activity against *Pseudomonas aeruginosa* and *Acinetobacter baumannii*.

Ertapenem shares the adverse effect profile of the other carbapenems. Lidocaine is also used in preparation of the solution for IM injection, and the same cautions should be used as with imipenem.

MONOBACTAM

Aztreonam (Azactam) is active against gram-negative bacteria, including Enterobacteriaceae and *P. aeruginosa*, and many strains that are resistant to multiple antibiotics. Activity against gram-negative bacteria is similar to that of the aminoglycosides, but the drug does not cause kidney damage or hearing loss. Aztreonam is stable in the presence of beta-lactamase enzymes. Because gram-positive and anaerobic bacteria are resistant to aztreonam, the drug's ability to preserve normal gram-positive and anaerobic flora may be an advantage over most other antimicrobial agents.

Indications for use include infections of the urinary tract, lower respiratory tract, skin and skin structures, as well as intra-abdominal and gynecologic infections and septicemia. Adverse effects are similar to those for penicillin, including possible hypersensitivity reactions.

Nursing Process

General aspects of the nursing process in antimicrobial drug therapy, as described in Chapter 33, apply to the client receiving penicillins, cephalosporins, aztreonam, and carbapenems. In this chapter, only those aspects related specifically to these drugs are included.

Assessment

With penicillins, ask clients whether they have ever taken a penicillin and, if so, whether they ever had a skin rash, hives, swelling, or difficulty breathing associated with the drug. With cephalosporins, ask clients if they have ever taken one of the drugs, as far as they know, and whether they ever had a severe reaction to penicillin. Naming a few cephalosporins (eg, Ceclor, Keflex, Rocephin, Suprax) may help the client identify previous usage.

Nursing Diagnoses

- Risk for Injury: Hypersensitivity reactions with penicillins or cephalosporins
- Risk for Injury: Renal impairment with cephalosporins
- Deficient Knowledge: Correct home care administration and usage of oral beta-lactams

Planning/Goals

The client will:

- Take oral beta-lactam antibacterials as directed
- Receive parenteral beta-lactam drugs by appropriate techniques to minimize tissue irritation
- Receive prompt and appropriate treatment if hypersensitivity reactions occur

Interventions

- After giving a penicillin parenterally in an outpatient setting, keep the client in the area for at least 30 minutes. Anaphylactic reactions are more likely to occur with parenteral than oral use and within a few minutes after injection.
- In any client care setting, keep emergency equipment and supplies readily available.
- Monitor client response to beta-lactam drugs.
- Monitor dosages of beta-lactam drugs for clients with impaired renal function.

Evaluation

- Observe for improvement in signs of infection.
- Interview and observe for adverse drug effects.

PRINCIPLES OF THERAPY

Guidelines Related to Hypersensitivity to Penicillins

1. Before giving the initial dose of any penicillin preparation, ask the client if he or she has ever taken penicillin and, if so, whether an allergic reaction occurred. Penicillin is the most common cause of drug-induced anaphylaxis, a life-threatening hypersensitivity reaction, and a person known to be hypersensitive should be given another type of antibiotic.
2. In the rare instance in which penicillin is considered essential, a skin test may be helpful in assessing hypersensitivity. Benzylpenicilloyl polylysine (Pre-Pen) or a dilute solution of the penicillin to be administered (10,000 units/mL) may be applied topically to a skin scratch made with a sterile needle. If the scratch test is negative (no urticaria, erythema, or pruritus), the preparation may be injected intradermally. Allergic reactions, including fatal anaphylactic shock, have occurred with skin tests and after negative skin tests. If the scratch test is positive, desensitization can be accomplished by giving gradually increasing doses of penicillin.
3. Because anaphylactic shock may occur with administration of the penicillins, especially by parenteral routes, emergency drugs and equipment must be readily available. Treatment may require parenteral epinephrine, oxygen, and insertion of an endotracheal or tracheostomy tube if laryngeal edema occurs.

Drug Selection

Choice of a beta-lactam antibacterial depends on the organism causing the infection, severity of the infection, and other factors. With penicillins, penicillin G or amoxicillin is the drug of choice in many infections; an antipseudomonal peni-