



Wolters Kluwer

When you have to be right

Introduction to Clinical Pharmacology

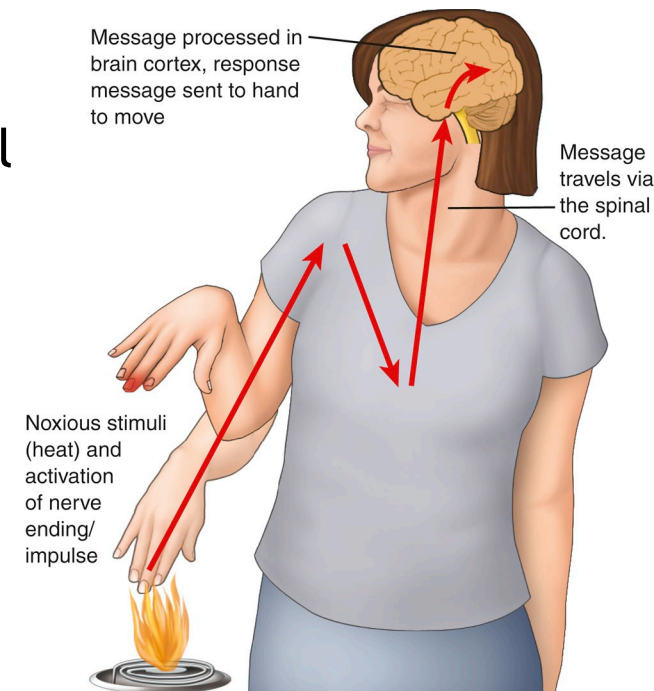
Chapter 13 Nonopioid Analgesics: Salicylates and Nonsalicylates

Learning Objectives

1. Discuss in general terms how pain is defined and the challenges of understanding the client's pain experience.
2. Distinguish the types, uses, general drug actions, common adverse reactions, contraindications, precautions, and interactions of the salicylates and acetaminophen.
3. Explain important preadministration and ongoing assessment activities the nurse should perform for the client taking salicylates or acetaminophen.
4. List nursing diagnoses particular to a client taking salicylates or acetaminophen.
5. 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 clients about the use of salicylates or acetaminophen.

Introduction to Pain

- ❖ Pain is the unpleasant sensory and emotional perception associated with actual or potential tissue damage
- ❖ The sensation of pain is sent from the peripheral tissue to the brain where it is interpreted. Pain medications change the sensation in the tissues or modulate the signal in the brain
- ❖ Acute pain has a short duration of less than 3 to 6 months
- ❖ Chronic pain lasts more than 6 months



Pharmacology in Practice Exercise #1

- ❖ Which body system is involved in the recognition and perception of pain?
 - a) Nervous system
 - b) Cardiovascular system
 - c) Integumentary system
 - d) Endocrine system



Salicylates—Actions

- ❖ Drugs derived from salicylic acid
- ❖ Useful in pain management due to analgesic, antipyretic, and anti-inflammatory effects
- ❖ Antipyretic—lowers body temperature by dilation of peripheral blood vessels
- ❖ Analgesic and anti-inflammatory—inhibit the production of prostaglandins
- ❖ Examples:
 - aspirin (acetylsalicylic acid)
 - magnesium salicylate



Salicylates—Uses

- ❖ Relieving mild to moderate pain
- ❖ Reducing elevated body temperature
- ❖ Treating inflammatory conditions (e.g., rheumatoid arthritis)
- ❖ Aspirin prolongs bleeding time by inhibiting the aggregation of platelets
 - Decreasing the risk of myocardial infarction in those with unstable angina or previous myocardial infarction (aspirin)
 - Reducing risk of transient ischemic attacks
 - Helps maintain pregnancy in some populations—prevents or treats inadequate uterine or placental blood flow

Salicylates—Adverse Reactions

❖ Gastrointestinal System Reactions:

- Gastric upset, heartburn, nausea, vomiting
- Anorexia
- GI bleeding

❖ Toxicity:

- Salicylism



Salicylates—Contraindications and Precautions

❖ Contraindicated in clients with:

- known hypersensitivity to salicylates or NSAIDs
- bleeding disorders
- GI bleeding
- and in children or teenagers who have influenza or chickenpox (Reye syndrome)

❖ Used cautiously in clients with:

- lactation
- hepatic or renal disease
- preexisting hypoprothrombinemia
- vitamin K deficiency
- peptic ulcers
- diabetes
- gout



Salicylates—Interactions

Interacting Drug/Food	Common Use	Effect of Interaction
Anticoagulant	Prevents blood clots	Increased risk for bleeding
NSAIDs	Pain relief	Increased serum levels of NSAID
Activated charcoal	Antidote—usually to poisons	Decreased absorption of the salicylates
Antacids	Relief of gastric upset, heartburn	Decreased effects of the salicylates
Carbonic anhydrase inhibitors	Reduction of intraocular pressure, also used as a diuretic	Increased risk for salicylism
Foods containing salicylates (e.g., curry powder, paprika, licorice, prunes, raisins, and tea)	Dietary preferences/nutrition	Increase the risk of adverse reactions

Nonsalicylates—Actions and Uses

❖ Actions:

- Analgesic and antipyretic activity: same as salicylates
- No anti-inflammatory action
- Nonopioid drug—mechanism of action unknown

❖ Uses:

- Used to treat mild to moderate pain
- Reduce elevated body temperature
- Manage pain and discomfort—arthritic disorders
- In clients with aspirin allergy, bleeding disorders, receiving anticoagulant therapy
- In clients who had recent minor surgical procedures



Nonsalicylates—Adverse Reactions

❖ Adverse Reactions (Rare):

- Skin eruptions, urticaria
- Hemolytic anemia
- Pancytopenia
- Hypoglycemia
- Jaundice, hepatotoxicity, and hepatic failure



❖ Toxicity:

- Can occur after a single dose and can be fatal at 20 to 25 g
- Signs of toxicity: nausea, vomiting, confusion, liver tenderness, hypotension, cardiac arrhythmias, jaundice, and acute hepatic and renal failure

Nonsalicylates—Contraindications and Precautions

❖ Contraindicated in clients with:

- known hypersensitivity to acetaminophen
- habitual alcohol use

❖ Used cautiously in clients with:

- pregnancy (pregnancy category B)
- lactation
- severe or recurrent pain or high continued fever
- clients who are taking combination over-the-counter cold preparations



Nonsalicylates—Interactions

Interacting Drug/Food	Common Use	Effect of Interaction
Barbiturates	Sedation, central nervous system depressants	Increased possibility of toxicity and decreased effect of acetaminophen
Hydantoins	Anticonvulsants	Increased possibility of toxicity and decreased effect of acetaminophen
Isoniazid and rifampin	Tuberculosis medications	Increased possibility of toxicity and decreased effect of acetaminophen
Loop diuretics	Control of fluid imbalance	Decreased effectiveness of diuretic

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #1

❖ Preadministration Assessment

❖ Objective Data

- Location of pain
- Description of site which is the cause of pain
- Palpate for tenderness in the location of pain, examine the joints if involved
- Vital signs



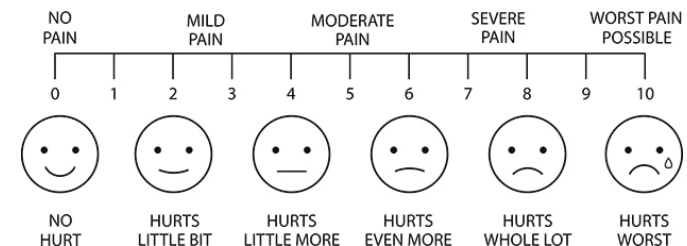
Nursing Process—Client Receiving a Salicylate or Nonsalicylate #2

❖ Preadministration Assessment (continued)

❖ Subjective Data

- Pain experience (onset, type, radiation, location, intensity, and duration)
- Type and duration of symptoms
- If febrile, describe the type and duration of symptoms
- Allergy history
- Alcohol use
- Remedies attempted before seeking care

PAIN MEASUREMENT SCALE



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #3

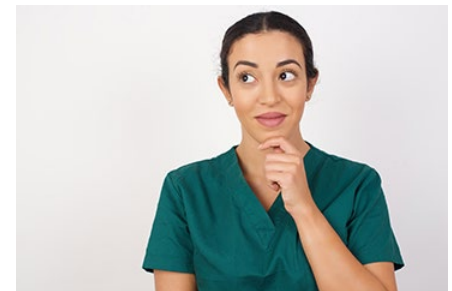
❖ Ongoing Assessment

- Monitor relief of pain; reassess pain rating 30 to 60 minutes following administration of the drug; monitor vital signs at least every 4 hours
- Assess and document severity, location, and intensity of pain
- When given for fever, monitor temperature every 4 hours
- Report any adverse reactions



Pharmacology in Practice Exercise #2

- ❖ A client has been administered acetaminophen. Which of the following tasks should the nurse perform as part of the ongoing assessment?
- a) Reassess the client's pain rating 3 hours after administration
 - b) Monitor the client's vital signs every 8 hours
 - c) If stools are dark, send a sample for testing immediately
 - d) Assess or decrease in inflammation and greater mobility



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #4

❖ Nursing Diagnoses

- Impaired Comfort related to fever of the disease process
- Chronic or Acute Pain related to peripheral nerve damage and/or tissue/inflammation because of the disease process
- Impaired Physical Mobility related to muscle and joint stiffness
- Risk for Poisoning related to increased salicylate or acetaminophen use

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #5

❖ Planning

- Expected client outcomes depend on the reason for administration of the drug but may include:
 - Optimal response to therapy (relief of pain and fever)
 - Management of common adverse drug reactions
 - Confidence and understanding of the prescribed medication regimen

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #6

❖ Implementation

- Promoting an optimal response to therapy
 - Teach clients to avoid salicylates 1 week before or after any surgery and until healing is complete
 - Teach clients that they can use acetaminophen or NSAIDs after surgery or a dental procedure
 - Observe for adverse drug reactions
 - Teach clients to take acetaminophen with a full glass of water, with meals or on an empty stomach
 - Symptoms of overdose: nausea; vomiting; diaphoresis; generalized malaise

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #7

❖ Implementation

- Promoting an optimal response to therapy continued
 - Observe for signs of salicylism (e.g., clients with arthritis using high doses of salicylates)
 - Therapeutic levels of salicylates are between 100 and 300 mcg/mL

TABLE 13.2 Symptoms of Salicylism

PLASMA LEVEL OF SALICYLATE	SYMPTOMS
Levels greater than 150 µg/mL (mild salicylism)	Tinnitus (ringing sound in the ear), difficulty hearing, dizziness, nausea, vomiting, diarrhea, mental confusion, central nervous system depression, headache, sweating, and hyperventilation (rapid, deep breathing)
Levels greater than 250 µg/mL	Symptoms of mild salicylism plus headache, diarrhea, thirst, and flushing
Levels greater than 400 µg/mL	Respiratory alkalosis, hemorrhage, excitement, confusion, asterixis (involuntary jerking movements especially of the hands), pulmonary edema, convulsions, tetany (muscle spasms), fever, coma, shock, and renal and respiratory failure

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #8

❖ Implementation

- Monitoring and Managing Client Needs
 - Impaired Comfort
 - For fever, check temperature before and 45 to 60 minutes after administration
 - Suppository form of drug used: check after 30 minutes for retention of suppository
 - Notify primary health care provider if temperature not controlled



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #9

❖ Implementation

- Monitoring and Managing Client Needs
 - Acute or Chronic Pain
 - Notify primary health care provider if no relief from pain or discomfort
 - Take with a full glass of water, food, or milk to avoid GI upset
 - Check cause of new pain experienced; report to primary health care provider as other therapy may be needed
 - Check the color of the stools and report changes to provider



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #10

❖ Implementation

- Monitoring and Managing Client Needs
 - Impaired Physical Mobility
 - Treat acute pain or long-standing mild to moderate pain to promote mobility
 - Determine degree of immobility
 - Assist with ambulation
 - If indicated, consult with physical or occupational therapy



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #11

❖ Implementation

- Monitoring and Managing Client Needs
 - Risk for Poisoning
 - Withhold drug and report any sensory alterations immediately if suspected
 - Explain that hearing loss disappears when the drug therapy is discontinued
 - Acute overdose of acetaminophen treated with gastric lavage within 4 hours of ingestion and acetylcysteine via nebulizer within 24 hours to prevent liver damage
 - Acute overdose of salicylates is treated with induction of emesis, gastric lavage, and/or activated charcoal



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #12

❖ Implementation—Educating the Client and Family

- Develop a teaching plan for the client and family to include:
 - Take the drug exactly as prescribed by the primary health care provider
 - Take the drug with food or a full glass of water
 - Do not consistently use an OTC nonopioid analgesic to treat chronic pain
 - Teach the client to keep a record of when they took the pain reliever
 - Contact health care provider if febrile for greater than 24 hours
 - Consult with the health care provider or pharmacist before taking multiple over-the-counter pain relievers

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #13

❖ Implementation—Educating the Client and Family

- Develop a teaching plan for the client and family to include:
 - Contact health care provider if febrile for greater than 24 hours
 - Consult with the health care provider or pharmacist before taking multiple over-the-counter pain relievers
 - Discard expired salicylates or salicylates that develop a vinegar-like odor
 - Discontinue salicylates 1 week prior to dental procedures/surgeries
 - Avoid alcoholic beverages



Nursing Process—Client Receiving a Salicylate or Nonsalicylate #14

❖ Implementation—Educating the Client and Family

- Develop a teaching plan for the client and family to include:

TABLE 13.3 Common Combination Drugs Containing Acetaminophen

PAIN RELIEVERS	AMOUNT OF ACETAMINOPHEN
Saleto tablets	115 mg/tab
Excedrin migraine tablets	250 mg/tab
Excedrin aspirin-free caplets	500 mg/caplet
Axocet tablets	600 mg/tab
Non-Pain Relievers	Amount of Acetaminophen
NyQuil/DayQuil	650 mg/2 tablespoons (30 mL)
Zicam	650 mg/2 tablespoons (30 mL)
Benadryl allergy and sinus	500 mg/tab

Nursing Process—Client Receiving a Salicylate or Nonsalicylate #15

❖ Evaluation

- Was the therapeutic response achieved? Is the pain relieved?
- Were adverse reactions: identified, reported, and managed?
 - Client reports comfort without fever
 - Discomfort is reduced or eliminated
 - Client maintains adequate mobility
 - Toxic levels of medication are recognized before harm
- Did client and family express confidence and demonstrate understanding of drug regimen?

Turn and Talk—Case Study

- ❖ A 34-year-old client was admitted to the hospital 2 days ago with a venous thromboembolism. Discharge orders for today include: warfarin 5 mg every day. The client asks the nurse if it is alright to take Ecotrin (a salicylate analgesic) for headaches? (Learning Objectives 2, 5)
- 1. What should the nurse tell the client about the use of Ecotrin with warfarin?
- 2. What should the nurse recommend that the client take for any headaches?
- 3. What should the nurse tell the client about the medication recommended for the headaches?

