Chapter 31

Medication Administration
To safely and accurately administer medications, you need knowledge related to:

- Legal aspects of health care
- Pharmacology
- Pharmacokinetics
- Life sciences
- Pathophysiology
- Human anatomy
- Mathematics
Medication Legislation and Standards

- Federal regulations
  - Pure Food and Drug Act
  - Food and Drug Administration (FDA)
  - MedWatch program
- State and local regulation of medication
- Health care institutions and medication laws
- Medication regulations and nursing practice (Nurse Practice Acts)
Case Study

- Esther Simmons is an 85-year-old African American woman who lives in her home. Esther is on a skilled care floor in a hospital following hip replacement surgery. Her strength and mobility are improving, and she is planning to return home with home care nursing within the week.
- Emilio Fernandez is a 31-year-old nursing student who is assigned to care for Esther today. While reviewing the medical record, Emilio finds that Esther has several chronic illnesses: diabetes, heart disease, hypertension, and arthritis.
Pharmacological Concepts

- Drug names:
  - Chemical—provides the exact description of medication’s composition
  - Generic—the manufacturer who first develops the drug assigns the name, and it is then listed in the U.S. Pharmacopeia
  - Trade—also known as brand or proprietary name. This is the name under which a manufacturer markets the medication.
Pharmacological Concepts (cont’d)

- Classification
  - Effect of medication on body system
  - Symptoms the medication relieves
  - Medication’s desired effect

- Medication forms
  - Solid, liquid, other oral forms; topical, parenteral; forms for instillation into body cavities
Pharmacokinetics

- The study of how medications:
  - Enter the body
  - Are absorbed and distributed into cells, tissues, or organs
  - Reach their site of action
  - Alter physiological functions
  - Are metabolized
  - Exit the body
Quick Quiz!

1. You are caring for a patient who has diabetes complicated by kidney disease. You need to make a detailed assessment when administering medications because this patient may experience problems with

A. Absorption.
B. Biotransformation.
C. Distribution.
D. Excretion.
Case Study (cont’d)

- Esther needs to take many medications on a routine basis. Several of Esther’s medications have changed, and several have been added since she was admitted.

- Based on this assessment, Emilio determines that Esther needs to learn how to administer her medications safely at home. He knows that to help Esther manage her medications at home, he needs to learn more about her culture.

- He assesses Esther's cultural beliefs and determines what factors affected her ability to manage her medications before she entered the hospital.
Absorption

- Passage of medication molecules into the blood from the site of administration
- Factors that influence absorption:
  - Route of administration
  - Ability to dissolve
  - Blood flow to site of administration
  - Body surface area
  - Lipid solubility of medication
Distribution

- After absorption, distribution occurs within the body to tissues, organs, and specific sites of action.

- Distribution depends on:
  - Physical and chemical properties of the medication
  - Physiology of the person taking it
    - Circulation
    - Membrane permeability
    - Protein binding
Metabolism

- Medications are metabolized into a less potent or an inactive form.
- Biotransformation occurs under the influence of enzymes that detoxify, break down, and remove active chemicals.
- Most biotransformation occurs in the liver.
- Kidneys, blood, intestines, and lungs play a role.
Excretion

- Medications are excreted through:
  - Kidney
  - Liver
  - Bowel
  - Lungs
  - Exocrine glands

- Chemical makeup of medication determines the organ of excretion.
### Types of Medication Action

<table>
<thead>
<tr>
<th>Therapeutic effect</th>
<th>Expected or predicted physiological response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side effect</td>
<td>Unavoidable secondary effect</td>
</tr>
<tr>
<td>Adverse effect</td>
<td>Unintended, undesirable, often unpredictable</td>
</tr>
<tr>
<td>Toxic effect</td>
<td>Accumulation of medication in the bloodstream</td>
</tr>
<tr>
<td>Idiosyncratic</td>
<td>Reaction different from normal</td>
</tr>
<tr>
<td>Allergic reaction</td>
<td>Unpredictable response to a medication</td>
</tr>
</tbody>
</table>
Allergy Identification
Quick Quiz!

2. A postoperative patient is receiving morphine sulfate via PCA. The nurse assesses that the patient’s respirations are depressed. The effects of the morphine sulfate can be classified as

A. Allergic.
B. Idiosyncratic.
C. Therapeutic.
D. Toxic.
Medication Interactions

- Occur when one medication modifies the action of another
- A synergistic effect occurs when the combined effect of two medications is greater than the effect of the medications given separately.
Therapeutic Range

# Medication Dose Responses

<table>
<thead>
<tr>
<th>Onset:</th>
<th>Peak:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time it takes for a medication to produce a response</td>
<td>Time at which a medication reaches its highest effective concentration</td>
</tr>
<tr>
<td>Trough:</td>
<td>Duration:</td>
</tr>
<tr>
<td>Minimum blood serum concentration before next scheduled dose</td>
<td>Time medication takes to produce greatest result</td>
</tr>
<tr>
<td>Plateau:</td>
<td>Biological half-life:</td>
</tr>
<tr>
<td>Point at which blood serum concentration is reached and maintained</td>
<td>Time for serum medication concentration to be halved</td>
</tr>
</tbody>
</table>
## Routes of Administration

<table>
<thead>
<tr>
<th>Oral</th>
<th>Parenteral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sublingual, buccal</td>
<td>ID, Sub-Q, IM, IV</td>
</tr>
<tr>
<td></td>
<td>(epidural, intrathecal, intraosseous, intraperitoneal, intrapleural, intra-arterial)</td>
</tr>
<tr>
<td><strong>Topical</strong></td>
<td><strong>Intraocular</strong></td>
</tr>
<tr>
<td>Direct, body cavity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
</tr>
</tbody>
</table>
Oral Route

Sublingual

Buccal

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Endotracheal Route
Systems of Medication Measurement

- Require the ability to compute medication doses accurately and measure medications correctly
- Metric system (0 before the decimal only)
  - Most logically organized
  - Meter, liter, gram
- Household system
  - Most familiar to individuals
  - Disadvantage: inaccuracy
- Solution
Metric Specifics

- Gram = g or gm
- Liter = l or L
- Use lowercase letters for abbreviations for other units:
  - Milligram = mg
  - Milliliter = mL
- Convert fractions to decimals:
  - 500 mg or 0.5 g, but NOT ½ g
  - 10 mL or 0.01 L, but NOT 1/100 L
Nursing Knowledge Base

- Safe administration is imperative.
- Nursing process provides a framework for medication administration.
- Clinical calculations must be handled without error.
  - Conversions within and between systems
  - Dose calculations
  - Pediatric calculations require special caution.
Dose Calculation Methods

- Verify medication calculations with another nurse to ensure accuracy.
- The ratio and proportion method
  - Example: 1:2 = 4:8
- Formula method
  - \[ \text{Dose ordered} \times \frac{\text{Amount on hand}}{\text{Dose on hand}} = \text{Amount to administer} \]
- Dimensional analysis
  - Factor-label or unit factor method
Prescriber’s Role

- Prescriber can be physician, nurse practitioner, or physician’s assistant.
- Orders can be written (hand or electronic), verbal, or given by telephone.
- The use of abbreviations can cause errors; use caution.
- Each medication order needs to include the patient’s name, order date, medication name, dosage, route, time of administration, drug indication, and prescriber’s signature.
# Types of Orders in Acute Care Agencies

<table>
<thead>
<tr>
<th>Standing or routine:</th>
<th>prn:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administered until the dosage is changed or another medication is prescribed</td>
<td>Given when the patient requires it</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single (one-time):</th>
<th>STAT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given one time only for a specific reason</td>
<td>Given immediately in an emergency</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Now:</th>
<th>Prescriptions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>When a medication is needed right away, but not STAT</td>
<td>Medication to be taken outside of the hospital</td>
</tr>
</tbody>
</table>
Medication Administration

- Pharmacist’s role
  - Prepares and distributes medication
- Distribution systems (unit dose or automatic medication dispensing system [AMDS])
  - Area for stocking and dispensing medication

- Nurse’s role
  - Assess patient’s ability to self-administer, determine whether patient should receive, administer medication correctly, and closely monitor effects; do not delegate this task.

- Medication error
Automated Medication Dispensing System
Medication Errors

- Report all medication errors.
- Patient safety is top priority when an error occurs.
- Documentation is required.
- The nurse is responsible for preparing a written occurrence or incident report: an accurate, factual description of what occurred and what was done.
- Nurses play an essential role in medication reconciliation.
Case Study (cont’d)

- Emilio anticipates that Esther will have difficulty getting her medicine from the pharmacy because of her hip replacement. Emilio asks Esther about her relationships with family and friends and assesses her spiritual and religious preferences. He asks Esther to identify family and friends who can help her when she goes home.

- After discovering that Esther is active in her church, Emilio gets permission from Esther to contact the church’s minister. Emilio asks the minister to identify church members who are able to help Esther get to the pharmacy or to go to the pharmacy for her.
Quick Quiz!

3. If a nurse experiences a problem reading a physician’s medication order, the most appropriate action will be to

A. Call the physician to verify order.
B. Call the pharmacist to verify order.
C. Consult with other nursing staff to verify.
D. Withhold the medication until physician makes rounds.
Critical Thinking and Medication Administration

- Knowledge
- Experience
  - Psychomotor skills (how to)
- Attitudes
  - Be disciplined; take your time.
  - Be responsible and accountable.
- Standards
  - Ensure safe nursing practice.
Medication Administration

- Keys to accuracy
  - Avoid distractions and follow the same routine.
  - Administer only medications you prepare, and never leave prepared medications unattended.
  - Document medications immediately after administration.
  - Use clinical judgment in determining the best time to administer prn medications.
  - When preparing medications, check the medication container label against the medication administration record (MAR) three times.
The Six “Rights”

The six rights of medication administration contribute to accurate preparation and administration of medication doses:

1. Right medication
2. Right dose
3. Right patient
4. Right route
5. Right time
6. Right documentation
Right Patient
Maintaining Patients’ Rights

- To be informed about a medication
- To refuse a medication
- To have a medication history
- To be properly advised about experimental nature of medication
- To receive labeled medications safely
- To receive appropriate supportive therapy
- To not receive unnecessary medications
- To be informed if medications are part of a research study
Quick Quiz!

4. Nurses are legally required to document medications that are administered to patients. The nurse is mandated to document which of the following?

A. Medication before administering it
B. Medication after administering it
C. Rationale for administering it
D. Prescriber rationale for prescribing it
Assessment

- Medical history
  - Allergies
  - Medications
  - Diet history
  - Patient adherence to therapy
- Patient’s perceptual or coordination problems
- Patient’s current condition
- Patient’s attitude about medication use
- Patient’s understanding of and adherence to medication therapy
- Patient’s learning needs
Case Study (cont’d)

- Emilio finds out that Esther will be going home in a few days. Before she can leave, she needs to learn how to self-administer her medications safely. Older adult patients often have difficulty with medication adherence because they have difficulty affording medications. They often take medications out of their normal containers, have difficulty opening packages, and often have problems related to health literacy.
Nursing Diagnosis

- Anxiety
- Ineffective health maintenance
- Readiness for enhanced immunization status
- Deficient knowledge (medications)
- Noncompliance (medications)
- Impaired swallowing
- Effective therapeutic regimen management
Planning

◦ Always organize your care activities to ensure the safe administration of medications.

◦ Setting goals and related outcomes contributes to patient safety and allows for wise use of time during medication administration.

◦ Provide the most important information about the medications first.

◦ On discharge, ensure that patients know where and how to obtain medications.
Case Study (cont’d)

- Emilio plans a teaching session with Esther. His goal is that Esther will be able to self-administer her medications safely and correctly.

**Strategies:**
- Emilio plans to sit with Esther at a table in a room that is well lit and has limited distractions (TV off).
- He will include Esther’s caregivers in educational sessions.
- He will ask Esther’s caregiver to bring all of her medications from home to the hospital. They will compare the medications Esther has at home with the ones she is going to take home to determine which medications Esther understands.
Implementation: Health Promotion

- Teach the patient and family:
  - Medication benefit
  - How to take the medication correctly
  - Symptoms of side effects
  - Safe use and storage of medications

- Help the patient and family establish a medication routine.

- Refer them to community resources for transportation as needed.
Implementation

- Acute care
  - Receiving, transcribing, and communicating medication orders
  - Accurate dose calculation and measurement
  - Correct administration
  - Recording medication administration

- Restorative care

- Special considerations
  - Infants and children (dosing, psychological prep)
  - Elderly
  - Polypharmacy
Case Study (cont’d)

- Emilio plans to assess Esther’s health literacy by determining her ability to understand what she reads and to do simple medication calculations. If she has poor health literacy, he will ensure that information is presented at a level that Esther can understand and will arrange for help from family, friends, and/or home care nurses.

- Emilio will review with Esther information about the medications: desired effect, dose, frequency, and adverse effects. He will show her how to use a medication organizer but will encourage her to leave medications in their original containers.
Case Study (cont’d)

- Emilio will provide patient teaching materials that include helpful pictures to enhance Esther’s understanding of prescribed medications. He will ensure that print and pictures on the teaching sheets are large enough for Esther to see.
Polypharmacy

Definition: when a patient takes two or more medications to treat the same illness, takes two or more medications from the same chemical class, uses two or more medications with the same or similar actions to treat several disorders simultaneously, or mixes nutritional supplements or herbal products with medications.

Taking over-the-counter (OTC) medications frequently, lack of knowledge about medications, incorrect beliefs about medications, and visiting several health care providers to treat different illnesses increase the risk for polypharmacy.
Evaluation

- Value patients’ participation in evaluation.
- Ensure that patients understand their medication schedules and are able to safely administer their medications.
- Be alert for reactions in patients taking several medications.
- Evaluate patient responses:
  - Physiological measures
  - Behavioral responses
  - Rating scales
  - Patient statements
Case Study (cont’d)

- Emilio decides on the following strategies to help Esther:
  - Ask Esther questions about her medications, such as, “Why are you taking these medications?” and “When do you take your medications?”
  - Ask Esther to write out a medication schedule that includes how much of each medication she should take and when to take it.
  - Have Esther verbalize symptoms related to the possible adverse effects of medications she is taking and identify what to report to her health care provider.
  - Have Esther set up her own medications for one day, and evaluate her accuracy.
Medication Administration

- Oral = By mouth
- Topical
  - Skin, nasal, eye, ear, vaginal, rectal
- Inhalation
- Irrigation
- Parenteral
- Injection
Oral Administration

- Easiest and most desirable route
- Food may decrease therapeutic effect.
- Aspiration precautions
- Enteral or small-bore feedings:
  - Verify that the tube location is compatible with medication absorption.
  - Follow American Society for Parenteral and Enteral Nutrition (ASPEN) guidelines.
  - Use liquids when possible.
  - If medication is to be given on an empty stomach, allow at least 30 minutes before or after feeding.
  - Risk of drug-drug interactions is higher.
Topical Medications

- **Skin**
  - Use gloves.
  - Use sterile technique if the patient has an open wound.
  - Clean skin first.
  - Follow directions for each type of medication.
  - Transdermal patches:
    - Remove old patch before applying new.
    - Document the location of the new patch.
    - Ask about patches during the medication history.
    - Apply a label to the patch if it is difficult to see.
    - Document removal of the patch as well.
Nasal Instillation

- Ethmoid sinuses
- Sphenoid sinus
- Maxillary sinus
- Frontal sinus
Topical Medications

○ Eye instillation
  ◦ Avoid the cornea.
  ◦ Avoid the eyelids with droppers or tubes to decrease the risk of infection.
  ◦ Use only on the affected eye.
  ◦ Never allow a patient to use another patient’s eye medication.

○ Intraocular instillation
  ◦ Disk resembles a contact lens.
  ◦ Teach patients how to insert and remove the disk.
  ◦ Teach about adverse effects.
Topical Medications (cont’d)

- **Ear instillation**
  - Structures are very sensitive to temperature.
  - Use sterile solutions.
  - Drainage may indicate eardrum rupture.
  - Never occlude the ear canal.
  - Do not force medication into an occluded ear canal.
Topical Medications: Vaginal Instillation
Topical Medications: Rectal Instillation
Administering via Inhalation

- Aerosol spray, mist, or powder via handheld inhalers; used for respiratory “rescue” and “maintenance”
  - Pressurized metered-dose inhalers (pMDIs)
    - Need sufficient hand strength for use
  - Breath-actuated metered-dose inhalers (BAIs)
    - Release depends on strength of patient’s breath.
- Dry powder inhalers (DPIs)
  - Activated by patient’s breath
- Produce local effects such as bronchodilation
- Some medications create serious systemic side effects.
Administering via Irrigation (cont’d)

- Usually use sterile water, saline, or antiseptic solutions on
  - Eye
  - Ear
  - Throat
  - Vagina
  - Urinary tract

- Use aseptic technique if a break is noted in the skin or mucosa.
- Use clean technique when the cavity is not sterile.
Medication Administration Parenteral

- Parenteral = Injection into body tissues
- Invasive procedure that requires aseptic technique
- Risk of infection
- Skills needed for each type of injection
- Effects develop rapidly, depending on the rate of medication absorption.
Medication Administration
Parenteral (cont’d)

- Syringes
  - Luer-Lok
  - Non-Luer-Lok
  - Sizes from 0.5 to 60 mL
    - Larger sizes to administer IV medications and to irrigate wounds or drainage tubes
  - May be prepackaged with a needle attached, or—
    - You may need to change a needle
Types of Syringes

A

B

C

D

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Parts of a Syringe

Plunger

Barrel

Tip

Measure dose here

Avoid touching
Parts of the Needle

Bevel

Shaft

25

Gauge number

Hub
Types of Needles
Disposable Injection Units
Medication Administration
Parenteral
Medication Administration
Parenteral (cont’d)

◦ If two medications are compatible, they can be mixed in one injection if the total dose is within accepted limits, so the patient receives only one injection at a time.

◦ Mixing medications
  ◦ Mixing medications from a vial and an ampule
    ◦ Prepare medication from the vial first.
    ◦ Use the same syringe and filter needle to withdraw medication from the ampule.
  ◦ Mixing medications from two vials
Mixing Medications from Two Vials

1. In vial A, draw up medication A.
2. In vial B, draw up medication B.
3. Gently mix the medications.
4. Draw up the desired amount of the mixture into the syringe.

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Insulin Preparation

- Insulin is the hormone used to treat diabetes.
- It is administered by injection because the GI tract breaks down and destroys an oral form of insulin.

- Use the correct syringe:
  - 100-Unit insulin syringe or an insulin pen to prepare U-100 insulin

- Insulin is classified by rate of action:
  - Rapid, short, intermediate, and long-acting

- Know the onset, peak, and duration for each of your patients’ ordered insulin doses.
Mixing Insulins

- Patients whose blood glucose levels are well controlled on a mixed-insulin dose need to maintain their individual routine when preparing and administering their insulin.
- Do not mix insulin with any other medications or diluents unless approved by the prescriber.
- Never mix insulin glargine (Lantus) or insulin detemir (Levemir) with other types of insulin.
- Inject rapid-acting insulins mixed with NPH insulin within 15 minutes before a meal.
- Verify insulin doses with another nurse while preparing them if required by agency policy.
Administering Injections

◦ Each injection route differs based on the types of tissues the medication enters.

◦ Before injecting, know:
  ◦ The volume of medication to administer
  ◦ The characteristics and viscosity of the medication
  ◦ The location of anatomical structures underlying the injection site

◦ If a nurse does not administer injections correctly, negative patient outcomes may result.
## Minimizing Patient Discomfort

Use a sharp-beveled needle in the **smallest suitable length** and gauge.

Select the proper injection **site**, using anatomical landmarks.

Apply a vapocoolant spray or topical **anesthetic** to the injection site before giving the medication, when possible.

**Divert the patient’s attention** from the injection through conversation using open-ended questioning.

Insert the needle **quickly and smoothly** to minimize tissue pulling.

Hold the syringe **steady** while the needle remains in tissues.

Inject the medication **slowly** and steadily.
Medication Administration

Injections: Subcutaneous

- Medication is placed in loose connective tissue under the dermis.
- Absorption is slower than with IM injections.
- Administering low-molecular-weight heparin requires special considerations.
- A patient’s body weight indicates the depth of the subcutaneous layer.
- Choose the needle length and angle of insertion based on the patient’s weight and estimated amount of subcutaneous tissue.
Subcutaneous Injections
Comparison of Angles of Insertion for Injections
Injections: Intramuscular

- Faster absorption than subcutaneous route
- Many risks, so verify the injection is justified
- Needles
  - Very obese: 3 inches; use different route
  - Thin: ½ to 1 inch
- Amounts:
  - Adults: 2 to 5 mL can be absorbed
  - Children, older adults, thin patients: up to 2 mL
  - Small children and older infants: up to 1 mL
  - Smaller infants: up to 0.5 mL
Injections: Intramuscular (cont’d)

- Assess the muscle before giving the injection.
- Properly identify the site by palpating bony landmarks.
- Be aware of potential complications with each site.
- The site needs to be free of tenderness.
- Minimize discomfort.
- Insertion angle is 90 degrees.
Landmarks: Ventrogluteal IM
Ventriclorectal IM Injection
Vastus Lateralis Site for IM Injection
Deltoid Site for IM Injection
Z-Track Method in IM Injections

A. During injection

B. After release

Injection tract seals as skin is released

Skin
Subcutaneous tissue
Muscle
Medication
Injections: Intradermal

- Used for skin testing (TB, allergies)
- Slow absorption from dermis
- Skin testing requires the nurse to be able to clearly see the injection site for changes.
- Use a tuberculin or small hypodermic syringe for skin testing.
- Angle of insertion is 5 to 15 degrees with bevel up.
- A small bleb will form as you inject; if it does not form, it is likely the medication is in subcutaneous tissue, and the results will be invalid.
Injections: Safety, Needleless Devices

- 600,000 to 1 million accidental needlesticks and sharps injuries annually in health care
- Common when workers recap needles, mishandle IV lines and needles, or leave needles at a patient’s bedside
- Exposure to bloodborne pathogens can be deadly.
- Most needlestick injuries are preventable.
- Needlestick Safety and Prevention Act
Needle With Plastic Guard
Sharps Disposal
Injections: Intravenous

- **Three methods:**
  - As mixtures within **large volumes** of IV fluids
  - By injection of a **bolus** or small volume of medication through an existing IV infusion line or intermittent venous access (heparin or saline lock)
  - By “**piggyback**” infusion of a solution containing the prescribed medication and a small volume of IV fluid through an existing IV line

- **Advantages**
  - To administer fast-acting medication
  - To establish constant therapeutic blood levels
  - Less irritating method for highly alkaline medications
Large-Volume Infusions

- Safest and easiest method of IV administration
- Large volumes (500 or 1000 mL) are used.
- If infused too rapidly, patient is at risk for overdose and fluid overload.

Best practices:
- Standardized concentrations and dosages
- Standardized procedures for ordering, preparing, and administering IV medications
- Ready-to-administer doses when possible
Large-Volume Infusions (cont’d)

- Precautions:
  - The nurse never prepares high-alert medications on a patient care unit.
  - Check with a pharmacist before mixing a medication in an IV container.
  - Ask another nurse to verify your calculations.
  - Have that nurse watch you during the entire procedure.
  - Ensure that the IV fluid and the medication are compatible.
  - Prepare the medication in a syringe using strict aseptic technique.
Large-Volume Infusions (cont’d)

- Clean the injection port of the IV bag.
- Remove the cap from the needle, and stick the needle into the IV fluid.
- Push the medication into the IV fluid, and mix the solution by turning the IV bag gently end to end.
- Finally, attach a medication label in accordance with Institute for Safe Medication Practices (ISMP) safe label guidelines.
- Administer the medication to the patient at the prescribed rate.
- Do not add medications to IV bags that are already hanging.
- Add medications only to new IV bags.
Intravenous Bolus or “Push”

- Introduces a concentrated dose of medication directly into the systemic circulation
- Advantageous when the amount of fluid that a patient can take is restricted
- The most dangerous method for medication administration because there is no time to correct errors
- Confirm placement of the IV line in a healthy site.
- Determine the rate of administration by the amount of medication that can be given each minute.
Volume-Controlled Infusions

- Uses small amounts (50 to 100 mL) of compatible fluids.
- Three types of containers: volume-control administration sets, piggyback sets, and mini-infusers
- Advantages of volume-controlled infusion:
  - Reduces the risk of rapid-dose infusion by IV push
  - Allows for administration of medications that are stable for a limited time
  - Allows control of IV fluid intake
Piggyback Setup
IV Piggyback Medication Label

John Jones 1
MR# 123456 3

Hydrocortisone 4 100 mg 6
(SOLU-CORTEF) 5

In D5W 7  IVPB 8
Total Volume 50 mL 9

Exp: 12/31/2013 12  RPh Initials: AMH 11

Deaconess Hospital Pharmacy 14
Infuse medication over 20-30 minutes 15
Injections

- Intermittent venous access (saline lock)
  - Advantages:
    - Cost savings resulting from the omission of continuous IV therapy
    - Effectiveness of nurse's time enhanced by eliminating constant monitoring of flow rates
    - Increased mobility, safety, and comfort for the patient
  - Before administration:
    - Assess the patency and placement of the IV site.
    - Check institution policy about the use of heparin.
Injections (cont’d)

- Administration of IV therapy in the home
  - Usually patients have a central venous catheter.
  - Home care nurses assist with monitoring.
  - Carefully assess patients and their families to determine their ability to manage this therapy at home.
  - Begin instruction on IV care management while the patient is still in the hospital. Teach family and patient:
    - To recognize signs of infection and complications
    - When to notify the health care provider
    - Regarding maintenance of the equipment