Chapter 13
Nonopioid Analgesics: Salicylates and Nonsalicylates

What system is involved in the perception of pain?

Nervous system

Pain

- Pain perception pathway-transmits the noxious stimulus along the pathway to the spinal cord and up to the brainstem
- From the brainstem the message of pain is transmitted to the brain cortex and the message is sent back in response

Pain

Pain is best described by

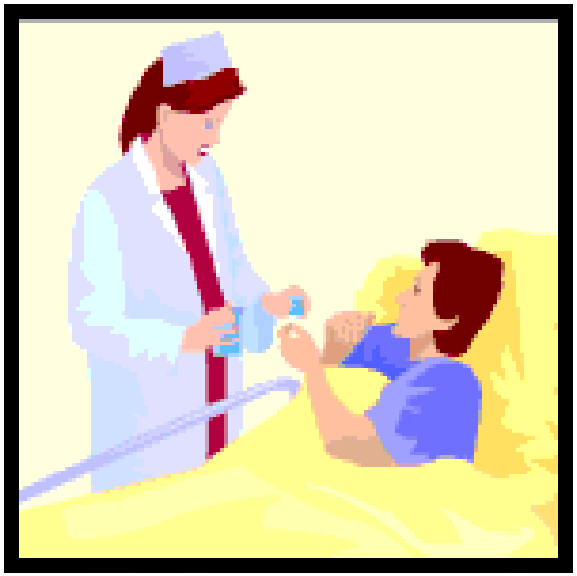
- Duration-acute and chronic
- Location-show where and describe pain
- Client's sensation-treating the pain peripherally or centrally

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, whereas chronic pain lasts more than 6 months

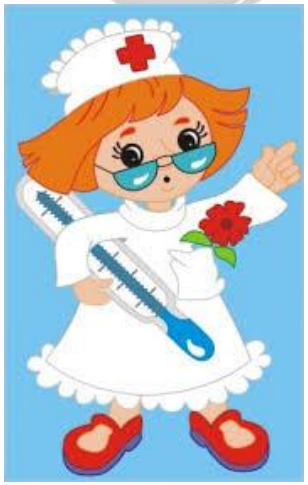
Salicylates

- Drugs derived from salicylic acid
  - Useful in pain management due to analgesic, antipyretic, and anti-inflammatory effects



Salicylates: Actions and Uses

- Lower body temperature
- Inhibit production of prostaglandins
- Aspirin: inhibits prostaglandin synthesis and has greater anti-inflammatory effects; prolongs bleeding time
- Used for mild to moderate pain; reducing elevated body temperature; treating inflammatory conditions; decreasing risk of myocardial infarction; reducing risk of transient ischemic attacks



Salicylates: Adverse Reactions

- Gastrointestinal (GI) reactions:
  - Gastric upset; heartburn; nausea; vomiting; anorexia; GI bleeding; allergy
  - Significant blood loss
  - Allergy to salicylates manifested by:
    - Hives, rash, angioedema, bronchospasm, anaphylactoid reactions

Salicylates: Contraindications and Precautions

- Contraindicated in clients with:
  - Known hypersensitivity; bleeding disorders; children or teenagers with chickenpox or influenza
- Used cautiously in clients:
  - With hepatic and/or renal disease; during pregnancy and lactation; with pre-existing hypoprothrombinemia; with vitamin K deficiency; with GI irritation or peptic ulcer; with mild diabetes or gout

Willow bark

- analgesic property
- bark and leaves have antipyretic and anti-inflammatory properties
- fewer adverse reactions but still need to be cautious
- contraindicated in some patients

What are the properties of salicylates?

1. Analgesics
2. Antipyretic
3. Anti-inflammatory
4. Anti-platelet

Salicylates: Interactions

Interactant drug	Effect of interaction
Anticoagulant	Increased risk for bleeding
NSAIDs	Increased serum levels of the NSAID
Activated charcoal	Decreased absorption of the salicylates
Antacids	Decreased effects of the salicylates
Carbonic anhydrase inhibitors	Increased risk for salicylism

What is the term for toxicity of salicylates?

Salicylism

Nonsalicylates: Actions and Uses

- Actions:
  - Analgesic and antipyretic activity: same as salicylates
  - No anti-inflammatory action
- Uses:
  - Used to treat mild to moderate pain; reduce elevated body temperature; manage pain and discomfort—arthritic disorders

Nonsalicylates: Action and Uses

- Useful for people:
  - With aspirin allergy; bleeding disorders; receiving anticoagulant therapy; who had recent minor surgical procedures

Nonsalicylates: Adverse Reactions

- Adverse reactions: skin eruptions; urticaria; hemolytic anemia; pancytopenia; hypoglycemia; jaundice; hepatotoxicity; hepatic failure
- Overdose causes acute acetaminophen poisoning or toxicity

Nonsalicylates: Contraindications and Precautions

- Contraindicated in patients with hypersensitivity
- Used cautiously in patients:
  - With severe or recurrent pain or high or continued fever
  - Acetaminophen used cautiously during pregnancy and lactation

What is the antidote for acetaminophen toxicity?

Acetylcysteine (Mucomyst)

Nonsalicylates: Interactions

Interactant drug	Effect of interaction
Barbiturates	Increased possibility of toxicity and decreased effect of acetaminophen
Hydantoins	Increased possibility of toxicity and decreased effect of acetaminophen
Isoniazid and rifampin	Increased possibility of toxicity and decreased effect of acetaminophen
Loop diuretics	Decreased effectiveness of the diuretic

Nursing Process: Assessment #1

- Preadministration assessment:
  - Assess type, onset, intensity, and location of pain
  - Evaluate ability to carry out activities of daily living
  - Develop a care plan
  - Evaluate the response to drug therapy

Nursing Process: Assessment #2

- 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
  - Report any adverse reactions

Nursing Process: Nursing Diagnosis and Planning

- **Impaired Comfort** related to fever of the disease process (e.g., infection or surgery)
- **Chronic** or **Acute Pain** related to peripheral nerve damage and/or tissue inflammation due to the disease process
- **Impaired Physical Mobility** related to muscle and joint stiffness
- **Risk for Poisoning** related to increased salicylate or acetaminophen use

What are symptoms of salicylism?

Dizziness

Tinnitus

Impaired hearing

N/V/D

Flushing

Sweating

Rapid deep breathing

Tachycardia

Mental confusion

Lassitude, drowsiness, Resp depression

Coma

Nursing Process: Implementation #1

- Promoting an optimal response to therapy:
  - Avoid salicylates 1 week before or after any surgery
  - Observe for adverse drug reactions
  - Observe for signs of salicylism

Nursing Process: Implementation #2

- Promoting an optimal response to therapy (cont.)
  - Symptoms associated with salicylates:
    - Levels greater than 150 mcg: result in mild salicylism
    - Levels greater than 250 mcg: result in symptoms of mild salicylism
    - Levels greater then 400 mcg: result in respiratory alkalosis; hemorrhage

Nursing Process: Implementation #3

- Promoting an optimal response to therapy (cont.):
  - Administer acetaminophen with full glass of water, with meals or on empty stomach
  - Symptoms of overdosage: nausea; vomiting; diaphoresis; generalized malaise
  - Acute overdosage treated with acetylcysteine to prevent liver damage

Nursing Process: Implementation #4

- Monitoring and managing patient needs:
  - Impaired comfort:
    - 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: Implementation #5

- Monitoring and managing patient needs (cont.)
  - Pain:
    - Notify primary health care provider if no relief from pain or discomfort
    - Check cause of new pain experienced; report to primary health care provider as other therapy may be needed
    - Check the color of the stools

Nursing Process: Implementation #6

- Monitoring and managing patient needs (cont.)
  - Impaired physical mobility
    - Acute pain or long-standing mild to moderate pain
    - Determine degree of immobility
    - Assist with ambulation

Nursing Process: Implementation #7

- Monitoring and managing patient needs (cont.)
  - Risk for poisoning
    - Withhold drug and report any sensory alterations immediately if suspected
    - Explain that hearing loss disappears when the drug therapy is discontinued

Nursing Process: Implementation #8

- Educating the patient and family:
  - Develop a teaching plan that includes:
    - 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

Nursing Process: Implementation #9

- Educating the patient and family (cont.)
  - Do not use these drugs on regular basis unless primary health care provider notified
  - Teaching on salicylates includes:
    - Salicylates deteriorate rapidly when exposed to air, moisture, and heat
    - Consult pharmacist about the product's ingredients if in doubt

Nursing Process: Implementation #10

- Educating the patient and family (cont.)
  - Discontinue use 1 week before surgery or dental procedure
  - Teaching on acetaminophen includes:
    - Acetaminophen lacks anti-inflammatory properties of aspirin
    - Notify primary health care provider if any adverse reactions occur
    - Avoid use of alcoholic beverages

Nursing Process: Evaluation

- Relief from pain; body temperature normal
- Adverse reactions are identified, reported, and managed
- Patient verbalizes the importance of complying with the prescribed treatment regimen
- Patient demonstrates understanding of prescribed treatment regimen and adverse effects