chapter 18

Nonnarcotic Analgesics: Nonsteroidal Anti-inflammatory Drugs (NSAIDs)

Key Terms

cyclooxygenase
cyclooxygenase-1 (COX-1)
cyclooxygenase-2 (COX-2)
prostaglandin

Chapter Objectives

On completion of this chapter, the student will:

- Discuss the types, uses, general drug actions, common adverse reactions, contraindications, precautions, and interactions of the NSAIDs.
- Discuss important preadministration and ongoing assessment activities the nurse should perform on the patient taking the NSAIDs.
- List some nursing diagnoses particular to a patient taking an NSAID.
- Discuss the ways to promote an optimal response to therapy, how to manage common adverse reactions, and important points to keep in mind when educating patients about the use of the NSAIDs.

The nonsteroidal anti-inflammatory drug (NSAID) group contains a large number of drugs. There are more than 70 drugs in this category, with new drugs continually becoming available. Some texts include the salicylates in the NSAID group, whereas others do not. Although the chemical and physiologic effects are similar, this text discusses the salicylates in a separate chapter (see Chap. 17). The NSAIDs are another type of nonnarcotic analgesic. This chapter covers general information on the NSAID group and discusses four of the more commonly used NSAIDs specifically. The four NSAIDs discussed in this chapter are celecoxib (Celebrex), ibuprofen (Advil), naproxen (Naprosyn), and rofecoxib (Vioxx). Other NSAIDs are listed in the Summary Drug Table: Nonsteroidal Anti-inflammatory Drugs. Like the salicylates, the NSAIDs have anti-inflammatory, antipyretic, and analgesic effects.

ACTIONS

The NSAIDs are so named because they do not belong to the steroid group of drugs and thus do not possess the adverse reactions associated with the steroids (see Chap. 50), and yet they have anti-inflammatory effects. In addition, NSAIDs have analgesic and antipyretic properties. Although the exact mechanisms of actions are not known, the NSAIDs are thought to act by inhibiting **prostaglandin** (a group of naturally occurring fatty acids that act within the body to regulate acid secretion of the stomach, regulate body temperature and platelet aggregation, and control inflammation) synthesis by inhibiting the action of the enzyme **cyclooxygenase,** the enzyme responsible for prostaglandin synthesis. The NSAIDs act to inhibit the activity of two related enzymes:

1. **cycloo1xygenase-1 (COX-1),** the enzyme that helps to maintain the stomach lining; and
2. **cyclooxygenase-2 (COX-2),** the enzyme that triggers pain and inflammation.

The anti-inflammatory effects of the NSAIDs are carried out by inhibition of COX-2. The gastrointestinal adverse reactions are caused by inhibition of COX-1. The newer NSAIDs (celecoxib and rofecoxib) appear to work by specifically inhibiting the COX-2 enzyme, without inhibiting the COX-1 enzyme. Celecoxib and rofecoxib relieve pain and inflammation with less potential for gastrointestinal adverse

SUMMARY DRUG TABLE NONSTEROIDAL ANTI-INFLAMMATORY DRUGS

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
celecoxib *sell-ah-cocx'-ib*	Celebrex	Acute and long-term treatment of the signs and symptoms of rheumatoid arthritis and osteoarthritis; reduction of the number of colorectal polyps in familial adenomatous polyposis	Headache, dizziness, somnolence, insomnia, dyspepsia, rash, fatigue, ophthalmic changes	100–200 mg PO BID as needed
diclofenac sodium *dye-kloe'-fen-ak*	Voltaren, *generic*	Signs and symptoms of rheumatoid arthritis and osteoarthritis, ankylosing spondylitis	Nausea, gastric or duodenal ulcer formation, gastrointestinal (GI) bleeding	Osteoarthritis: 100–150 mg/d PO in divided doses; rheumatoid arthritis: 150–200 mg/d PO in divided doses; ankylosing spondylitis: 100–125 mg/d PO in divided doses
diclofenac potassium	Cataflam, *generic*	Signs and symptoms of rheumatoid arthritis and osteoarthritis, ankylosing spondylitis	Nausea, gastric or duodenal ulcer formation, gastrointestinal (GI) bleeding	Osteoarthritis: 50 mg PO BID–TID Rheumatoid arthritis: 50 mg PO BID–TID Ankylosing spondylitis: 25 mg PO QID with 25 mg hs PRN
etodolac *ee-toe-doe'-lak*	Lodine, Lodine XL, *generic*	Osteoarthritis, mild to moderate pain, rheumatoid arthritis	Dizziness, tiredness, nausea, dyspepsia, rash, constipation, bleeding, diarrhea	Osteoarthritis, rheumatoid arthritis: Maintenance, 600–1200 mg/d in divided doses. Maximum dose 1200 mg/d
fenoprofen calcium *fen-oh-proe'-fen*	Nalfon, *generic*	Signs and symptoms of rheumatoid arthritis and osteoarthritis, long-term management of mild to moderate pain	Dizziness, visual disturbances, jaundice, nausea, vomiting, peptic ulcer	Rheumatoid arthritis and osteoarthritis: 300–600 mg PO TID, QID: pain: 200 mg PO q4–8h
flurbiprofen *flure-bi'-proe-fen*	Ansaid, *generic*	Signs and symptoms of rheumatoid arthritis and osteoarthritis	Nausea, vomiting, diarrhea, constipation, gastric or duodenal ulcer formation, GI bleeding, headache	Up to 300 mg/d PO in divided doses
ibuprofen *eye-byoo'-proe-fen*	Advil, Genpril, Nuprin, Motrin, *generic*	Mild to moderate pain, rheumatoid disorders, painful dysmenorrhea	Nausea, dizziness, somnolence, dyspepsia, gastric or duodenal ulcer formation, GI bleeding, headache	Arthritis disorders: 1.2–3.2 g/d PO in divided doses; pain: 400 mg PO q4–6h; dysmenorrhea: 400 mg PO q4h
indomethacin *in-doe-meth'-a-sin*	Indocin, *generic*	Rheumatoid arthritis, ankylosing spondylitis, moderate to severe osteoarthritis, acute painful shoulder, acute gouty arthritis	Nausea, constipation, gastric or duodenal ulcer formation, GI bleeding, hematologic changes	Anti-inflammatory and analgesic: 25–50 mg PO BID–TID not to exceed 200 mg/d Acute painful shoulder: 75–150 mg/d PO in 3–4 divided doses
ketoprofen *kee-toe-proe'-fen*	Orudis, Oruvail, *generic*	Mild to moderate pain, rheumatoid disorders, painful dysmenorrhea	Dizziness, visual disturbances, nausea, constipation, vomiting, diarrhea, gastric or duodenal ulcer formation, GI bleeding	Arthritis: 150–300 mg/d in divided doses; Primary dysmenorrhea: 25–50 mg q6–8h PRN
ketorolac *kee'-toe-role-ak*	Toradol, *generic*	Short-term management of pain; osteoarthritis, rheumatoid arthritis	Dyspepsia, nausea, GI pain, pain at injection site, drowsiness	30–60 mg IM initially, followed by half the initial dose q6h PRN; 10 mg q4–6h PO, PRN; maximum dose, 40 mg/d

SUMMARY DRUG TABLE NONSTEROIDAL ANTI-INFLAMMATORY DRUGS *(Continued)*

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
meclofenamate *me-kloe-fen-am'-ate*	*generic*	Rheumatoid arthritis; mild to moderate pain; dysmenorrhea	Headache, dizziness, tiredness, insomnia, nausea, dyspepsia, constipation, rash, bleeding	Rheumatoid arthritis: 200–400 mg/d PO in 3–4 doses; pain: 50 mg q4–6h, maximum dose, 400 mg/d; dysmenorrhea: 100 mg PO TID
mefenamic acid *me-fe-nam'-ik*	Ponstel	Moderate pain that does not exceed 1 wk	Dizziness, tiredness, nausea, dyspepsia, rash constipation, bleeding, diarrhea	500 mg followed by 250 mg q6h PO PRN, maximum dose, 1wk of therapy
meloxicam *mel-ox'-i-kam*	Mobic	Osteoarthritis	Nausea, dyspepsia, GI pain, headache, dizziness, somnolence, insomnia, rash	7.5–15 mg PO QD
nabumetone *nah-byew'-meh-tone*	Relafen	Rheumatoid arthritis and osteoarthritis	Dizziness, tiredness, nausea, dyspepsia, rash, constipation, bleeding, diarrhea	1000–2000 mg/d PO
naproxen *na-prox'-en*	Aleve, Anaprox, Naprosyn, Naprelan, *generic*	Management of inflammatory disorders including rheumatoid arthritis and osteoarthritis, management of mild to moderate pain, treatment of dysmenorrhea	Dizziness, visual disturbances, headache, nausea, vomiting, gastric or duodenal ulcer formation, GI bleeding	Pain, primary dysmenorrhea: 500 mg initially then 250 mg q6–8h; arthritic disorders: 250–500 mg PO BID
oxaprozin *oks-a-pro'-zin*	Daypro	Rheumatoid arthritis and osteoarthritis	Dizziness, tiredness, nausea, dyspepsia, rash, constipation, bleeding, diarrhea	1200 mg PO QD
piroxicam *peer-ox'-i-kam*	Feldene, *generic*	Mild to moderate pain, rheumatoid arthritis and osteoarthritis	Nausea, vomiting, diarrhea, drowsiness, gastric or duodenal ulcer formation, GI bleeding	20 mg/d PO as a single dose or 10 mg PO BID
rofecoxib *roh-fah-cox'-ib*	Vioxx	Signs and symptoms of osteoarthritis, management of acute pain, primary dysmenorrhea	Same as celecoxib	Osteoarthritis: 12.5 mg or 25 mg/d PO Dysmenorrhea and acute pain: 50 mg PO QD for no more than 5 days
sulindac *sul-in'-dak*	Clinoril, *generic*	Mild to moderate pain, rheumatoid arthritis, ankylosing spondylitis, osteoarthritis, gouty arthritis	Nausea, vomiting, diarrhea, constipation, gastric or duodenal ulcer formation, GI bleeding	150–200 mg PO BID for 1–2 wk, then reduce dose (not to exceed 400 mg/d)
tolmetin sodium *tole'-met-in*	Tolectin	Mild to moderate pain, rheumatoid arthritis and osteoarthritis	Nausea, vomiting, diarrhea, constipation, gastric or duodenal ulcer formation, GI bleeding	400 mg PO TID or BID, not to exceed 2 g/d
valdecoxib *val-dah-cox'-hib*	Bextra	Osteoarthritis, rheumatoid arthritis, primary dysmenorrhea	Headache, nausea, dyspepsia, abdominal pain, anemia	Arthritis 10 mg/d PO; primary dysmenorrhea, 20 mg BID PRN

*The term *generic* indicates the drug is available in generic form.

reactions. The traditional NSAIDs, such as ibuprofen and naproxen, are thought to regulate the pain and inflammation by blocking COX-2. Unlike celecoxib and rofecoxib, these drugs also inhibit COX-1, the enzyme that helps maintain the lining of the stomach. This inhibition of COX-1 causes the unwanted gastrointestinal reactions, such as stomach irritation and ulcers.

USES

The NSAIDs have a variety of uses that vary depending on the drug selected. NSAIDs are used for the following conditions:

- Relief of signs and symptoms of osteoarthritis, rheumatoid arthritis, and other musculoskeletal disorders (see Chap. 19 for more information on these disorders)
- Mild to moderate pain relief
- Primary dysmenorrhea
- Fever reduction

The uses of individual NSAIDs are given in the Summary Drug Table: Nonsteroidal Anti-inflammatory Drugs.

ADVERSE REACTIONS

Many adverse reactions are associated with the use of the NSAIDs. However, many patients take these drugs and experience few, if any, side effects. Some of the adverse reactions associated with the use of these drugs are listed here.

- Gastrointestinal tract—nausea, vomiting, diarrhea, constipation, epigastric pain, indigestion, abdominal distress or discomfort, intestinal ulceration, stomatitis, jaundice, bloating, anorexia, and dry mouth
- Central nervous system—dizziness, anxiety, lightheadedness, vertigo, headache, drowsiness, insomnia, confusion, depression, and psychic disturbances
- Cardiovascular—congestive heart failure, decrease or increase in blood pressure, and cardiac arrhythmias
- Renal—hematuria, cystitis, elevated blood urea nitrogen, polyuria, dysuria, oliguria, and acute renal failure in those with impaired renal function
- Special senses—visual disturbances, blurred or diminished vision, diplopia, swollen or irritated eyes, photophobia, reversible loss of color vision, tinnitus, taste change, and rhinitis
- Hematologic—neutropenia, eosinophilia, leukopenia, pancytopenia, thrombocytopenia, agranulocytosis, and aplastic anemia
- Skin—rash, erythema, irritation, skin eruptions, exfoliative dermatitis, Stevens-Johnson syndrome, ecchymosis, and purpura
- Metabolic/endocrinologic—decreased appetite, weight increase or decrease, hyperglycemia, hypoglycemia, flushing, sweating, menstrual disorders, and vaginal bleeding
- Other—thirst, fever, chills, and vaginitis

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

The NSAIDs are contraindicated in patients with known hypersensitivity. There is a cross-sensitivity to other NSAIDs. Therefore, if a patient is allergic to one NSAID, there is an increased risk of an allergic reaction with any other NSAID. Hypersensitivity to aspirin is a contraindication for all NSAIDs. In general, the NSAIDs are contraindicated during the third trimester of pregnancy and during lactation.

The NSAIDs are used cautiously in patients with bleeding disorders, renal disease, cardiovascular disease, or hepatic impairment and in the elderly. There is an increased risk of ulcer formation in patients older than 65 years. Most NSAIDs are classified as Pregnancy Category B. In general, the NSAIDs are used with extreme caution during pregnancy, especially in large doses or during the third trimester (see above).

The NSAIDs prolong bleeding time and increase the effects of anticoagulants, lithium, cyclosporine, and the hydantoins. These drugs may decrease the effects of diuretics or antihypertensive drugs. Long-term use of the NSAIDs with acetaminophen may increase the risk of renal impairment.

COMMON ADVERSE REACTIONS OF SELECT NSAIDs

Celecoxib

The most common adverse reactions seen with celecoxib include dyspepsia, abdominal pain, diarrhea, nausea, and headache. Like other NSAIDs, celecoxib may compromise renal function. Elevation of aminotransferase levels also occurs.

Ibuprofen

This drug is available to individuals as an over-the-counter drug and may be purchased without a prescription. The drug is used in children with juvenile arthritis and for fever reduction in children 6 months to 12 years. Common adverse reactions seen with ibuprofen include headache, dizziness, somnolence, nausea, dyspepsia, gastrointestinal pain, and rash.

Naproxen

Common adverse reactions seen with naproxen include headache, vertigo (dizziness), somnolence, insomnia, nausea, dyspepsia, gastrointestinal pain, and rash.

Rofecoxib

Common adverse reactions seen with rofecoxib include headache, dizziness, somnolence, insomnia, dyspnea, hemoptysis, and rash.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

Celecoxib

Celecoxib is contraindicated in patients who are allergic to the drug itself, the sulfonamides, other NSAIDs, or aspirin; it also is contraindicated during pregnancy (Category C) and lactation.

The drug is used cautiously in patients with a history of peptic ulcer, individuals older than 60 years, and those taking an anticoagulant or steroids. In rare instances, serious stomach problems such as bleeding can occur without warning. When celecoxib is given with the anticoagulants, there is an increased risk for bleeding.

Ibuprofen

Ibuprofen is contraindicated in individuals who are allergic to the drug or other NSAIDs; those who have hypertension, peptic ulceration, or gastrointestinal bleeding; and during pregnancy (Category B) and lactation. The drug is used cautiously in patients with renal or liver dysfunction. When ibuprofen is used with lithium, there is an increased risk of lithium toxicity. A decreased effect of the diuretic may occur when administered with ibuprofen. When ibuprofen is administered with the beta-adrenergic blocking drugs there is a risk for a decrease in the antihypertensive effect of the beta-adrenergic blocking drug.

Naproxen

Naproxen is contraindicated in patients who are allergic to the drug or other NSAIDs and during pregnancy (Category B) and lactation. The drug is used cautiously in patients with asthma, hypertension, cardiac problems, peptic ulcer disease, and impaired liver or kidney function. Like ibuprofen, naproxen increases the risk of lithium toxicity when the drug is administered with naproxen. When naproxen is administered with the anticoagulants there is an increased risk for bleeding. When naproxen is administered with the antihypertensives, there is a decrease in the antihypertensive effect. Coadministration of naproxen with the diuretics decreases the diuretic effect.

Rofecoxib

Rofecoxib is contraindicated in patients who are allergic to the drug, any of the NSAIDs, or the sulfonamides. The drug is not used during pregnancy (Category C) or lactation. Rofecoxib is used cautiously in patients with impaired renal or hepatic function, in those with a history of gastrointestinal bleeding or peptic ulcer disease, and in patients with congestive heart failure, asthma, or hypertension. Interactions with rofecoxib are similar to those with the other NSAIDs, such as an increased risk of bleeding when taken with anticoagulants and possible risk of lithium toxicity when taken concurrently with lithium.

NURSING PROCESS

The Patient Receiving a Nonsteroidal Anti-inflammatory Drug

ASSESSMENT

Preadministration Assessment

Before administering an NSAID, it is important for the nurse to determine if the patient has any history of allergy to aspirin or any other NSAID. The nurse determines if the patient has a history of gastrointestinal bleeding, hypertension, peptic ulceration, or impaired hepatic or renal function. If so, the nurse notifies the primary health care provider before administering an NSAID.

In addition, before giving an NSAID to a patient, the nurse assesses the type, onset, and location of the pain. It is important to determine if this problem is different in any way from previous episodes of pain or discomfort. If the patient is receiving an NSAID for arthritis, a musculoskeletal disorder, or soft tissue inflammation, the nurse should examine the joints or areas involved. The appearance of the skin over the joint or affected area or any limitation of motion is documented. The

nurse evaluates the patient's ability to carry out activities of daily living. This important information is used to develop a care plan, as well as to evaluate the response to drug therapy.

Ongoing Assessment

During the ongoing assessment, the nurse monitors the patient for relief of pain. If pain recurs it is important to assess its severity, location, and intensity. The nurse monitors the vital signs every 4 hours or more frequently if necessary. Hot, dry, flushed skin and a decrease in urinary output may develop if temperature elevation is prolonged and dehydration occurs. The nurse assesses the joints for a decrease in inflammation and greater mobility. The nurse reports adverse reactions, such as unusual or prolonged bleeding or dark-colored stools, to the primary health care provider.

NURSING DIAGNOSES

Drug-specific nursing diagnoses are highlighted in the Nursing Diagnoses Checklist. Other nursing diagnoses applicable to these drugs are discussed in depth in Chapter 4.

PLANNING

The expected outcomes for the patient depend on the reason for administration of the NSAID but may include an optimal response to drug therapy, which includes relief of pain and fever, management of adverse reactions, and an understanding of and compliance with the prescribed treatment regimen.

IMPLEMENTATION

Promoting an Optimal Response to Therapy

The nurse should give the NSAIDs with food, milk, or antacids. Patients who do not experience a therapeutic response to one NSAID may have such a response to another NSAID. However, several weeks of treatment may be necessary to receive full therapeutic response.

The NSAIDs are prescribed for the pain and inflammation associated with arthritis. Because older adults have a higher incidence of both rheumatoid arthritis and osteoarthritis and may use the NSAID on a long-term basis, they are particularly vulnerable to gastrointestinal bleeding. The nurse should encourage the patient to take the drug with a full glass of water or with food because this may decrease the gastrointestinal effects.

Nursing Diagnoses Checklist

- ✓ **Acute** or **Chronic Pain** related to physical disorder (name of specific disorder)
- ✓ **Impaired Physical Mobility** related to muscle and joint stiffness

Gerontologic Alert

Age appears to increase the possibility of adverse reactions to the NSAIDs. The risk of serious ulcer disease in adults older than 65 years is increased with higher doses of the NSAIDs. Use greater care and begin with reduced dosages in the elderly, increasing the dosage slowly.

Pain and Impaired Physical Mobility

The nurse provides comfort measures to the patient with pain from the limbs or joints affected by the various musculoskeletal disorders. Limbs are supported by proper positioning, in the use of heat or cold, joint rest, and avoidance of joint overuse. Various orthodontic devices, such as splints and braces, may be used to support inflamed joints. The use of braces, splints, and assistive mobility devices such as canes, crutches, and walkers eases pain by limiting movement or stress from weight bearing on painful joints. The nurse may need to assist the patient while ambulating or help the patient when using assistive devices to walk. Patients with osteoarthritis should exhibit an increased range of motion and a reduction in tenderness, pain, stiffness, and swelling.

Monitoring and Managing Adverse Reactions

It is important to observe the patient receiving an NSAID for adverse drug reactions throughout therapy. Because these drugs have many adverse reactions, the nurse notifies the primary health care provider of any complaints the patient may have. Gastrointestinal reactions are the most common and can be severe and sometimes fatal, especially in those prone to upper gastrointestinal disease.

Nursing Alert

The nurse withholds the next dose and notifies the primary health care provider immediately if any gastric symptoms, especially nausea, vomiting, diarrhea, evidence of bleeding (blood in stool, tarry stools), or abdominal pain occurs.

The NSAIDs may cause visual disturbances. The nurse reports any complaints of blurred or diminished vision or changes in color vision to the primary health care provider. Corneal deposits and retinal disturbances may also occur. The primary health care provider may discontinue therapy if ocular changes are noted. Blurred vision may be significant and warrants thorough examination.

Home Care Checklist

USING OVER-THE-COUNTER NONSTEROIDAL ANTI-INFLAMMATORY DRUGS

Quite a few NSAIDs are available as OTC products. OTC formulations such as ibuprofen (Advil, Motrin, and Nuprin), ketoprofen (Orudis), and naproxen sodium (Aleve) are available to any consumer. The potential for misuse and abuse is high, especially when one is confronted by the large number of advertisements on television and in print heralding the wonderful benefits of these products.

Now, more than ever, patients need to be educated about these products. A thorough drug history and knowledge of the consumer's underlying disorder are essential to setting up an effective teaching program. In addition to the topics that are normally addressed with any drug teaching plan, the nurse stresses the following:

- ☑ Indications for using the drug (the reason the patient might take it)
- ☑ Dosage information, including frequency and maximum daily amounts
- ☑ Possible drug–drug and drug–food interactions
- ☑ Possible adverse effects, including life-threatening ones such as bleeding
- ☑ Need to read and heed all manufacturer's instructions, including the number of days that the patient should use the drug and when to notify the physician (eg, if fever is not resolved within 3 days or pain persists)

Although this is not a foolproof remedy for eliminating possible misuse and abuse, thorough patient education can help minimize the risk of problems associated with OTC NSAIDs.

Because the visual changes may be asymptomatic, patients on long-term therapy require periodic eye examinations.

Educating the Patient and Family

In many instances, an NSAID may be prescribed for a prolonged period, such as when the patient has arthritis. Some patients may discontinue their drug use, fail to take the drug at the prescribed or recommended intervals, increase the dose, or decrease the time interval between doses, especially if there is an increase or decrease in their symptoms. The patient and family must understand that the drug is to be taken even though symptoms have been relieved. The nurse develops a teaching plan to include the following information.

- Take the drug exactly as prescribed by the primary health care provider. Do not increase or decrease the dosage, and do not take any over-the-counter (OTC) drugs without first consulting the primary health care provider. Notify the primary health care provider or dentist if the pain is not relieved.
- Take the drug with food or a full glass of water unless indicated otherwise by the primary health care provider. If gastric upset occurs, take the drug with food or milk. If the problem persists, contact the primary health care provider.
- Inform all health care providers, including dentists, when these drugs are taken on a regular or occasional basis.
- If the drug is used to reduce fever, contact the primary health care provider if the temperature continues to remain elevated for more than 24 hours.
- Do not consistently use an OTC nonnarcotic analgesic to treat chronic pain without first consulting the primary health care provider.
- Severe or recurrent pain or high or continued fever may indicate serious illness. If pain persists more than 10 days in adults, or if fever persists more than 3 days, consult the primary health care provider.
- Avoid the use of aspirin or other salicylates when taking an NSAID.
- The drug may take several days to produce an effect (relief of pain and tenderness). If some or all of the symptoms are not relieved after 2 weeks of therapy, continue taking the drug, but notify the primary health care provider.
- These drugs may cause drowsiness, dizziness, or blurred vision. Use caution while driving or performing tasks that require alertness.
- Notify the primary health care provider if any of the following adverse reactions occur: skin rash, itching, visual disturbances, weight gain, edema, diarrhea, black stools, nausea, vomiting, or persistent headache. See Home Care Checklist: Using Over-the-Counter Nonsteroidal Anti-inflammatory Drugs.

EVALUATION

- Pain is relieved, and discomfort is reduced or eliminated.
- Body temperature is normal.
- Adverse reactions are identified, reported to the primary health care provider, and managed.
- The patient verbalizes the importance of complying with the prescribed treatment regimen.
- The patient demonstrates an understanding of the treatment regimen and adverse effects of the drug.

● Critical Thinking Exercises

1. *Mr. Nunn, age 68 years, has been prescribed an NSAID for the treatment of arthritis and has been taking the drug for 2 weeks. When keeping an outpatient appointment, Mr. Nunn tells you that he has noticed very little, if any, improvement in his arthritis and complains of nausea, difficulty hearing, constipation, and bloating. Analyze what steps you might take to investigate this problem. Give a reason for your answers.*
2. *Ms. Parker, age 72 years, is prescribed celecoxib for osteoarthritis. She is confused at times and has difficulty hearing. In developing a teaching plan for Ms. Parker, discuss what assessments would be important. Identify points to include in her teaching plan.*

● Review Questions

1. The nurse observes a patient for which of the common adverse reactions when administering naproxen?
   - **A.** headache, dyspepsia
   - **B.** blurred vision, constipation
   - **C.** anorexia, tinnitus
   - **D.** stomatitis, confusion
2. An elderly patient is receiving sulindac. The nurse is aware that older adults taking NSAIDs are at increased risk for _____.
   - **A.** ulcer disease
   - **B.** stroke
   - **C.** myocardial infarction
   - **D.** gout
3. When a patient is receiving a nonsteroidal anti-inflammatory drug, the nurse must monitor the patient for _____.
   - **A.** agitation, which indicates nervous system involvement
   - **B.** urinary retention, which indicates renal insufficiency
   - **C.** decrease in WBC count, which increases the risk for infection
   - **D.** gastrointestinal symptoms, which can be serious and sometimes fatal
4. Which of the following statements would the nurse be certain to include in a teaching plan for the patient taking a NSAID?
   - **A.** If gastrointestinal upset occurs, take this drug on an empty stomach.
   - **B.** Avoid the use of aspirin or other salicylates when taking these drugs.
   - **C.** These drugs can cause extreme confusion and should be used with caution.
   - **D.** Relief from pain and inflammation should occur within 30 minutes after the first dose.

● Medication Dosage Problems

1. Naprosyn oral suspension 250 mg is prescribed. The dosage on hand is oral suspension 125 mg/5 mL. The nurse administers _____.
2. The physician orders celecoxib 200 mg PO. The nurse has celecoxib 100-mg tablets on hand. The nurse administers _____.