Pharmacology Exam Review
Exam 4

Principles of administration

1) Cleanliness- Always wash hands before handling medicines and be sure prep area is clean and neat
2) Organization- be sure meds and supplies are in the appropriate area and in adequate supply.
3) Preparation area- should be well lighted and away from distractions

Responsible Drug Administration

1. *Info*- be up to date on medication administration, purpose, SE, cautions and contraindications
2. *Assess*
   1. Get a patient history-health conditions, allergies, medications (including OTC)
   2. Observe posture, skin temp, color and vitals
3. *evaluate* response to medication
   document when meds are given (controlled substances must be documented on narcotic record)
   plan interventions if needed
4. *Patient education*- why, how, when medication is to be administered, potential SE and precautions. Document if done.

The 6 Rights of medication administration

1) Right medication
2) Right amount
3) Right time
4) Right route
5) Right patient
6) Right documentation

RIGHT MEDICATION

- Compare the drug prescribed with the label on the package, bottle or unit dose packet
  - make sure the name of the drug is clearly visible
  - Watch for sound-alike or look-alike drugs
- If you have any question about the drug order (allergies, interactions, misspellings etc) you have the right and responsibility to question the physician and pharmacist
- Never give medications that someone else has prepared
- Never leave meds at the bedside unless Dr. specifies
- If patient is unable to take meds then you must return (in unopened packet) to the patient's drawer in the med cart or medicine room
- Never open unit-dose packet until patient is prepared to take the medication

RIGHT ROUTE

- If no route is specified, the oral route is generally used unless conditions warrant otherwise (ex: nausea, vomiting, or dysphagia). Verify if needed.
- If there needs to be a change in route because of the patient's condition, you must have a physician's order to change

RIGHT AMOUNT

- The drug dosage ordered must be compared with the dose listed on the label of the package, bottle or unit-dose packet
- If a drug calculation is required that must be done by another licensed health care worker such as an RN, pharmacist or physician
- Always recheck the dose if less than ½ tablet or more than 2 tablets are required, or more than 2ml for injection. An unusual dose should alert you to the possibility of error

RIGHT PATIENT

- In health care facilities, check wrist ID band *first*, then the pt should be asked to state his name *before* administering the medication
- In an ambulatory care setting, you should ask the patient to state their name and DOB and this should be verified with the chart before administering the medication
- If the patient questions the med or dosage, recheck the order and medicine before giving

RIGHT DOCUMENTATION

- Every medication given must be recorded on the patient's record along with dose, time, route and location of injections
- Note any adverse reactions the pt may have
- If the medication is prn basis (as for pain), notation should also be made on the patient's record
- Document as required per the policy of the facility,
- Narcotics administered are documented on a special controlled substance record. If a narcotic needs destroyed, two health care workers must sign and witness of the disposal

GUIDELINES FOR ORAL MEDICATION ADMINISTRATION

- See page 101

1) Wash hands
2) Check for completeness of medication order ("6 rights")
3) Check for special circumstances (allergies, NPO)
4) Be familiar with drug, look it up if needed
5) Select proper cup (paper =tablets,capsules/ plastic-=liquids)
6) Locate medication and compare against medication sheet for the 6 Rights of Medication Administration, also check expiration date
7) If the dose ordered differs from dose on hand check with nurse
8) Prepare dose- do not open unit dose package until you are with the patient. If liquid medication, prepare as instructed
9) Take medication in cup to pt and place it on nearby table

ORAL ADMINISTRATION

Advantages

- Convenience and patient comfort
- Safety (medication can be retrieved in overdose or error)
- Economical (few equipment costs)

Disadvantages

- Slower onset of absorption and action
- Absorption can vary with GI contents
- Some drugs are destroyed by digestive fluids and must be given by injection (insulin, heparin))
- Cannot be used with nausea and vomiting
- Possible aspiration if patient has dysphagia
- Cannot be used in the unconscious patient
- Cannot be used if NPO (like before surgery,fasting for test, or X-ray)

GUIDELINES FOR ORAL MEDICATION ADMINISTRATION CONT.

- Check the patients ID bracelet. Ask pt to tell you their name and DOB. Compare info and verify that it is the correct patient.
- Once pt is verified, call them by name & explain what you are doing
- Monitor vital signs if required (BP taken before giving BP meds)
- Open unit-dose and place container in patient's hand. Avoid touching the medication
- Provide full glass of water. Raise bed and give straw if needed
- Stay with pt until medication is swallowed. Make pt comfortable
- Discard medicine cup and wrappers in wastebasket
- Return clean tray to medicine cart or medicine room
- Record the medication, dose, time and your signature or initials on the patients record
- Document on the patients record and report if med was withheld or refused and the reason. Record and report any adverse effects

Special considerations for oral administration

- If patient is NPO check to make sure that is still the case and contact physician for change of route
- Check if the patient has any allergies
- Give the most important medication first
- Elevate pts head, if not contraindicated to aid swallowing
- Stay with pt until medication is swallowed. Do not leave medication by the bedside unless instructed by physician
- Give medicine with water unless ordered otherwise (NO juice/milk)
- Meds requiring contact w/ mucous membranes of mouth or throat (Topical anesthetics or fungicides) should not be given with food or liquid
- Don't open or crush timed-release capsules or enteric-coated tabs
- Do not break tablets by hand. Cut on score only with knife or pill cutter

Rectal route

- Used when patient has nausea or vomiting, when patient is unconscious or unable to swallow

Advantages

- Bypasses the action of digestive enzymes
- Avoid irritation to the upper GI tract
- Useful with dysphagia

Disadvantages

- Not all meds available in rectal form
- Difficulty retaining suppository in rectum
- Rectal irritation with prolonged use
- Irregular or incomplete absorption if feces are present

Preparation of Liquid medications

These steps are added to guidelines for oral administration

- Shake bottle if it is a suspension. Remove cap and place upside down on table.
- Hold medicine bottle with label side upward to prevent smearing of label while pouring
- In other hand, hold medicine cup at eye level and thumbnail on level which med is to be poured
- Pour prescribed amount at eye level
- Replace cap on bottle
- Compare info on med sheet against label on stock bottle and qty of drug in cup
- Replace med bottle in cupboard or medicine cart
- Recheck 6 rights of medication administration

Administration of rectal suppository

- Wash hands
- Check medication order for 6 rights of Medication Administration
- Identify medication. Research info if necessary
- Assemble supplies (disposable gloves, lubricant if needed)
- Select medication as ordered. Check med name & dose (may need refrigeration)
- Check pt's ID bracelet, ask pt name & DOB, explain procedure, answer any questions
- Close door and curtain completely
- Lower head of the bed and position pt on the left side with upper knee bent (keep pt covered, expose only the rectal area)

Parenteral

- Any route other than the GI tract
- Parenteral administration can have systemic and local effects

Patient Education-Applying Nitroglycerin oint with Appli-ruler

Absorption is slower, therefore not effective in treatment of acute angina

- DO NOT TOUCH OINTMENT! Absoption of ointment thru skin can lead to severe headache. Wear gloves to eliminate risk
- Squeeze prescribed amt of oint on Appli-Ruler paper
- Fold Appli-Ruler paper lengthwise c ointment inside
- Flatten the folded paper to spread the ointment, being careful not to let the oint reach the edges of the paper
- Application site should be rotated between chest, back, upper arms & upper legs. Be sure area is clean , dry and free of irritation. Do not shave area
- Open the paper and apply oint side to skin. Fasten with paper tape on the edges of paper. Write date, time and initials on the tape

Sublingual and Buccal

- Drug is absorbed into circulation thru numerous blood vessels located in the mucosa of the area
- Buccal- medication placed between cheek and gum
- Sublingual- medication placed under the tongue for rapid absorption used when quick response is required
- Patient education
  - Hold tablet in place with mouth closed until medication is absorbed
  - Do not swallow the medication
  - Do not eat or drink until medication is completely absorbed
- Ex: Nitrostat (nitroglycerin) for acute angina (chest pain)
  - Dosage is one tablet dissolved under the tongue at the first sign of an acute angina attack. The dose may be repeated approx. every 5 minutes, until relief is obtained. If the pain persists after a total of 3 tablets in a 15-minute period, prompt medical attention is recommended.

Inhalation Therapy

- Metered-dose inhaler (MDI)
- Small-volume nebulizer(SVNs)
- Intermittent positive pressure breathing (IPPB)
- Dry Powder Inhalers (DPIs)

Advantages of inhalation therapy

- Rapid action of the drug, with local effects within the respiratory tract
- Potent drugs may be given in small amounts, minimizing the side effects
- Convenience and comfort to the patient

Inhalation Therapy cont.

Disadvantages of inhalation therapy:

- Requires patient's cooperation & proper technique for effectiveness
- Adverse systemic effects may result rapidly because of extensive absorption capacity of the lungs
- Improper or too frequent use can be irritating and lead to brochospasm
- Asthmatic and COPD pts sometimes become dependent on small-volume nebulizer or MDI
- Can be a source of infection if nebulizer is not cleaned properly

Dry Powder Inhalers

- Devices that deliver a drug in powdered form into the lung with no propellant or external power source

Advantages

- Small and relatively easy to use
- Eliminates the timing technique problems with MDIs
- Can be used in very cold environments such as ski slopes where propellants may not work effectively

Disadvantages

- Not for acute breathing problems (pt must generate a sufficient inspiratory flow rate for the powder to aerosolize properly) therefore only prophylactic use
- Fewer drugs are available in this form

Metered-Dose Inhaler (MDI)

- A spacer may be added to act as a reservoir for the aerosol, allowing the pt to first depress the canister and then inhale (some have horn or whistle to signal inhalations that are too rapid

Examples of MDIs used for asthma and COPD:

Short acting beta$_2$-adrenergic agonists:

- ProAir HFA, Ventolin HFA (albuterol)
- Xopenex (levalbuterol tartrate)

Long-acting beta$_2$-adrenergic agonists (LABA)

- Foradil (formoterol)
- Serevent (salmeterol)

******They work by relaxing smooth muscle resulting in dilation of the bronchial passages (bronchodilator)

Intermittent Positive Pressure Breathing (IPPB)

- Combines administration of an aerosol with a mechanical breather to assist patients who are unable to take a deep breath on their own
- Performed by respiratory therapist or specially trained nurse

INJECTIONS

Drawing Up Medications

- wash hands
- Assemble equipment (syringe, needle, alcohol wipes, medication)
- Check order using the "Six Rights"
- If vial- remove protective cap. Wipe rubber top with alcohol. Check exp date & if contents are discolored
- Attach the needle to the syringe
- Draw air into the syringe equal to the amt of soln you will be withdrawing from the vial. Insert need;e into center or rubber diaphragm and inject air into vial. Invert vial and withdraw prescribed dosage. Verify proper amt and that no air bubbles are present. Withdraw needle from vial
- Recap needle carefully to maintain sterility and prevent needle sticks. Or remove needle from syringe carefully and discard in sharps container, replace with sterile capped needle

CONT.

- Inject medication *very slowly*. A small white bubble should form in the skin immediately. If not, withdraw needle slightly; it may be too deep. If soln leaks out as you inject, the needle is not deep enough
- After correct amt of medication is injected, withdraw needle – apply gentle pressure with 2x2 gauze. Do not massage the area-it may interfere with test results
- Discard syringe c needle uncapped into sharps container immediately without touching needle. Remove gloves & wash hands
- Note drug name, dosage, time, date & injection site on pt record
- Instruct pt not to scrub, scratch or rub area. Contact Dr if breathing difficulty, hives or rash

INTRADERMAL INJECTIONS

- Usually administered into the skin on the inner surface of the lower arm
- For allergy testing, the upper chest and upper back areas may also be used. Do not start allergy testing unless emergency equipment is available and trained personnel in case of anaphylactic response. Pt should be observed 30 minutes after injection
- A small amount (0.1-0.2ml) is injected so close to the surface that a wheal, or bubble is formed by the skin expanding

SUBCUTANEOUS INJECTIONS

- Injections administered into the fatty tissues on the upper outer arm, front of the thigh, abdomen, or upper back
- A 2 ½ -3ml syringe is usually used with a 24-26 gauge, 3/8 -5/8 inch needle
- No more than 2ml of medication may be administered subcutaneously

Administering Subcu Injections

- Wash hands
- Assemble equipment (correct size sryinge, needle, alcohol wipes, 2x2 gauze and medication)
- Check the order c the "6 Rights" and draw up med
- ID the pt and explain procedure
- Rotate injection site
- Put on gloves
- Cleanse skin with alcohol wipe
- Pinch the skin into a fat fold of at least 1 inch
- Insert the needle at 45-degree angle. A 90-degree angle may be used with a 3/8 needle, if there is sufficient subcu tissue & also for insulin and heparin

Intramuscular injections

- Administered deep into large muscles
- Advantages over subcu route:
  - A larger amt of soln can be administered (up to 3ml for adults, or 1ml in children)
  - Absorption is more rapid because the muscle tissue is more vascular
- The needle must be long enough to go thru the subcu tissue into the muscle. The length varies with pt size
- See Figures 16-21 for recommended sites for IM

Administering Subcu Injections Cont.

- Pull back on the plunger (aspirate). If any blood appears in the syringe, withdraw the needle. Place pressure with 2x2 until bleeding stops. Discard needle uncapped in "Sharps" . Start over with fresh solution, syringe & needle

  *****Do not aspirate with heparin and insulin
- Inject medication slowly-push plunger all the way
- Place dry 2x2 over the entry site, applying pressure with it, as you withdraw the needle rapidly. Do not push down on the needle while withdrawing it
- Do not massage the area with heparin or insulin
- Discard syringe c uncapped needle into sharps immediately
- Remove gloves and discard. Wash hands
- Note the medication, dose, time, date, site of injection & signature on pt record. Observe pt for effects

Administering IM injections

- Wash hands
- Assemble equipment (correct size syringe & needle, alcohol wipes, 2x2 gauze, and medication)
- Check the order with the "6 Rights". Draw up the medication
- After measuring correct amt of medication in syringe, draw 0.2ml of air into the syringe to clear the needle. Recap carefully
- ID the pt and explain procedure
- Rotate injection site. Cleanse skin with alcohol wipe
- With nondominant hand, stretch the skin taut at the injection site

Administering IM injections Cont.

- Insert the needle at a 90-degree angle with a quick, dart-like motion of your dominant hand
- Aspirate for blood (follow previous guidelines)
- Inject medication at a slow, even rate
- Withdraw needle rapidly-hold dry 2x2 over site
- Apply pressure and massage area gently with alcohol wipe
- Discard syringe with needle uncapped in sharps immediately
- Note the med, dosage, time date, site of injection, & your signature on the pt record
- Observe the pt for effects and record

Administering Eye Medications

- Wash hands
- Assemble eye medication (ophthalmic soln or oint)
- Check the order with the "6 Rights" (pay attention to the percentage on medication label and which eye)
- ID pt and explain procedure
- Put on gloves
- Position pt flat on back or upright c head back. Ask pt to look up
- Instill med into the lower conjunctival sac. Avoid contamination of the tip of the dropper or oint tube to the eye. Do not let solution run from one eye to another
- Have pt close eye. Press gently on the inner canthus to avoid systemic absorption
- Remove gloves. Wash hands. Return medication to proper place
- Record the medication, dosage, time, date & which eye was treated on pt record
- If more than one eye medication wait 5 min before 2nd med
- If gtts & oint are ordered for the same time, instill drop first, wait 5 minutes and then apply oint

Skin Medications

- Topical
  - Ointments, lotions, creams, solutions, soaks and baths
- If in doubt regarding administration techniques of topical medications, always ask for help

Suggestions for applying topical meds:

- for burns use sterile gloves to apply & cover c sterile dressings because danger of infection. Use light touch
- For skin conditions in which there is irritation or itching, use cotton ball or snug-fitting gloves to apply. Never use gauze which can cause additional irritation & discomfort
- Follow Drs orders whether to cover or leave open to air
- Wash old medication off before applying new, unless directed otherwise

Poisons

- Poison- A substance taken into the body by ingestion, inhalation, injection, or absorption that interferes with normal physiological functions
- Even small amounts can be harmful
- Children between the ages of one and five are most at risk for poisoning
- If a poisoning is suspected contact the Poison Control Center at 1-800-222-1222

Other Types of Poisonings

Inhalation-

- requires symptomatic treatment: fresh air, oxygen, and CPR if indicated
- Carbon monoxide poisoning robs the tissues of oxygen therefore oxygen therapy may be needed

External Poisoning of skin or eyes

- Flush from the skin for 20 minutes or eyes for 30 minutes with a continuous stream of water and transported to ER if needed.
- If systemic absorption thru skin, an antidote may be required

Medication Disposal

- It is important to dispose of medication properly to avoid harm to others.

Medicine Take-Back Programs- National Prescription Take Back Day April 27th

Disposal in Household Trash

- If no medicine take-back program is available in your area
- Mix medicines (do NOT crush tablets or capsules) with an unpalatable substance like kitty litter or used coffee grounds
- Place the mixture in a sealed plastic bag; and throw in your household trash.
- Before throwing out a medicine container, such as a pill bottle, remember to scratch out all information on the prescription label to make it unreadable.

Flushing of Certain Medicines

- A small number of medicines are especially harmful and, in some cases, fatal with just one dose if they are used by someone other than the person for whom the medicine was prescribed. These meds should be flushed down the sink or toilet as soon as they are no longer needed, and when they cannot be disposed of through a medicine take-back program. (see handout)