Introduction to Clinical Pharmacology

Chapter 15
Opioid Analgesics & Antagonists

Three-Step Analgesic Pain Intensity Treatment

- The World Health Organization (WHO) developed a three-step analgesic protocol based on intensity as a guideline for treating pain. The “pain ladder” directs the use of both opioids and nonopioids in the treatment of mild to severe pain.

Introduction to Opioid Analgesics

- Controlled substances
- Do not change tissues where pain originates
- Change patient's perception of pain
- Treat pain centrally in the brain

Opioid Analgesics

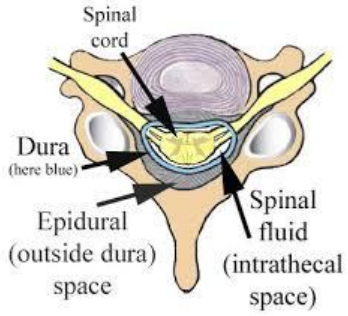
- Opiates
- Morphine
- Heroin
- Synthetic opioids

Opioid Analgesics: Actions

- Cells within central nervous system
  —Mu and kappa receptors
- Agonist agents
- Opioid analgesic
- Agonist
- Partial agonist
- Agonist-antagonist
- Nonintended responses

Opioid Analgesics: Uses

- Treat pain
- Manage opiate dependence
- Decrease anxiety
- Support anesthesia adjunct
- Promote obstetric analgesia
- Administered intrathecally/epidurally
- Treats severe diarrhea; intestinal cramping; severe, persistent cough



Opioid Analgesics: Adverse Reactions

- CNS: sedation, increased intracranial pressure
- Respiratory: depressed breathing rate/depth
- GI: constipation, anorexia, biliary tract spasms
- Cardiovascular: tachycardia, bradycardia
- Genitourinary: urinary retention/hesitancy
- Allergic reactions: pruritus, rash, urticaria
- Other reactions: sweating, pain at injection site, local tissue irritation

Opioid Analgesics: Contraindications

- Patients with hypersensitivity to drugs
- Acute bronchial asthma, emphysema, or upper airway obstruction
- Patients with head injury or increased intracranial pressure
- Convulsive disorders; severe renal or hepatic dysfunction; acute ulcerative colitis
- Not recommended in pregnancy or labor

Opioid Analgesics: Precautions

- Elderly patients
- Patients considered opioid naive
- Patients undergoing biliary surgery
- Lactating women
- Patients with undiagnosed abdominal pain, hypoxia, supraventricular tachycardia, prostatic hypertrophy, and renal/hepatic impairment

Opioid Analgesics: Interactions

- Alcohol; antihistamines; antidepressants; sedatives; phenothiazines: increased risk for CNS depression
- Opioid agonist-antagonist: opioid withdrawal symptoms
- Barbiturates: respiratory depression, hypotension, and/or sedation

Nursing Process: Assessment #1

- Preadministration assessment
  - Assess and document description of pain
  - Review patient's health history, allergy history, and past and current drug therapies
    - Data may be obtained during the initial history and physical assessment that require the nurse to contact the primary health care provider

Nursing Process: Assessment #2

- Ongoing assessment
  - Obtain blood pressure, pulse and respiratory rate, and pain rating
  - Notify primary health care provider if analgesic is ineffective
  - Inquire about details of pain
  - Nursing judgment: when a change in pain/intensity or location needs to be reported
  - Opioid-naive patient: risk for respiratory depression

Nursing Process: Assessment #3

- Respiratory rate 10 or less needs frequent monitoring and notification
- Opiate as an antidiarrheal drug:
  - Record each bowel movement: Appearance, color, and consistency
  - Notify in case of blood, severe abdominal pain, or if diarrhea is not relieved or worsens

Nursing Process: Nursing Diagnosis

- **Ineffective Breathing Pattern** related to pain and effects on breathing center by opioids
- **Risk for Injury** related to dizziness or lightheadedness from opioid administration
- **Constipation** related to the decreased GI motility caused by opioids
- **Imbalanced Nutrition: Less Than Body Requirements** related to anorexia caused by opioids

Nursing Process: Planning

- Expected outcomes
  - Relief of pain
  - Supporting patient needs: management of adverse reactions
  - Absence of injury
  - Adequate nutrition intake
  - Understanding of and compliance with prescribed treatment regimen

Nursing Process: Implementation #1

- Relieving acute pain
  - Self-administration system is under the control of the nurse
  - Adds the drug to the infusion pump
  - Sets the time interval (or lockout interval) between doses

Patient Controlled Analgesia Pump

Nursing Process: Implementation #2

- Relieving chronic severe pain
  - Morphine sulfate: should be scheduled around the clock
  - Controlled-released forms: indicated for the management of pain when a continuous analgesic is needed for an extended time
  - Long-acting forms: a fast-acting form may be given for breakthrough pain
  - Drugs that combine a nonopioid and an opioid analgesic provide good pain relief

Nursing Process: Gerontologic Alert

- Transdermal route: use with caution in the elderly
- Brompton's mixture: mixture of an oral opioid and other drugs
- Monitor for the adverse reactions of each drug contained in the solution
- Fear of respiratory depression; adverse effects on GI system
- Decrease in motility causes constipation, nausea, acute abdominal pain, anorexia
- Provide a good, aggressive bowel program

Nursing Process: Implementation #3

- Using epidural pain management
  - Lower total dosages of the drug used; fewer adverse reactions; greater patient comfort
  - Serious adverse reaction: respiratory depression
  - 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 Process: Implementation #4

- Monitoring and managing patient needs
  - Report significant decrease in the respiratory rate or a respiratory rate of 10 breaths/min or below
  - Report significant increase or decrease in the pulse rate or a change in the pulse quality
  - Report significant decrease in blood pressure (systolic or diastolic) or a systolic pressure below 100 mm Hg

Nursing Process: Implementation #5

- Ineffective Breathing Pattern: encourage coughing and breathing deeply every 2 hours
- Risk for Injury: provide assistance
- Constipation: record bowel movement daily
- Imbalanced Nutrition: assess food intake after each meal
- Opioid drug dependence: provide adequate pain relief to *prevent* returning to addictive behaviors

Nursing Process: Implementation #6

- Management of opioid dependence
  - Wait 48 hours after the last dose of levomethadyl before administering the first dose of methadone or other narcotic
  - Maintenance therapy is designed to prevent desire
  - Dose and length of time vary
  - Patients on methadone maintenance need to continue therapy when hospitalized

Nursing Process: Implementation #7

- Educating patient and family
  - Inform that drug is for pain relief
  - Provide information on administration of drug and adverse effects
  - Discuss appropriate use and care of PCA infusion pump, transdermal patch
  - Give the family instruction in the parenteral administration of the drug or use of an IV pump

Opioid (Narcotic) Antagonists #1

- Actions
  - Antagonist: competes for opiate receptor sites
  - Reverses all effects; pain will return
  - No opioid: antagonist has no drug activity

Opioid (Narcotic) Antagonists #2

- Uses
  - Postoperative acute respiratory depression, reversal of opioid adverse effects, suspected acute opioid overdosage
- Adverse reactions
  - Nausea, vomiting, sweating, tachycardia, increased blood pressure, tremors

Opioid (Narcotic) Antagonists #3

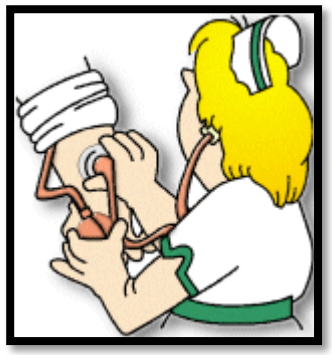
- Contraindications, precautions, interactions
  - Hypersensitivity, pregnancy category B, infants of opioid-dependent mothers, patients with opioid dependency, cardiovascular disease, and lactation
- Withdrawal symptoms: opioid dependent

Nursing Process: Assessment #1

- Preadministration assessment:
  - Long-term opioid therapy: tolerant to physical adverse effects
  - Risk for respiratory depression
  - Somnolence and pain relief: slows breathing pattern
  - Coach breathing pattern

Nursing Process: Assessment #2

- Obtain blood pressure, pulse, and respiratory rate
- Review record for drug suspected of causing respiratory depression symptoms
- Review initial health history, allergy history, treatment modalities



Nursing Process: Assessment #3

- Ongoing assessment
  - Monitor blood pressure, pulse, and respiratory rate at frequent intervals and vital signs every 5 to 15 minutes after patient responsive
  - Adverse drug reactions: notify primary health care provider
  - Continue to monitor vital signs until effects of opioid wear off

Nursing Process: Assessment #4

- Nursing Alert
  - Repeated dose needed if results from initial dose unsatisfactory
  - Duration of close patient observation depends on response to opioid antagonist

Nursing Process: Planning and Implementation #1

- Planning
  - Return to normal respiratory rate, rhythm, and depth; adequate ventilation of body; continued pain relief
- Implementation: promoting an optimal response to therapy
  - Naloxone: used in postanesthesia recovery unit
  - Balance pain relief

Nursing Process: Planning and Implementation

- Monitoring and managing patient needs
  - Impaired spontaneous ventilation
    - Naloxone: cardiac monitoring, artificial ventilation, suction equipment, maintain patent airway
    - Naloxone by IV infusion: secondary line, IV piggyback, IV push

Nursing Process: Planning and Implementation #2

- Nursing Alert
  - Slow IV push: somnolence abates
- Acute pain
  - Assess pain and begin to treat pain again, review circumstances that led to use of antagonist, educate family, monitor fluid intake and output

Nursing Process: Evaluation

- The therapeutic effect is achieved
- The patient's respiratory rate, rhythm, and depth are normal
- Pain relief is resumed