INJECTIONS FOR THE OPTOMETRIC PHYSICIAN

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OVERVIEW

- Practical reminders
- Injection overview
- Blood-borne pathogens (BBP)
- Universal Precautions (UP)
- Needlestick Protocol
- Injection techniques: IM, SQ, ID, lid/ocular – with videos
- Adverse events/reactions
- Anaphylaxis
- COVID-19 vaccines
- Medicolegal/best practices

SAFETY FIRST!

WORKSHOP/PRACTICAL COMPONENT

- For the safety of all participants in the practical component of this course, please pay attention :)
- You will be giving (and likely receiving in return) an intramuscular injection of saline with a proctor assisting and observing

- Please wear close-toed shoes if you have them
- Please wear sleeves that roll up easily above the shoulder if you can

INJECTION OVERVIEW

WHAT'S AN INJECTION?

DEFINITION

INJECT:
TO FORCING FLUID INTO
(AS FOR MEDICAL PURPOSES)

ETYMOLOGY

LATIN *INJECTUS*,
PAST PARTICIPLE OF *INICERE*,
FROM *IN-* + *JACERE*: "TO THROW"

HOLD IT LIKE A DART, BUT…

INJECT WITH PURPOSE, NOT AGGRESSION.

WHAT'S AN INTRAMUSCULAR INJECTION?

- INTRAMUSCULAR (IM) INJECTIONS DEPOSIT MEDICATIONS INTO THE MUSCLE FASCIA
- COMPARED TO SUBCUTANEOUS (SQ) TISSUE, MUSCLE:
  - has a rich blood supply, allowing for **faster absorption**
  - can absorb **larger volumes** than SQ administration
  - is less sensitive to **irritating, concentrated, and/or viscous medications** than SQ tissue

Intramuscular Injections. (2020, August 13). Retrieved April 9, 2021, from https://med.libretexts.org/@go/page/10034

POST-INJECTION: SCANNING ELECTRON MICROSCOPY

Photo credit: SciencePhotoLibrary https://www.sciencephoto.com/category/human%20body/skin,%20hair,%20tissues%20&%20glands/skin
Via Reddit: https://www.reddit.com/r/pics/comments/cwk6k8/this_is_the_hole_in_your_skin_after_a_needle/

USES FOR INJECTIONS

- medication – one-time (bolus)
- medication – continuous administration
- vaccination/immunization
- blood draw

INJECTIONS IN EYECARE

- diagnostic
  - fluorescein/indocyanine green angiography
- therapeutic
  - local anesthesia (minor surgical procedures)
  - intravitreal injections (AMD, macular edema)
  - intralesional steroid injections (chalazion)
  - botulinum toxin type A injections (blepharospasm)
  - subconjunctival/sub-Tenon steroids (uveitis, inflammation)
  - epinephrine (anaphylaxis)
  - intracameral implants (glaucoma management)

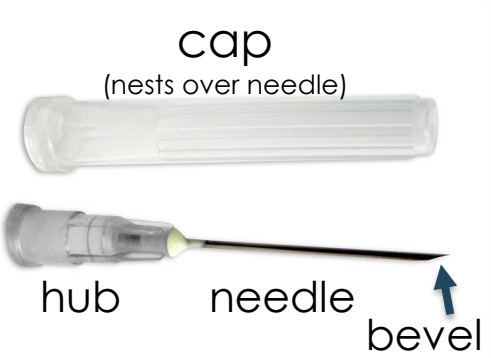
https://allerganig.com/durysta/training/implant-delivery/durysta-examining-the-applicator-and-administration

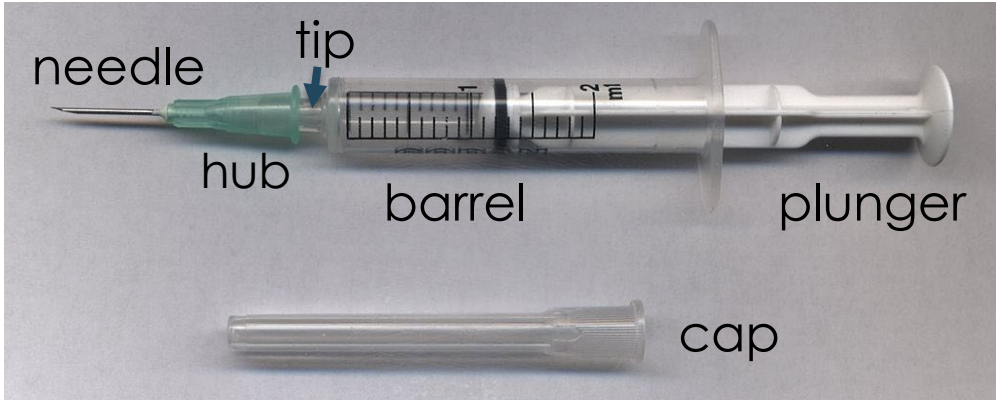
BASIC TENETS

- We need to get it right the first time!
- Maintain sterile (aseptic/“clean") technique wherever possible
  - Preparation, delivery
- Adhere to universal precautions
  - Hand washing, gloves, disposal; avoid bloodborne pathogen exposure
- Site prep – never go over same spot twice; let dry
- "If it looks really 'neat' - don't inject it"
- "The hand that holds the needle always holds the needle"
- "Inject with purpose, not aggression"

TERMINOLOGY

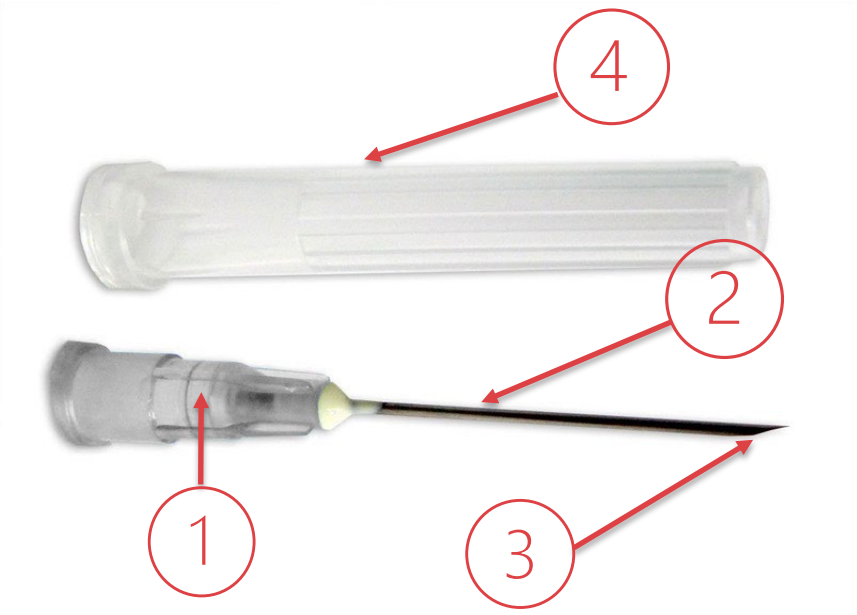
- Needles/Syringes
- Gauge
- Length
- Bevel
- Hub
- Barrel
- Plunger
- Cap





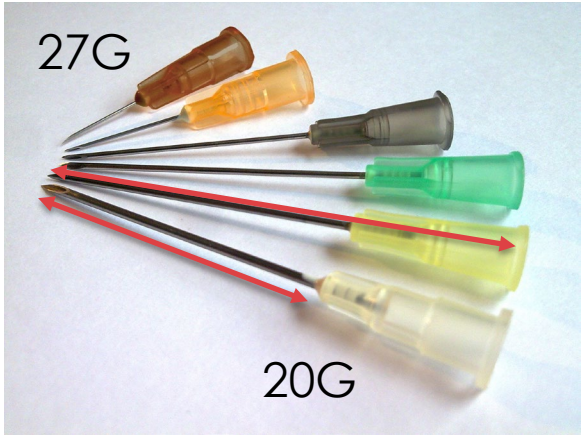
TERMINOLOGY

- Needles
  1. Hub
  2. Shaft
  3. Bevel
  4. Cap



TERMINOLOGY

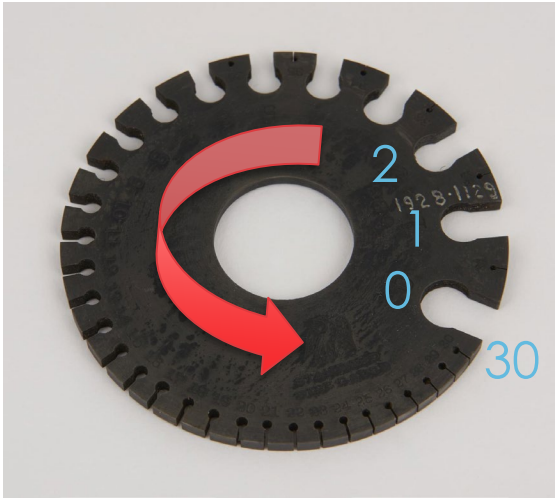
- Needles (the "sharp")
  - **NEEDLE LENGTH (5/8"; 1"; 1½")**
  - exposed portion of cannula measured from the junction with the hub to the tip of point
  - "overall needle length" would include length of hub itself
  - **NEEDLE GAUGE**
  - inner measurement or opening of the needle (diameter)



Note: hub color does not necessarily indicate gauge

NEEDLE GAUGE

- Think of as how "thick" or "thin" the needle is
  - smaller number = larger mm width
  - larger number = smaller mm width
- Abbreviated "G" as in, "25G"
- Example:
  - 23G needle = 0.6mm diameter
  - 25G needle = 0.5mm diameter

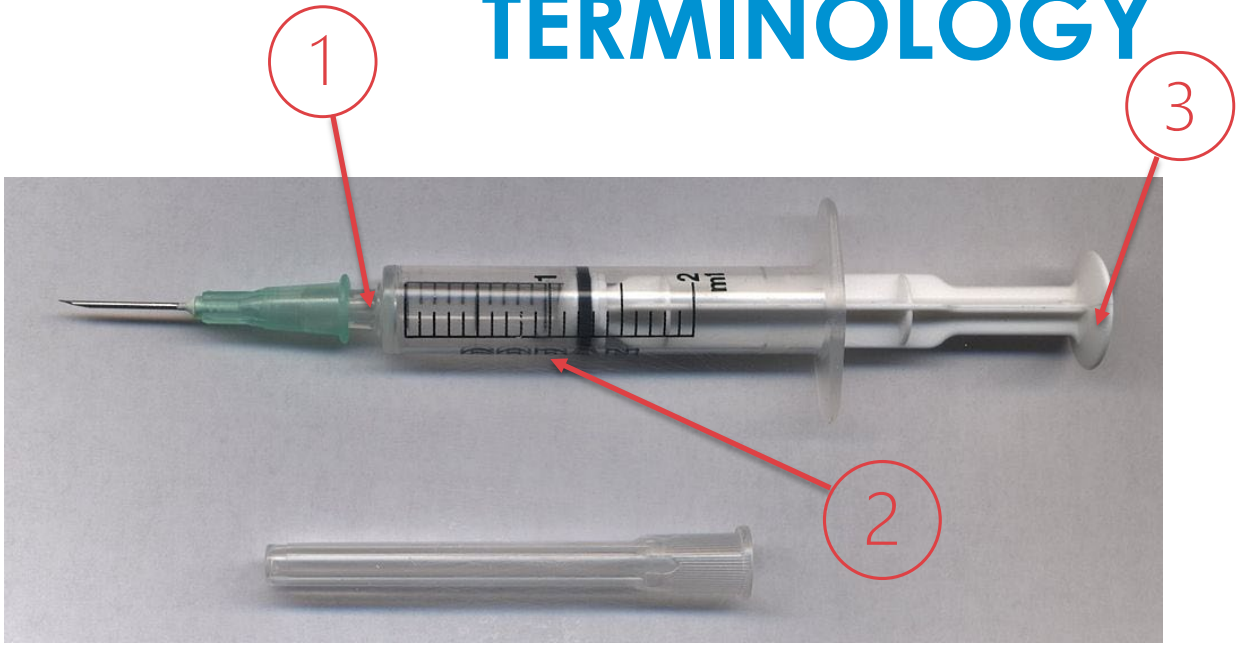


Beirne PV, Hennessy S, Cadogan SL, Shiely F, Fitzgerald T, MacLeod F. Needle size for vaccination procedures in children and adolescents. Cochrane Database of Systematic Reviews 2018, Issue 8. Art. No.: CD010720. DOI: 10.1002/14651858.CD010720.pub3. Accessed 9 April 2021.

NEEDLES

- **BEVEL**
  - Cupped portion at the end of needle
  - Needle will tend to go opposite the bevel
  - Needs to face in different directions for different types of injections (e.g. "bevel up" or "bevel down")
  - If it contains a drop or two of liquid, that's ok
    - no need to shake, touch, or remove (aseptic technique)

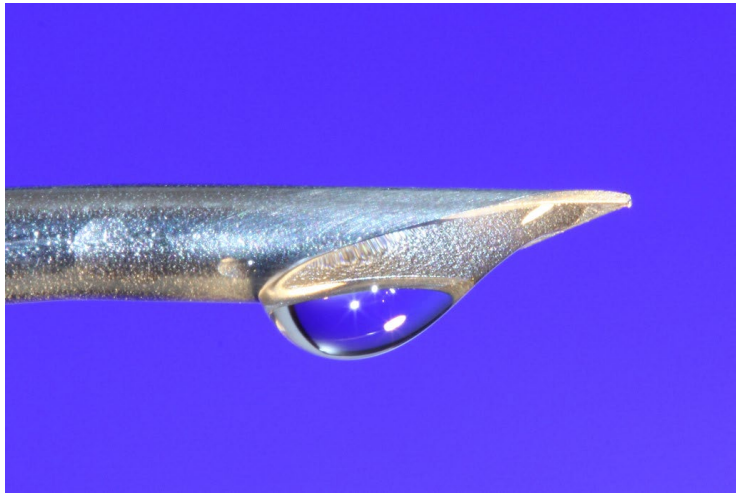
TERMINOLOGY



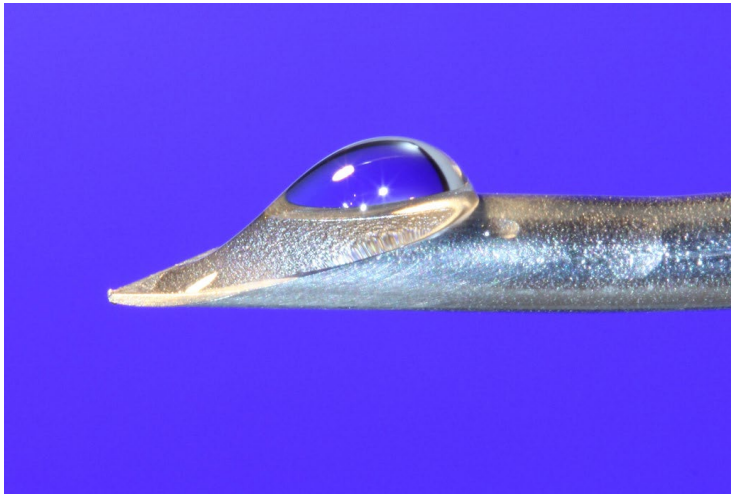
- Syringes
  1. Tip
  2. Barrel
  3. Plunger

https://upload.wikimedia.org/wikipedia/commons/thumb/c/c4/syringe_with_needle_and_needle_cap.jpeg/1024px-syringe_with_needle_and_needle_cap.jpeg

BEVEL POSITION

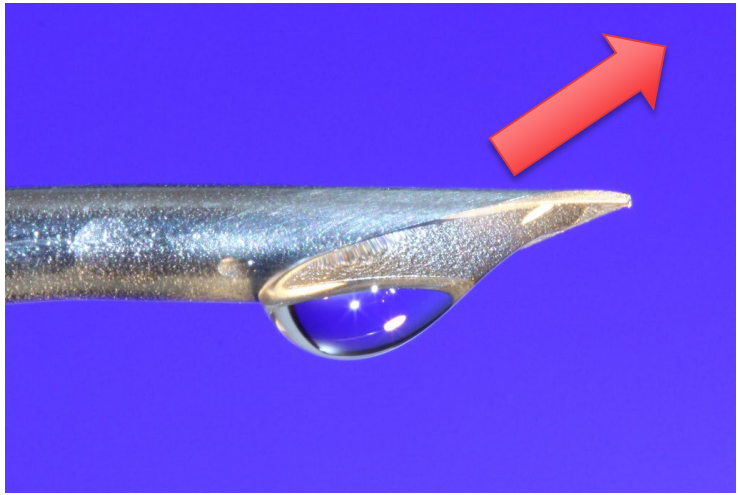


Bevel down

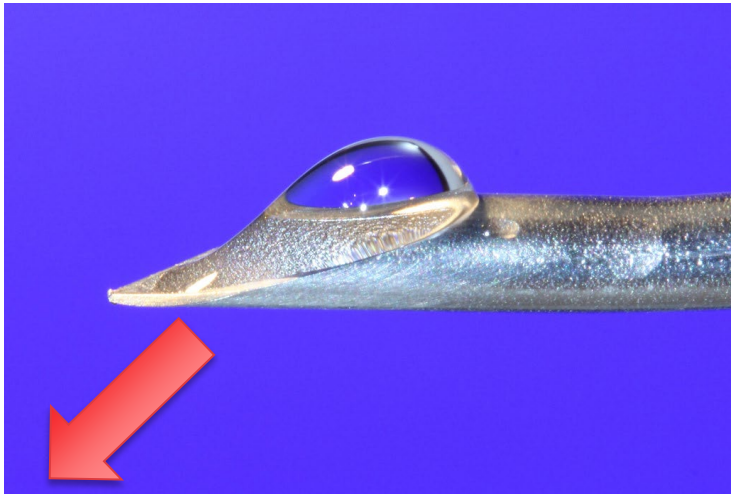


Bevel up

BEVEL POSITION / NEEDLE MOVEMENT



bevel down



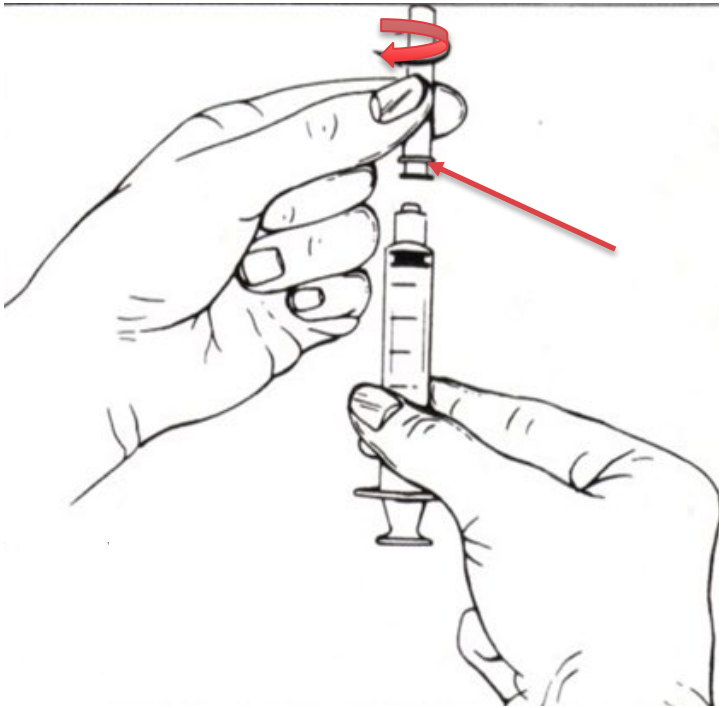
bevel up

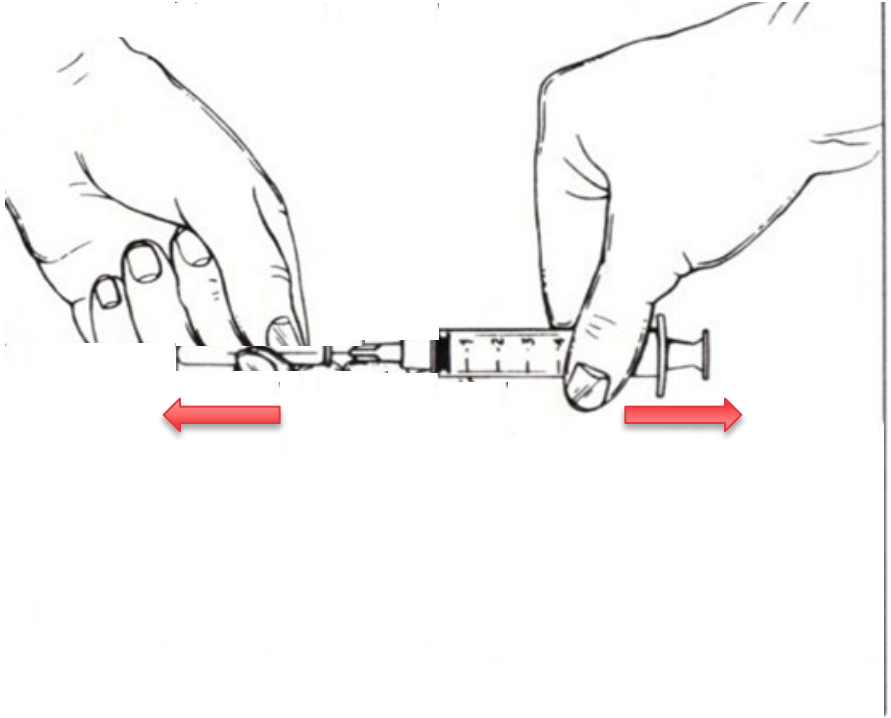
NOTE: BEVEL DIRECTION DOES NOT MATTER FOR IM INJECTION IF DONE AT 90*.

SYRINGE TYPES

- **BARREL** available in different volumes
  - 1mL to 10mL
- **TIP** types
  - Leur-lock tip
  - slip-tip

REMOVING THE NEEDLE VS. THE CAP





HORIZONTAL UNCAP OF THE NEEDLE

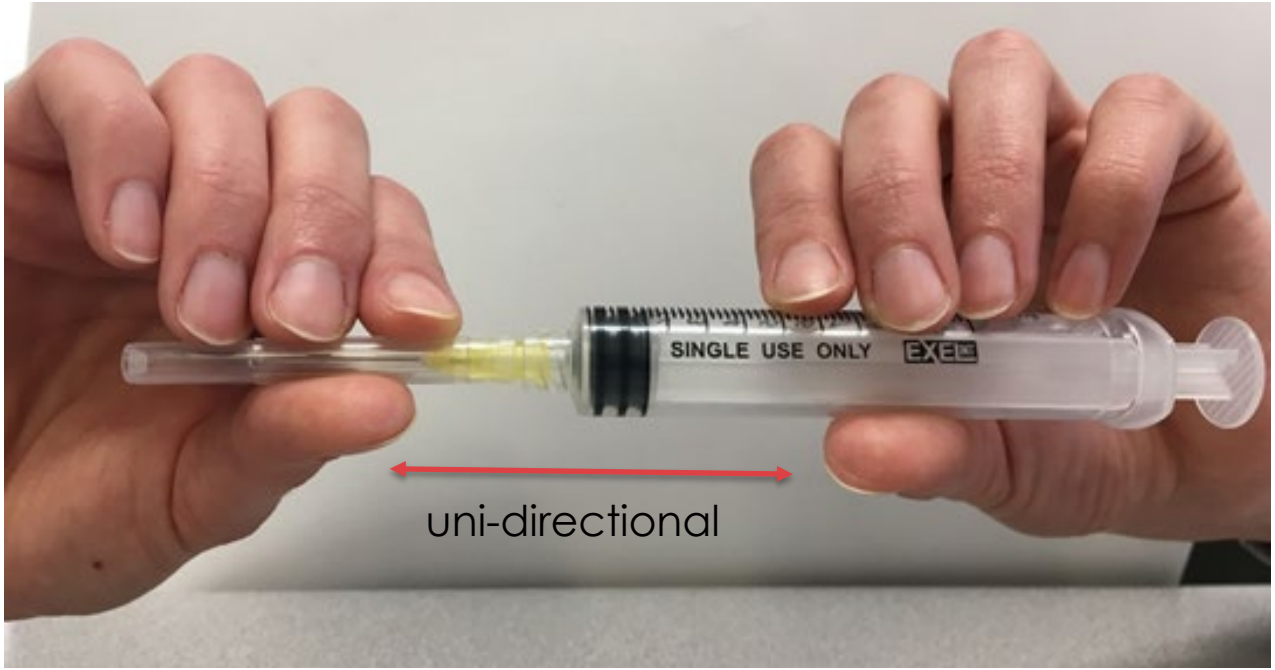


Photo by: Katherine Lynch, OD, FAAO

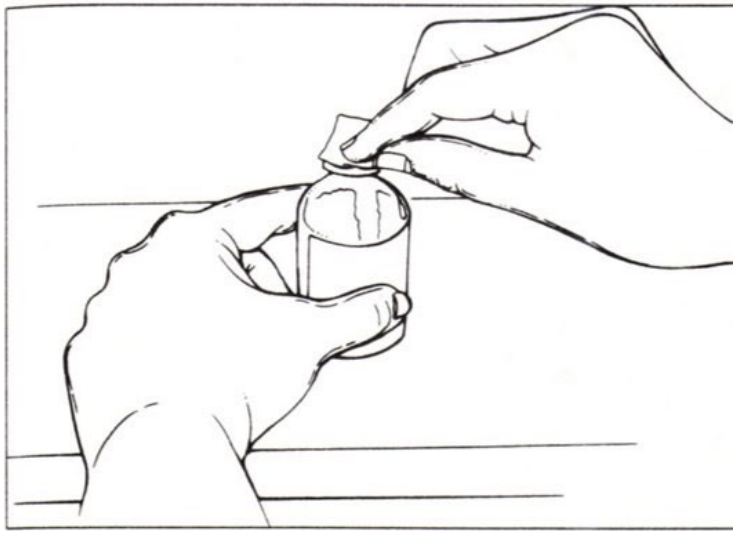
MEDICATION CONTAINERS

- SINGLE-USE OR MULTIPLE-USE
- RUBBER SEAL/MEMBRANE ON TOP
- INJECT AIR TO WITHDRAW MEDICATION (TYPICALLY UNDER A VACUUM)

- SINGLE-USE
- DISPOSABLE
- (IN SHARPS)
- GLASS

- SINGLE-USE
- INCREASED SAFETY
- USUALLY NON-PRESERVED

MULTIDOSE VIALS



MEDICATION CONTAINERS

ALWAYS CHECK:

✓ **MEDICATION**

✓ **CONCENTRATION**

✓ **EXPIRATION DATE**

ON ANY CONTAINER BEFORE USE!

CHECK BOTH VACCINE AND DILUENT VIALS, IF APPLICABLE.
NEVER USE EXPIRED VACCINE OR DILUENT.

CONFIRM THERE ARE NO PARTICULATES OR DISCOLORATION.

COMMON INJECTION ROUTES

- Intramuscular (IM)
- Subcutaneous (SQ)
- Intradermal (ID)
- Intravenous (IV)

Vaccines must reach the desired tissue to provide an optimal immune response and reduce the likelihood of injection-site reactions.

PREPARING THE SITE OF INJECTION

- glove up
- visually inspect; palpate the site
- decide where you plan to inject
- open sterile alcohol wipe
- wipe the area you plan to inject in a **circular motion, working from the center out**
  - **never go over the same spot twice/back over an area (no need to scrub!)**
  - sometimes increases circulation
  - can desensitize the area
  - let the area air dry (~30 seconds)
  - dispose of the used alcohol wipe and its wrapper in trash
  - do not blow on/touch area again until giving injection

ALLEVIATING DISCOMFORT/ANXIETY

- Be honest and explain what to expect
- Have a positive attitude
  - Facial expressions, body language, comments
- Soft, calm tone of voice
- Make eye contact
- Distract (talking, playing music, or pretending to blow away the pain)
- Tap OR stroke the injection site

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html
https://www2.cdc.gov/vaccines/ed/vaxadmin/va/index.html

ALLEVIATING DISCOMFORT

- **Topical analgesia or cooling of the injection site**
  - 5% topical lidocaine-prilocaine emulsion cream, 30-60 min prior
  - Use of a topical refrigerant (vapo-coolant) spray immediately before vaccination
- **Ingestion of sweet liquids**
- **Slow, lateral swaying**
- **No aspiration required for vaccines (faster, less movement, less pain)**
- **Evidence does not support use of antipyretics before or at the time of vaccination; however, they may be used for the treatment of fever and local discomfort that might occur following vaccination.**

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html

BLOODBORNE PATHOGENS

WHAT ARE BLOODBORNE PATHOGENS?

- **INFECTIOUS MICROORGANISMS IN HUMAN BLOOD THAT CAN CAUSE DISEASE IN HUMANS.**
- **INCLUDE, BUT ARE NOT LIMITED TO:**
  - hepatitis B (HBV)
  - hepatitis C (HCV)
  - human immunodeficiency virus (HIV)

https://www.osha.gov/bloodborne-pathogens

VACCINATION FOR BLOODBORNE PATHOGENS

- HBV vaccination is recommended for all health care workers (unless they are immune because of previous exposure).
- HBV vaccine has proved highly effective in preventing infection in workers **exposed to HBV**.
- **However, no vaccine exists** to **prevent HCV or HIV infection.**

https://www.cdc.gov/niosh/docs/2000-135/

REGULATION

- **CDC: Centers For Disease Control And Prevention**
- **OSHA: Occupational Safety & Health Administration**
  - Division of the U.S. Department of Labor

OSHA

- The current federal standard for addressing needlestick injuries among health care workers is **the OSHA bloodborne pathogens standard [29 CFR 1910.1030; 56 fed. Reg.†† 64004 (1991)], which has been in effect since 1992.**
- **The standard applies to all occupational exposures to blood or other potentially infectious materials.**

BLOODBORNE PATHOGENS STANDARD

- **Are workers who administer the vaccines in emergency situations (e.g., in a pandemic response) covered by the bloodborne pathogens standard?**
  - The bloodborne pathogens standard covers all workers in the private sector as well as civilian employees of federal entities. State and local government employees are covered if they are in one of the 25 states and two territories that operate their own osha-approved state plans.
  - In jurisdictions, where federal OSHA has authority, hospitals operated by state, territorial or local governments are required to provide the protection of the bloodborne pathogens standard to their employees with enforcement by the centers for medicare and medicaid services (CMS).

BLOODBORNE PATHOGENS STANDARD

- Are workers who administer the vaccines in emergency situations (e.g., in a pandemic response) covered by the bloodborne pathogens standard?
  - **The CDC recommends that all vaccination clinics comply with the Bloodborne Pathogens standard's provisions.**

BLOODBORNE PATHOGENS

- a written exposure control plan designed to eliminate or minimize exposure
- compliance with universal precautions
- engineering controls and work practices to eliminate or minimize worker exposure
- personal protective equipment
- prohibition of bending, recapping, or removing contaminated needles and other sharps unless no feasible alternative exists
- prohibition of shearing or breaking used needles
- free hepatitis b vaccinations offered to workers with occupational exposure
- worker training in engineering controls
- post-exposure evaluation and follow-up, including post-exposure prophylaxis, when appropriate

BLOODBORNE PATHOGENS

- Needlesticks and other sharps-related injuries may expose workers to bloodborne pathogens.
- Workers in many occupations, including first responders, housekeeping personnel in some industries, nurses and other healthcare personnel (e.g. ODs!), all may be at risk for exposure to bloodborne pathogens.

UNIVERSAL PRECAUTIONS

UNIVERSAL PRECAUTIONS

- **At all times during preparation and performance of injection procedures, universal precautions should be used**
- All human **blood and certain body fluids** should be **treated as if known to be infected** with HIV, hep-b, and other bloodborne pathogens
  - CSF, synovial/pleural/pericardial/amniotic fluid, semen/vaginal secretions
- precautions are intended to prevent **parenteral ("non-oral"/ injected), mucous membrane and non-intact skin exposures** of healthcare workers to bloodborne pathogens.

HANDWASHING

- **Follow these five steps every time:**
  - **Wet your hands** with clean, running water (warm or cold), turn off the tap, and apply soap.
  - **Lather your hands** by rubbing them together with the soap. Lather the **backs of your hands, between your fingers, and under your nails.**
  - **Scrub** your hands for at least **20 seconds.**
    - Need a timer? Hum the "happy birthday" song from beginning to end twice.
  - **Rinse** your hands well under clean, running water.
  - **Dry** your hands using a clean towel or air dry them.

https://www.cdc.gov/handwashing/

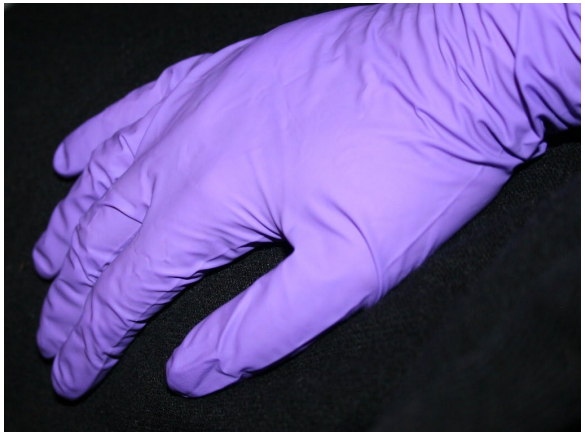
HAND SANITIZER

- **How to use alcohol-based hand rub:**
  - Apply the gel product to the palm of one hand
    - Read the label to learn the correct amount
  - Rub your hands together
  - Rub the gel over all the surfaces of your hands and fingers until your hands are dry
    - Should take around 20 seconds

https://www.cdc.gov/handwashing/

GLOVES

- **Disposable, single-use, gloves should be worn**
  - At any time while performing vascular access procedures
  - Any time it can be reasonably anticipated that you may have direct contact with blood, other potentially infectious materials, mucous membranes or non-intact skin (i.E. When giving a vaccination)
  - Non-latex (nitrile) gloves are preferred
    - Ask about allergies prior to injection



Intramuscular Injections. (2020, August 13). Retrieved April 12, 2021, from https://med.libretexts.org/@go/page/10034

BIOHAZARD WASTE

- Any material other than sharps **contaminated with blood, bodily fluid or tissue** must be placed in an approved container for storage and transport

- **Do NOT throw ordinary garbage in the biohazard** waste bin

- Usually have **RED** bags marked with biohazard symbol and/or designated red bins

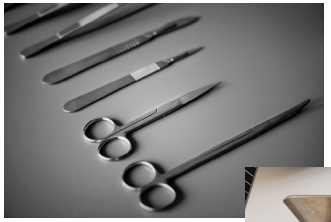
ASEPTIC TECHNIQUES

- **Aseptic technique** refers to the manner of handling, preparing, and storing of medications and injection equipment/supplies (e.g., syringes, needles, vials) to prevent microbial contamination

- **Aseptic/"clean" technique**
  - Preparation of vaccine
  - Administration of vaccine

ASEPTIC TECHNIQUES

- **DISINFECTION/STERILIZATION**
  - Injection Site
    - cleanse and disinfect area to be injected
    - use sterile, single-use alcohol swab
    - from the inside-out
    - don't go over the same spot twice
  - Instruments
    - sterilization of instruments used in a procedure
      - heat (autoclave)
      - chemical



ASEPTIC TECHNIQUES

- **Vials**
  - Swabbing of vial tops before injection

- **When vial tops are swabbed with alcohol, providers should:**
  - **Allow alcohol to dry**
  - Use at least 60-70% alcohol
  - NOT use cotton swabs in a jar
  - **Use only single-use, disposable sterile alcohol swabs**

https://cdn.ymaws.com/www.spineintervention.org/resource/resmgr/factfinder/FactFinder_2019_03_Swabbing_.pdf

ASEPTIC TECHNIQUES

- **At concentrations of 60-70% or greater, isopropyl alcohol has germicidal activity against:**
  - Gram negative (e.g. E. coli) AND
  - Gram positive bacteria (e.g. MRSA).
- **Alcohol is also effective against many viruses**
  - HIV, influenza, RSV, and HSV
  - Hepatitis B and C (at concentrations of at least 60%)
- **Alcohol is NOT effective against bacterial spores**
  - Such as those causing clostridium difficile infection
- **Bactericidal function is accomplished during the evaporation of the alcohol.**
  - It is not complete until dry.

https://cdn.ymaws.com/www.spineintervention.org/resource/resmgr/factfinder/FactFinder_2019_03_Swabbing_.pdf

STERILE TECHNIQUES

- All objects used in a sterile field must be sterile.
  - *Do not use anything* ***torn, previously opened, or wet***
  - *Do not use anything that has been* ***dropped on the floor***
- A sterile object becomes non-sterile when touched by a non-sterile object.
  - ***The preparation area should be cleaned and disinfected regularly***
- Sterile items that are below the waist level, or items held below waist level, are considered to be non-sterile.
- Sterile fields must always be kept in sight to be considered sterile.

Surgical Asepsis and the Principles of Sterile Technique. (2020, August 13). Retrieved April 12, 2021, from https://med.libretexts.org/@go/page/9983

STERILE TECHNIQUES

- When opening sterile equipment and adding supplies to a sterile field, take care to avoid contamination.
  - ***Unwrap/peel open packaging and allow syringes to fall onto field***
  - ***Ensure ready access to necessary supplies (hand sanitizer, needles and syringes in their sterile packaging, alcohol wipes)***
- Sterile persons or sterile objects may only contact sterile areas; non-sterile persons or items contact only non-sterile areas.

Surgical Asepsis and the Principles of Sterile Technique. (2020, August 13). Retrieved April 12, 2021, from https://med.libretexts.org/@go/page/9983

TENETS OF ASEPTIC TECHNIQUES

- Once a sterile field is set up, the border of one inch at the edge of the sterile drape is considered non-sterile.
- Movement in/around the sterile field should not compromise/contaminate it.
  - *No sneezing, coughing, laughing, or talking over the sterile field*
  - *Refrain from reaching over the sterile field*
- If there is any doubt about the sterility of an object, consider it non-sterile.

Surgical Asepsis and the Principles of Sterile Technique. (2020, August 13). Retrieved April 12, 2021, from https://med.libretexts.org/@go/page/9983

PROPER HANDLING

- Needles and syringes used for vaccine injections must be sterile and disposable.

- A separate needle and syringe should be used for each injection.
  - *You may need to put the needle and syringe together if they do not come pre-assembled.*

- Changing needles between drawing vaccine from a vial and injecting it into a recipient is not necessary unless the needle has been damaged or contaminated.

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1

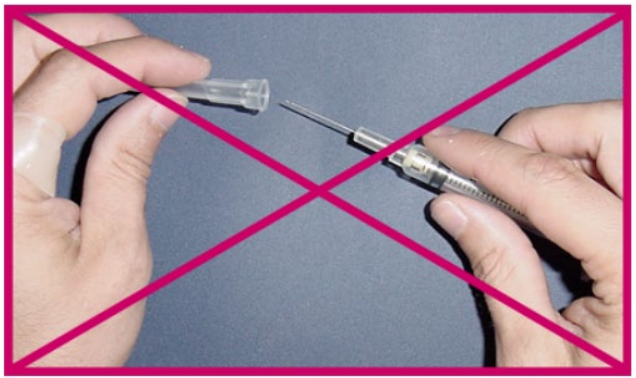
RECAPPING NEEDLES

- **Unused needles may be recapped utilizing the one-handed "scoop" technique**
  - Lay the cap on the sterile field
  - Hold syringe/needle in dominant hand
    - Other hand behind your back
  - Scoop up the lid with the needle
    - ***Can use same hand to re-cap (preferred)***
    - Can use non-dominant hand to re-cap
    - Can increase stability by using the wall (if available)
  - ***Do NOT hold the cap in your other hand when scooping***

SCOOP TECHNIQUE

RECAPPING NEEDLES

- **Needlestick Safety and Prevention**
  - Exposure to blood-borne pathogens is MOST likely when using or handling sharp instruments
  - Great care must be taken at all times
  - **At no time should a used needle be recapped or bent**
    - *That is, after the injection is complete, the needle and syringe should be disposed of, without recapping, directly into a sharps container.*



https://www.osha.gov/bloodborne-pathogens/hazards

NEEDLE SAFETY SHIELD

- **Some needles have a safety shield mechanism**
  - NEVER recap needles after giving an injection.
  - However, if a safety shield is present, one should apply the safety shield and then dispose in the closest sharps container.

SAFETY SHIELD MECHANISM

https://youtu.be/ElWb8cicuUE?si=f3UsiKrQWkOFZGPE&t=20

SHARPS CONTAINERS

- Closeable, puncture-resistant, containers that are leak-proof on the sides and bottom
- Must be appropriately labeled/color coded
- ALL USED NEEDLES should be placed directly into an approved sharps container (needle-side first)
- Keep within reach at your injection station
- Should only be filled 2/3 - 3/4 full (most have a marked line)

SHARPS CONTAINERS

- Containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of sharps injury
- **<u>Never</u> reach into a sharps container to remove or retrieve articles at any time**
- Mailed back in secure boxes for incinerator disposal

NEEDLESTICK PROTOCOL

DEFINITION: "NEEDLE STICK"

PER THE CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC):

a needlestick (or sharps injury) is when you are exposed to the blood or other body fluid of a patient during the course of your work

https://www.cdc.gov/niosh/topics/bbp/emergnedl.html

WARNING!

Health care workers who use or may be exposed to needles are at increased risk of needlestick injury. Such injuries can lead to serious or fatal infections with bloodborne pathogens such as hepatitis B virus, hepatitis C virus, or human immunodeficiency virus (HIV).

Table 1. Infections Transmitted via Sharps Injuries during Patient Care (PC) and/or Laboratory/Autopsy (L/A)

Infection	PC	L/A	Infection	PC	L/A
Blastomycosis		✓	Leptospirosis		✓
Cryptococossis		✓	Malaria	✓	
Diphtheria		✓	M. tuberculosis	✓	✓
Ebola		✓	Rocky Mountain		✓
Gonorrhea		✓	Spotted Fever		
Hepatitis B	✓	✓	Scrub typhus		✓
Hepatitis C	✓	✓	Strep Pyogenes		✓
HIV	✓	✓	Syphilis		✓
Herpes	✓				

References 2-5, 14-16

https://www.cdc.gov/niosh/docs/2000-135/
https://www.cdc.gov/sharpssafety/pdf/sharpsworkbook_2008.pdf

Improper scalpel loading technique can also lead to sharps injuries.

https://www.cdc.gov/nora/councils/hcsa/stopsticks/postertemplates.html

HOW TO PREVENT NEEDLE STICK

- Never use a needle more than once
- Always place needles in the sharps container needle first
- No need to rush - handle with care!
- Always err on the side of caution: if you think you stuck yourself, let's follow the protocol

NEEDLE STICK

- **STOP**
- **go to the sink and flush the area with water (place under running water)**
- **wash with soap and water**
- **dry area**
- **apply a bandage**
- **report incident to a supervisor immediately**
  - in the facility, there will be a designated way to notify your supervisor
- **do NOT put the wound in your mouth!**

IF THIS HAPPENS IN OUR WORK TODAY...

- immediately remove your gloves (if using) and go to a sink
- rinse the wound under running water
- wash the wound with soap and water
- let the faculty/proctor know about the stick
- we will assist you with reporting and finding same-day care

INCIDENT PROTOCOL

Identify the person who was originally stuck with the needle to the faculty

BOTH parties will need to have same day HIV, HEP-B and HEP-C bloodwork, with consent

Medication will be started within 2 hours if exposure poses any possible risk or unknown risk

- this is known as "post-exposure prophylaxis"

There will be follow up at 6 weeks, 3 months, 6 months and one year

https://www.cdc.gov/niosh/topics/bbp/emergnedl.html

ON-SITE AT A FACILITY

- Immediately remove your gloves (if using) and go to a sink
- Rinse the wound under running water
- Wash the wound with soap and water
- Let the facility supervisor know of the incident
- They should be able to assist you in locating same day care
- You will need to fill out any incident report paperwork they require

Any local protocol at the facility at which you are working supersedes this advice.

STOP STICKS

FAST FACTS

Did you know?

Risk of HCV infection from a contaminated sharp is **6x HIGHER** than the risk of HIV infection.

https://www.cdc.gov/nora/councils/hcsa/stopsticks/postertemplates.html

STOP STICKS

FAST FACTS

Did you know?

Deep needlesticks and **sharps injuries** put you at a higher risk of HIV or hepatitis infection than shallow injuries.

Contact with **mucous membranes** and **non-intact skin** also carry a risk.

*Report **all exposures** and seek a medical evaluation.*

https://www.cdc.gov/nora/councils/hcsa/stopsticks/postertemplates.html

ADVERSE REACTIONS

SIDE EFFECTS (EXPECTED)

Common side effects

On the arm where you got the shot:

- Pain
- Redness
- Swelling

Throughout the rest of your body:

- Tiredness
- Headache
- Muscle pain
- Chills
- Fever
- Nausea

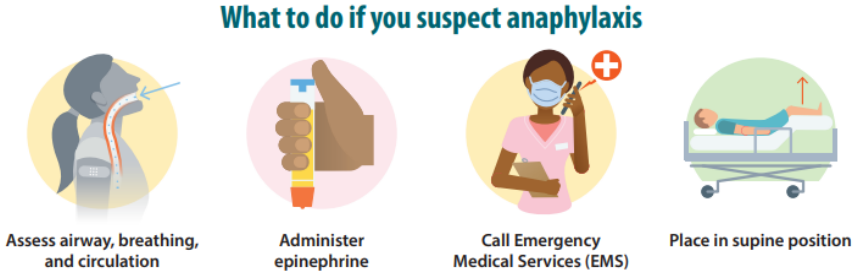
	Pfizer	Moderna	Janssen
Most common adverse events	**Injection site:** pain, swelling, redness **Systemic:** fatigue, headache, muscle pain, chills, fever, joint pain	**Injection site:** pain, swelling, redness **Systemic:** fatigue, headache, muscle pain, chills, fever, nausea, joint pain	**Injection site:** pain, redness, swelling **Systemic:** fatigue, headache, muscle pain, nausea, fever

https://www.cdc.gov/vaccines/covid-19/downloads/covid19-vaccine-quick-reference-guide-2pages.pdf

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/expect/after.html

ADVERSE REACTIONS

- allergy
- syncope
- nausea and vomiting
- anaphylaxis
- cardiac arrest
- other complications



Have necessary emergency equipment kit and know its location

EMERGENCY KIT – IN OFFICE

- Albuterol inhaler
- Aspirin
- Epinephrine
- Ammonia inhalants
- Atropine
- Nitroglycerin
- Dextrose syringe
- Glucose gel
- Ephedrine
- Diphenhydramine
- Syringes
- Filtering syringes
- Tourniquet
- Cold pack

http://vitalerttkit.com/medical-emergency-kit-pro

ADVERSE REACTIONS

- Observe recipients after vaccination for an immediate (4 hours) adverse reaction

- **30 MINUTES**
  - history of an immediate allergic reaction of any severity to a vaccine or injectable therapy
  - contraindication to Janssen COVID-19 vaccine who receive Pfizer-BioNTech vaccine
  - history of anaphylaxis due to any cause

- **15 MINUTES**
  - all other persons

ALLERGENS

- **SOME COVID-19 VACCINES CONTAIN ALLERGENS:**
  - polyethylene glycol (PEG) - Pfizer BioNTech/Moderna
  - polysorbate 80 - Janssen
- **NONE OF THE CURRENT COVID-19 VACCINES IN USE CONTAIN:**
  - eggs
  - gelatin
  - latex
  - preservatives

https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

CONTRAINDICATIONS

- **Polyethylene glycol (PEG)** is in the **MRNA vaccines (pfizer-biontech and moderna)**
  - Persons with a contraindication to one of the mrna covid-19 vaccines should not receive doses of either of the mrna vaccines (pfizer-biontech or moderna).
- **Polysorbate 80** is in the **Janssen vaccine**
- PEG and polysorbate are structurally related, and crossreactive hypersensitivity between these compounds may occur.
  - Persons with a contraindication to MRNA COVID-19 vaccines (including due to a known [diagnosed] allergy to PEG) have a precaution to Janssen COVID-19 vaccine.
- Persons with a contraindication to Janssen COVID-19 vaccine (including due to a known [diagnosed] allergy to polysorbate) have a precaution to MRNA COVID-19 vaccines.

Note: Persons who have a contraindication to an mRNA COVID-19 vaccine (Moderna or Pfizer-BioNTech) may be able to receive the Janssen COVID-19 vaccine (see footnote).±

Persons who have a contraindication to Janssen COVID-19 vaccine may be able to receive an mRNA COVID-19 vaccine (see footnote).±

ALLERGIC REACTION MANAGEMENT

- **When vaccine recipients report an immediate allergic reaction:**
  - Urticaria, angioedema, respiratory distress, anaphylaxis
  - Providers should attempt to determine whether reactions reported are consistent with immediate allergic reactions (within 4 hours of vaccination) versus other types of reactions commonly observed following vaccination, such as vasovagal reaction or postvaccination side effects (which are not contraindications to receiving the second of an mrna COVID-19 vaccine dose)

https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

SYNCOPE

- Sudden, transient loss of consciousness due to inadequate cerebral blood flow with spontaneous recovery

- The term syncope excludes seizures, coma, shock or other states of altered consciousness

VASOVAGAL SYNCOPE: ETIOLOGY

- **Vasovagal syncope** is sometimes referred to as a **neurocardiogenic** or reflex **syncope**
  - Environmental
    - A hot, under-ventilated room
  - Emotional
    - Stress, anxiety, the sight or threat of injury
  - Personal
    - If patient is not well, either from fatigue, hypoglycemia, dehydration or illness

SYNCOPE

- **common**
  - 3% ER visits
  - 6% hospital admissions/year

- **men (younger and older)**

SYNCOPE: SIGNS AND SYMPTOMS

- nausea
- diaphoresis (sweating)
- tachycardia
- dizziness
- pallor
- decreased BP

SYNCOPE: DIFFERENTIAL DIAGNOSIS

- **TIA**
- **vertigo**
- **hypoglycemia**
- **seizure**

✓ **make sure to ask about prior fainting history**

  ✓ if happens often, refer them to their PCP for evaluation

VASOVAGAL SYNCOPE: MANAGEMENT

- Assess condition
- Protect from injury
- Place in reclined position
- Elevate feet
- Maintain airway
- Cold towel/ice pack
- Ammonia inhalants/smelling salts

POST-SYNCOPE EVENT

- Regaining of consciousness
- Embarrassment
- Concern

SYNCOPE PRECAUTIONS

- Recognize anxious behavior
- Avoid stressful situations
- Be prepared
- Further evaluations/referrals as needed

ANAPHYLAXIS

ANAPHYLAXIS

SYSTEMIC ALLERGIC REACTION: ANAPHYLAXIS!

- Anticipate anaphylaxis in those with:
  - past medical history and history of allergies
  - h/o hay fever
  - h/o asthma
  - h/o multiple allergies to food or drugs
  - h/o anaphylaxis
  - atopic conditions
- Rx: prophylactic antihistamines

ANAPHYLAXIS

- *Diagnosis is primarily made based on recognition of clinical signs and symptoms*
- **Respiratory:** sensation of throat closing or tightness, stridor (high-pitched sound while breathing), hoarseness, respiratory distress (such as shortness of breath or wheezing), coughing, trouble swallowing/drooling, nasal congestion, rhinorrhea (runny nose), sneezing
- **Gastrointestinal:** nausea, vomiting, diarrhea, abdominal pain, or cramps
- **Neurologic:** agitation; convulsions; acute change in mental status; sense of impending doom

https://www.cdc.gov/vaccines/covid-19/downloads/IntermConsid-Anaphylaxis-covid19-vaccine-sites.pdf

ANAPHYLAXIS

- **Cardiovascular:** dizziness; fainting; tachycardia (abnormally fast heart rate); hypotension (abnormally low blood pressure); pulse difficult to find or "weak"; cyanosis (bluish discoloration); pallor; flushing

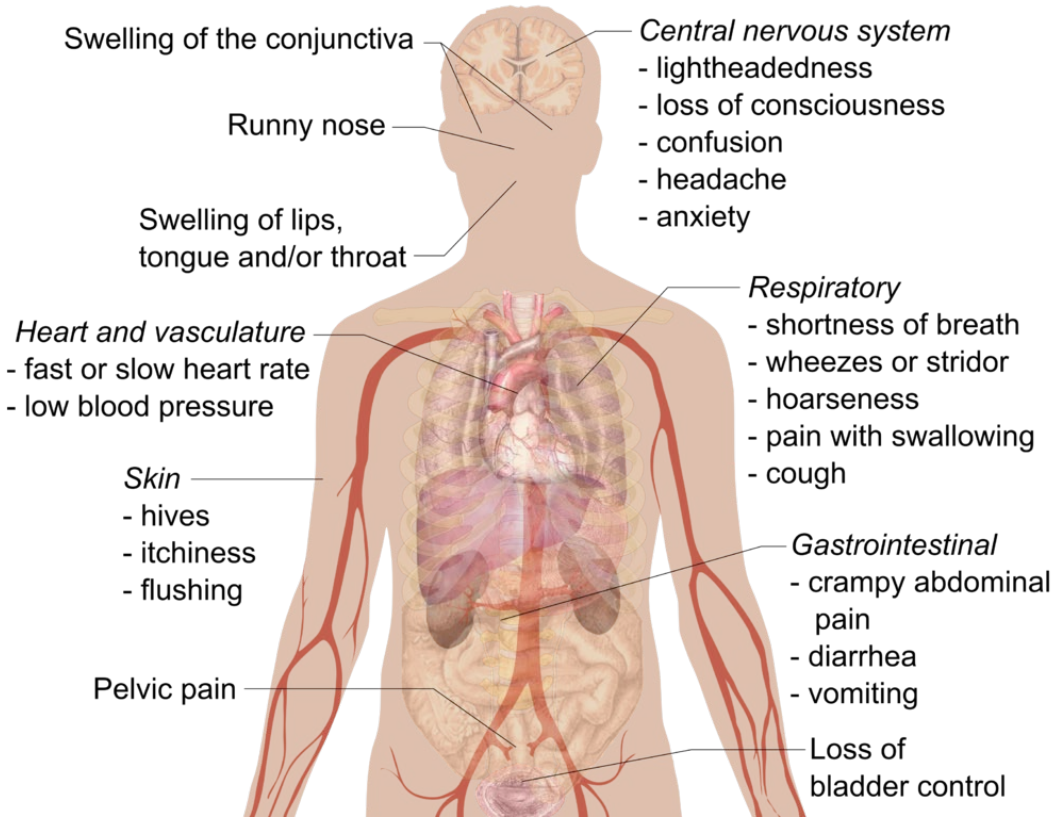
- **Skin/mucosal:** generalized hives; widespread redness; itching; conjunctivitis; or swelling of eyes, lips, tongue, mouth, face, or extremities

- **Other:** sudden increase in secretions (from eyes, nose, or mouth); urinary incontinence

https://www.cdc.gov/vaccines/covid-19/downloads/IntermConsid-Anaphylaxis-covid19-vaccine-sites.pdf

Signs and symptoms of

Anaphylaxis



ANAPHYLAXIS

SYSTEMIC ALLERGIC REACTION: ANAPHYLAXIS!

- Management
  - Call 911 (emergency medical services)
  - Lie the patient flat
  - Administer oxygen (6 liters/minute)
  - Monitor blood pressure regularly
  - IM: Epinephrine (adrenaline) 0.3 to 0.5ml of 1:1000
    - Re-administer every 10-15 minutes until shock has resolved
  - IV: 0.1mg of 1:10,000 slowly over 5 minutes (0.1ml of 1:1000 in 10ml normal saline)
    - May repeat if needed

ANAPHYLAXIS VS. SYNCOPE

	anaphylaxis (fight or flight)	syncope (fainting)
color	pink	pale
pulse	fast	weak
BP (drops for both, but…)	can **remain** low while lying	**normalizes** while lying
other	rash, swelling, difficulty breathing, stomach pain, diarrhea	h/o fainting

MANAGING ANAPHYLAXIS ON-SITE

Trained personnel and appropriate medical treatment for severe allergic reactions must be immediately available in the event that an acute anaphylactic reaction occurs following administration of a COVID-19 vaccine.

Should be available at all locations	If feasible, include at locations (not required)
Epinephrine (e.g., prefilled syringe, autoinjector)*	Pulse oximeter
H1 antihistamine (e.g., diphenhydramine, cetirizine)†	Oxygen
Blood pressure monitor‡	Bronchodilator (e.g., albuterol)
Timing device to assess pulse	H2 antihistamine (e.g., famotidine, cimetidine)
	Intravenous fluids
	Intubation kit
	Adult-sized pocket mask with one-way valve (also known as cardiopulmonary resuscitation [CPR] mask)

https://www.cdc.gov/vaccines/covid-19/downloads/IntermConsid-Anaphylaxis-covid19-vaccine-sites.pdf

AT THE SITE

- A written protocol to manage medical emergencies following vaccination should be available
- Equipment and medications, including:
  - **At least 3 doses of IM epinephrine**
    - **Easily replenished if used**
  - **H1 antihistamines**
  - **Blood pressure monitor**
  - **Timing device to assess pulse**

- Healthcare personnel who are trained and qualified to recognize the signs and symptoms of anaphylaxis as well as administer intramuscular epinephrine should be available at the vaccination location at all times

ANAPHYLAXIS

SYSTEMIC ALLERGIC REACTION: ANAPHYLAXIS!

- Management
  - call 911 (emergency medical services)
  - lie the patient flat
  - administer oxygen (6 liters/minute)
  - monitor blood pressure regularly
  - IM: epinephrine (adrenaline) 0.3 to 0.5ml of 1:1000
    - re-administer every 10-15 minutes until shock has resolved
  - IV: 0.1mg of 1:10,000 slowly over 5 minutes (0.1ml of 1:1000 in 10ml normal saline)
    - May repeat if needed

ANAPHYLAXIS

SYSTEMIC ALLERGIC REACTION: **ANAPHYLAXIS!**

- Management
  - diphenhydramine (**Benadryl**: histamine H1-receptor antagonist): 50mg PO for mild reactions; or 25-50mg IV or deep IM
  - cimetidine (**Tagamet** OTC: histamine H2-receptor antagonist) 300mg IV
  - OR ranitidine (**Zantac** OTC: histamine H2-receptor antagonist) 50mg IV
    - Should **use concurrently with Benadryl** for H1 and H2 blocking
  - Corticosteroid: hydrocortisone succinate 100mg IV, IM
    - Prevent recurrence and reduces chance of vascular damage

ANAPHYLAXIS

- **SYSTEMIC ALLERGIC REACTION: ANAPHYLAXIS!**
  - Management with epinephrine autoinjector unit
    - EPIPEN: one dose of 0.30mg epinephrine (1:1000, 0.3ml)
    - EPIPEN Jr.: one dose of 0.15mg epinephrine (1:2000, 0.3ml)

    - ABCs
      - **Airway**
      - **Breathing**
      - **Circulation**
    - Administer epinephrine
    - Antihistamine: diphenhydramine

EPIPEN DIRECTIONS FOR USE

Never **put thumb, fingers or hand over black tip**

Do *not* remove gray activation cap until ready for use

EPIPEN DIRECTIONS FOR USE

1. Familiarize yourself with the unit
2. Grasp unit with black tip pointing downward
3. Form a fist around the auto-injector
4. With the other hand pull off gray activation cap
5. Hold black tip near outer thigh
6. Swing and jab firmly into outer thigh so that unit is perpendicular (90 degrees) to the thigh
7. **Hold firmly in thigh for 10-15 seconds**
8. Remove unit, **massage injection area** for several seconds
9. Check black tip: if needle is exposed, dose was delivered

Note: most of the liquid remains in auto-injector

SEVERE ALLERGIC REACTION TO A COVID-19 VACCINE

- If a severe allergic reaction (anaphylaxis) occurred after the first dose of a COVID-19 vaccine, the CDC recommends the individual does not get a second dose.
- An allergic reaction is considered severe when a person needs to be treated with epinephrine or epipen, or if they must go to the hospital.

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/allergic-reaction.html

NON-SEVERE ALLERGIC REACTION TO A COVID-19 VACCINE

- **If patient had an immediate allergic reaction after a COVID-19 vaccine, they should not get a second dose**
  - Even if the allergic reaction was not severe enough to require emergency care.
  - An immediate allergic reaction is defined as within 4 hours of getting vaccinated
  - May include symptoms such as hives, swelling, and wheezing (respiratory distress)

HTTPS://WWW.CDC.GOV/CORONAVIRUS/2019-NCOV/VACCINES/SAFETY/ALLERGIC-REACTION.HTML

RASH AT INJECTION SITE

- **CDC has reported that some people have experienced a red, itchy, swollen, or painful rash at the vaccination site**
  - Can start a 3-14 days after the first dose
  - Can become quite large
  - Also known as "COVID arm"
- **If patient had a rash after dose 1, they should still get dose 2 at recommended interval (if that vaccine needs a second dose)**

HTTPS://WWW.CDC.GOV/CORONAVIRUS/2019-NCOV/VACCINES/SAFETY/ALLERGIC-REACTION.HTML

RASH AT INJECTION SITE

- **Patients should tell their provider if they experienced a rash or "COVID arm" after dose 1**
  - *Consider vaccinating these patients in the opposite arm*

- **If the rash is itchy, one can take an antihistamine**
- **If it is painful, one can take acetaminophen or NSAID**

HTTPS://WWW.CDC.GOV/CORONAVIRUS/2019-NCOV/VACCINES/SAFETY/ALLERGIC-REACTION.HTML

CARDIAC ARREST

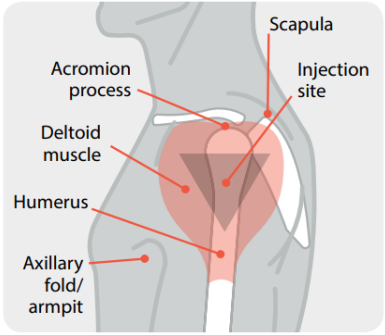
- **DIAGNOSIS:**
  - loss of consciousness
  - absent pulse and heart sounds
  - absent blood pressure
  - pallor and cyanosis

- **MANAGEMENT**
  - call 911
  - lie patient flat
  - ABC's of CPR
  - defibrillator use prn

INTRAMUSCULAR INJECTION

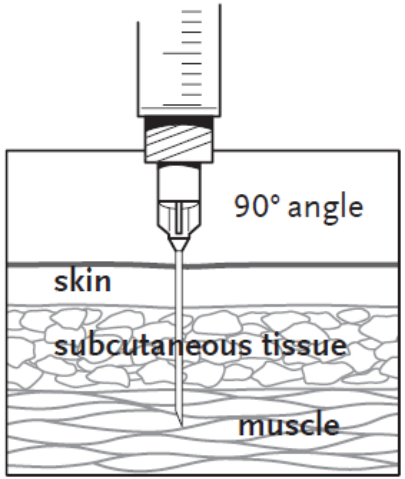
PRINCIPLES OF INTRAMUSCULAR INJECTION

- Injectable agents should be administered where local, neural, vascular, or tissue injury is unlikely.
- Vaccinators should be familiar with the anatomy of the area into which they are injecting vaccine.
- Injection technique is the most important parameter to ensure efficient intramuscular vaccine delivery.



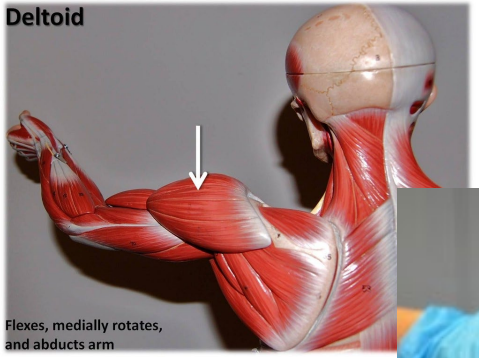
VACCINATIONS

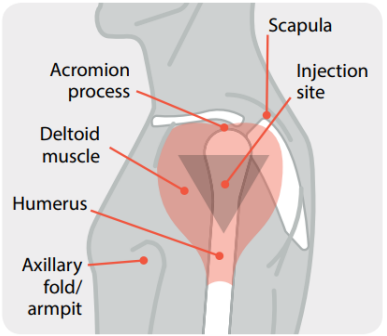
- **Most vaccinations are administered via IM route**
  - Diphtheria-tetanus-pertussis (DTaP, Tdap)
  - Diphtheria-tetanus (DT, Td)
  - Haemophilus influenzae type b (Hib)
  - Hepatitis A (HepA)
  - Hepatitis B (HepB)
  - Human papillomavirus (HPV)
  - Inactivated influenza (IIV)
  - Meningococcal serogroups A,C,W, Y (MenACWY)
  - Meningococcal serogroup B (MenB)
  - Pneumococcal conjugate (PCV13)
  - Zoster, recombinant (RZV)



INTRAMUSCULAR (IM) INJECTION

- COVID-19 injections are administered IM at a **90-degree angle** to the skin, preferably into the **deltoid muscle of the upper arm** of an adult patient.



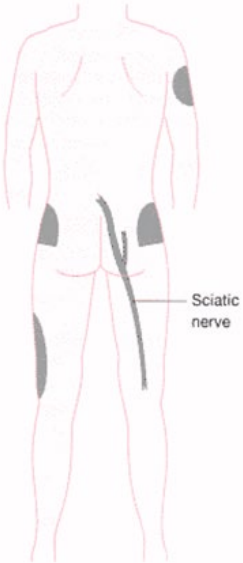


https://www.immunize.org/catg.d/p2020.pdf
Linked at: https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1
Intramuscular Injections. (2020, August 13). Retrieved April 9, 2021, from https://med.libretexts.org/@go/page/10034

INTRAMUSCULAR (IM) INJECTION SITES

Sites

- **mid-deltoid – preferred for vaccination**
  - easy to locate and access
  - "belly" of the muscle
- ventrogluteal (hip) - preferred otherwise
- dorsogluteal (butt) - avoid
  - if a needle hits the sciatic nerve, the patient may experience partial or permanent paralysis of the leg
- vastus lateralis (anterior lateral thigh) - infant/toddler
  - generally: smaller gauge, shorter needle for peds



https://www.immunize.org/catg.d/p2020.pdf
Linked at: https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1

INTRAMUSCULAR (IM) INJECTION SITES

- select sites to avoid injury to tissue, nerves and vessels
- avoid muscles that are emaciated or atrophied
- choose a site free of pain, infection, abrasion, scarring, excoriation, nevi, necrosis, open wound, or tattoo ink
  - "if it looks really neat, don't inject it!"
    - CDC guidance says IM and SQ through tattoo are ok

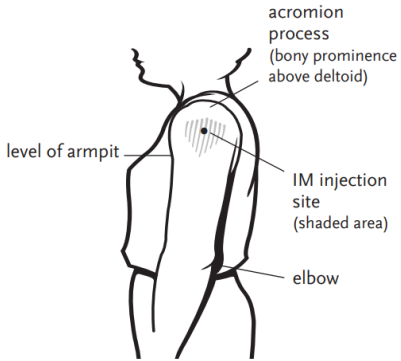
https://www2.cdc.gov/vaccines/ed/vaxadmin/va/index.html

INTRAMUSCULAR (IM) INJECTION SITES

- different sites can accommodate different volumes of medication
  - larger muscles accommodate more volume
  - generally, < 5mL for single IM injection
  - recommended volume for deltoid: < 1mL

INTRAMUSCULAR (IM) INJECTION

- Give in the central and thickest portion of the **deltoid** muscle
  - approximately 2–3 finger widths (~2") **below the acromion process** AND
  - **above the level of the armpit**
- To avoid causing an injury, do not inject too high (near the acromion process) or too low.



https://www.immunize.org/catg.d/p2020.pdf
Linked at: https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1

NEEDLE LENGTH

- Use of longer needles has been associated with less redness or swelling than occurs with shorter needles because of injection into deeper muscle mass.
- Appropriate needle length depends on age and body mass.
- For all intramuscular injections, the needle should be:
  - long enough to reach the muscle mass and prevent medication from seeping into subcutaneous tissue
  - not so long as to involve underlying nerves, blood vessels, bone

Needle Length and Gauge: Adults (age 19 years or older) for *Intramuscular* Injection

Age and Gender	Needle Length and Gauge	Injection Site
Less than 130 lbs (60 kg)	1-inch (25 mm)*: 22- to 25-gauge	Deltoid muscle of arm (preferred site)†
130–152 lbs (60–70 kg)	1-inch (25 mm): 22- to 25-gauge	
Men, 153–260 lbs (70–118 kg)	1- to 1.5-inch (25–38 mm): 22- to 25-gauge	
Women, 153–200 lbs (70–90 kg)	1- to 1.5-inch (25–38 mm): 22- to 25-gauge	
Men, greater than 260 lbs (118 kg)	1.5-inch (38 mm): 22- to 25-gauge	
Women, greater than 200 lbs (90 kg)	1.5-inch (38 mm): 22- to 25-gauge	
Children, 11–18 years	5/8*- to 1-inch (16–25mm): 22- to 25-gauge	Deltoid muscle o

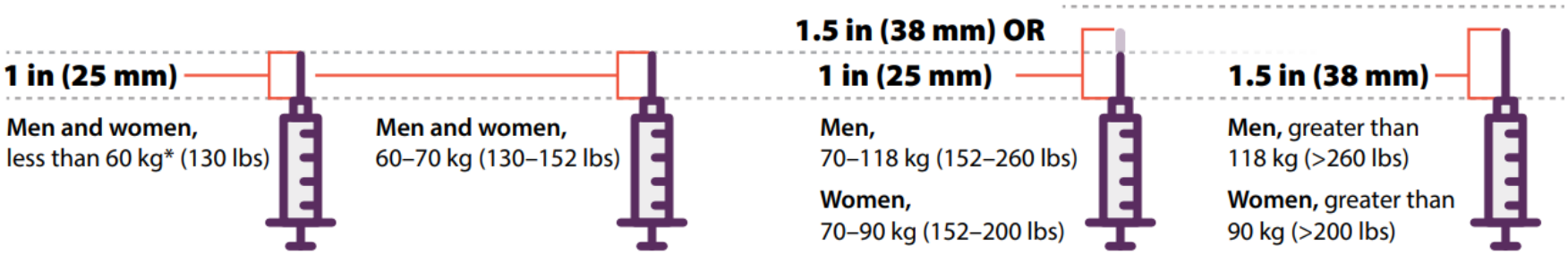
*If the skin is stretched tightly and subcutaneous tissues are not bunched.
†The vastus lateralis muscle of the anterolateral thigh can also be used. Most adolescents and adults needle to ensure intramuscular administration.

*Some experts recommend a 5/8-inch needle for men and women weighing less than 60 kg; if used, skin must be stretched tightly and subcutaneous tissues must not be bunched.
†The vastus lateralis muscle of the anterolateral thigh can also be used. Most adolescents and adults will require a 1- to 1.5-inch (25–38 mm) needle to ensure intramuscular administration.

https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1
Poland GA, Borrud A, Jacobson RM, et al. Determination of deltoid fat pad thickness. Implications for needle length in adult immunization. *JAMA*. 1997;277(21):1709-1711. DOI: 10.1001/jama.1997.03540450065037

1. **Use** the correct syringe and needle.

- Administer vaccine using either a 1-mL or 3-mL syringe.
- Use a 22- to 25-gauge needle.
- Use the correct needle length based on the patient's gender and weight. For adults, use a 1- to 1.5-inch needle.



**Some experts recommend a 5/8-inch needle for men and women who weigh less than 60 kg (130 lbs). If used, the skin must be stretched fully and the subcutaneous tissues must not be bunched.*

Children, 11–18 years	5/8*- to 1-inch (16–25mm): 22- to 25-gauge	Deltoid muscle of arm (preferred site) †

*If the skin is stretched tightly and subcutaneous tissues are not bunched.
†The vastus lateralis muscle of the anterolateral thigh can also be used. Most adolescents and adults will require a 1- to 1.5-inch (25–38 mm) needle to ensure intramuscular administration.

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1

NEEDLE LENGTH

- A ⅝" needle is sufficient for IM injection in the deltoid muscle in adults weighing less than 130 lbs (<60 kg) only if the subcutaneous tissue is not bunched and the injection is made at a 90° angle
- A 1" needle is sufficient in adults weighing 130–152 lbs (60–70 kg)
- A 1–1½" needle is recommended in women weighing 153–200 lbs (70–90 kg) and men weighing 153–260 lbs (70–118 kg)
- A 1½" needle is recommended in women weighing more than 200 lbs (91 kg) or men weighing more than 260 lbs (more than 118 kg).

https://www.immunize.org/catg.d/p2020.pdf

NEEDLE LENGTH

- Some experts allow intramuscular injection with a ⅝-inch needle but ONLY if the skin is stretched flat (Poland 1997).
- If the subcutaneous and muscle tissue are bunched to minimize the chance of striking bone (Haramati 1994), a 1-inch needle or larger is required to ensure intramuscular administration.

https://www.immunize.org/catg.d/p2020.pdf
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#ref17
Poland GA, Borrud A, Jacobson RM, et al. Determination of deltoid fat pad thickness. Implications for needle length in adult immunization. *JAMA*. 1997;277(21):1709-1711. DOI: 10.1001/jama.1997.03540450065037
Haramati N, Lorans R, Lutwin M, Kaleya RN. Injection granulomas. Intramuscle or intrafat? *Arch Fam Med.* 1994;3(2):146-148.

NEEDLE LENGTH

- decision on needle length must be made for each person, based on:
  - site of injection
  - injection technique
  - the size of the muscle
  - the thickness of adipose tissue at the injection site
  - the depth below the muscle surface into which the material is to be injected
  - the volume/type of the medication to be administered

NEEDLE GAUGE

- needle gauge for intramuscular injection is **22-25G**
- solutions for IM injections generally aren't very viscous
  - gauge can be smaller

ASPIRATION

- refers to the action of pulling back on the plunger just prior to injecting medication, to see if you are inside a blood vessel
  - can occur prior to drawing up medication; withdraw plunger to draw up air into syringe which is then injected into vial
  - can occur while needle is in injection site; aspirating ensures one is not in a blood vessel
  - may also refer to removal of air bubbles lodged in a syringe after medication is withdrawn/prior to administration (plunger is pushed in/medication advanced)

Intramuscular Injections. (2020, August 13). Retrieved April 9, 2021, from https://med.libretexts.org/@go/page/10034

ASPIRATION

- refers to the action of **pulling back on the plunger** prior to injecting medication (Ipp, Sam, & Parkin, 2006)
- current practice in the acute care setting is to aspirate IM injections to check for blood return in the syringe.
  - lack of blood in the syringe confirms that the needle is in muscle and not in a blood vessel
  - if blood is aspirated, the needle is removed to the sharps container, and the injection is re-prepared and re-administered (Perry et al., 2014).
- there is little evidence to support the practice of aspiration for IM/SQ injections, but it continues to be taught and practiced (Canadian Agency for Drugs and Technologies in Health, 2014; Greenway, 2014; Sepah, Samad, & Altaf, 2014; Sisson 2015).
- if required by your local clinic/hospital/agency policy, aspirate

Intramuscular Injections. (2020, August 13). Retrieved April 9, 2021, from https://med.libretexts.org/@go/page/10034

ASPIRATION

- **Aspiration before injection of vaccines** or toxoids (i.e., pulling back on the syringe plunger after needle insertion but before injection) **is not necessary (Centers for Disease Control and Prevention, 2015)**
  - no large blood vessels are present at the recommended injection sites
  - a process that includes aspiration might be more drawn out and painful (studies done in infants)
  - do still want to ensure no bubbles in syringe

REMOVING BUBBLES

- invert needle (pointing toward sky)
- flick syringe to advance bubbles to hub of needle
- push in/up on plunger to advance solution so bubbles advance up through hub of needle
- watch for steady stream of solution to flow out of needle
- ensure proper amount of medication is being injected
- circular anterior part of rubber stopper lines up with line

GENERAL SUPPLIES FOR IM VACCINATION

- syringe: 1 or 3mL (or 5mL)
- needle: 22-25 G; 5/8", 1", or 1.5" inch length
- sterile alcohol wipes
- gloves
- sterile gauze
- bandage

PROCEDURE FOR IM VACCINE DELIVERY

- palpate for deltoid muscle/acromion process
  - injection site makes a triangle approx 2" below the acromion process to the level of the axillary fold/armpit
- cleanse site (inside out), allow to air dry
- skin becomes taut by:
  - compressing skin and muscle between fingers (5/8")
  - lifting muscle to avoid bone (≥1" for most adults) or if elderly

PROCEDURE FOR IM INJECTION

- **pierce tissue quickly**
  - "with purpose, not aggression"
  - always at 90° angle
  - bevel does not matter
- release muscle tissue and move needle to “follow” tissue
- no need to aspirate (if vaccine, per CDC)

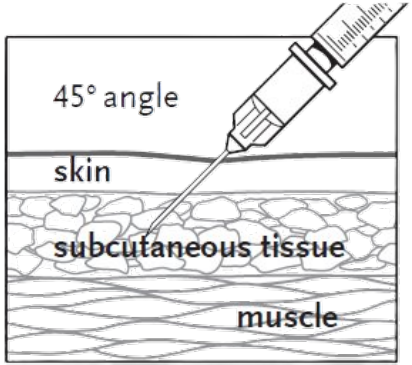
PROCEDURE FOR IM INJECTION

- inject dose slowly
- remove needle at 90° and place in sharps
  - do NOT recap a used needle!
  - loose cap can go in trash once syringe is in sharps
- apply pressure with gauze
  - if blood, recommend place in biohazard bin
- apply bandage

SUBCUTANEOUS INJECTION

VACCINATIONS

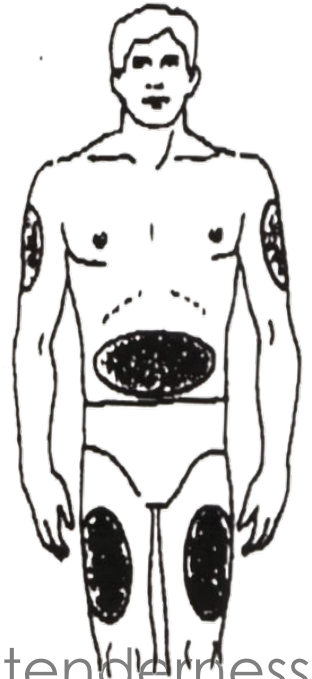
- Vaccinations administered via SQ route
  - Measles, mumps, rubella (MMR)
  - Pneumococcal polysaccharide (PPSV23) – *may also be given IM*
  - Polio (IPV) – *may also be given IM*
  - Varicella (Var; chickenpox)
  - Zoster, live (ZVL; Zostavax)



https://www.immunize.org/catg.d/p2020.pdf
Linked at: https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html#fig_1

INJECTION SITES

- **Anterior thigh**
- **Outer aspect of upper arm**
- **Abdomen**
- **Other**
  - Not over a bony prominence
  - Free of large blood vessels or nerves
  - Free of inflammation, excoriation, itching, tenderness, edema and scar tissue



GENERAL SUPPLIES FOR SQ INJECTION

- syringe: 1mL
- needle: 27 G; 1/2" length
- sterile alcohol wipes
- gloves
- sterile gauze
- bandage

PROCEDURE

- **Cleanse site**
  - Circular motion, allow to dry
- **Compress and lift subcutaneous tissue**
- **Insert 45° to 90° angle**
  - Amount of subcutaneous fat determines angle of injection
- **Release pinched skin**
- **Don't need to aspirate**
  - If present, remove needle and start over
- **Inject medication slowly**
- **Remove needle along insertion track**
- **Apply pressure with** sterile gauze

INTRADERMAL INJECTION

USES

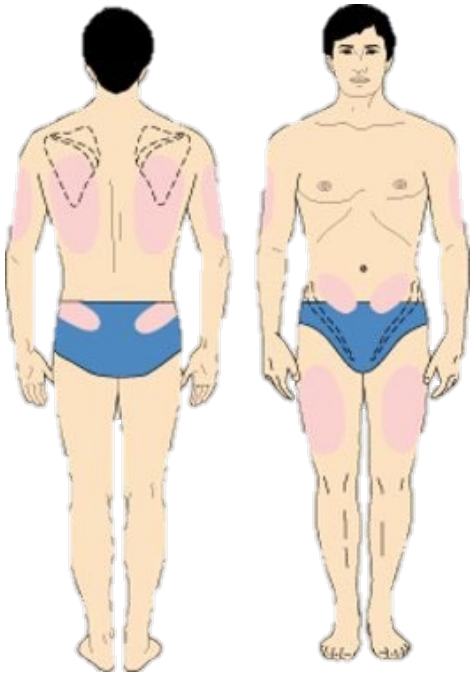
- Administered via ID route
  - TB test

GENERAL SUPPLIES FOR ID INJECTION

- syringe: 1mL
- needle: 27G; 1/2“ length
- sterile alcohol wipes
- gloves
- sterile gauze
- bandage

INJECTION SITES

- Volar forearm (most common)
- Deltoid
- Back



PROCEDURE

- Cleanse site
- Circular motion, allow to dry
- Hold skin taut between fingers
- Insert 10° to 15° angle
- **Bevel MUST be UP**
- Release skin
- Inject medication slowly
- Formation of wheal or bleb
- Remove needle along insertion track
- Apply pressure with sterile gauze

SUMMARY THUS FAR

	IM EASY!	SQ →	ID NEEDS MORE PRACTICE
Purposes	irritating medications and larger volumes that cannot be given SQ **many vaccines (ex. flu, COVID-19)** **penicillin injection**	many meds for slow absorption **insulin** **anticoagulants**	generally for testing hypersensitivity **TB testing** allergy testing **local anesthetic (periocular) - MSP**
Syringe	2, 2.5, 3, or 5mL **We will likely use 3mL**	**1mL (TB, Insulin type)** Could be 2, 2.5 or 3mL	**1mL (TB, Insulin type)** Could be 2, 2.5 or 3mL
Needle length	1, 1.5, or 2 inch Depends on size of patient Typical is 1"	3/8 – 5/8 inch	3/8 – 5/8 inch
Needle gauge **the higher the #, the thinner the needle!**	21, 22, 23	25, 26, 27	25, 26, 27
Recommended injection volumes	≤ 1 – (up to) 5mL / single injection. depending on site	≤ 1mL	≤ 1mL
Angle of injection	90 degrees	45 degrees	10-15 degrees
Bevel	--	--	up
Aspirate?	Classic answer: Yes Real answer: Depends…	No	No

OCULAR INJECTIONS

- Intralesional
- Subconjunctival
  - *Subtenon*
  - *Intraocular*
  - *Retrobulbar*

EYELID/INTRALESIONAL INJECTION

INDICATIONS

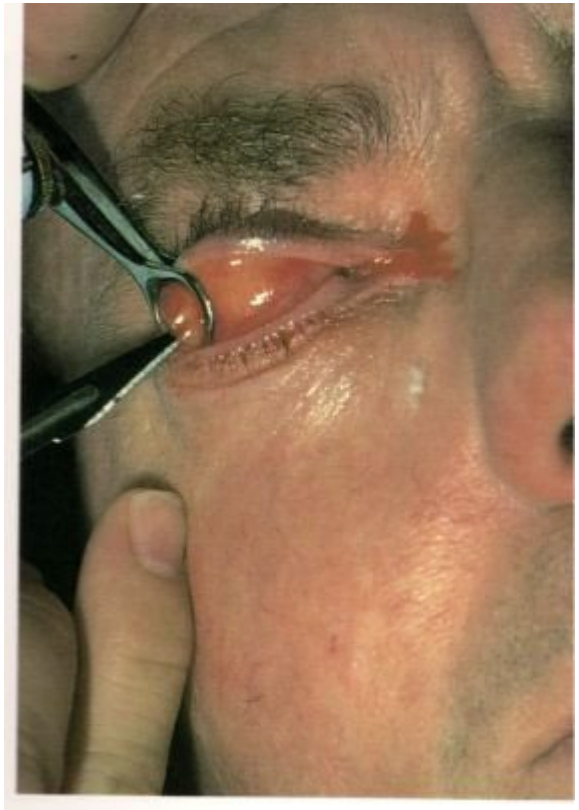
- Chalazion (conjunctival granuloma)
- Pyogenic granuloma
- Anesthetic for MSP

GENERAL SUPPLIES FOR IL INJECTION

- syringe: 1mL
- needle: 27-30G; 1/2" length + 20G to draw up
- sterile alcohol wipes
- gloves
- sterile gauze
- Bandage
- Chalazion clamp/forceps
- Topical anesthetic
- Medication (steroid to be injected)

INJECTION SITES

- Secure chalazion with clamp
  - support
  - protection



PROCEDURE

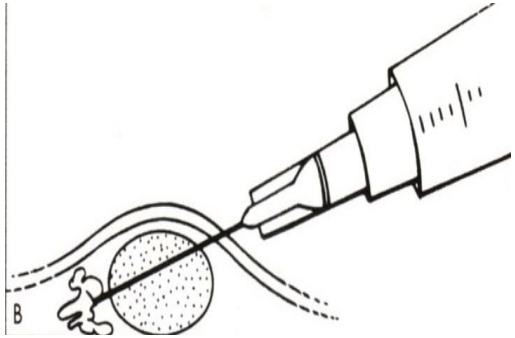
- Approach the injection site tangentially with the tip away from cornea
- Insert needle into the lesion bevel side up
- No need to aspirate
- Slowly and gently inject on distal side
- Back out the needle a little and inject more into lesion
- Repeat until enough volume is injected or needle backs out completely
- Approx. 0.1cc for small, 0.3cc for larger chalazia

PROCEDURE

- May repeat the injection from a different approach

- Apply gentle pressure with sterile gauze over the site of the lesion with the eye closed for several minutes

- Application of topical antibiotic optional



PRE-OP CONSIDERATIONS

- Pre-op considerations

- Single injection of steroid into chalazion can reduce need for incision and curettage, which requires 3 injections of anesthetic

- This is a more cost-effective management and alternative to surgery for chalazion than I&C

- Differentiate between hordeolum and chalazion

- Inject chalazia present <6mo; if longer, need I&C. If unclear, tx with antibiotics first and then injection 5d later.

PATIENT EDUCATION

- Avoid warm compresses, which will "spread out" steroid; want depot to stay near lesion x 2-3 weeks

- May see bolus of white steroid underneath – this is NOT depigmentation

Figure 5
Subcutaneous white (steroid) deposits after intralesional triamcinolone injection

EXPECTATIONS

- Approximately 60% will resolve in 2 weeks with one injection
  - 85-90% with two injections
- Follow-up
  - 2 weeks; may repeat with ½ dose of original
- Do not do more than two injections
  - Send for I&C

COMPLICATIONS OF OCULAR STEROID INJECTION

- Hypo- or hyper-pigmentation of the skin
- Atrophy of subcutaneous fat
- Increased IOP
- Subcutaneous abscess

LOCAL ANESTHETIC

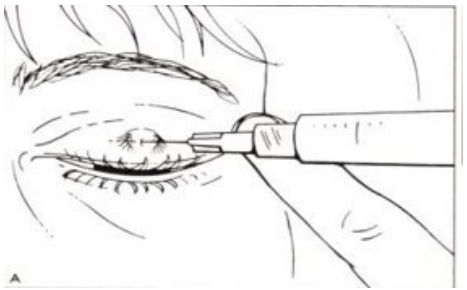
- Most commonly = lidocaine with epinephrine
- Works in 5+ minutes, last ~1 hour
- Mark the area you are going to cut!
- Inject, and keep injecting as you withdraw the needle
- In the lid, functions like an intradermal injection

PROCEDURE FOR ANESTHETIC

- Injection procedure for anesthetic is the same (to dermis side of lid)

- Will then use chalazion clamp and evert the lid

- Incision is made perpendicular to the lid margin (palpebral conj)



- Incision and curettage, removing all the capsule

NERVOUS?

- **Nervous about injecting the lid?**
  - Have patient look away
  - Keep needle angled away from globe
  - Apply corneal shield
  - Apply chalazion clamp

Subcutaneous Anesthesia Injection Video – Dr. Rich Castillo

https://www.youtube.com/watch?v=gL9XyYGwDsM

SUBCONJUNCTIVAL INJECTION

GENERAL SUPPLIES FOR SCONJ INJECTION

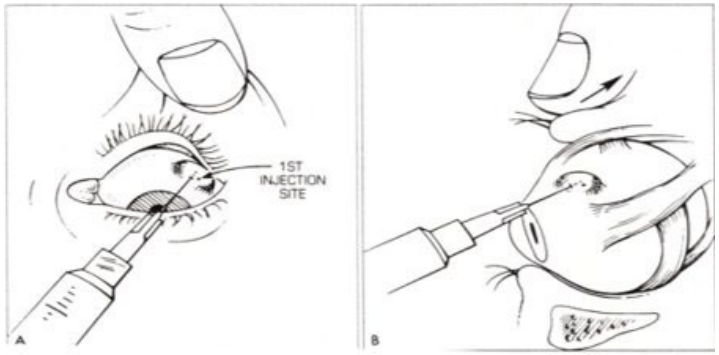
- syringe: 1-5mL
- needle: 27-30G; 1/2" length + 20G to draw up
- sterile alcohol wipes
- gloves
- sterile gauze
- topical anesthetic
- topical antibiotic
- tissue forceps (“toothed”)
- lid speculum (optional)

INJECTION SITES

- near the insult
- superior or inferior temporal conjunctiva
- between superior and lateral rectus
- midway between limbus and equator

PROCEDURE

- draw up medication
- prepare eye
- 2 gtts anesthetic + 1 gtt fellow eye
- have patient look in specified direction



- at chosen location use toothed forceps to grip and lift to form a "conjunctival tent"
- for s/p trabeculectomy, do NOT inject into the bleb ("if it's neat, don't inject it!")

PROCEDURE

- Approach tented conjunctiva tangentially, bevel down with the point away from the conjunctiva

- When the conjunctiva is penetrated you may feel it "pop"

- Inject solution to form a blister

- (Rinse cornea after injection if using 5-FU or MMC)

- Instill prophylactic antibiotic (if necessary)

- Instruct patient not to rub eye

- Will I get a subconjunctival hemorrhage?
  - Maybe!

- If so, how long will it take to resolve?
  - 2-4 weeks
  - artificial tears
  - avoid unnecessary aspirin use, etc.

CAUTIONS

- Children
- Complications
  - steroid response
  - corneal epithelial defect (5-FU)
  - conjunctival necrosis/ulceration
  - scleral thinning/scleritis
- Follow-up
  - varies depending on medication/procedure

COVID-19 VACCINES

CURRENT VACCINES

Three COVID-19 vaccines are currently authorized for use in the United States. These vaccines are authorized for use among different age groups.

PRODUCT	AUTHORIZED AGE GROUPS
Pfizer-BioNTech COVID-19 Vaccine	16 years of age and older
Moderna COVID-19 Vaccine	18 years of age and older
Janssen COVID-19 Vaccine (Johnson & Johnson)	18 years of age and older

Anyone outside the authorized age groups for a product should not receive the vaccine.

https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

CURRENT VACCINES

Vaccine	NUMBER OF DOSES/SERIES	INTERVAL BETWEEN DOSES
Pfizer-BioNTech COVID-19 Vaccine	2	21 days
Moderna COVID-19 Vaccine	2	28 days
Janssen COVID-19 Vaccine	1	N/A

*The second dose should be administered as close to the recommended interval as possible. If this is not possible, the second dose of mRNA COVID-19 vaccine may be scheduled for administration up to 6 weeks (42 days) after the first dose.

https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

CURRENT VACCINES

COVID-19 Vaccine Components*

Description	Pfizer-BioNTech mRNA COVID-19 Vaccine	Moderna mRNA COVID-19 Vaccine	Janssen COVID-19 Vaccine
Active ingredients	Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2	Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2	Viral Vector; Recombinant, replication-incompetent Ad26 vector, encoding a stabilized variant of the SARS-CoV-2 Spike (S) protein
Inactive ingredients	2[(polyethylene glycol {PEG})-2000]-N, N-ditetradecylacetamide	PEG2000-DMG: 1,2-dimyristoyl-rac-glycerol, methoxypolyethylene glycol	Polysorbate-80
	1,2-distearoyl-sn-glycero-3-phosphocholine	1,2-distearoyl-sn-glycero-3-phosphocholine	2-hydroxypropyl-β-cyclodextrin (HBCD)
	Cholesterol	Cholesterol	Citric acid monohydrate
	(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate)	SM-102: heptadecan-9-yl 8-((2-hydroxyethyl) (6-oxo-6-(undecyloxy) hexyl) amino) octanoate	Trisodium citrate dihydrate
	Sodium chloride	Tromethamine	Sodium chloride
	Monobasic potassium phosphate	Tromethamine hydrochloride	Ethanol
	Potassium chloride	Acetic acid	
	Dibasic sodium phosphate dihydrate	Sodium acetate	
	Sucrose	Sucrose	

https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

CURRENT VACCINES: TYPE/ADMINISTRATION

	Pfizer	Moderna	Janssen
Type of Vaccine	mRNA	mRNA	Viral vector
Age Indications	16 years of age and older	18 years of age and older	18 years of age and older
Schedule	2-doses, separated by 21 days. Both doses must be Pfizer-BioNTech vaccine	2 doses, separated by 28 days. Both doses should be Moderna vaccine	1 dose only
Dosage	0.3 mL	0.5 mL	0.5 mL
Needle gauge/length	22–25 gauge, 1 – 1½"	22–25 gauge, 1 – 1½"	22–25 gauge, 1 – 1½"

https://www.cdc.gov/vaccines/covid-19/downloads/covid19-vaccine-quick-reference-guide-2pages.pdf

CURRENT VACCINES: PREPARATION

	Pfizer	Moderna	Janssen
Route	Intramuscular (IM) injection	Intramuscular (IM) injection	Intramuscular (IM) injection
Site	Deltoid	Deltoid	Deltoid
Thawing Frozen Vaccine	**Between:** 2°C and 8°C (36°F and 46°F) or Room temperature up to 25°C (77°F) **Do NOT** refreeze thawed vaccine.	**Between:** 2°C and 8°C (36°F and 46°F) or 8°C to 25°C (46°F to 77°F) **Do NOT** refreeze thawed vaccine.	N/A
Mixing Vaccine	Mix vaccine with 1.8 mL of 0.9% sodium chloride (preservative-free, normal saline)	**Do NOT** mix with any diluent	**Do NOT** mix with any diluent

https://www.cdc.gov/vaccines/covid-19/downloads/covid19-vaccine-quick-reference-guide-2pages.pdf

	Pfizer	Moderna	Janssen
How supplied	**Multidose vial:** 6 doses	**Multidose vial:** 10 doses	**Multidose vial:** 5 doses
Diluent	0.9% sodium chloride (preservative-free, normal saline) provided in the ancillary kit. Do NOT use other diluent.	None	None
Storage Temperatures: Before Puncture	**Between:** -80°C and -60°C (-112°F and -76°F) until the expiration date -25°C and -15°C (-13°F and 5°F) for up to 2 weeks 2°C and 8°C (36°F and 46°F) for up to 120 hours (5 days)	**Between:** -25°C and -15°C (-13°F and 5°F) until the expiration date 2°C and 8°C (36°F and 46°F) for up to 30 days	**Between:** 2°C and 8°C (36°F and 46°F) until the expiration date.
Storage Temperatures: After puncture	**Between:** 2°C to 25°C (36°F to 77°F) for up to 6 hours. Discard any unused vaccine after 6 hours.	**Between:** 2°C and 25°C [36°F and 77°F] for up to 6 hours. Discard any unused vaccine after 6 hours.	**Between:** 2°C and 8°C (36°F and 46°F) for up to 6 hours. 9°C and 25°C (47°F and 77°F) for up to 2 hours. Discard any unused vaccine after these time frames.
Transport Temperatures: Before Puncture	**Between:** -80°C and -60°C (-112°F and -76°F) -25°C and -15°C (-13°F and 5°F) 2°C and 8°C (36°F and 46°F)	**Between:** -25°C and -15°C (-13°F and 5°F) 2°C and 8°C (36°F and 46°F) for up to 12 cumulative hours.	**Between:** 2°C and 8°C (36°F and 46°F)
After Puncture	**Between:** 2°C to 25°C (36°F to 77°F) for up to 6 hours.	**Between:** 2°C and 25°C (36°F and 77°F) for up to 6 hours.	**Between:** 2°C and 8°C (36°F and 46°F) for up to 6 hours

https://www.cdc.gov/vaccines/covid-19/downloads/covid19-vaccine-quick-reference-guide-2pages.pdf

MEDICOLEGAL

BEST PRACTICES

- **The setting in which vaccines are prepared and administered should have adequate space to prepare a vaccine using aseptic technique to prevent vial contamination.**
- There should be a clear physical separation of the vaccine storage/prep area from the patient administration area. A barrier/wall is NOT required.
- The multi-dose vaccine vial remains in the vaccine prep area and does NOT cross over into administration area.
- Any item taken into administration area (e.g. needle, syringe, medication vial, bandage, etc.) does NOT return to the storage/prep area.
- Staff preparing vaccines should be trained on procedures required to prevent cross contamination (maintain "clean"/aseptic technique).
- All supplies are secured and/or under constant visual surveillance to ensure cross contamination and errors do not occur.

https://www.jointcommission.org/standards/standard-faqs/assisted-living-community/medication-management-mm/000002221/

VACCINE VIALS/SUPPLIES

CHECK:

✓ **MEDICATION**

✓ **CONCENTRATION**

✓ **EXPIRATION DATE** [VACCINE AND DILUENT VIALS]

✓ **CLARITY**

✓ **COLOR**

BEST PRACTICES

D **Administering Immunizations**	1. Verifies identity of patient. Rechecks the provider's order or instructions against the vial and the prepared syringes.
	2. Utilizes proper hand hygiene with every patient and, if it is office policy, puts on disposable gloves. (If using gloves, changes gloves for every patient.)
	3. Demonstrates knowledge of the appropriate route for vaccine.
	4. Positions patient
	5. Correctly identifies the injection site (e.g., deltoid, vastus lateralis).
	6. Locates anatomic landmarks specific for IM injections.
	7. Preps the site with an alcohol wipe, using a circular motion from the center to a 2" to 3" circle. Allows alcohol to dry.

https://www.immunize.org/catg.d/p7010.pdf

BEST PRACTICES

D **Administering Immunizations** (continued)	8. Controls the limb with the non-dominant hand; holds the needle an inch from the skin and inserts it quickly at the appropriate angle (90° for IM).
	9. Injects vaccine using steady pressure; withdraws needle at angle of insertion.
	10. Applies gentle pressure to injection site for several seconds (using, e.g., gauze pad, bandaid).
	11. Uses strategies to reduce anxiety and pain associated with injections.
	12. Properly disposes of needle and syringe in "sharps" container.
	13. Properly disposes of vaccine vials.

https://www.immunize.org/catg.d/p7010.pdf

BEST PRACTICES

- always flick/advance to remove bubbles prior to injection
- do NOT inject with your finger/thumb on syringe plunger
- when injection is complete and you are removing needle/syringe, do NOT put your hand back toward the patient nor "brace" yourself on their arm

BEST PRACTICES

- Recent investigations undertaken by state and local health departments and the CDC have identified improper use of syringes, needles, and medication vials during injection administration. The unsafe practices have resulted in one or more of the following:
  - *Transmission of bloodborne viruses, including hepatitis C virus to patients*
  - *Notification of thousands of patients of possible exposure to bloodborne pathogens and recommendation that they be tested for HCV, HBV, and HIV*
  - *Referral of providers to licensing boards for disciplinary action*
  - *Malpractice suits filed by patients*

BEST PRACTICES

- **Always enter a medication vial with a sterile needle and sterile syringe.**
  - avoid combining several multi-dose vials to form a single dose
- It is NOT recommended to use the same needle and syringe to enter more than one medication vial though there are circumstances where more than one vial may need to be entered with the same syringe and needle (e.g., when reconstituting medications or vaccines).
  - aseptic technique must be followed
  - reconstitution should be performed in a designated aseptic field/area

https://www.cdc.gov/injectionsafety/providers/provider_faqs.html
https://www.cdc.gov/injectionsafety/providers.html

BEST PRACTICES

- Never administer medications from the same syringe to more than one patient, even if the needle is changed
- Do NOT enter any vial with a used syringe or needle
- Anything packaged as single-use should never be used for more than one patient
  - e.g. medication vials for single-use
- Absolute adherence to proper infection control practices be maintained during the preparation and administration of injected medications
- Prepare the injection as close as possible to the time of administration to the patient – this prevents compromised sterility or compromised physical and chemical stability of the medication
- Never leave a needle inserted into a medication vial septum for multiple uses/any amount of time. This provides a direct route for microorganisms to enter the vial and contaminate the fluid.

https://www.cdc.gov/injectionsafety/providers/provider_faqs.html
https://www.cdc.gov/injectionsafety/providers.html

MEDICOLEGAL CONSIDERATIONS

- Informed consent
- Documentation
- Reporting

INFORMED CONSENT

- The process by which a fully informed patient can participate in choices about his/her health care
- Elements
  - What is the injection/how is it performed
  - Reasonable alternative methods of treatment
  - Risks, benefits, side-effects and possible complications of procedure
  - Statement of request/demonstration of understanding by patient
  - Signatures: typically patient and witness

PROVIDE TO PATIENT

- **PERSONAL VACCINATION CARD** THAT INCLUDES:
  - name of vaccine administered
  - date of administration
  - name/location of the administering clinic
- **EMERGENCY USE AUTHORIZATION (EUA) "FACT SHEET FOR RECIPIENTS"** OF VACCINE ADMINISTERED
- PROVIDE **V-SAFE** INFORMATION
  - encourage participation for active safety monitoring

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html
https://www.cdc.gov/vaccines/covid-19/eua/index.html
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/pdfs/v-safe-information-sheet-508c.pdf

EMERGENCY USE AUTHORIZATION (EUA) "FACT SHEET FOR RECIPIENTS"

- Pfizer/BioNTech
  - https://www.fda.gov/media/144414/download
- Moderna
  - https://www.cdc.gov/vaccines/covid-19/eua/modernatx.html
- Jannsen
  - https://www.janssenlabels.com/emergency-use-authorization/Janssen+COVID-19+Vaccine-Recipient-fact-sheet.pdf

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html
https://www.cdc.gov/vaccines/covid-19/eua/index.html
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/pdfs/v-safe-information-sheet-508c.pdf

EMERGENCY USE AUTHORIZATION (EUA) "FACT SHEET FOR RECIPIENTS"

- What is the vaccine?
- What is an Emergency Use Authorization (EUA)?
- Who should get/not get the vaccine?
- How is it given? (IM administration; two doses or single dose)
- Clinical trial details
- Benefits/risks
- What do I do about side effects? (manufacturer contact info; v-safe)

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html
https://www.cdc.gov/vaccines/covid-19/eua/index.html
https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/pdfs/v-safe-information-sheet-508c.pdf

DOCUMENTATION

- **Type of visit?**
  - But may be seeing doctor for other reasons on same day
  - Insurance may be charged materials and administration fees
- **Patient at risk? (h/o anaphylaxis, allergies)**
- **Procedure well tolerated? (NAD - "no apparent distress")**
- **Complications? (Allergic reaction, anaphylaxis)**
- **Post-procedure instruction? (Educational sheets)**

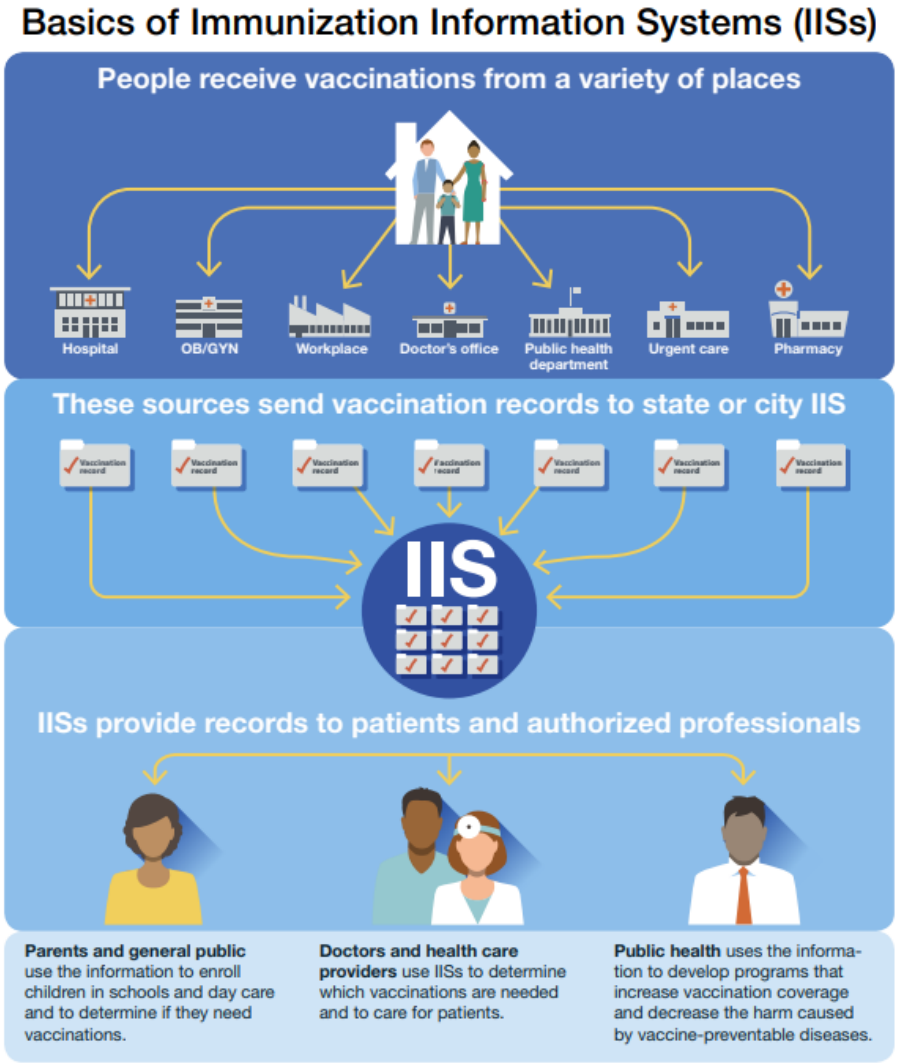
REPORTING

- PCP notification within 30 days
- submitting required info to the state and local vaccine registry/IIS
- reporting adverse events
- reviewing records prior to vaccine administration
  - ensure proper dose, needle size, location, precautions, etc.

RECORD IN MEDICAL RECORD/IIS

- Record in the patient's medical record and/or immunization information system (IIS):
  - date of administration, manufacturer, lot number, vaccination site and route, and name and title of the person administering the vaccine.
- Vaccination providers must:
  - document vaccine administration in their medical record systems within 24 hours of administration, and
  - use their best efforts to report administration data to the relevant system for the jurisdiction (i.e., IIS) as soon as practicable and no later than 72 hours after administration.

IMMUNIZATION INFORMATION SYSTEMS (IIS)



https://www.cdc.gov/vaccines/programs/iis/downloads/basics-immun-info-sys-iis-508.pdf

VAERS Vaccine Adverse Event Reporting System
www.vaers.hhs.gov

- VAERS = **V**accine **A**dverse **E**vent **R**eporting **S**ystem
- **National program** managed by the U.S. Centers For Disease Control and Prevention **(CDC)** and the U.S. Food and Drug Administration **(FDA)**

- **Monitors the safety of all vaccines** licensed in the united states
- **Collects and reviews reports of adverse events** that occur after vaccination
  - An "adverse event" is any health problem or "side effect" that happens post-vaccination
  - Reports can come from healthcare professionals, vaccine manufacturers, and the public

https://vaers.hhs.gov/index.html

VAERS

VAERS Vaccine Adverse Event Reporting System
www.vaers.hhs.gov

- **If a patient has a severe allergic reaction after getting vaccinated, the provider will send a report to VAERS.**
- VAERS cannot determine if a vaccine caused an adverse event, but can determine if further investigation is needed
- Reports of adverse events that are unexpected, appear to happen more often than expected, or have unusual patterns are followed up with specific studies
  - Report at: https://vaers.hhs.gov/reportevent.html

https://vaers.hhs.gov/index.html

VAERS: WHAT TO REPORT

- **Healthcare providers are required by law to report to VAERS:**
  - Any adverse event listed in the VAERS table of reportable events following vaccination that occurs within the specified time period after vaccinations
  - An adverse event listed by the vaccine manufacturer as a contraindication to further doses of the vaccine

- **Healthcare providers are strongly encouraged to report to VAERS:**
  - Any adverse event that occurs after the administration of a vaccine licensed in the united states, whether it is or is not clear that a vaccine caused the adverse event
  - Vaccine administration errors

https://vaers.hhs.gov/reportevent.html

VAERS: FALSE REPORTING

KNOWINGLY FILING A FALSE VAERS REPORT IS A VIOLATION OF FEDERAL LAW (18 U.S. CODE § 1001) PUNISHABLE BY FINE AND IMPRISONMENT.

https://vaers.hhs.gov/reportevent.html

STEPS FOR COVID-19 VACCINATION

- ✓ Complete the Centers for Disease Control and Prevention COVID–19 Vaccine Training Modules.
- ✓ Have a current certificate in basic cardiopulmonary resuscitation (CPR).
- ✓ Complete a practical training program of at least 4 hours.
  - ✓ *This will be completed if you finish workshop this afternoon as well.*
- ✓ Have documentation of an observation period by an approved observer, who confirms competency in **preparation and administration** of the COVID-19 vaccine(s) to be administered.
  - ✓ *This is the afternoon workshop – we will inject one another.*
- ✓ Comply with recordkeeping/reporting requirements, including PCP notification within 30 days, submitting required info to the state and local vaccine registries, reporting any adverse events, and reviewing patient records prior to vaccine administration.

REFERENCES AND RESOURCES

- **OSHA – Bloodborne Pathogens and Needlestick Prevention**
  - https://www.osha.gov/bloodborne-pathogens
- **OSHA – COVID-19 Guidance**
  - https://www.osha.gov/coronavirus/guidance/topic
- **CDC – COVID-19 vaccine training: general overview of immunization best practices for healthcare providers**
  - https://www2.cdc.gov/vaccines/ed/covid19/SHVA/10040.asp
- **CDC – Handwashing Guidance**
  - https://www.cdc.gov/handwashing/index.html
- **CDC – Preparing for the Potential Management of Anaphylaxis at COVID-19 Vaccine Sites**
  - https://www.cdc.gov/vaccines/covid-19/downloads/IntermConsid-Anaphylaxis-covid19-vaccine-sites.pdf
- **CDC – Vaccine Storage and Handling Toolkit**
  - https://www.cdc.gov/injectionsafety/providers.html
- **CDC – Vaccine Administration E-Learn Modules**
  - https://www2.cdc.gov/vaccines/ed/vaxadmin/va/ce.asp

REFERENCES AND RESOURCES

- **CDC – Pre-Vaccination Checklist**
  - https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf
- **CDC – Designing, Implementing and Evaluating a Sharps Injury Prevention Program**
  - https://www.cdc.gov/sharpssafety/pdf/sharpsworkbook_2008.pdf
- **NIOSH – Preventing Needlestick Injuries in a Healthcare Setting**
  - https://www.cdc.gov/niosh/docs/2000-108/pdfs/2000-108.pdf?id=10.26616/NIOSHPUB2000108
- **NIOSH – Selecting, Evaluating and Using Sharps Disposal Containers**
  - https://www.cdc.gov/niosh/docs/97-111/
- **VAERS – Vaccine Safety Fact Sheet**
  - https://www.cdc.gov/vaccinesafety/pdf/vaers_factsheet1.pdf
- **VAERS – Checklist of Information to Complete Form**
  - https://vaers.hhs.gov/docs/VAERS%202.0_Checklist.pdf
- **Immunization Action Coalition – Skills Checklist for Vaccine Administration**
  - https://www.immunize.org/catg.d/p7010.pdf