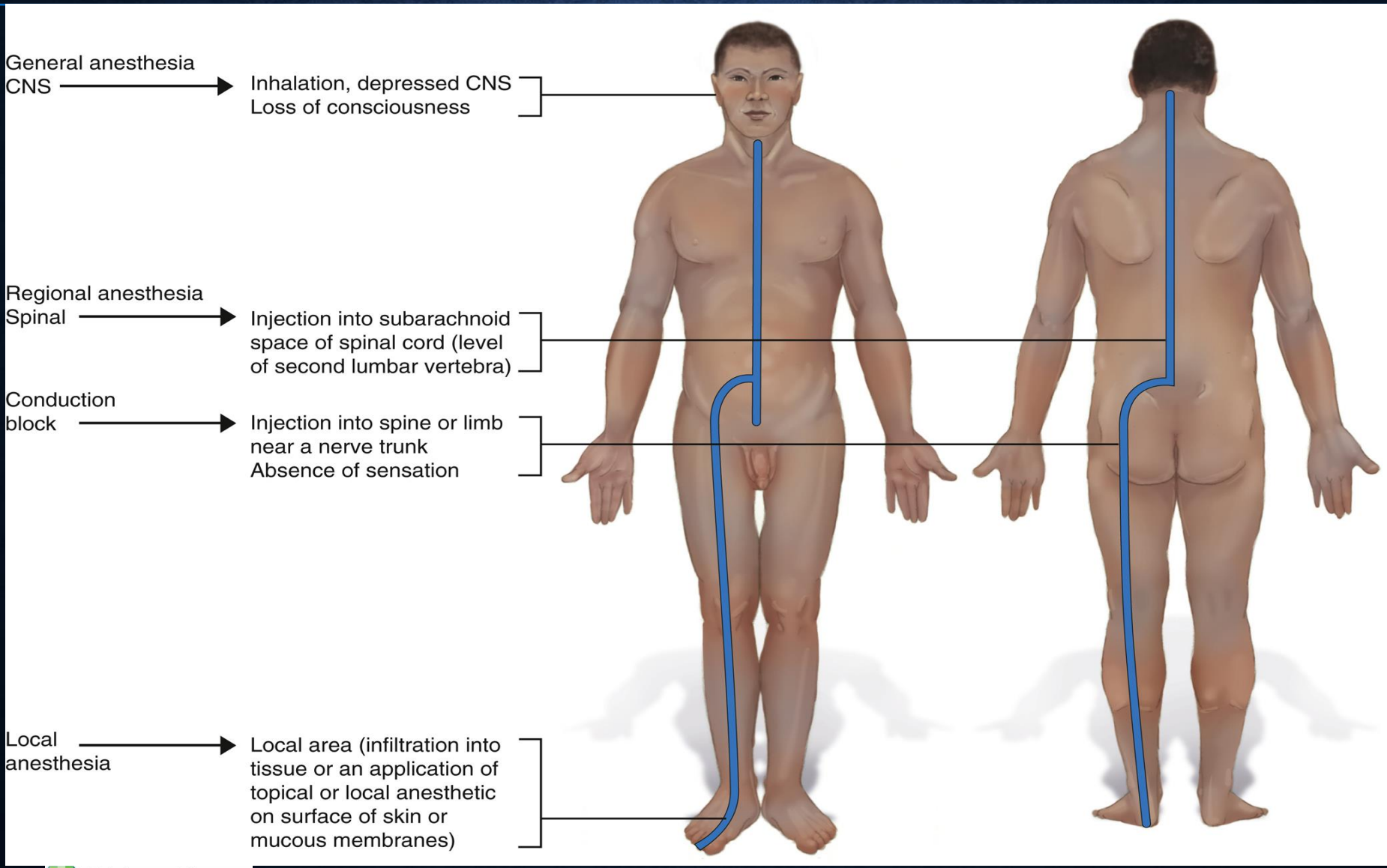
Introduction to Clinical Pharmacology

Chapter 16
Anesthetic Drugs

INTRODUCTION TO ANESTHESIA AND TYPES OF ANESTHESIA #1

- Anesthesia—Induced by various drugs to bring about partial or complete loss of sensation
- Types of anesthesia:
  - Local anesthesia
  - Regional anesthesia
  - Conscious sedation
  - General anesthesia
- Anesthesiologist
  - Trained physician to administer anesthesia
- Nurse Anesthetist
  - Registered nurse with a minimum of a master's degree and special training in anesthesia

INTRODUCTION TO ANESTHESIA AND TYPES OF ANESTHESIA #2



TYPES OF ANESTHESIA—LOCAL ANESTHESIA

- **Local anesthesia:**
  - Topical anesthesia: application of the anesthesia to surface of skin, open area, mucous membrane, transdermal form
- **Local infiltration anesthesia: injection of anesthesia into tissues**
  - Dental procedures, suturing of small wounds, making an incision into a small area
- **Examples: Bupivacaine, Lidocaine, Xylocaine**

TYPES OF ANESTHESIA—REGIONAL ANESTHESIA

- Regional anesthesia: injection of anesthesia in the nerves to prevent sending pain signals
- Spinal anesthesia: injection of anesthesia into the subarachnoid space of the spinal cord
- Conduction blocks: injection of anesthesia into or near a nerve trunk
  - Epidural block, transsacral block, brachial plexus block
- Examples: lidocaine, bupivacaine

PREPARING A CLIENT FOR LOCAL ANESTHESIA

- Explain the administration of the anesthetic and the procedure
- Take client's allergy history
- Prepare the area to be anesthetized:
  - Cleaning the area with antiseptic, shaving the area
  - Some anesthetics/procedures require fasting
- Start an IV per provider orders
- May administer intravenous sedative

ADMINISTERING LOCAL ANESTHESIA

- Provider administers a local injectable anesthetic
- Mixed with epinephrine to cause local vasoconstriction
- Epinephrine contraindicated when used on an extremity
- As a nurse, you may draw up the anesthetic drug for the provider to administer
- Be aware of when to and when not to use epinephrine

NURSING RESPONSIBILITIES WHEN CARING FOR A CLIENT RECEIVING LOCAL ANESTHESIA

- Applying dressing to the appropriate surgical area
- Observe area for bleeding, oozing, other problems after administration
- When spinal anesthesia is administered you would expect loss of feeling in the lower abdomen, lower extremities, and perineum

PREANESTHETIC DRUGS—USES #1

- Given before administration of anesthesia
- May consist of one drug or a combination of drugs
- Uses
  - Antianxiety—provide slight sedation, reduce anxiety, promote induction of anesthesia
  - Histamine-2 receptor antagonists—decrease gastric acidity and volume
  - Anticholinergics—decrease respiratory secretions, dry mucous membranes, and prevent vagal nerve simulation during endotracheal intubation

PREANESTHETIC DRUGS—USES #2

- Uses
  - Neuromuscular blocking agents—skeletal muscle relaxation, allows for rapid intubation
  - Opioids—sedate and decrease the amount of anesthesia
  - Antibiotics—prevent infection, destroy enteric microorganisms
- Preanesthetic drugs may be contraindicated in clients older than 60 years due to medical disorders affecting this population of clients

NURSING RESPONSIBILITIES WHEN CARING FOR A CLIENT RECEIVING PREANESTHETIC DRUGS

- Assess the client's physical status
- Explain the anesthesia that will be used for the procedure
- Describe or explain the preparations for surgery ordered by the physician (e.g., fasting, enema, shaving)
- Describe or explain immediate postoperative care (e.g., frequent vital signs)
- Demonstrate, describe, and explain postoperative client activities (e.g., deep breathing and coughing)
- Emphasize the importance of pain control and teach the client to use the PCA pump if indicated

TYPES OF ANESTHESIA—CONSCIOUS SEDATION

- Conscious sedation is used when a procedure requires that a client be relaxed, but awake and able to follow commands
- Medications are used to minimize anxiety, produce a calm, relaxed state, and reduce the sensation of pain
- Used in conjunction sometimes with local anesthesia
- Used in outpatient settings, ambulatory surgery, procedural clinics, dental offices, and pediatric settings
- Examples: nitrous oxide, sedatives

LEVELS OF CONSCIOUS SEDATION

TABLE 16.1 Example of Local Anesthetics

GENERIC NAME	TRADE NAME
Articaine	Septocaine
Bupivacaine	Marcaine
Chloroprocaine	Nesacaine
Lidocaine	Xylocaine
Mepivacaine	Carbocaine, Isocaine
Prilocaine	
Ropivacaine	Naropin

NURSING RESPONSIBILITIES WHEN CARING FOR A CLIENT RECEIVING CONSCIOUS SEDATION

- Clients may hear and remember their procedure when receiving conscious sedation
- Provide verbal reassurance to the client during the procedure
- Monitor vital signs as indicated
- Ensure resuscitation equipment is nearby

TYPES OF ANESTHESIA—GENERAL ANESTHESIA

- The choice of anesthetic drug depends on:
- General physical condition of the client
- Area, organ, system being operated on
- Anticipated length of surgical procedure

STAGES OF GENERAL ANESTHESIA

- Stage I: Anesthesia (Analgesia)
- Stage II: Delirium/Excitement
- Stage III: Surgical Analgesia
- Stage IV: Respiratory paralysis

DRUGS USED FOR GENERAL ANESTHESIA #1

- Barbiturates and similar agents:
  - Methohexital; Etomidate; Propofol
- Benzodiazepines: Midazolam
- Ketamine
- Gases and volatile liquids:
  - Nitrous oxide; Sevoflurane (Ultane); Isoflurane (Forane); Desflurane (Suprane)

DRUGS USED FOR GENERAL ANESTHESIA #1

- Sevoflurane (Ultane): a generalized anesthetic agent administered via inhalation
- Desflurane (Suprane): a special vaporizer is used to deliver this anesthetic, because delivery by mask results in irritation of the respiratory tract

DRUGS USED FOR GENERAL ANESTHESIA #1

Barbiturates such as Methohexital have the effect of CNS depression

DRUGS USED FOR GENERAL ANESTHESIA #2

- Opioids
  - Analgesic fentanyl; droperidol; remifentanil; neuroleptic drug
- Skeletal muscle relaxants
  - Anectine; Nimbex

NURSING RESPONSIBILITIES FOR PREANESTHESIA

- Performing the required tasks and procedures as prescribed (e.g., cleanse the operative area, take vital signs, check for signed consent form)
- Checking the chart for any recent, abnormal laboratory tests
- Placing a list of known or suspected drug allergies
- Administering the preanesthetic drug
- Outpatient—ensure there is a caregiver to take person home

NURSING RESPONSIBILITIES FOR POSTANESTHESIA OR POSTANESTHESIA CARE UNIT #1

- **Postanesthesia**
  - Admitting the client to the unit according to hospital procedure or policy
  - Positioning the client to prevent aspiration of vomitus and secretions
  - Checking the airway for patency, assessing the respiratory status, and giving oxygen as needed
  - Check blood pressure and pulse, IV lines, catheters, drainage tubes, surgical dressings, and casts
  - Review the client's surgical and anesthesia records

NURSING RESPONSIBILITIES FOR POSTANESTHESIA OR POSTANESTHESIA CARE UNIT #2

- **Postanesthesia**
  - Monitor the blood pressure, pulse, and respiratory rate every 5 to 15 minutes until the client is discharged from the area
  - Check the client every 5 to 15 minutes for emergence from anesthesia. Suctioning is provided as needed
  - Exercise caution in administering opioids
  - Discharge the client from the area to their room or other specified area