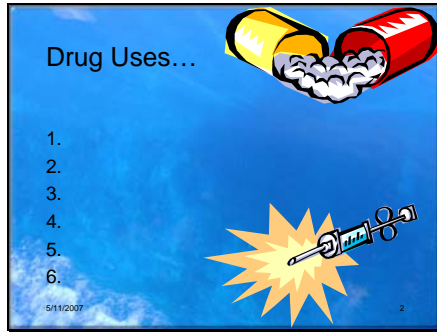


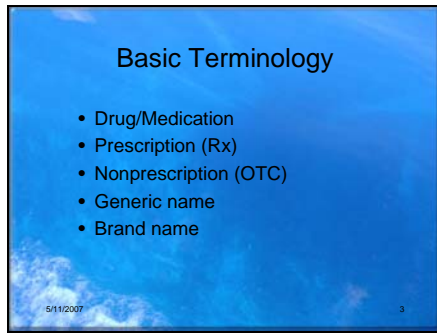
Slide 1



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Drug Information Sources

- AHFS
- PDR
- Product Insert
- Nursing Drug Handbook
- Micromedex
- Internet sources:
<http://www.infodrug.com/>,
<http://www.drugexpert.com/>, <http://www.nursadr.com/>

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Drug Standards

- Developed to ensure uniform quality
- 1938 Federal Food, Drug and Cosmetic Act
- 1952 Durham Humphrey Amendment
- 1962 Kefauver-Harris Amendment
- 1970 Controlled Substance Act

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Pharmokinetic Factors in Drug Therapy

- Liberation
- Absorption
- Distribution
- Biotransformation/Metabolism
- Elimination

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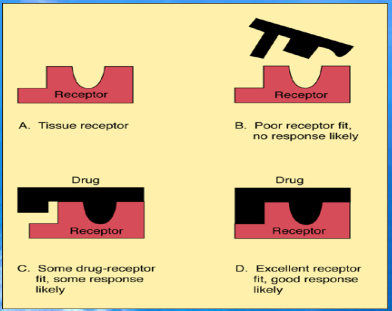
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Principles of Drug Action

- Alter cellular function
- Drug interaction to produce a response
 - agonist
 - antagonist
- Drug receptor interaction

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A. Tissue receptor

B. Poor receptor fit, no response likely

C. Some drug-receptor fit, some response likely

D. Excellent receptor fit, good response likely

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Adverse Drug Effects/Reactions (ADE/ADR)

- Side Effects
- Allergic reactions (anaphylaxis)
- Toxicity
- Idiosyncratic
- Teratogenic
- Drug tolerance and dependence

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Drug Misuse

- Drug misuse
- Drug abuse
- Drug dependence

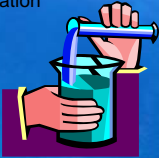


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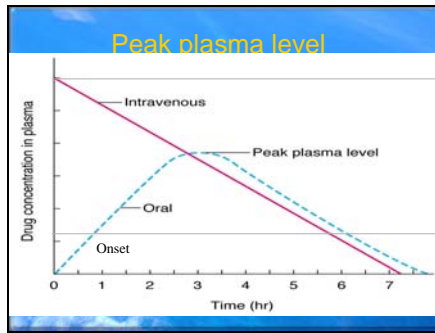
Measuring Drug Action

- Elimination half-life or Drug half-life
- Onset of action/Peak/Duration
- Peak plasma level
- Plateau



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Monitoring Drug Therapy

- Therapeutic Drug Levels
 - Dilantin
 - Theophylline
 - Digoxin
 - Aminoglycosides-gentamycin and tobramycin
- Peak
- Trough

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Drug Interactions

- Synergistic/potentiating
- Antagonistic/against/prevent
- Desirable or undesirable

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Herbal and Botanical Medicine


- Natural plant and substances to treat disease
 - Echinacea
 - Ginko biloba
 - St. John's wart
 - Garlic
 - Ginseng

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Factors affecting medication action

- Developmental factors
- Gender
- Cultural, ethnic, and genetic factors
- Diet
- Environment
- Psychologic factors
- Illness and disease
- Time of administration



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Developmental Considerations of medication administration

- Infants and children
- Older adults



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Legal Aspects of drug administration

- Nurses need to know the NPA of the state in which they practice
- Recognize your limits as an RN... knowledge and skills
- Under the law, nurses are responsible for their own actions regardless if there is a written order
- Controlled substances (use/waste)



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Medication Error: Definition

- Error in the process of ordering or delivering a medication
- Any preventable event that may lead to an inappropriate medication or patient harm

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Human cost of medication errors

- More than 1.5 million errors/ per year
- July 2004 195,000 medicare deaths/year from medication errors

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Medication errors & ADE's relationship

- ADE's are the most clinically significant result of a medication error
- Large problem, but only a small number result in serious ADE's
- ADE's may or may not be a direct consequence of preventable medication error

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Relationship between the HCS and medication errors

- System failure is seen as the primary cause
i.e., poorly designed systems and lack of focus on improving them

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Causes of medication errors

- Lack of knowledge of the drug
- Lack of information about the patient
- Failure to follow accepted, well established rules/policies
- Slips and memory lapses
- Transcription errors
- Faulty drug identity checking

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Causes of medication errors (con't)

- Problems communicating with other services or units in the hospital
- Faulty dose checking
- Incorrect infusion pump and parenteral delivery systems
- Inadequate monitoring
- Drug stocking and delivery problems
- Preparation errors and lack of standardization

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Additional causes of medication errors

- Sheer number of drugs 8,000 the US and Canada exacerbate look-alike and sound-like problem
- Insufficient training of staff
- HCP's stressful schedules, overwork, and sleep deprivation
- Drug calculation errors

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Preventive strategies for nurses

- Clarify incomplete/illegible orders
- Use the "7 RIGHTS"
- Review pertinent patient information (medical Hx., allergies)

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Nurse Responsibility...

- To report medication errors
- Be a part of the process for improving the medication error rate at your institution
- Identify problems that make administration unsafe and report them
- Educate your patients about the medications they are receiving and make them part of the medication administration process

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In the event of a medication error...

- Assess the patient
- Notify the MD/Charge nurse
- Complete an incident report
- Why was the error made?

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Administering medications safely...preventing errors!

- Medical hx. *prior* to administration
- Know the patient's drug allergies!
- Eating habits
- Identify any self-administration problems

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Nurstoons by Carl Elbites

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High Alert Medications

- Insulin IV
- Heparin IV
- Potassium Chloride IV
- Magnesium IV
- Opioids via PCA IV
- Iron IV
- Chemotherapy agents
- Theophylline IV

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Medication Orders

Types of medication orders

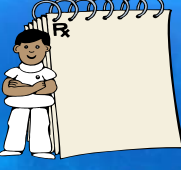
- STAT order
- Single order
- Standing order
- Prn order

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Essential parts of a drug order


- Full name of the client
- Date and time the order is written
- Name of the drug
- Dosage
- Route
- Frequency
- MD Name/Signature
- (VO for nursing)



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Communicating a medication order



- MD Order
- MAR

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An inappropriate order?

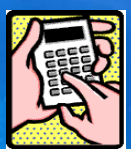
- Contact the MD and discuss...
- Document when what and how
- Document attempts to contact
- Document about the patient
- Incident report if necessary

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Calculating Dosages

- $\frac{\text{Desired Dose}}{\text{Dose on Hand}} \times \text{Vehicle} = \text{Dose}$



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Administering medications

1. Identify the client
2. Inform the client (Teach)
3. Administer the drug
4. Provide adjunctive interventions
5. Record the drug administered ASAP
6. **Evaluate the response!!!!!!**

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Rights of medication administration

- **Right client**
- **Right drug**
- **Right dose**
- **Right time**
- **Right route**
- Right documentation
- Right to refuse

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"Clinical Guidelines"
Administration of Medications


- You give it...You're responsible
- Know the meds you give
- Lock narcotics
- Use medications that are clearly labeled
- Do not use cloudy med or those that have changed color
- Identify the client
- Do not leave meds at the bedside
- If the client vomits after PO med notify the MD
- High Alert Drugs
- Check post-op orders
- Document omissions
- Errors are reported immediately
- **DO NOT** give a med another nurse has drawn up

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Routes of Administration

- Oral (P.O.)/ Nasogastric/gastric tubes
- Sublingual (S.L.)
- Buccal
- Parenteral
 - Subcutaneous (S.C.)
 - Intramuscular (I.M.)
 - Intradermal (I.D.)
 - Intravenous (I.V.)




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Routes of Administration

- Topical
 - Inhalations
 - Vaginal
 - Rectal



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Oral Medications

- Most common
- Most cost effective
- Contraindications
 - NPO, N/V, tastes bad, GI irritation, harms teeth

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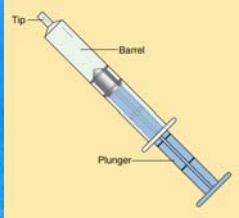
Nasogastric (NGT) and Gastrostomy (G-Tube) Tubes

- Liquid is best
- Can you crush it?
- READ THE LABEL
- DO NOT GIVE WHOLE Medications
- What about the Suction?
- Flush *before, in between* and *after*

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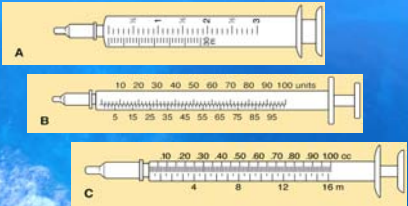
Syringes



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Syringes



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Needles

- Stainless steel and most are disposable
- Bevel
- Gauge #18-#28
- Subq. #24-#26 gauge 3/8-5/8 in long
- IM #20-#22 1-1.5 inches long
- Obese/slender adults/children

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Preventing needle sticks



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Preparing injectable medications

- Ampules
- Vials
- Reconstitution
- Single dose vials
- Multidose vials
- Filter needles

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Physical and Chemical Incompatibilities

- Most common when mixing parenteral medications
- Change in appearance
 - Color
 - Precipitate
 - Warm feeling
- Ascertain compatibility/stability *prior* to administration



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Mixing Medication in one syringe

- Insulin
- Pain medication
- Pre-op medication
- Confirm compatibility!!!

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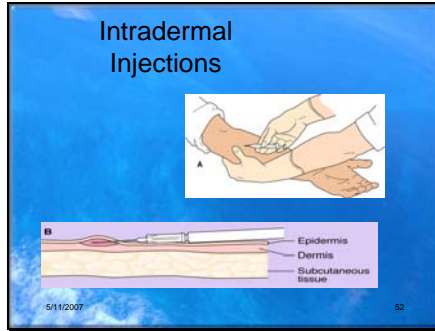
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Intradermal Injections

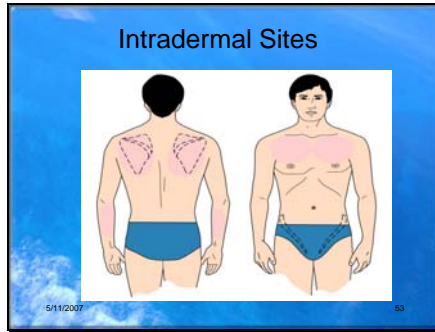
- Allergy testing and TB testing
- 1 ml syringe
- 25,26,27 gauge needle
- 1/4-5/8 inch long
- Procedure
- Bleb must be present
- No massage

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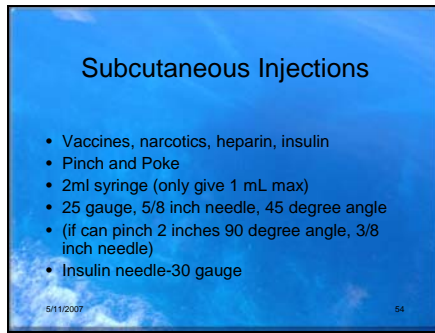
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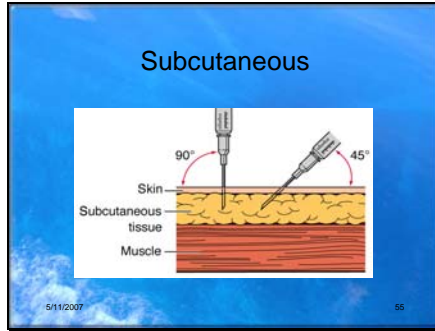
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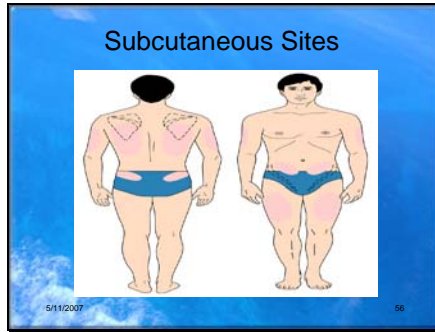
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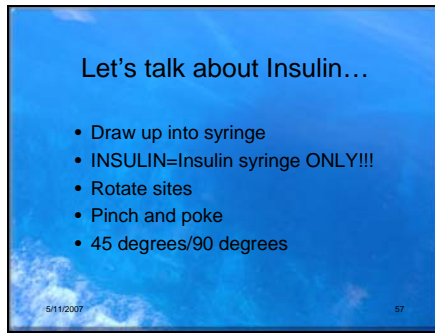
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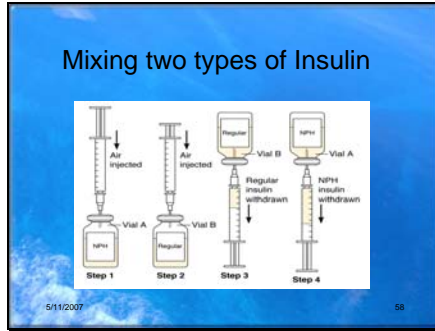
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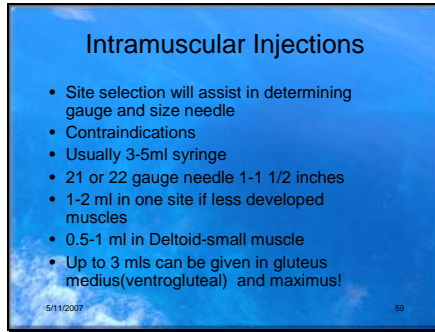
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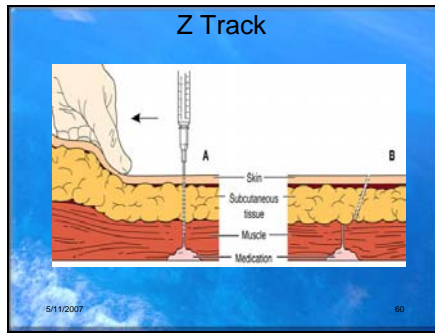
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Intramuscular Injection Sites

- Ventrogluteal site
- Vastus lateralis
- Dorsogluteal
- Deltoid
- Rectus femoris

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Gluteal muscles for IM Injections

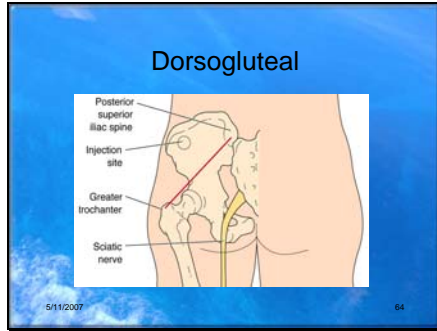
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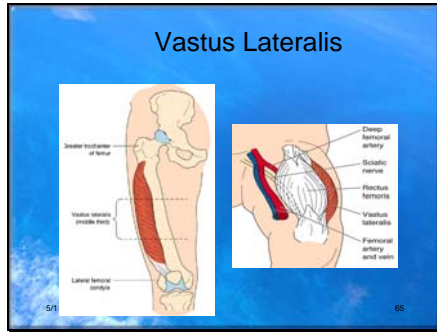
Ventrogluteal

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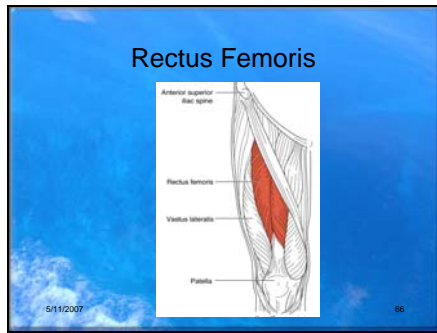
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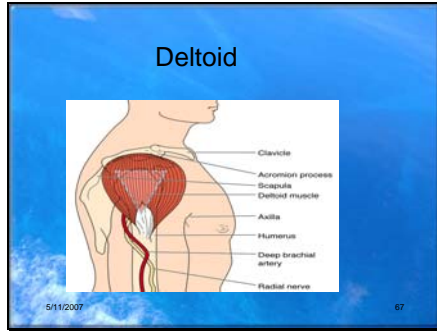
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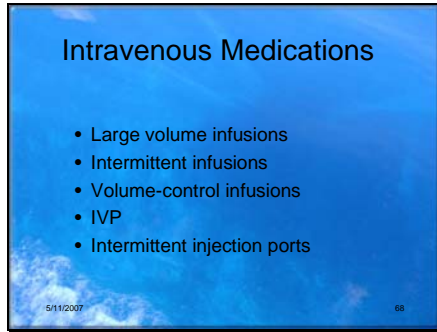
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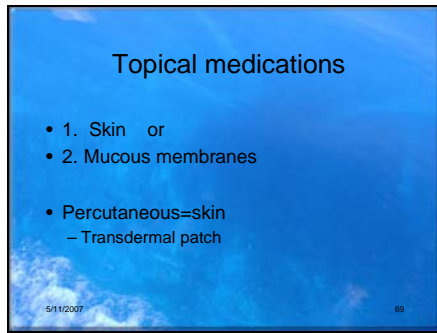
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Skin Applications


- Lotions
- Creams
- Powders
- Sprays
- Patches

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Ophthalmic Instillations

- Sterile preparation
- Sterile technique




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Otic Instillations

- Medical aseptic technique
- Special considerations



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Nasal Instillations



- Nose drops and sprays
- Client usually administers sprays
- Children sprays are given head upright

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Vaginal Instillations

- Medication, instillations, foams, jellies and creams
- To treat infection, relieve discomfort or itching
- Medical asepsis is used

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Rectal Instillations


- Convenient and safe
- Oncology uses frequently
- Rectal suppositories thought to provide higher titers – not transported through the liver

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Respiratory Inhalations

- MDI's (inhaler vs. nebulizer)
- Aerochambers/Other Spacers
- Advair Diskus



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Irrigations

- To clean
- To apply
- To medicate
- To reduce inflammation
- To relieve discomfort
- Surgical asepsis required with a break in the skin or a body cavity is entered

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