Injection Techniques for the Primary Care Optometrist

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Asepsis
- Prevention of contact with microorganisms, freedom from infection
- Anyone in surgical suite has responsibility to provide and maintain a safe environment
- Human body major source of contamination
- Bacteria in sebaceous glands and around hair follicles cannot be destroyed

Mechanisms for Asepsis
- Hands of operating team
  - Fingernails short, clean and healthy
  - Scrub hands
  - No rings or jewelry
  - Hair back (caps, masks, etc)
  - Donning sterile gloves

Mechanisms for Asepsis
- Surgical attire
  - Barrier from personnel to patient and patient to personnel
  - Scrubs, hair covering
  - Use eyewear and masks when risk of splash
  - No cloth shoes or sandals
  - Shoe covers if splash or spill possible

Mechanisms for Asepsis
- Patient’s skin
  - Wash site
  - Antimicrobial applied, outward circles
  - Sterile hands do not touch skin and then deeper tissues
  - Instruments that touch skin are not reused
  - Sterile drape after site prepared helps
Mechanisms for Asepsis

- Inspect sterilized supplies
  - If tear in packaging discard
  - If glass bottle/vial cracked, discard
  - Open without contamination
- Air particles
  - Minimum number of people in room
  - Minimal movement
  - Doors, windows closed
  - Masks if open sterile items present

Mechanisms of Asepsis

- Sterile field maintenance
  - Site of incision
  - Sterile persons
  - Sterile drape over Mayo stand
  - Create field as close to time of use as possible

Bloodborne Pathogens

- Universal Precautions
- Do not recap contaminated needles
- Needle stick safety
- Needle stick policy
- You will have to be aware of these things if doing procedures in your office

Informed Consent

- Indications for treatment
- Description of treatment in layman’s terms
- Alternatives to treatment
- Risks and benefit of treatment
- Expected and unexpected outcomes
- Patient must request procedure
Needles
- hub
- shaft
- lumen (18 to 30 gauge)
- size (1/2 to 2 inches)

USE THE RIGHT SIZE/LENGTH NEEDLE FOR THE JOB!!!!!
Intramuscular Injections

- Advantages
  - Quick absorption (10 – 30 min)
  - Not a lot of irritation from drug because not many sensory fibers, can hold larger volume to distribute up to 3 cc
  - Not as quick as IV – better for some meds

Intramuscular Injections

- Intramuscular injections are indicated
  - when a patient must have medications and they cannot take the medication orally
  - the medication is not effective orally
  - the medication does not come in an oral preparation

Intramuscular Injections

- Select injection site
  - Shoulder
  - Buttocks
  - Thigh

- Select needle size
  - 19 to 23 gauge
  - 1 to 1 ½ inch length

Intramuscular Injections

- Insert needle at 90° angle quickly
  - insert needle as if throwing a dart
  - hurts worse if you gently insert
  - patient should hang arm at side relaxed

- Stick needle approximately 2” below top

- Recheck volume of medication
- Ask patient to relax arm, the more they tense the muscle the more sore it will be
- Swab the area with an alcohol wipe
- Stretch the skin around the injection site or pinch the skin and muscle up
**Intramuscular Injections**
- Pull syringe plunger back to check for penetration of blood vessel
- Inject medication at moderate rate while holding needle steady
- Withdraw needle quickly
- Cover puncture with antiseptic swab
- With some medications can massage area
- Place Band-aid over area
- Dispose of needle, syringe, and other supplies appropriately (NO RECAPPING)
- Observe patient for adverse effects for up to 30 minutes

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**Venipuncture**
- Patient education regarding the procedure
- Wash hands carefully and have all equipment and supplies ready
- Wear latex gloves to protect from blood exposure
- Open a new vial of fluorescein and withdraw into the syringe, eliminate the air bubble, and attach to the IV tubing attached to the needle
- Place the tourniquet on the upper arm and select the best injection site, then release to clean area

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**Venipuncture**
- Advantages
  - drug goes directly into bloodstream and therefore reaches eye quickly
- Disadvantages
  - drug goes directly into bloodstream and therefore reaches everything quickly
  - highest risk to patient
  - impossible to reverse the effects of the drug once delivered

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**Venipuncture**
- Select a suitable vein
  - non-dominant arm
  - choose distal vein first
  - straight and lies on a flat surface
  - well-fixed, does not roll
  - should feel springy when palpated
  - back of hand or antecubital fossa
Venipuncture
- Avoid:
  - veins that are crooked, hardened, scarred, inflamed, tender
  - veins in an edematous arm
  - affected arm of mastectomy patient
  - performing venipuncture distal to a previously used or injured vein
  - IVs in areas that require immobilizing a joint
  - areas where an arterial pulse is palpable close to the vein
  - veins of the lower extremities

- Apply tourniquet
  - 2-6" above site
  - slip knot
  - check to make sure a pulse is still present after the band is in place

- Prepare the venipuncture site
  - scrub the selected area with Betadine or alcohol swab
  - wipe the area in widening circles around the site, leaving a wide margin

- Dilate the vein
  - have patient lower arm and hand
  - digital pressure
  - have patient open and close fist 4-6 times and keep it closed
  - tap vein lightly

- Stabilize vein
  - apply pressure on it below the point of entry

- Remove needle guard and position needle
  - grasp wings firmly
  - point in direction of blood flow
  - bevel up

- Enter the vein
  - tell patient to inhale slowly
  - insert needle at approximately a 45 degree angle
Venipuncture

- Troubleshooting
  - No backflow
  - Very little backflow
  - Very little backflow and then none

Venipuncture

- Observe for backflow
  - When you have entered the vein, blood will return through the needle
  - If you mistakenly entered an artery, the blood will be bright red, will have a greater force and may pulsate

Venipuncture

- Advance until needle well within vein
  - gentle lifting pressure
- Tell patient to release fist
- Release the tourniquet and connect the syringe to the adapter
Venipuncture
- Administer the medication
  - ensure no air in syringe
  - pull back on plunger
  - Hold syringe vertically
- After the patient has received small amount of medication, check for anaphylactic reactions
- Inject at appropriate speed

Venipuncture
- Check for infiltration
  - if infiltration under skin occurs, stop.
- Monitor the patient (esp. breathing)
  - do not leave patient alone
  - recheck blood pressure and pulse before release
- Remove IV
  - hold sterile gauze above site
  - quickly withdraw needle by pulling straight out
  - apply immediate pressure with gauze
  - tape down gauze
- Patient instructions
- Discard supplies appropriately

Subconjunctival Injections
- Between anterior conjunctivap and Tenon’s capsule

Subconjunctival Injections
- Disadvantages
  - Injections uncomfortable (more of a fear reaction)
  - Drug may remain in eye for several days – weeks
- Clinical Uses
  - Local antibiotic injection
  - Local steroid injection

Subconjunctival Injections
- Procedure
  - Patient education regarding the procedure
  - Wash hands carefully and have all equipment and supplies ready
  - Wear latex gloves to protect from blood exposure
  - Instill topical anesthetic
- Use small short needle (30 g ½ inch)

Swab 4% topical xylocaine over injection area (optional)

Use forceps to create a “tent” of conj to place your injection – watch needle tip at all times – No needle to pull back on plunger if needle tip visualized as in this case.
Complications

- Subconjunctival hemorrhage
- Chemosis
- Pain
- Retained drug deposits
- Perforation of globe

Subcutaneous Injections

Useful when slow continuous absorption is desired
- Local anesthesia
- Insulin
- Low molecular weight heparin
Intralesional Steroid Injection

Indications
- Over 6 months old
- Large (4 - 6 + mm)
- Located in medial aspect of lid (won’t be able to do I & C)
- Patient choice

Contraindications
- Allergy/sensitivity to steroid

Risks and Complications
- Depigmentation
- Infection
- No resolution of lesion

Intralesional Steroid Injection Technique

- Multiuse Vial
  - Alcohol top
  - Put air in syringe
  - Push air into vial
  - Load syringe with med
  - Alcohol top of vial
  - Dilute kenalog 40 to 20 or 10

Sources
- http://labhandbook.hitchcock.org/routine.html