chapter 19

Narcotic Analgesics

Key Terms

agonist-antagonist
agonist
analgesic
epidural
miosis
opioid
pain
partial agonist
patient-controlled analgesia

Chapter Objectives

On completion of this chapter, the student will:

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

Pain is a complex occurrence that is uniquely experienced by each individual. It has been defined as the emotional and sensory perceptions associated with real or potential tissue damage (see Chap. 17 for a discussion on pain). Acute pain is a warning that something is not right in the body. Chronic pain is pain that persists beyond the expected time for healing. **Analgesic**s are drugs that relieve pain. The narcotic analgesics are controlled substances (see Chap. 1) used to treat moderate to severe pain. Nurses must be knowledgeable concerning pain assessment and management if the patient's pain is to be adequately managed. Despite advances in technology and pharmacologic measures, evidence exists indicating that for many, pain is not managed adequately.

Drugs that counteract the effects of the narcotic analgesics are the narcotic antagonists. These drugs compete with the narcotics at the receptor sites and are used to reverse the depressant effects of the narcotic analgesics. Both types of drugs are discussed in this chapter.

NARCOTIC ANALGESICS

Opioid analgesics are the narcotic analgesics obtained from the opium plant. More than 20 different alkaloids are obtained from the unripe seed of the opium poppy plant. The analgesic properties of opium have been known for hundreds of years. The narcotics obtained from raw opium (also called the opiates, opioids, or opiate narcotics) include morphine, codeine, hydrochlorides of opium alkaloids, and camphorated tincture of opium.

Morphine, when extracted from raw opium and treated chemically, yields the semisynthetic narcotics hydromorphone, oxymorphone, oxycodone, and heroin. Heroin is an illegal narcotic in the United States and is not used in medicine. Synthetic narcotics are those man-made analgesics with properties and actions similar to the natural opioids. Examples of synthetic narcotic analgesics are methadone, levorphanol, remifentanil, and meperidine. Additional narcotics are listed in the Summary Drug Table: Narcotic Analgesics.

ACTIONS

Narcotic analgesics are classified as agonists, partial agonists, and mixed agonists-antagonists. The **agonist** binds to a receptor and causes a response. A **partial agonist** binds to a receptor, but the response is limited (ie, is not as great as with the agonist). Antagonists bind to a receptor and cause no response. An antagonist can reverse the effects of the agonist. This reversal is possible because the antagonist competes with the agonist for a receptor site.

SUMMARY DRUG TABLE NARCOTIC ANALGESICS

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS**	DOSAGE RANGES
Agonist				
alfentanil HCL *al-fen'-ta-nil*	Alfenta	Analgesic, anesthetic	Respiratory depression, skeletal muscle rigidity, light-headedness, sedation, constipation, dizziness, nausea, vomiting	Individualize dosage and titrate to obtain desired effect
codeine *koe'-deen*	*generic*	Analgesic, antitussive	Sedation, sweating, headache, dizziness, lethargy, confusion, light-headedness	Analgesic: 15–60 mg q4–6h PRN PO, IV, SC, IM; antitussive: 10–20 mg PO q4–6h; maximum dose, 120 mg/24 h
fentanyl *fen'-ta-nil*	Sublimaze, *generic*	Analgesic, anesthesia before, during, and after surgery	Sedation, sweating, headache, vertigo, lethargy, confusion, light-headedness, nausea, vomiting, respiratory depression	Preanesthesia: 0.05–0.1 mg IM; postoperative: 0.05–0.1 mg IM; anesthesia: administered by anesthesiologist
fentanyl *fen'-ta-nil* transmucosal system	Actiq, Fentanyl Oralet	Fentanyl Oralet: only as anesthetic premedication Actiq: only as management of breakthrough cancer pain	Sedation, sweating, headache, vertigo, lethargy, confusion, light-headedness, nausea, vomiting, respiratory depression	Individualize dosage: Oralet up to 5 mcg/kg/dose (lozenges) Actiq: 200 mcg/dose (lozenge on a stick)
fentanyl *fen'-ta-nil* transdermal system	Duragesic	Chronic pain	Sedation, sweating, headache, vertigo, lethargy, confusion, light-headedness, nausea, vomiting, respiratory depression	Individualized dosage: 25–100 mcg/h as a transdermal patch
hydromorphone *hy-droe-mor'-fone*	Dilaudid	Analgesic	Sedation, vertigo, lethargy, confusion, light-headedness, nausea, vomiting, respiratory depression	2–4 mg PO, IM, SC q4–6h; 3 mg q6–8h rectally
levomethadyl acetate *lev-oh-meth'-a-dil*	Orlaam	Opioid dependence	Sedation, lethargy, nausea, vomiting, clamminess, sweating, vertigo, unusual dreams, respiratory depression	Individualized dosage of 60–90 mg PO 3 times a wk
levorphanol tartrate *lee-vor'-fa nole*	Levo-Dromoran	Analgesic, preoperative medication	Dizziness, sedation, nausea, vomiting, dry mouth, sweating, respiratory depression	2–3 mg PO, SC, IM q4h PRN; 1 mg IV q3–8 h PRN
meperidine *me-per'-i-deen*	Demerol	Analgesic, preoperative medication, support of anesthesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	50–150 mg PO, IM, SC, q3–4h PRN
methadone *meth'-a-doan*	Dolophine	Analgesic, detoxification and temporary maintenance treatment of narcotic abstinence syndrome	Light-headedness, dizziness, sedation, nausea, vomiting, constipation, respiratory depression	Analgesic: 2.5–10 mg PO, IM, SC q4h PRN; detoxification: 10–40 mg PO, IV
morphine sulfate *mor'-feen*	MS Contin, Roxanol	Analgesic, preoperative sedation, adjunct to anesthesia, dyspnea due to pulmonary edema, pain associated with MI	Sedation, hypotension, increased sweating, constipation, dizziness, drowsiness, nausea, vomiting, dry mouth, somnolence, respiratory depression	10–30 mg PO q4h PRN; 10–20 mg rectally q4h; 5–20 mg IM SC q4h PRN; 2.5–15mg/70 kg IV
opium *oh'-pee-um*	Camphorated tincture of opium, Paregoric	Analgesic, anti-diarrheal	Light-headedness, dizziness, sedation, nausea, vomiting, constipation, suppression of cough reflex, dry mouth	Paregoric: 5–10 mL PO QID; 10% liquid: 0.6 mL PO QID
oxycodone *ox-ee-koe'-done*	OxyContin, OxyIR, Roxicodone	Analgesic	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, sweating, respiratory depression	OxyContin: 10–20 mg PO q12h; OxyIR: 5 mg for breakthrough pain

SUMMARY DRUG TABLE NARCOTIC ANALGESICS *(Continued)*

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS**	DOSAGE RANGES
oxymorphone *ox-ee-mor'-fone*	Numorphan	Analgesic, preoperative sedation, obstetric analgesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	1–1.5 mg SC or IM q4–6h PRN; 0.5 mg IV; 5 mg rectally q4–6h
propoxyphene *proe-pox'-i-feen*	Darvon, Darvocet-N, Darvon-N	Analgesic	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	Darvon: 65 mg PO q4h PRN Darvocet-N and Darvon-N: 100 mg PO q4h, maximum dose, 600 mg/d
remifentanil HCL *reh-mih-fen'-tah-nill*	Ultiva	anesthesia	Light-headedness, sedation, skeletal muscle rigidity, nausea, vomiting, respiratory depression, sweating	0.5–1 mcg/kg/min
Partial Agonist				
buprenorphine *byoo-pre-nor'-feen*	Buprenex	Analgesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	0.03 mg q6h PRN IV or IM
butorphanol *byoo-tor'fa-nole*	Stadol, Stadol NS	Analgesia, preoperative to support anesthesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	1–4 mg IM; 0.5–2 mg IV; nasal spray (NS): 1 mg (spray) repeat in 60–90 min. May repeat q3–4h
Agonist Antagonist				
nalbuphine *nal'-byoo-feen*	Nubain, generic	Analgesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	10 mg/70 kg SC, IM, IV q3–6h PRN
pentazocine *pen-taz'-oh-seen*	Talwin, TalwinNX	Analgesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	50–100 mg PO q3–4h PRN; up to 30 mg IM, SC, IV q3–4h PRN
Pentazocine combination	Talacen (pentazocine and acetaminophen)	Analgesia	Light-headedness, sedation, constipation, dizziness, nausea, vomiting, respiratory depression	1 tablet q4h

*The term *generic* indicates the drug is available in generic form.
**The adverse reactions of the narcotic analgesics are discussed extensively in the chapter. Some of the reactions may be less severe or intense than others.

Drugs that act as antagonists are discussed at the end of this chapter. An **agonist-antagonist** has properties of both the agonist and antagonist. These drugs have some agonist activity at the receptor sites and some antagonist activity at the receptor sites.

Classification of the narcotic analgesics is based on their activity at the opioid receptor sites. Although five categories of opioid receptors have been identified, only three of these receptors affect the action of the narcotic analgesics:

- mu
- kappa
- delta

Table 19-1 identifies the responses in the body associated with each of these receptors. The narcotic agonists

Table 19-1 Activities Within the Body Associated With Receptor Sites

RECEPTOR	BODILY RESPONSE
Mu	Morphine-like supraspinal analgesia, respiratory and physical depression, miosis, reduced GI motility
Delta	Dysphoria, psychotomimetic effects (eg, hallucinations), respiratory and vasomotor stimulations caused by drugs with antagonist activity
Kappa	Sedation and miosis

DISPLAY 19-1 ● Secondary Pharmacological Effects of the Narcotic Analgesics

- Cardiovascular—peripheral vasodilation, decreased peripheral resistance, inhibition of baroreceptors (pressure receptors located in the aortic arch and carotid sinus that regulate blood pressure), orthostatic hypotension and fainting
- Central nervous system—euphoria, drowsiness, apathy, mental confusion, alterations in mood, reduction in body temperature, feelings of relaxation, dysphoria (depression accompanied by anxiety), nausea, and vomiting are caused by direct stimulation of the emetic chemoreceptors located in the medulla. The degree to which these occur usually depends on the drug and the dose.
- Dermatologic—histamine release, pruritus, flushing, and red eyes
- Gastrointestinal—decrease in gastric motility (prolonged emptying time); decrease in biliary, pancreatic, and intestinal secretions; and delay in digestion of food in the small intestine; increase in resting tone, with the potential for spasms, epigastric distress, or biliary colic (caused by constriction of the sphincter of Oddi). These drugs can cause constipation and anorexia.
- Genitourinary—urinary urgency and difficulty with urination, caused by spasms of the ureter. Urinary urgency also may occur because of the action of the drugs on the detrusor muscle of the bladder. Some patients may experience difficulty voiding because of contraction of the bladder sphincter.
- Respiratory—depressant effects on respiratory rate (caused by a reduced sensitivity of the respiratory center to carbon dioxide)
- Cough—suppression of the cough reflex (antitussive effective) by exerting a direct effect on the cough center in the medulla. Codeine has the most noticeable effect on the cough reflex.
- Medulla—Nausea and vomiting can occur when the chemoreceptor trigger zone located in the medulla is stimulated. To a varying degree, narcotic analgesics also depress the chemoreceptor trigger zone. Therefore, nausea and vomiting may or may not occur when these drugs are given.

have activity at the mu and kappa receptors (and possibly the delta sites). Remifentanil is a very short-acting agonist with potent analgesic activity. It is a mu opioid agonist with rapid onset, peak effect, and short duration of action. The mixed agonist-antagonist drugs act on the mu receptors by competing with other substances at the mu receptor (antagonist activity) and are agonists at other receptors. Partial agonists have limited agonist activity at the mu receptor. The actions of the narcotic analgesics on the various organs and structures of the body (also called secondary pharmacological effects) are shown in Display 19-1.

USES

The major use of the narcotic analgesic is to relieve or manage moderate to severe acute and chronic pain. The ability of a narcotic analgesic to relieve pain depends on several factors, such as the drug, the dose, the route of administration, the type of pain, the patient, and the length of time the drug has been administered. Morphine is the most widely used opioid and an effective drug for moderately severe to severe pain. Morphine is considered the prototype or "model" narcotic. Morphine's actions, uses, and ability to relieve pain are the standards to which other narcotic analgesics are often compared. Other narcotics, such as meperidine and levorphanol, are effective for the treatment of moderate to severe pain. For mild to moderate pain, the primary health care provider may order a narcotic such as codeine or pentazocine.

In addition to the relief or management of moderate to severe acute and chronic pain, the narcotic analgesics may be used for the following reasons:

- To lessen anxiety and sedate the patient before surgery. Patients who are relaxed and sedated when anesthesia is given are easier to anesthetize (requiring a smaller dose of an induction anesthetic), as well as easier to maintain under anesthesia
- Support of anesthesia (ie, as an adjunct during anesthesia)
- Obstetrical analgesia
- Relief of anxiety in patients with dyspnea associated with pulmonary edema
- Intrathecally or epidurally for pain relief for extended periods without apparent loss of motor, sensory, or sympathetic function
- Relief of pain associated with a myocardial infarction (morphine)
- Management of opiate dependence (levomethadyl)
- Detoxification of and temporary maintenance of narcotic addiction (methadone)
- To induce conscious sedation before a diagnostic or therapeutic procedure in the hospital setting
- Treatment of severe diarrhea and intestinal cramping (camphorated tincture of opium)
- Relief of severe, persistent cough (codeine, although the drug's use has declined)

Use in Management of Opioid Dependence

Two opioids are used in the treatment and management of opiate dependence: levomethadyl and methadone. Levomethadyl is given in an opiate dependency clinic to maintain control over the delivery of the drug. Because of its potential for serious and life-threatening proarrhythmic effects, levomethadyl is reserved for use in the treatment of addicted patients who have no response to other treatments. Levomethadyl is not taken daily; the drug is administered three times a week (Monday/Wednesday/Thursday or Tuesday/Thursday/Saturday). Daily use of the usual dose will cause serious overdose.

Nursing Alert

If transferring from levomethadyl to methadone, the nurse should wait 48 hours after the last dose of levomethadyl before administering the first dose of methadone or other narcotic.

Methadone, a synthetic narcotic, may be used for the relief of pain, but it also is used in the detoxification and maintenance treatment of those addicted to narcotics. Detoxification involves withdrawing the patient from the narcotic while preventing withdrawal symptoms.

Maintenance therapy is designed to reduce the patient's desire to return to the drug that caused addiction, as well as to prevent withdrawal symptoms. The dosages used vary with the patient, the length of time the individual has been addicted, and the average amount of drug used each day. Patients enrolled in an outpatient methadone program for detoxification or maintenance therapy on methadone must continue to receive methadone when hospitalized.

ADVERSE REACTIONS

The adverse reactions differ according to whether the narcotic analgesic acts as an agonist or as an agonist-antagonist.

Agonists

One of the major hazards of narcotic administration is respiratory depression, with a decrease in the respiratory rate and depth. The most common adverse reactions include light-headedness, dizziness, sedation, constipation, anorexia, nausea, vomiting, and sweating. When these effects occur, the primary health care provider may lower the dose in an effort to eliminate or decrease the intensity of the adverse reaction. Other adverse reactions that may be seen with the administration of an agonist narcotic analgesic include:

- Central nervous system—euphoria, weakness, headache, pinpoint pupils, insomnia, agitation, tremor, and impairment of mental and physical tasks
- Gastrointestinal—dry mouth and biliary tract spasms
- Cardiovascular—flushing of the face, peripheral circulatory collapse, tachycardia, bradycardia, and palpitations
- Genitourinary—spasms of the ureters and bladder sphincter, urinary retention or hesitancy
- Allergic—pruritus, rash, and urticaria
- Other—physical dependence, pain at injection site, and local tissue irritation

Agonist-Antagonists

Administration of a narcotic agonist-antagonist may result in symptoms of narcotic withdrawal in those addicted to narcotics. Other adverse reactions associated with the administration of a narcotic agonist-antagonist include sedation, nausea, vomiting, sweating, headache, vertigo, dry mouth, euphoria, and dizziness.

CONTRAINDICATIONS

All narcotic analgesics are contraindicated in patients with known hypersensitivity to the drugs. These drugs are contraindicated in patients with acute bronchial asthma, emphysema, or upper airway obstruction and in patients with head injury or increased intracranial pressure. The drugs are also contraindicated in patients with convulsive disorders, severe renal or hepatic dysfunction, acute ulcerative colitis, and increased intracranial pressure. The narcotic analgesics are Pregnancy Category C drugs (oxycodone, Category B) and are not recommended for use during pregnancy or labor (may prolong labor or cause respiration depression of the neonate). The use of narcotic analgesics is recommended during pregnancy only if the benefit to the mother outweighs the potential harm to the fetus.

PRECAUTIONS

These drugs are used cautiously in the elderly and in patients with undiagnosed abdominal pain, liver disease, history of addiction to the opioids, hypoxia, supraventricular tachycardia, prostatic hypertrophy, and renal or hepatic impairment. The obese must be monitored closely for respiratory depression while taking the narcotic analgesics. The drug is used cautiously during lactation (wait at least 4 to 6 hours after taking the drug to breastfeed the infant). The narcotics are used cautiously in patients undergoing biliary surgery because the drug may cause spasm of the sphincter of Oddi.

INTERACTIONS

The narcotic analgesics potentiate the central nervous system (CNS) depressant properties of other CNS depressants, such as alcohol, antihistamines, antidepressants, sedatives, phenothiazines, and monoamine oxidase inhibitors. Use of the narcotic analgesics within 14 days of the MAO inhibitors (see Chap. 31) may potentiate the effect of either drug. Patients taking the agonist-antagonist narcotic analgesics may experience withdrawal symptoms if the patient has been abusing or using narcotics.

The agonist-antagonists drugs can cause opioid withdrawal symptoms in those who are physically dependent on the opioids. There is an increased risk of respiratory

depression, hypotension, and sedation when narcotic analgesics are administered too soon after barbiturate general anesthesia.

Herbal Alert: Passion Flower

The term "passion flower" is used to denote many of the approximately 400 species of the herb. Passion flower has been used in medicine to treat pain, anxiety, and insomnia. Some herbalists use the herb to treat symptoms of parkinsonism. Passion flower is often used in combination with other herbs, such a valerian, chamomile, and hops, for promoting relaxation, rest, and sleep. Although no adverse reactions have been reported, large doses may cause CNS depression. The use of passion flower is contraindicated in pregnancy and in patients taking the monoamine oxidase inhibitors (MAOIs). Passion flower contains coumarin, and the risk of bleeding may be increased when used in patients taking warfarin and passion flower.

The following are recommended dosages for passion flower:

- *Tea: 1–4 cups per day (made with 1 tablespoon of the crude herb per cup)*
- *Tincture (2 g/5 mL): 2 teaspoons (10 mL) 3–4 times daily*
- *Dried herb: 2 g 3–4 times daily*

NURSING PROCESS

The Patient Receiving a Narcotic Analgesic for Pain

ASSESSMENT

Preadministration Assessment

As part of the preadministration assessment, the nurse reviews the patient's health history, allergy history, and past and current drug therapies. This is especially important when a narcotic is given for the first time because data may be obtained during the initial history and physical assessment that require the nurse to contact the primary health care provider. For example, the patient may state that nausea and vomiting occurred when he or she was given a drug for pain several years ago. Further questioning of the patient is necessary because this information may influence the primary health care provider regarding administration of a specific narcotic drug. Guidelines for the initial pain assessment are listed in Display 19-2. Questions to include in the assessment of pain include the following:

- Does the pain keep you awake at night? Prevent you from falling asleep or staying asleep?
- What makes your pain worse?
- Does the pain affect your mood? Are you depressed? Irritable? Anxious?
- What over-the-counter or herbal remedies have you used for the pain?
- Does the pain affect your activity level? Are you able to walk? Perform self-care activities?

DISPLAY 19-2 ● Guidelines for the Initial Pain Assessment

- Patient's subjective description of the pain (What does the pain feel like?)
- Location(s) of the pain
- Intensity, severity, and duration
- Any factors that influence the pain
- Quality of the pain
- Patterns of coping
- Effects of previous therapy (if applicable)
- Nurses' observations of patient's behavior

The nurse may request that the patient evaluate the pain using a standardized pain scale measurement tool. The pain is rated using a scale of 1 to 10, with 10 being the most severe pain and 1 being the least discomfort. Failure to adequately assess pain is a major factor in the undertreatment of pain.

It is especially important for the nurse to assess the type, location, and intensity of pain before administering the narcotic analgesic. Immediately before preparing a narcotic analgesic for administration, the nurse assesses the patient's blood pressure, pulse, and respiratory rate.

In addition, a thorough drug history, as well as physical assessment, may raise a question of drug dependency. The nurse must notify the primary health care provider of any suspicion of drug dependency.

Ongoing Assessment

The nurse obtains the blood pressure, pulse, and respiratory rate 20 to 30 minutes after the drug is administered intramuscularly or subcutaneously, 30 or more minutes if the drug is given orally, and in 5 to 10 minutes if the drug is given intravenously (IV).

During the ongoing assessment, it is important for the nurse to ask about the pain regularly and believe the patient and family in their reports of pain. The nurse determines the exact location of the pain, a description of the pain (eg, sharp, dull, or stabbing), and an estimate of when the pain began, each time the patient requests a narcotic analgesic. Further questioning and more detailed information about the pain are necessary if the pain is of a different type than the patient had been experiencing previously or if it is in a different area. Nursing judgment must be exercised because not all instances of a change in pain type, location, or intensity require notifying the primary health care provider. For example, if a patient recovering from recent abdominal surgery experiences pain in the calf of the leg, the nurse should immediately notify the primary health care provider. However, it is not important to contact the primary health care provider for pain that is slightly worse because the patient has been moving in bed.

In addition, the nurse determines if any controllable factors (eg, uncomfortable position, cold room, drafts, bright lights, noise, thirst) may be decreasing the patient's tolerance to pain. If these factors are present, the nurse corrects them as soon as possible. However, the nurse should not deny pain drugs or make the patient wait for the drug. Pain medication is delivered in a timely manner.

Narcotic analgesics can produce serious or potentially fatal respiratory depression if given too frequently or in an excessive dose. Respiratory depression may occur in patients receiving a normal dose if the patient is vulnerable (ie, in weakened state or debilitated state). Elderly, cachectic, or debilitated patients may have a reduced initial dose until the response of the drug is known. If the respiratory rate is 10/min or below, the nurse must monitor the patient at frequent intervals and notify the primary health care provider immediately.

When an opiate is used as an antidiarrheal drug, the nurse records each bowel movement, as well as its appearance, color, and consistency. The nurse should notify the primary health care provider immediately if diarrhea is not relieved or becomes worse; if the patient has severe abdominal pain; or if blood in the stool is noted.

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 of the patient may include a relief of pain, an understanding of the use of the patient-controlled analgesia device (when applicable), an absence of injury, an adequate nutrition intake, an absence of drug dependence, and an understanding of and compliance with the prescribed treatment regimen.

Nursing Diagnoses Checklist

- ✓ **Acute Pain** related to medical or surgical disorder (specify)
- ✓ **Chronic Pain** related to medical disorder (specify)
- ✓ **Risk for Injury** related to effect of narcotic on the CNS
- ✓ **Constipation** related to the effects of the narcotics on the gastrointestinal system
- ✓ **Imbalanced Nutrition: Less Than Body Requirements** related to anorexia secondary to effects of the narcotic

Relieving Acute Pain

The nurse assesses the patient for relief of pain about 30 minutes after a narcotic analgesic is given. It is important to notify the primary health care provider if the analgesic is ineffective because a higher dose or a different narcotic analgesic may be required.

The nurse should perform tasks, such as getting the patient out of bed, and encouraging therapeutic activities, such as deep breathing, coughing, and leg exercises (when ordered), when the drug is producing its greatest analgesic effect, usually 1 to 2 hours after the nurse administers the narcotic.

Using Patient-Controlled Analgesia. **Patient-controlled analgesia** (PCA) allows patients to administer their own analgesic by means of an IV pump system (Fig. 19-1). The dose and the time interval permitted between doses is programmed into the device to prevent accidental overdosage.

Many postoperative patients require less narcotics when they are able to self-administer a narcotic for pain. Because the self-administration system is under the control of the nurse, who adds the drug to the infusion pump and sets the time interval (or lockout interval) between doses, the patient cannot receive an overdose of the drug.

Relieving Chronic Severe Pain

Morphine is the most widely used drug in the management of chronic severe pain, such as pain associated with cancer. The fact that this drug can be given orally,

FIGURE 19-1. Patient-controlled analgesia allows the client to self-administer medication, as necessary, to control pain.

subcutaneously, intramuscularly, IV, and rectally in the form of a suppository allows tremendous versatility. Medication for chronic pain should be scheduled around the clock and not given on a PRN (as needed) basis. Most patients with cancer can be treated with 30 to 60 mg morphine orally every 4 hours. The oral route is preferred as long as the patient is able to swallow or can tolerate sublingual administration. Respiratory depression is less likely to occur when the drug is given orally.

OxyContin is a controlled-released form of oxycodone and indicated for the management of moderate to severe pain when a continuous, around-the-clock analgesic is needed for an extended period of time. OxyContin is not intended for use as a PRN analgesic. The patient may experience fewer adverse reactions with oxycodone than morphine, and the drug is effective and safe for the elderly. The tablets are to be swallowed whole and are not to be broken, chewed, or crushed.

Fentanyl transdermal is a transdermal system that is effective in the management of the severe pain associated with cancer. The transdermal system allows for a timed-release patch containing the drug fentanyl to be activated over a 72-hour period. A small number of patients may require systems applied every 48 hours. The nurse monitors for adverse effects in the same manner as for other narcotic analgesics (eg, the nurse notifies the primary health care provider if the respiratory rate is 10/min or less).

Gerontologic Alert

The use of the transdermal route in the elderly is questionable because the amount of subcutaneous tissue is reduced in the aging process.

On rare occasions, when pain is not relieved by the narcotic analgesics alone, a mixture of an oral narcotic and other drugs may be used to obtain relief. Brompton's mixture is commonly used to identify these solutions. In addition to the narcotics, such as morphine or methadone, other drugs may be used in the solution, including antidepressants, stimulants, aspirin, acetaminophen, and tranquilizers. The pharmacist prepares the solution according to the primary health care provider's instructions.

It is necessary to monitor for the adverse reactions of each drug contained in the solution. The time interval for administration varies. Some primary health care providers may order the mixture on an as-needed basis; others may order it given at regular intervals.

When narcotics are administered for severe pain, the goal is to prevent or control the pain, not to prevent addiction. Patients taking the narcotics for severe pain rarely become addicted. Although some dependence may occur in rare instances, if the patient recovers from the illness, he or she may be gradually weaned from the drug.

When long-acting forms of the narcotic are used, a fast-acting form may be given for breakthrough pain. Patients should be given the drug as ordered and on time. Oral transmucosal fentanyl (Actiq) is used to treat breakthrough pain. Making the patient wait for the drug may result in withdrawal symptoms, which will only add to the pain of the illness.

Tolerance results over a period of time in the patient taking a narcotic analgesic. The rate the patient develops tolerance varies according to the dosage, the route or administration, and the individual. Patients taking oral or transdermal morphine develop tolerance more slowly than those taking the drug parenterally. Some patients develop tolerance quickly and need larger doses every few weeks, whereas others are maintained on the same dosage schedule throughout the course of the illness.

The risk of respiratory depression is a concern for many nurses administering a narcotic and may cause some nurses to hesitate to administer the drug. However, respiratory depression rarely occurs in patients using a narcotic for pain. In fact, these patients usually develop tolerance to the respiratory depressant effects of the drug very quickly. Naloxone (see Chap. 20) can be administered to reverse the narcotic effects if absolutely necessary.

Nursing Alert

Naloxone should be administered with great caution and only when necessary in patients receiving a narcotic for severe pain. Naloxone removes all of the pain-relieving effects of the narcotic and may lead to withdrawal symptoms or the return of pain.

Using Epidural Pain Management

Administration of certain narcotic analgesics, specifically morphine and fentanyl, by the epidural route has provided an alternative to the intramuscular or oral route. **Epidural** administration is performed when a catheter is placed into the epidural space, which is the space outside of the dura matter of the brain and spinal cord. The analgesic effect is produced by the direct effect on the opiate receptors in the dorsal horn of the spinal cord. This approach was introduced with the idea that very small doses of narcotic would provide long-lasting pain relief with systemic adverse reactions. Epidural administration offers several advantages over other routes. Lower total dosages of the drug used, fewer adverse reactions, and greater patient comfort are all benefits seen with epidural administration.

Access to the epidural route is made through the use of a percutaneous epidural catheter. The placement of the catheter requires strict aseptic technique by a skilled physician. The epidural catheter is placed into the space

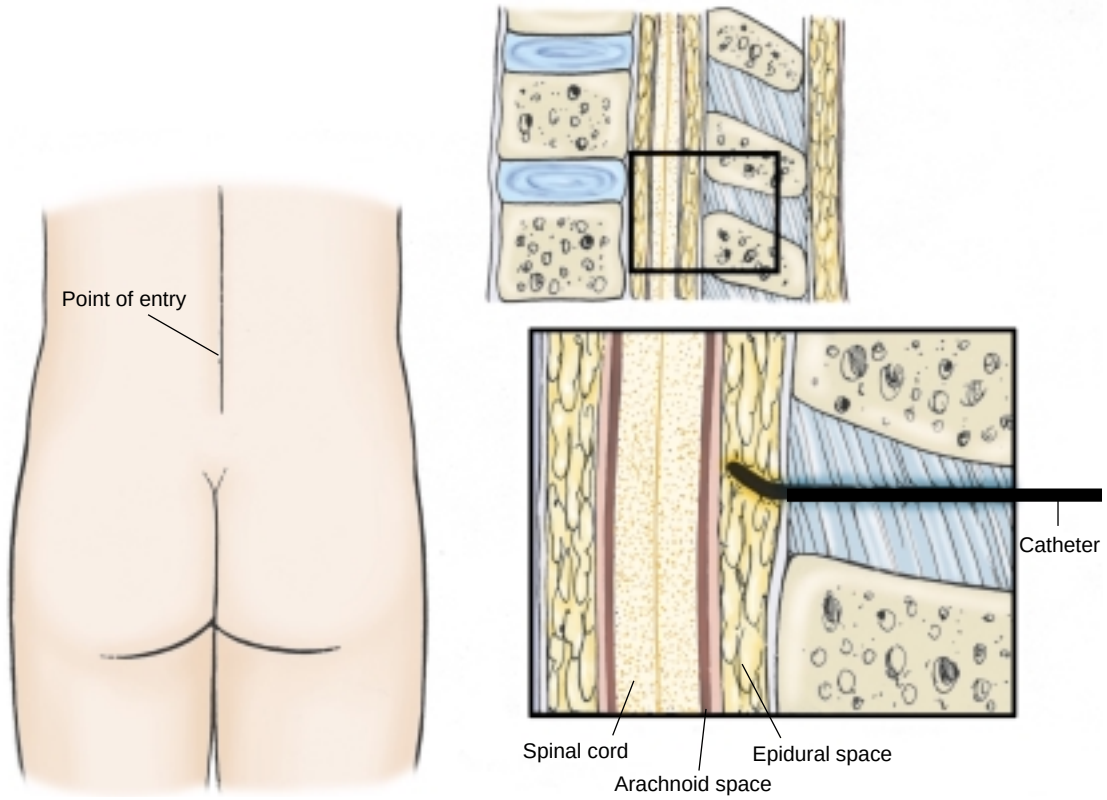

FIGURE 19-2. Epidural catheter placement.

between the dura mater and the vertebral column (Fig. 19-2). Drug injected through the catheter spreads freely throughout all the tissues in the space, interrupting pain conduction at the points where sensory fibers exit from the spinal cord. The administration of the narcotic is either by bolus or by continuous infusion pump.

This type of pain management is used for postoperative pain, labor pain, and cancer pain. The most serious adverse reaction associated with the administration of narcotics by the epidural route is respiratory depression. The patient may also experience sedation, confusion, nausea, pruritus, or urinary retention. Fentanyl is increasingly used as an alternative to morphine sulfate because patients experience fewer adverse reactions.

Nursing Alert

Sufentanil, fentanyl, remifentanil, alfentanil, and morphine sulfate should be administered only by those specifically trained in the use of IV and epidural anesthetics. Oxygen, resuscitative, and intubation equipment should be readily available.

Nursing care includes close monitoring of the patient immediately after insertion of the epidural catheter and throughout therapy for respiratory depression. Vital signs are taken every 30 minutes, apnea monitors are used, and a narcotic antagonist, such as naloxone, is readily available.

Policies and procedures for administering, monitoring, and documenting drugs given through the epidural route must be specific to the Nurse Practice Act in each state and in accordance with federal and state regulations. This type of analgesia is most often managed by registered nurses with special training in the care and management of epidural catheters.

Monitoring and Managing Adverse Drug Reactions

The nurse immediately reports to the primary health care provider any significant change in the patient's vital signs. Narcotic analgesics can cause hypotension. Particularly vulnerable are postoperative patients and individuals whose ability to maintain blood pressure has been compromised.

Nursing Alert

The nurse should withhold the narcotic analgesic and contact the primary health care provider immediately if any of the following are present:

- *A significant decrease in the respiratory rate or a respiratory rate of 10/min or below*
- *A significant increase or decrease in the pulse rate or a change in the pulse quality*
- *A significant decrease in blood pressure (systolic or diastolic) or a systolic pressure below 100 mm Hg*

Patients receiving long-term opioid therapy rarely have problems with respiratory depression. In instances where respiratory depression occurs, administration of a narcotic antagonist (see Chap. 20) may be ordered by the primary health care provider if the respiratory rate continues to fall.

Gerontologic Alert

The older adult is especially prone to adverse reactions of the narcotic analgesics, particularly respiratory depression, somnolence (sedation), and confusion. The primary health care provider may order a lower dosage of the narcotic for the older adult.

Narcotics may depress the cough reflex. The nurse should encourage patients receiving a narcotic on a regular basis, even for a few days, to cough and breathe deeply every 2 hours. This task prevents the pooling of secretions in the lungs, which can lead to hypostatic pneumonia and other lung problems. If the patient experiences nausea and vomiting, the nurse should notify the primary health care provider. A different analgesic or an antiemetic may be necessary.

RISK FOR INJURY. Narcotics may produce orthostatic hypotension, which in turn results in dizziness. The nurse should assist the patient with ambulatory activities and with rising slowly from a sitting or lying position. **Miosis** (pinpoint pupils) may occur with the administration of some narcotics and is most pronounced with morphine, hydromorphone, and hydrochlorides of opium alkaloids. Miosis decreases the ability to see in dim light. The nurse keeps the room well lit during daytime hours and advises the patient to seek assistance when getting out of bed at night.

CONSTIPATION. The nurse checks the bowel elimination pattern daily because constipation can occur with repeated doses of a narcotic. The nurse keeps a daily record of bowel movements and informs the primary health care provider if constipation appears to be a problem. Most patients should begin taking a stool softener or laxative with the initial dose of a narcotic analgesic. Many patients need to continue taking a laxative as long as the narcotic analgesic is taken. If the patient is constipated despite the use of a stool softener, the primary health care provider may prescribe an enema or another means of relieving constipation.

IMBALANCED NUTRITION. When a narcotic is prescribed for a prolonged time, anorexia (loss of appetite) may occur. Those receiving a narcotic for the relief of pain caused by terminal cancer often have severe anorexia from the disease and the narcotic. The nurse assesses food intake after each meal. When anorexia is prolonged, the nurse weighs the patient weekly or as ordered by the primary health care provider. It is important for the nurse to notify the primary health care provider of continued weight loss and anorexia.

NARCOTIC DRUG DEPENDENCE. Most patients receiving the narcotic analgesics for medical purposes do not develop dependence. However, drug dependence can occur when a narcotic is administered over a long period. For some patients, such as those who are terminally ill and in severe pain, drug dependence is not considered a problem because the most important task is to keep the patient as comfortable as possible for the time he or she has remaining (see "Relieving Chronic Severe Pain").

When a patient does not have a painful terminal illness, drug dependence must be avoided. Signs of drug dependence include occurrence of withdrawal symptoms (acute abstinence syndrome) when the narcotic is discontinued, requests for the narcotic at frequent intervals around the clock, personality changes if the narcotic is not given immediately, and constant complaints of pain and failure of the narcotic to relieve pain. Although these behaviors can have other causes, the nurse should consider drug dependence and discuss the problem with the primary health care provider. Specific symptoms of the abstinence syndrome are listed in Display 19-3.

Drug dependence can also occur in a newborn whose mother was dependent on opiates during pregnancy. Withdrawal symptoms in the newborn usually appear during the first few days of life. Symptoms include irritability, excessive crying, yawning, sneezing, increased respiratory rate, tremors, fever, vomiting, and diarrhea.

Educating the Patient and Family

The nurse informs the patient that the drug he or she is receiving is for pain. It also is a good idea to include additional information, such as how often the drug can be given and the name of the drug being given. If a patient is receiving drugs through a PCA infusion pump, the nurse discusses the following points:

- The location of the control button that activates the administration of the drug;

DISPLAY 19-3 ● Symptoms of the Abstinence Syndrome

EARLY SYMPTOMS
Yawning, lacrimation, rhinorrhea, sweating

INTERMEDIATE SYMPTOMS
Mydriasis, tachycardia, twitching, tremor, restlessness, irritability, anxiety, anorexia

LATE SYMPTOMS
Muscle spasm, fever, nausea, vomiting, kicking movements, weakness, depression, body aches, weight loss, severe backache, abdominal and leg pains, hot and cold flashes, insomnia, repetitive sneezing, increased blood pressure, respiratory rate, and heart rate

Home Care Checklist

USING A PATIENT-CONTROLLED ANALGESIA PUMP

In some situations, narcotic analgesics may be ordered for pain relief using patient-controlled analgesia (PCA). If the patient will be receiving PCA at home, the nurse makes sure to review the following steps with the patient and the caregiver:

- ☑ How the pump works
- ☑ What drug is being given
- ☑ When to administer a dose
- ☑ What the power source is (battery or electricity)
- ☑ What to do if the battery fails or a power failure occurs
- ☑ How to check the insertion site
- ☑ How to change the cartridge or syringe

If the patient or caregiver will be responsible for changing the drug cartridge or syringe, the nurse teaches the following steps:

- ☑ Gather new syringe with drug (if refrigerated, remove it at least 30 minutes before using).
- ☑ Attach pump specific tubing to the drug.
- ☑ Prime the tubing.
- ☑ Turn off the pump and clamp the infusion tubing.
- ☑ Remove the tubing from the infusion site.
- ☑ Flush the site (if ordered).
- ☑ Remove used cartridge or syringe from the pump.
- ☑ Insert the new cartridge or syringe into the pump.
- ☑ Connect the new infusion tubing to the infusion site.
- ☑ Turn on the pump and have the patient provide a drug dose when needed.

- The difference between the control button and the button to call the nurse (when both are similar in appearance and feel);
- The machine regulates the dose of the drug as well as the time interval between doses;
- If the control button is used too soon after the last dose, the machine will not deliver the drug until the correct time;
- Pain relief should occur shortly after pushing the button;
- Call the nurse if pain relief does not occur after two successive doses.

Narcotics for outpatient use may be prescribed in the oral form or as a timed-release transdermal patch. In certain cases, such as when terminally ill patients are being cared for at home, the nurse may give the family instruction in the parenteral administration of the drug or use of PCA (see Home Care Checklist: Using a Patient Controlled Analgesia Pump). When a narcotic has been prescribed, the nurse includes the following points in the teaching plan:

- This drug may cause drowsiness, dizziness, and blurring of vision. Use caution when driving or performing tasks requiring alertness.
- Avoid the use of alcoholic beverages unless use has been approved by the primary health care provider. Alcohol may intensify the action of the drug and cause extreme drowsiness or dizziness.

In some instances, the use of alcohol and a narcotic can have extremely serious and even life-threatening consequences that may require emergency medical treatment.
- Take the drug as directed on the container label and do not exceed the prescribed dose. Contact the primary health care provider if the drug is not effective.
- If gastrointestinal upset occurs, take the drug with food.
- Notify the primary health care provider if nausea, vomiting, and constipation become severe.
- To administer the transdermal system, remove the system from the package and immediately apply it to the skin of the upper torso. To ensure complete contact with the skin surface, press for 10 to 20 seconds with the palm of the hand. After 72 hours, remove the system and, if continuous therapy is prescribed, apply a new system. Use only water to cleanse the site before application because soaps, oils, and other substances may irritate the skin. Rotate site of application. The used patch should be folded carefully so the system adheres to itself.

EVALUATION

- The therapeutic effect occurs and pain is relieved.
- The patient demonstrates the ability to effectively use PCA.
- Adverse reactions are identified, reported to the primary health care provider, and managed through appropriate nursing interventions.
- No evidence of injury is seen.
- Body weight is maintained.
- Diet is adequate.
- The patient is free of drug dependence.
- The patient and family demonstrate understanding of the drug regimen.

● *Critical Thinking Exercises*

1. *Ms. Taylor is receiving meperidine for postoperative pain management. In assessing Ms. Taylor approximately 20 minutes after receiving an injection of meperidine, the nurse discovers Ms. Taylor's vital signs are blood pressure 100/50 mm Hg, pulse rate 100 bpm, and respiratory rate 10/min. Determine what action, if any, the nurse should take.*
2. *Mr. Talley, a 64-year-old retired schoolteacher, has cancer and is to receive morphine through a PCA infusion pump. His wife is eager to help, but Mr. Talley is very independent and refuses any assistance from her. Formulate a teaching plan for Mr. Talley that includes the use of PCA, adverse reactions to expect, and what adverse reactions to report. Discuss what methods the nurse might use to include Mrs. Talley in the care of her husband.*
3. *Roger Baccus, age 23 years, is prescribed Demerol for postoperative pain. You discover in his health history on the chart that he has a history of alcohol and drug use. Determine what further assessments you would need to make. Explain how Roger's answers would influence the actions that you as a nurse would take.*
4. *Discuss the important preadministration assessments that must be made on the patient receiving a narcotic analgesic.*
5. *Joe Thompson, age 48 years, is taking morphine to manage severe pain occurring as the result of cancer. The primary health care provider has prescribed an around-the-clock dosage regimen. Joe is asking for the pain drug 1 to 2 hours before the next dose is due. One of your co-workers feels that Joe is becoming addicted to the narcotic analgesic. Analyze this situation. What signs and symptoms would you look for in Joe? What information (if any) would you discuss with your co-worker. Discuss the actions you would take in providing the best possible care for this patient.*

● *Review Questions*

1. The nurse explains to the patient that some narcotics may be used as part of the preoperative medication regimen to _____.
   - **A.** increase intestinal motility
   - **B.** facilitate passage of an endotracheal tube
   - **C.** enhance the effects of the skeletal muscle relaxant
   - **D.** lessen anxiety and sedate the patient

2. Each time the patient requests a narcotic analgesic, the nurse must _____.
   - **A.** check the patient's diagnosis
   - **B.** talk to the patient to be sure he or she is not becoming addicted to the narcotic
   - **C.** determine the exact location of the pain, a description of the pain, and when the pain began
   - **D.** administer the narcotic with food to prevent gastric upset

3. Which of the following findings requires that the nurse withhold a narcotic and immediately contact the health care provider?
   - **A.** a pulse rate of 80 bpm
   - **B.** a significant decrease in blood pressure or a systolic pressure below 100 mm Hg
   - **C.** a respiratory rate of 20/min
   - **D.** blood pressure with a systolic pressure of 140 mm Hg

4. When administering narcotic analgesics to an elderly patient, the nurse monitors the patient closely for _____.
   - **A.** an increased heart rate
   - **B.** euphoria

C. confusion
D. a synergistic reaction

5. When monitoring a patient receiving a narcotic agonist-antagonist, the nurse must be aware that _____.

A. symptoms of narcotic withdrawal may occur in those addicted to narcotics
B. severe respiratory depression may occur
C. serious cardiac arrhythmias may develop
D. CNS stimulation is possible

● *Medications Dosage Problems*

1. A patient is prescribed oral morphine 12 mg. The dosage available is 10 mg/mL. The nurse administers _____.

2. A patient is prescribed fentanyl (Sublimaze) 50 mcg IM 30 minutes before surgery. The nurse has available a vial with a dosage strength of 0.05 mg/1 mL. The nurse calculates the dosage and administers _____.