dose where indicated)</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>telithromycin (Ketek)</td>
<td>PO; 800 mg/day</td>
<td>Nausea, diarrhea, dizziness, headache</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Superinfections, pseudomembranous colitis, hepatotoxicity, dysrhythmias</td>
</tr>
<tr>
<td>vancomycin (Vancocin, others)</td>
<td>IV; 500 mg qid or 1 g bid</td>
<td>Nausea, vomiting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anaphylaxis, superinfections, nephrotoxicity, ototoxicity, red-man syndrome</td>
</tr>
</tbody>
</table>

Italics indicate common adverse effects; underlining indicates serious adverse effects.
**NURSING PROCESS FOCUS**  Clients Receiving Antibacterial Therapy (Continued)

<table>
<thead>
<tr>
<th>Interventions and (Rationales)</th>
<th>Client Education/Discharge Planning</th>
</tr>
</thead>
</table>
| • Monitor for photosensitivity. (Tetracyclines, fluoroquinolones, and sulfonamides can increase client’s sensitivity to ultraviolet light and increase risk of sunburn.) | Encourage client to:  
• Avoid direct exposure to sunlight during and after therapy.  
• Wear protective clothing, sunglasses, and sunscreen when in the sun.  |
| • Determine the interactions of the prescribed antibiotics with various foods and beverages. (Certain food and beverages will interfere with the medication’s effectiveness.) | Instruct client regarding foods and beverages that should be avoided with specific antibiotic therapies, including:  
• No acidic fruit juices with penicillins.  
• No alcohol intake with cephalosporins.  
• No dairy/calcium products with tetracyclines.  |
| • Monitor IV site for signs and symptoms of tissue irritation, severe pain, and extravasation. (These are signs of infiltration.) | Instruct client to report pain or other symptoms of discomfort immediately during intravenous infusion.  |
| • Monitor for side effects specific to various antibiotic therapies. (See “Nursing Considerations” for each antibiotic classification in this chapter.) | Instruct client to report side effects specific to the prescribed antibiotic therapy.  |
| • Monitor renal function such as intake and output ratios and urine color and consistency. Monitor lab work including serum creatinine and BUN. (Some antibiotics such as the aminoglycosides are nephrotoxic.) | Explain the purpose of required laboratory tests and scheduled follow-up with healthcare provider.  
• Instruct client to increase fluid intake to 2,000 to 3,000 ml/day.  |
| • Monitor for symptoms of ototoxicity. (Some antibiotics, such as the aminoglycosides and vancomycin, may cause vestibular or auditory nerve damage.) | Instruct client to notify healthcare provider of:  
• Changes in hearing, ringing in ears, or full feeling in the ears.  
• Nausea and vomiting with motion, ataxia, nystagmus, or dizziness.  |
| • Monitor client for compliance with antibiotic therapy. (Adhering to prescribing guidelines increase drug’s effectiveness.) | Instruct client about the importance of:  
• Completing the prescription as ordered.  
• Follow-up care after antibiotic therapy is completed.  |

**Implementation**

**Evaluation of Outcome Criteria**

Evaluate the effectiveness of drug therapy by confirming that client goals and expected outcomes have been met (see “Planning”).

• The client reports a reduction in symptoms and has improved laboratory results.
• The client demonstrates an understanding of the drug’s action by accurately describing drug side effects and actions.
• The client accurately states signs and symptoms to be reported to the healthcare provider.
• The client completes the full course of therapy and complies with follow-up care.

See Tables 34.2 through 34.9 for lists of drugs to which these nursing actions apply.

Metronidazole (Flagyl) is another older anti-infective that is effective against many anaerobes that are common causes of abscesses, gangrene, diabetic skin ulcers, and deep-wound infections. A relatively new use is for the treatment of *H. pylori* infections of the stomach associated with peptic ulcer disease (see Chapter 40). Metronidazole is one of only a few drugs that have dual activity against both bacteria and multicellular parasites; it is a prototype for the antiprotozoal medications in Chapter 35. When metronidazole is given orally, side effects are generally minor, the most common being nausea, dry mouth, and headache. High doses can produce neurotoxicity.

Quinupristin/dalfopristin (Synercid) is a combination drug that is the first in a new class of antibiotics called streptogramins. This drug is primarily indicated for treatment of vancomycin-resistant *Enterococcus faecium* infections. It is contraindicated in clients with hypersensitivity to the drug and should be used cautiously in clients with renal or hepatic dysfunction. Hepatotoxicity is the most serious adverse effect of this drug. The client should report significant side effects to the healthcare provider immediately, including irritation, pain, or burning at the IV infusion site, joint and muscle pain, rash, diarrhea, or vomiting.

Linezolid (Zyvox) is significant as the first drug in a new class of antibiotics called the oxazolidinones. This drug is as effective as vancomycin against methicillin-resistant *S. aureus* (MRSA) infections. Linezolid is administered intravenously or orally. Most clients can be converted from IV to oral routes in about 5 days. Linezolid is contraindicated in clients with hypersensitivity to the drug and in pregnancy, and should be used with caution in clients who have hypertension. Cautious use is also necessary in clients taking MAOIs or serotonin reuptake inhibitors, because the drugs can interact, causing a hypertensive crisis. Linezolid can cause thrombocytopenia.