Welcome!

Immunization Training Pre-work for the Pharmacy Technician

Housekeeping

- Take notes
- Reminder: Prework is not the only requirement for training completion
  - Live Class
  - Post Class Survey
  - Assessment & Assessment form completed with Required Supplies
  - Technician Readiness Checklist
  - CPR Certification

Objectives

- Understand essential immunization terms, including active vs. passive immunity and inactivated vs. live attenuated vaccines (LAV).
- Identify and describe common vaccines administered in pharmacy settings.
- Demonstrate proper procedures for vaccine preparation and administration across various routes (e.g., subcutaneous, intramuscular, intranasal).
- Ensure safe handling and disposal of sharps to prevent contamination or injury.
- Communicate effectively with patients regarding vaccines.
- Implement correct procedures for receiving, storing, and handling vaccines to ensure safety and efficacy.

Impact of a Pharmacy Technician Administering Immunizations

- Increases immunization rates within local communities
- Expands the role and knowledge base of pharmacy technicians
- Enhances job satisfaction for technicians
- Improves pharmacy workflow by allowing more efficient immunization services

Requirements

- Technicians must hold national certification.
- Complete an approved immunization training program.
- Obtain and maintain approved CPR certification.
- Operate under the direct supervision of a licensed pharmacist trained to administer immunizations.
- Retain copies of all training documents for records.
- Maintain all required immunization credentials through required CE.

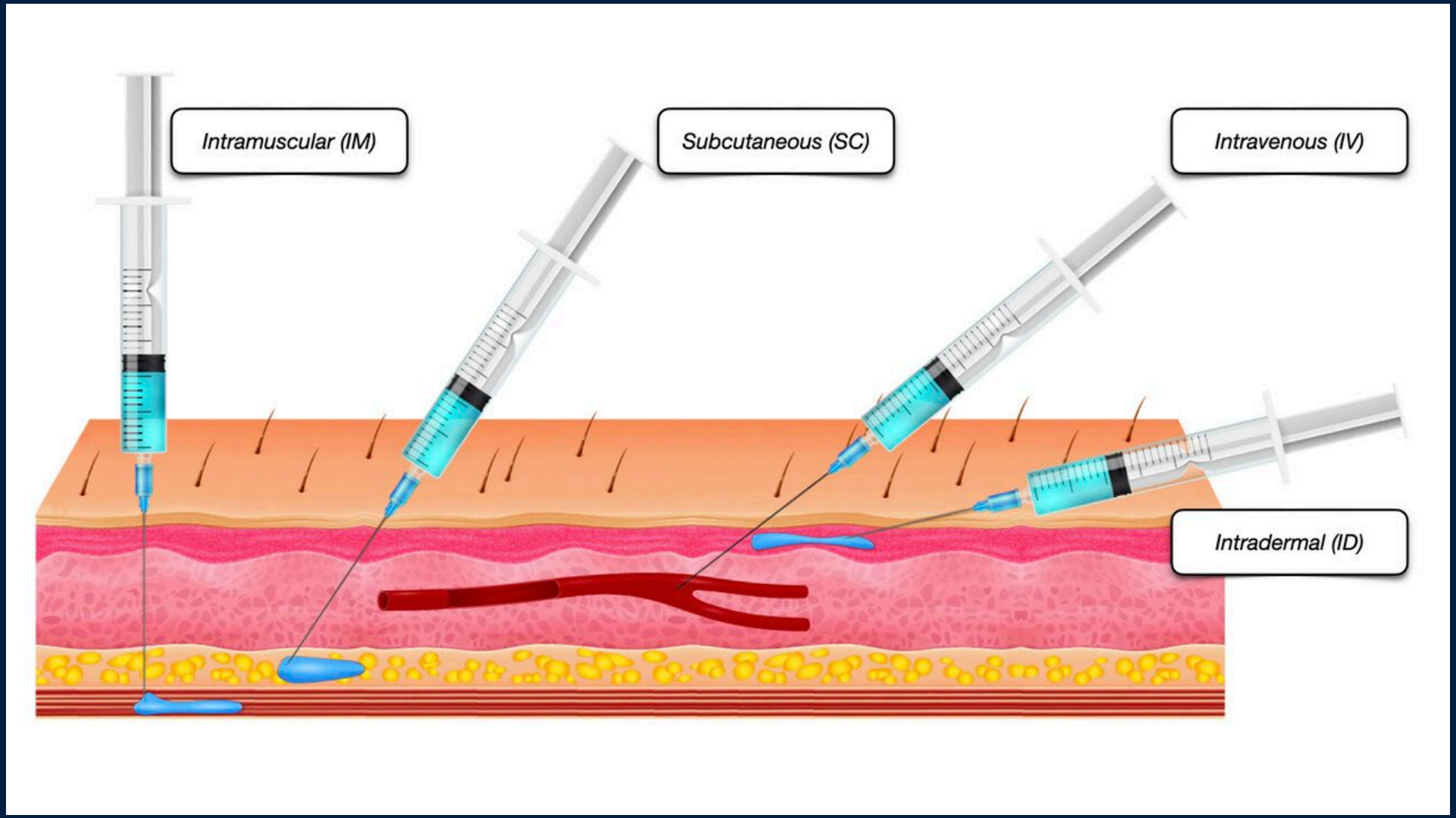
Key Terms

- **Immunization:** The process of making an individual immune to infection through vaccine administration.
- **Vaccine:** A substance given to stimulate antibody production and provide immunity against disease.
- **Antibody:** A protective protein produced by the body to fight foreign substances.
- **Immunity:** The body's ability to defend itself against foreign substances.
  - **Active Immunity:** Immunity developed over time after exposure to an antigen, typically through vaccination; usually long-lasting and takes 2-4 weeks to fully develop.
  - **Passive Immunity:** Immunity acquired by the transfer of antibodies from another person; provides immediate protection but is short-lived.

Key Terms

- **Route:** The path by which the vaccine is administered into the body.
- **Intramuscular (IM):** Injection into the muscle, typically in the deltoid muscle of the upper arm.
- **Subcutaneous (SQ):** Injection under the skin, often administered in the back of the arm.
- **Intranasal (IN):** Administration through the nostrils.
- **Site:** The specific location on the body where the vaccine is administered.

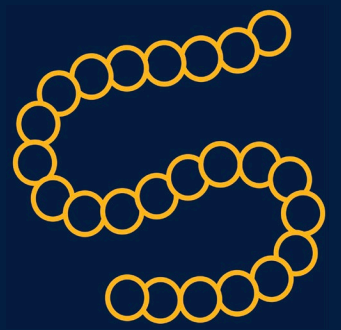
Key Terms


Intramuscular (IM)
Subcutaneous (SC)
Intravenous (IV)
Intradermal (ID)

Types of Vaccines

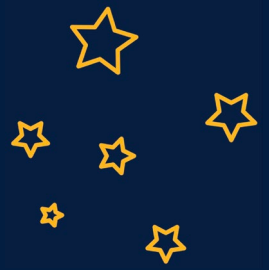
Inactivated

Subunit, recombinant, polysaccharide, & conjugate



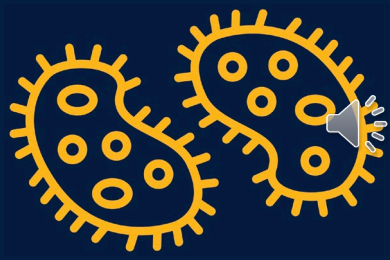
Live-Attenuated

Toxoid



Messenger RNA (mRNA)

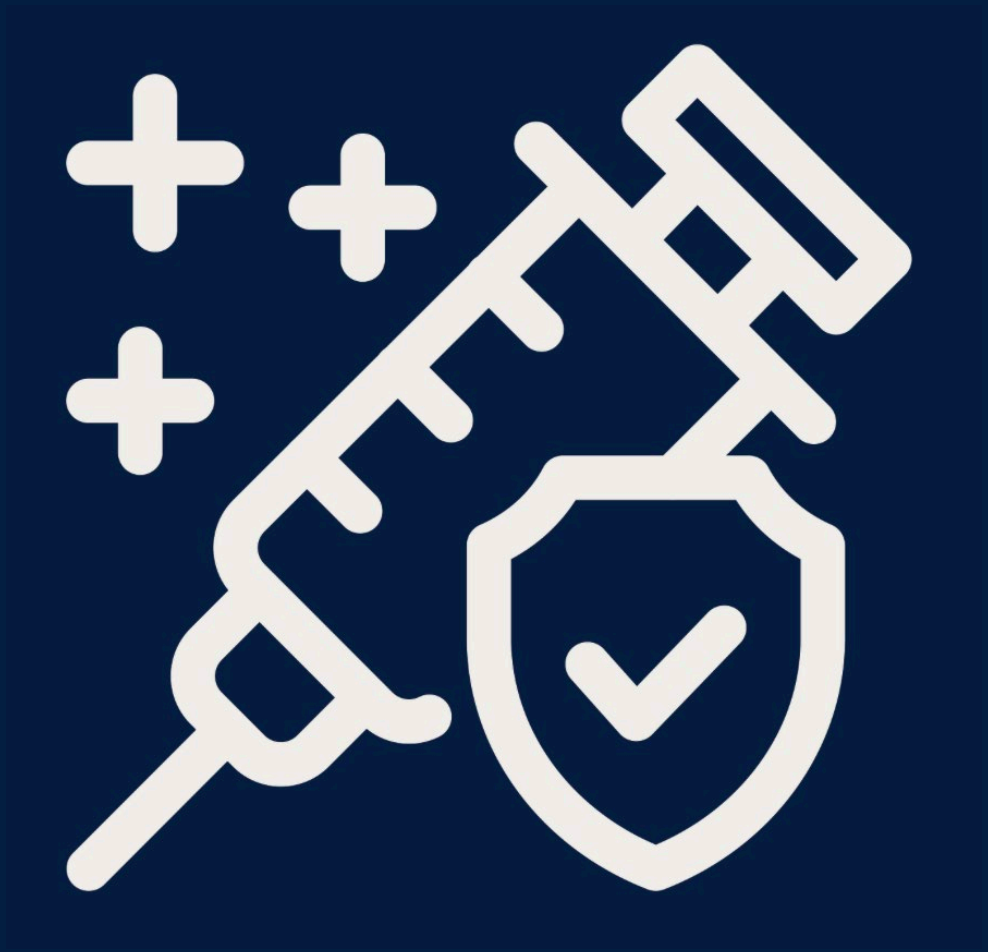
Viral Vector



Types of Vaccines

- **Inactivated:** Vaccines containing killed pathogens to stimulate an immune response without causing disease.
- **Messenger RNA (mRNA):** Vaccines that use mRNA to instruct cells to produce a protein that triggers immunity.
- **Subunit, Recombinant, Polysaccharide & Conjugate:** Vaccines that use specific pieces of the pathogen to stimulate an immune response.
- **Toxoid:** Vaccines that target toxins produced by pathogens rather than the pathogens themselves.
- **Viral Vector:** Vaccines that use a modified virus to deliver genetic material from the pathogen.
- **Live-Attenuated:** Vaccines containing a weakened form of the live pathogen to induce immunity.

Vaccine Preventable Diseases



Influenza Infection

- Viral infection affecting the respiratory tract
- Highly contagious; spreads through droplets
- Symptoms: Fever, cough, chills, body aches, and fatigue
- Seasonal, peaking in fall and winter
- Complications:
  - Pneumonia, worsening of chronic conditions (e.g., asthma, heart failure)
- Increased risk of heart attacks and strokes
- High-risk groups: elderly, young children, pregnant women, those with chronic health issues

Influenza Vaccines

Vaccine	Approval Age	Syringe Size (prefilled)	Administration Route
Fluzone	6+ months	0.5 ml	Intramuscular
Fluzone HD	65+ years; Solid organ transplant recipients age 18 through 64 years who are on immunosuppression medication regimens	0.7 ml	Intramuscular
Flublok	18+ years	0.5 ml	Intramuscular
Fluad	65+ years	0.5 ml	Intramuscular
Flucelvax	6+ months	0.5 ml	Intramuscular

Influenza Vaccines

Vaccine	Approval Age	Pregnancy Use	Syringe Size (prefilled)	Administration Route
FluMist	2-49 years	No	0.2 mL	Intranasal

Type: Live, Attenuated Intranasal Vaccine
Dose: 0.1 ml per nostril (0.2 ml total)
Common Side Effect: Runny or stuffy nose

No need to repeat dose if patient sneezes or blows nose!

Pneumococcal Infection

- Prevents serious infections, especially in individuals with compromised immune systems.
- Spread via mucus, affecting patients year-round, not limited to flu season.
- CDC Recommendations:
  - Primary Groups:
    - Children under 5 years
    - Adults 50 years and older
  - High-Risk Individuals:
    - Ages 2 years of age and older at risk or with chronic conditions (e.g., lung disease,
- Helpful Tools for Providers:
  - PneumoRecs VaxAdvisor App: Assists in determining appropriate vaccines.
  - CDC Schedule App: Useful for verifying immunization schedules.

Pneumococcal Vaccines

Conjugate Vaccines (PCVs)

- Prevnar 7 (PCV 7)
- Prevnar 13 (PCV 13)
- Vaxneuvance (PCV15)
- Prevnar 20 (PCV 20)
- Capvaxive (PCV 21)

Polysaccharide Vaccine

- Pneumovax (PPSV 23)

Herpes Zoster Infection

- **Risk**: Affects anyone with a history of chickenpox or the live vaccine.
- **Prevalence**: 1 in 3 people in the U.S. will develop shingles.
- **Trigger**: Often reactivates in immunocompromised or elderly patients.
- **Symptoms**: Painful, itchy rash (can cause scarring, eye issues, or nerve pain).
- Rash duration: 2-4 weeks; pain may persist for months or years (postherpetic neuralgia).

Herpes Zoster Vaccine

- **Zoster Vaccine (Shingrix)**
- **Type**: Inactivated vaccine
- **ACIP Recommendations**:
  - Adults 50+ years
  - Adults 19-49 years with immunodeficiency or immunocompromise due to disease or therapy
- **Dosing**: 2-dose series, intramuscular
  - Second dose: 2-6 months after first dose
  - For immunocompromised patients: 1-2 months after first dose

Hepatitis A Infection

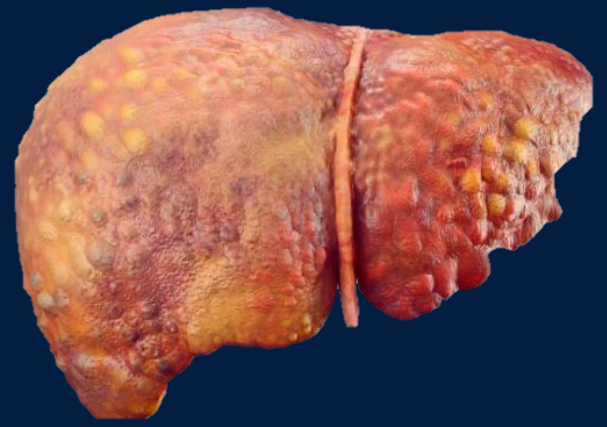
- Highly contagious liver infection
- **Symptoms**: Jaundice, fever, nausea, vomiting, dark urine
- **Transmission**: Fecal-oral route
- **High-Risk Groups**:
- Illegal IV drug users
- Individuals with chronic liver disease
- People engaging in high-risk sexual behavior
- Recipients of blood products

Hepatitis A Vaccines

Vaccine	Approved Age Group	Administration Route	Dosage	Dosing Schedule	Additional Info
Havrix (Peds)	12 months through 18 years	Intramuscular (IM)	0.5 ml	2-dose series (6-12 months apart)	Hepatitis A vaccine
Havrix (Adults)	19 years and older	Intramuscular (IM)	1 ml	2-dose series (6-12 months apart)	Hepatitis A vaccine
Vaqta (Peds)	12 months through 18 years	Intramuscular (IM)	0.5 ml	2-dose series (6-18 months apart)	Hepatitis A vaccine
Vaqta (Adults)	19 years and older	Intramuscular (IM)	1 ml	2-dose series (6-18 months apart)	Hepatitis A vaccine
Twinrix	18 years and older	Intramuscular (IM)	1 ml (combined Hepatitis A & B)	Standard: 3-dose (0, 1, 6 months); Accelerated: 4-dose (days 0, 7, 21-30, booster at month 12)	Combination Hepatitis A and B vaccine

Hepatitis B Infection

- Bloodborne Virus Transmission: Spread through blood, semen, and other bodily fluids.
- Transmission Modes:
  - Shared needles, razors, toothbrushes, lancets
  - Sexual contact
  - Mother-to-baby at birth
- Often Asymptomatic: Many are unaware of infection.
- Symptoms: Nausea, anorexia, fever, abdominal pain.
- Complications: Risk of chronic hepatitis, liver failure, death.



Hepatitis B Vaccines

Vaccine	Age Approved	Dosage	Administration	Series Details
Recombivax	All ages	IM	3-dose series	Doses at 0, 1, and 6 months
Engerix	All ages	IM	3-dose series	Doses at 0, 1, and 6 months
Heplisav-B	18+ years	IM	2-dose series	Doses at 0 and 1 month
Twinrix	18+ years	IM	Hepatitis A and B combination	Standard: 3 doses (0, 1, 6 months); Accelerated: 4 doses (0, 7, 21-30 days, booster at 12 months)

Tetanus Infection

- **Cause**: *Clostridium tetani* bacteria found in soil, feces, and dust.

- **Mechanism**: Bacteria produce toxins that prevent muscle relaxation.
  - Leads to **muscle rigidity**, **spasms**, and **lockjaw (trismus)**.
  - Fatality rate approximately **10%**.

- **Transmission**: Enters through skin injuries.
  - Common entry points: **abrasions**, **lacerations**, **chronic wounds**, **injectable drug use**

Diphtheria Infection

- **Caused by** *Corynebacterium diphtheriae*
- **Transmission:** Spread through respiratory droplets from coughing, sneezing, or close contact
- **Symptoms:** Causes a thick, gray coating in the back of the throat, potentially blocking airways
- **Complications:** Leads to severe difficulty breathing, heart inflammation (myocarditis), nerve damage (paralysis), and can be fatal

Pertussis Infection (Whooping Cough)

- Highly contagious respiratory infection
- Spread by respiratory droplets
- "Whoop" sound after severe coughing fits
- Early symptoms: Like a cold (runny nose, mild fever)
- Increased cases: Waning immunity & vaccine hesitancy
- Serious risk for infants: Complications like pneumonia, brain damage, death

Hold for Video

- https://www.youtube.com/watch?v=l5SHtdczSBc

Vaccines for Tetanus, Diphtheria, and Pertussis

Vaccine	Brand	Protection Against	Target Group	Additional Info
DTaP	Daptacel®, Infanrix®	Diphtheria, Tetanus, and Pertussis	Primary series for ages 6 mo - 6 yrs; not for adults	Administered IM
Tdap	Boostrix®, Adacel®	Tetanus, Diphtheria, and Pertussis	10 YOA or older, Expectant mothers (every pregnancy); family with new babies	Administered IM; lower dose of diphtheria and pertussis to reduce reactions in adults
Td	Tenivac®, TDVax	Tetanus and Diphtheria	Booster dose every 10 years; wound prophylaxis	Administered IM; does not contain pertussis component

Measles Infection

- Highly contagious viral disease spread through respiratory droplets
- Symptoms: Koplik spots, fever, cough, conjunctivitis, and rash
- In 2019, the CDC reported 1,261 measles cases in the US, a significant spike due to lower vaccination rates
- Vaccination has substantially reduced incidence; as of September 26, 2024, there were 254 reported cases across 32 states
- In 2025 there were 3 outbreaks and the first confirmed measles related death in a decade occurred in Texas that may have been fully prevented with vaccination

Mumps & Rubella Infections

Mumps

- Highly contagious viral disease primarily spread by respiratory droplets
- Symptoms include fever, muscle aches, headache, and painful swelling of the salivary glands (especially the parotid glands)
- Complications can include:
  - Central Nervous System (CNS) involvement (such as meningitis or encephalitis)
  - Deafness (often permanent, especially in children)
  - Orchitis (inflammation of the testicles in males), which can rarely lead to infertility
  - Pancreatitis
  - In rare cases, can be fatal

Rubella (German Measles)

- Mild but highly contagious viral disease spread by respiratory droplets
- Symptoms include low-grade fever, sore throat, and a pinkish rash that starts on the face and spreads
- Mostly eradicated in the U.S. due to high vaccination rates
- Major risk for pregnant women: Can lead to congenital rubella syndrome (CRS) if contracted during pregnancy, causing birth defects such as:
  - Heart problems
  - Vision and hearing impairment
  - Intellectual disabilities
  - In severe cases, fetal death

Measles, Mumps, & Rubella (MMR) Vaccines

1. **MMR-II**
   - Type: Live attenuated vaccine
   - Doses and Schedule
     - 2 Doses (First dose at 12-15 months, Second dose at 4-6 years)
   - Administration: SQ or IM
   - Reconstitution Required: Yes (with manufacturer diluent)

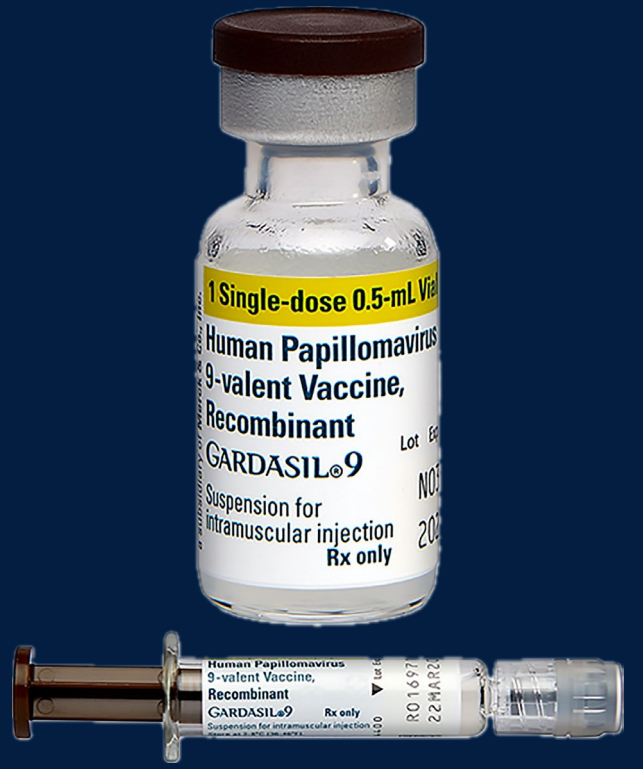
2. **PRIORIX**
   - Type: Live attenuated vaccine
   - Doses and Schedule
     - 2 Doses (First dose at 12-15 months, Second dose at 4-6 years)
   - Administration: SQ
   - Reconstitution Required: Yes (with manufacturer diluent)

Human Papillomavirus (HPV) Infection

- **Most common transmitted skin infection**
- Usually **self-limiting**, but some strains can lead to **genital warts** and **cancer**
- **Vaccination** recommended starting at ages **9-12** for all children
- **Gardasil 9** (HPV vaccine)
  - Protects against **9 types of HPV** (6, 11, 16, 18, 31, 33, 35, 52, 58)
  - **Administered IM** in a series of **2-3 doses** depending on age at initial vaccination
- **Syncope (fainting)** can occur post-vaccination, especially in adolescents; observe for **15 minutes** after administration

HPV Vaccine

- **Gardasil 9**
- **Administration**: Intramuscularly (IM), 0.5 ml per dose
- **Dosing Schedule**:
  - **Ages 9-14**: 2-dose series (0 and 6-12 months)
  - **Ages 15-26**: 3-dose series (0, 1-2, and 6 months)
  - **Ages 27-45**: 3-dose series* (0, 1-2, and 6 months)
    - *For ages 27-45, vaccination should be based on **Shared Clinical Decision Making***



Meningococcal Disease

- Caused by *Neisseria meningitidis*
- **Transmission**: Respiratory droplets
- **Symptoms**: Headache, neck stiffness, and pain
- **Fatality Rate**: 10-15% despite treatment
- **High-Risk Groups**
  - Adolescents
  - Military recruits in basic training
  - College students in dormitories (vaccination often required by colleges)
  - Patients with asplenia
  - Laboratory workers handling *N. meningitidis*
  - Travelers to areas where meningococcal disease is endemic
  - Individuals with HIV and a low CD4 count or high viral load

Meningococcal Vaccines

3 Types of Meningococcal Vaccines

MenACWY	MenB	MenABCWY
• Protects against serogroups A, C, W, and Y. • Recommended for adolescents, college students, and certain high-risk groups.	• Protects against serogroup B. • Typically given to teens and young adults, especially those in high-risk settings or outbreak areas.	• Offers broad protection against serogroups A, B, C, W, and Y. • Usually reserved for specific high-risk individuals or outbreak scenarios.

Meningococcal Vaccines

MenACWY (Meningococcal Conjugate Vaccines)

- **Routine Dosing**: Initial dose at ages 11-12, booster at age 16 (2 doses total).
- **High-Risk Individuals or Outbreak Situations**: Age & dosing adjustments may apply.
- **Brands**: MenQuadfi, Menveo.

MenB (Serogroup B Meningococcal Vaccines)

- **Routine Dosing**: For patients 16-18 years old.
- **High-Risk Individuals (10+ years)**: Recommended for those at increased risk.
- **Doses**: Typically 2-3 doses, depending on age and risk factors.
- **Outbreak Situations**: Booster doses may be recommended.
- **Brands**: Bexsero, Trumenba.

Meningococcal Vaccines

- **MenABCWY Vaccine**
- A comprehensive option that provides protection against both MenACWY and MenB serogroups.
- **Brand:** Penbraya
  - **Dosing:** Administered as a single-dose vaccine.
  - **Ideal Use:** Suitable for individuals at high risk who need protection from all five serogroups of meningococcal bacteria (A, B, C, W, Y) in one dose.

Varicella Infection (Chickenpox)

- **Highly contagious Transmission**: Spread via respiratory droplets or direct contact with fluid from varicella (chickenpox) lesions
- **Cause**: Primary infection with the varicella zoster virus (VZV)
- **Symptoms**:
  - Red, itchy skin rash that progresses to small, fluid-filled blisters
  - Blisters eventually rupture, forming scabs
- **Complications**: Can lead to bacterial infections, pneumonia, or encephalitis in some cases

Varicella Infection (Chickenpox)

Varivax

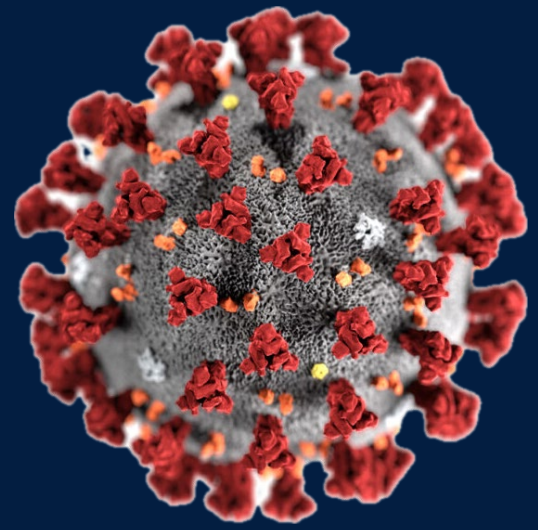
- **Vaccine Type**: Live attenuated vaccine
- **Dosage**: 0.5 mL, administered SQ or IM
- **Dosing Schedule**:
  - 2-dose series for children, adolescents, and adults without evidence of immunity
- **Post-Exposure Prophylaxis**:
  - Recommended for individuals without immunity who have been exposed to varicella or herpes zoster (shingles)

COVID-19 (SARS-CoV-2)

Virus: SARS-CoV-2

Transmission: Primarily spread through respiratory droplets

- **Modes of Transmission**:
  - Coughing
  - Sneezing
  - Talking
  - Close contact with infected individuals
- **Symptoms**:
  - **Common**: Fever, chills, cough, shortness of breath (SOB), fatigue, headache
  - **Muscle/Body Aches**: Generalized muscle pain or discomfort
  - **Loss of Smell/Taste**: New or sudden onset
  - **Upper Respiratory**: Congestion, runny nose, sore throat



COVID-19 Vaccine

- **Recommended for Everyone 6 Months and Older**: The vaccine is advised for all individuals to help prevent severe illness, hospitalization, and death from COVID-19.

- **High-Risk Groups will require the vaccine as well as a 2nd or 3rd dose based on age or medical conditiona**
  - Adults **65 years and older**
  - Individuals at **high risk for severe COVID-19** complications
  - Those who have **never received a COVID-19 vaccine**
  - Residents of **long-term care facilities**
  - **Pregnant, breastfeeding, or individuals planning to become pregnant**

- On the market: Pfizer-BioNTech, Comirnaty, Moderna, Spikevax, Novavax

Respiratory Syncytial Virus (RSV) Infection

- **Type:** Respiratory disease causing cold-like symptoms
- **At-Risk Groups:** Infants and older adults are at higher risk for serious infections
- **Seasonality:** Common in fall and winter seasons

RSV Vaccines

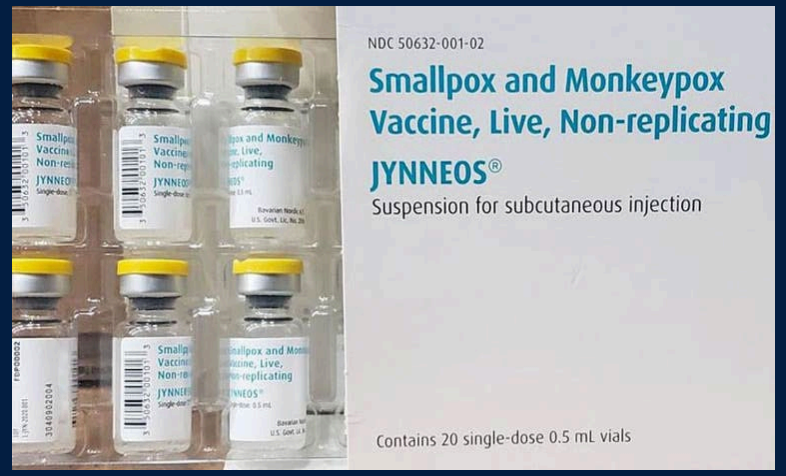
Vaccine	Formulation	Dose & Administration
Arexvy	Reconstituted	0.5 mL IM injection
Abrysvo	Vial/pre-filled syringe and Act-O-Vial	0.5 mL IM injection
mRESVIA	Pre-filled syringe	0.5 mL IM injection

MPox

- A viral disease caused by the Monkeypox virus, related to smallpox.
- Spread through close contact (rash, body fluids, respiratory droplets).
- **Symptoms:** fever, headache, muscle aches, swollen lymph nodes, chills, exhaustion, and a rash resembling pimples/blisters.
- **Prevention**
  - Avoid close contact with infected individuals.
  - Wash hands frequently or use sanitizer.
  - Use PPE when caring for patients.

MPox Vaccine

- **Vaccine**: JYNNEOS (live, non-replicating)
- **Doses**: 2 doses, 28 days apart
- **Administered**: SQ
- **Who Should Get It?**
  - Close contacts of mpox cases.
  - Individuals with high exposure risk.
  - If a patient has recovered from mpox, they do not need any mpox vaccine doses.



Vaccine Intervals

Vaccine Intervals

VACCINE	Minimum interval
Two inactivated vaccines	No minimum
Live vaccines & inactivate vaccine	No minimum
Two live vaccines if NOT administered SIMULTANEOUSLY	28 days
Live vaccines followed by blood products	2 weeks
Live vaccine followed by PPD skin test	28 days
PPD skin test followed by live vaccine	Give live vaccine after skin test is read

Preparation for Vaccine Administration

- Vaccine and necessary personal protective equipment (PPE)
- Gloves (as required by state-specific guidelines)
- Alcohol pads for sanitizing injection sites
- Appropriate needle length with a safety device
- Syringe for accurate dosing
- Sterile adhesive bandage
- Sharps container for safe disposal
- Emergency kit for managing adverse reactions

Choosing the Correct Needle Length

Intramuscular Injection	Subcutaneous Injection
Needle Gauge: 23-25 gauge **Syringe Size:** 3cc preferred; 1cc can be used if necessary **Needle Length:** Select based on patient weight: • **For patients <130 lbs:** Use a 5/8 inch needle • **For women 130-200 lbs and men 130-260 lbs**: Use a 1-inch needle • **For women >200 lbs and men >260 lbs:** Use a 1.5-inch needle	**Needle Gauge:** 25 gauge **Syringe Size:** 3cc preferred; 1cc can be used if necessary **Needle Length:** Use a 5/8 inch needle for all patients

Choosing the Correct Needle Length

Why it matters:

- Using a needle that is **the wrong length** may result in the vaccine being deposited in subcutaneous tissue rather than the muscle, reducing efficacy and increasing the risk of irritation or development of nodules or cellulitis.
- Additionally, the wrong length may potentially cause injury to underlying structures and result in the vaccine not fully absorbing into the muscle.

For IM injections, a **1-inch needle** is standard. However, based on patient-specific factors such as body mass index (BMI), a **1.5-inch needle** may be required to ensure the vaccine reaches the muscle.

Types of Syringes and Safety Features

Standard Syringes: Commonly used for most injections. Ensure proper disposal in sharps containers.

Retractable Needles:

- Designed to retract the needle while still in the arm, minimizing the risk of needle-stick injuries.
- Enhances safety for both patients and healthcare professionals

Vial Vaccine Prep

Steps for Preparing a Vaccine from a Vial:

1. Remove the cap from the vial
2. Clean the rubber stopper with an alcohol pad
3. Draw the appropriate volume of air into the syringe, matching the dose to be withdrawn
4. Insert the needle into the vial at an angel bevel side up and inject the air to prevent coring
5. Avoid touching or bending the needle during this process
6. Invert the vial and slowly withdraw the correct dose into the syringe
7. Check for and remove any air bubbles before administration

Reconstitution

- Follow specific instructions for reconstituting vaccines that require mixing with a diluent
- Ensure both the vaccine and diluent are at the correct temperature before reconstitution
- Gently mix according to manufacturer guidelines to avoid damaging the vaccine

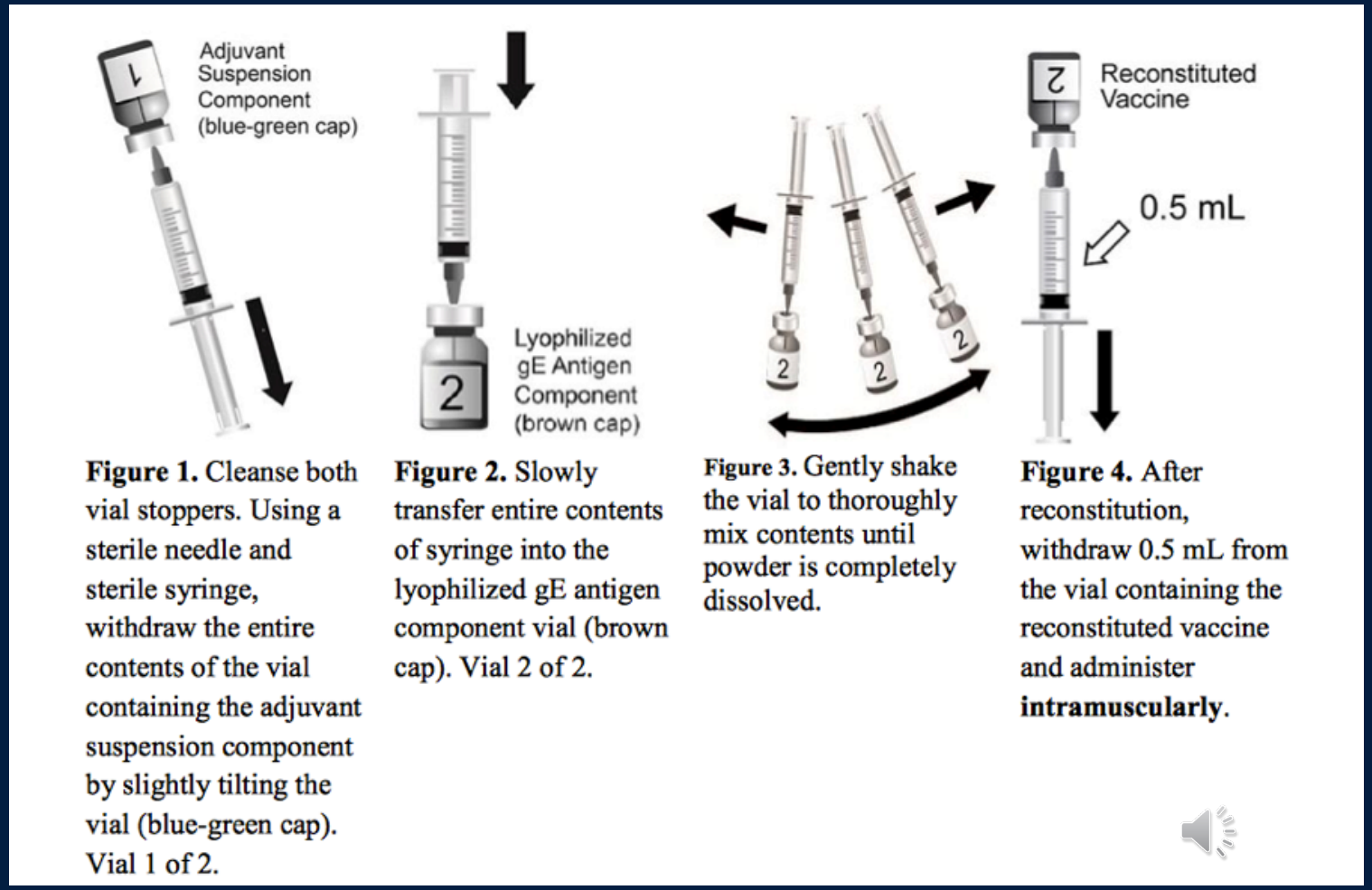


Figure 1. Cleanse both vial stoppers. Using a sterile needle and sterile syringe, withdraw the entire contents of the vial containing the adjuvant suspension component by slightly tilting the vial (blue-green cap). Vial 1 of 2.

Figure 2. Slowly transfer entire contents of syringe into the lyophilized gE antigen component vial (brown cap). Vial 2 of 2.

Figure 3. Gently shake the vial to thoroughly mix contents until powder is completely dissolved.

Figure 4. After reconstitution, withdraw 0.5 mL from the vial containing the reconstituted vaccine and administer **intramuscularly**.

*Shingrix Vaccine

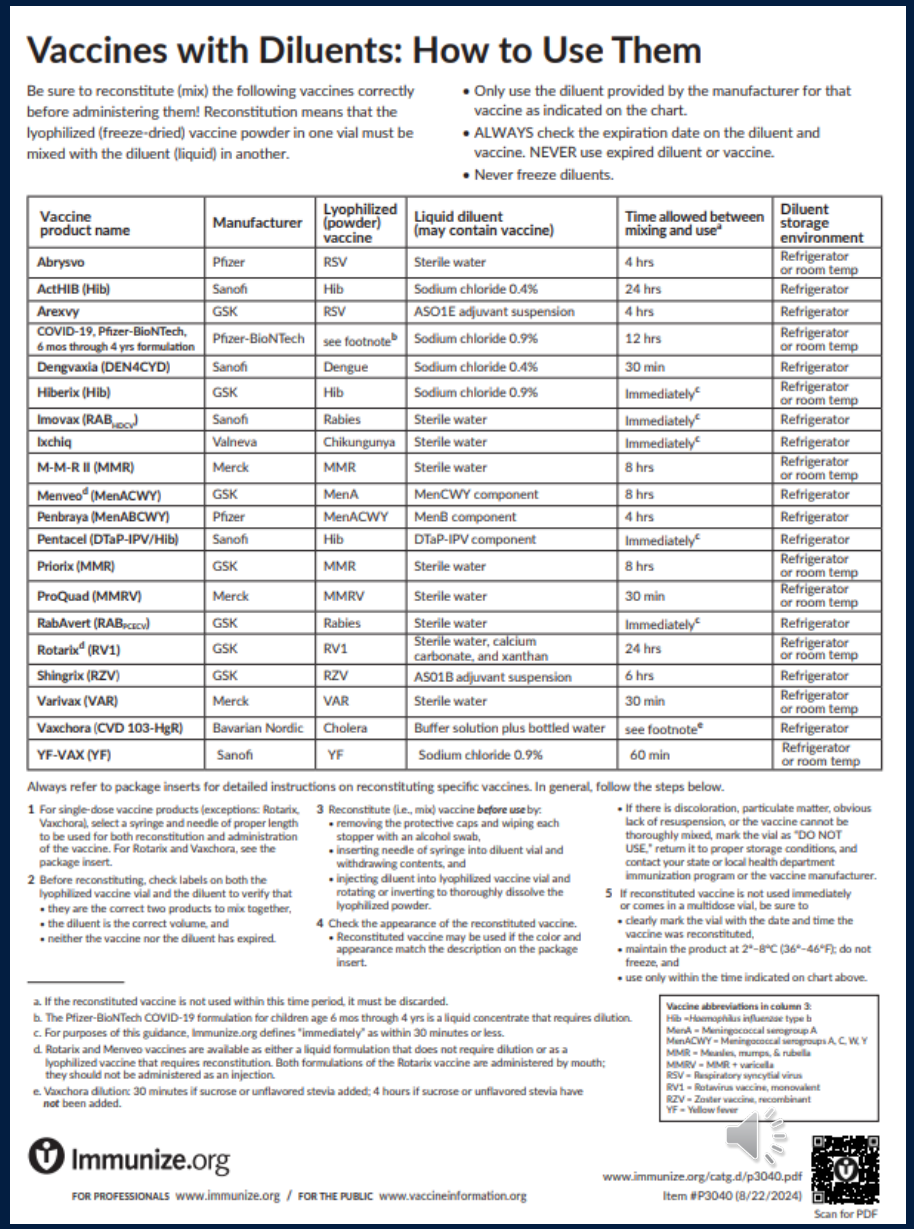
HOLD FOR VIDEO

- https://www.youtube.com/watch?v=oZAOqlk3TBA

Vaccines with Diluents

- Some vaccines require a diluent for reconstitution before administration. Refer to product-specific guidelines for correct procedures.

- For a complete list and additional instructions, consult Immunize.org's guide on vaccines with diluents



Vaccines with Diluents: How to Use Them

Be sure to reconstitute (mix) the following vaccines correctly before administering them! Reconstitution means that the lyophilized (freeze-dried) vaccine powder in one vial must be mixed with the diluent (liquid) in another.

- Only use the diluent provided by the manufacturer for that vaccine as indicated on the chart.
- ALWAYS check the expiration date on the diluent and vaccine. NEVER use expired diluent or vaccine.
- Never freeze diluents.

Vaccine product name	Manufacturer	Lyophilized (powder) vaccine	Liquid diluent (may contain vaccine)	Time allowed between mixing and use[a]	Diluent storage environment
Abrysvo	Pfizer	RSV	Sterile water	4 hrs	Refrigerator or room temp
ActHIB (Hib)	Sanofi	Hib	Sodium chloride 0.4%	24 hrs	Refrigerator
Arexvy	GSK	RSV	AS01E adjuvant suspension	4 hrs	Refrigerator
COVID-19, Pfizer-BioNTech, 6 mos through 4 yrs formulation	Pfizer-BioNTech	see footnote[b]	Sodium chloride 0.9%	12 hrs	Refrigerator or room temp
Dengvaxia (DEN4CYD)	Sanofi	Dengue	Sodium chloride 0.4%	30 min	Refrigerator
Hiberix (Hib)	GSK	Hib	Sodium chloride 0.9%	Immediately[c]	Refrigerator or room temp
Imovax (RAB_{HDCV})	Sanofi	Rabies	Sterile water	Immediately[c]	Refrigerator
Ixchiq	Valneva	Chikungunya	Sterile water	Immediately[c]	Refrigerator
M-M-R II (MMR)	Merck	MMR	Sterile water	8 hrs	Refrigerator or room temp
Menveo[d] (MenACWY)	GSK	MenA	MenCWY component	8 hrs	Refrigerator
Penbraya (MenABCWY)	Pfizer	MenACWY	MenB component	4 hrs	Refrigerator
Pentacel (DTaP-IPV/Hib)	Sanofi	Hib	DTaP-IPV component	Immediately[c]	Refrigerator
Priorix (MMR)	GSK	MMR	Sterile water	8 hrs	Refrigerator or room temp
ProQuad (MMRV)	Merck	MMRV	Sterile water	30 min	Refrigerator or room temp
RabAvert (RAB_{PCECV})	GSK	Rabies	Sterile water	Immediately[c]	Refrigerator
Rotarix[d] (RV1)	GSK	RV1	Sterile water, calcium carbonate, and xanthan	24 hrs	Refrigerator or room temp
Shingrix (RZV)	GSK	RZV	AS01B adjuvant suspension	6 hrs	Refrigerator
Varivax (VAR)	Merck	VAR	Sterile water	30 min	Refrigerator or room temp
Vaxchora (CVD 103-HgR)	Bavarian Nordic	Cholera	Buffer solution plus bottled water	see footnote[e]	Refrigerator
YF-VAX (YF)	Sanofi	YF	Sodium chloride 0.9%	60 min	Refrigerator or room temp

Always refer to package inserts for detailed instructions on reconstituting specific vaccines. In general, follow the steps below.

1 For single-dose vaccine products (exceptions: Rotarix, Vaxchora), select a syringe and needle of proper length to be used for both reconstitution and administration of the vaccine. For Rotarix and Vaxchora, see the package insert.

2 Before reconstituting, check labels on both the lyophilized vaccine vial and the diluent to verify that
- they are the correct two products to mix together,
- the diluent is the correct volume, and
- neither the vaccine nor the diluent has expired.

3 Reconstitute (i.e., mix) vaccine ***before use*** by:
- removing the protective caps and wiping each stopper with an alcohol swab,
- inserting needle of syringe into diluent vial and withdrawing contents, and
- injecting diluent into lyophilized vaccine vial and rotating or inverting to thoroughly dissolve the lyophilized powder.

4 Check the appearance of the reconstituted vaccine.
- Reconstituted vaccine may be used if the color and appearance match the description on the package insert.
- If there is discoloration, particulate matter, obvious lack of resuspension, or the vaccine cannot be thoroughly mixed, mark the vial as "DO NOT USE," return it to proper storage conditions, and contact your state or local health department immunization program or the vaccine manufacturer.

5 If reconstituted vaccine is not used immediately or comes in a multidose vial, be sure to
- clearly mark the vial with the date and time the vaccine was reconstituted,
- maintain the product at 2°–8°C (36°–46°F); do not freeze, and
- use only within the time indicated on chart above.

a. If the reconstituted vaccine is not used within this time period, it must be discarded.
b. The Pfizer-BioNTech COVID-19 formulation for children age 6 mos through 4 yrs is a liquid concentrate that requires dilution.
c. For purposes of this guidance, Immunize.org defines "immediately" as within 30 minutes or less.
d. Rotarix and Menveo vaccines are available as either a liquid formulation that does not require dilution or as a lyophilized vaccine that requires reconstitution. Both formulations of the Rotarix vaccine are administered by mouth; they should not be administered as an injection.
e. Vaxchora dilution: 30 minutes if sucrose or unflavored stevia added; 4 hours if sucrose or unflavored stevia have ***not*** been added.

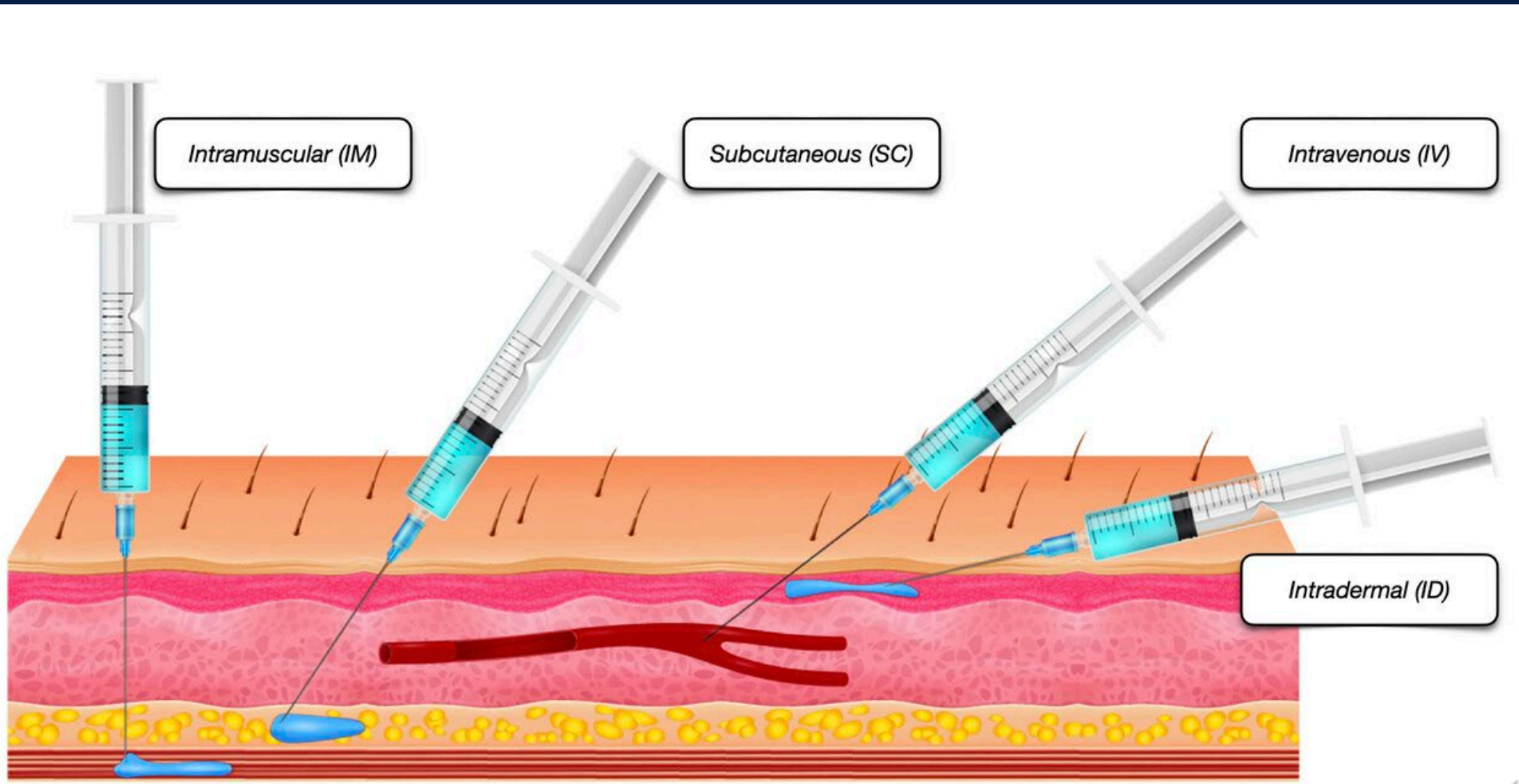
Vaccine abbreviations in column 3:
Hib = *Haemophilus influenzae* type b
MenA = Meningococcal serogroup A
MenACWY = Meningococcal serogroups A, C, W, Y
MMR = Measles, mumps, & rubella
MMRV = MMR + varicella
RSV = Respiratory syncytial virus
RV1 = Rotavirus vaccine, monovalent
RZV = Zoster vaccine, recombinant
YF = Yellow fever

Immunize.org

FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org

www.immunize.org/catg.d/p3040.pdf
Item #P3040 (8/22/2024)

Scan for PDF


Intramuscular (IM)
Subcutaneous (SC)
Intravenous (IV)
Intradermal (ID)

IM Injections

Steps for Administering an Intramuscular Injection:

1. Sanitize your hands and swab the injection site with an alcohol pad and allow it to dry
2. Locate the acromion process (the bony prominence above the deltoid)
3. Place the adhesive bandage 2-3 finger widths below the base of the deltoid triangle
4. Insert the needle at a 90-degree angle
5. Inject the vaccine slowly
6. Engage the needle safety device, then place the syringe in the Sharps container.

HOLD FOR VIDEO

- https://www.youtube.com/watch?v=1H7LnK0CpOY

SQ Injections

Steps for Administering a Subcutaneous Injection:

1. Sanitize your hands and clean the injection site with an alcohol pad and allow it to dry
2. Gently pinch the skin between the thumb and index finger
3. Insert the needle at a 45-degree angle
4. Inject the medication slowly
5. Activate the safety needle
6. Dispose of the syringe in a Sharps container

HOLD FOR VIDEO

- SQ
- https://www.youtube.com/watch?v=ylhdvNZBWN0

Intranasal Administration

Steps for Administering Intranasal Vaccines

1. Confirm the patient's eligibility and review any contraindications
2. Instruct the patient sit upright and to tilt their head slightly backward. They should breathe normally.
3. Insert the tip of the applicator into one nostril
4. Administer the prescribed dose as quickly as possible, then repeat in the other nostril.

HOLD FOR VIDEO

- Intransal
- https://www.youtube.com/watch?v=FUaptzVvRmU

Inject-Safe Barrier Bandages

- **Patient Benefits**:
  - Provides a safer environment by eliminating blood splatter
  - Reduces the risk of SIRVA (shoulder injury related to vaccine administration) by 25% due to improved injection targeting
  - Maintains an aseptic environment at the injection site
  - Reduces time in the pharmacy area, minimizing exposure between patients
  - Often results in less pain for the patient

- **Pharmacist/Technician Benefits**:
  - Protects the immunizer from contact with bloodborne pathogens
  - Cuts injection procedure time by 50%
  - Lowers exposure time to the patient
  - Minimizes clean-up time
  - Reduces SIRVA risk through better targeting using Inject-Safe Barrier Bandages
  - Decreases needle stick incidents by 25% (reported by a national chain)

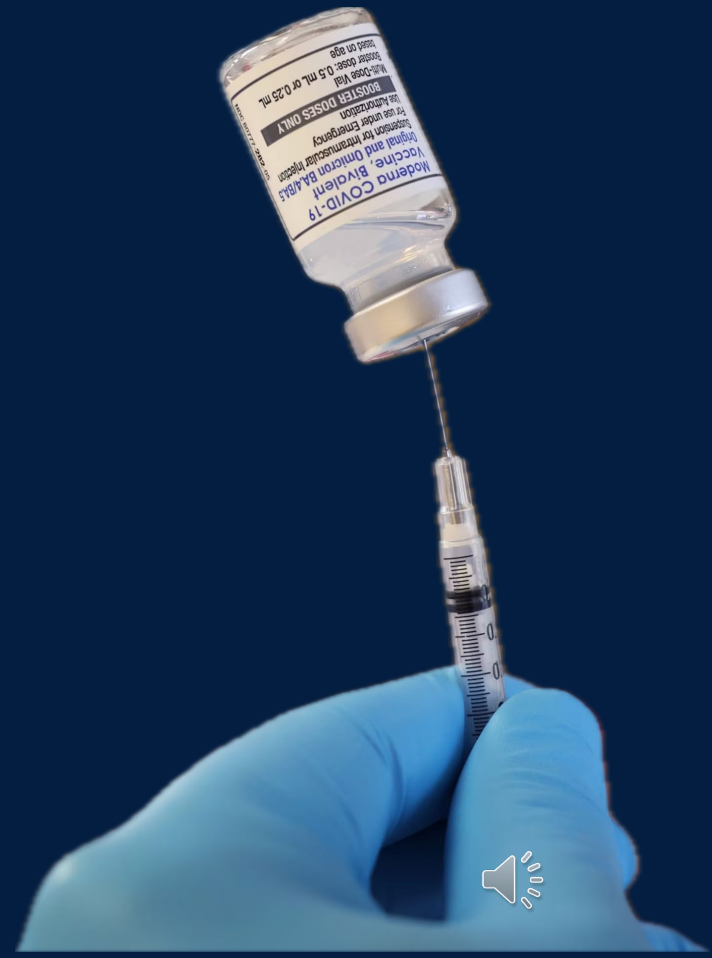
Inject-Safe Barrier Bandages

- All bandages come in a sterile package
- DO NOT open bandages prior to administration for ease of access
- DO NOT touch the inside of the bandage that will be placed against the arm
  - Replace the bandage if there is accidental contamination
- ONLY inject one vaccine at a time through the membrane
- If the middle of the outer bandage is touched, sanitize with alcohol
- When sanitizing with alcohol, do not blow on the area or fan the area to dry the bandage

Administering the Vaccine

Preparation Steps for Vaccine Administration:

- Wash hands thoroughly and put on appropriate PPE
- Check the expiration dates on both the vaccine and diluent
- Draw up the vaccine using a sterile syringe
- Have the emergency safety kit readily available
- Verify the right patient, right dose, and right injection site
- Clean the injection site with an alcohol pad and allow it to dry
- Apply an Inject-Safe Barrier Bandage to the injection site



Administering the Vaccine

Steps for Administering the Injection

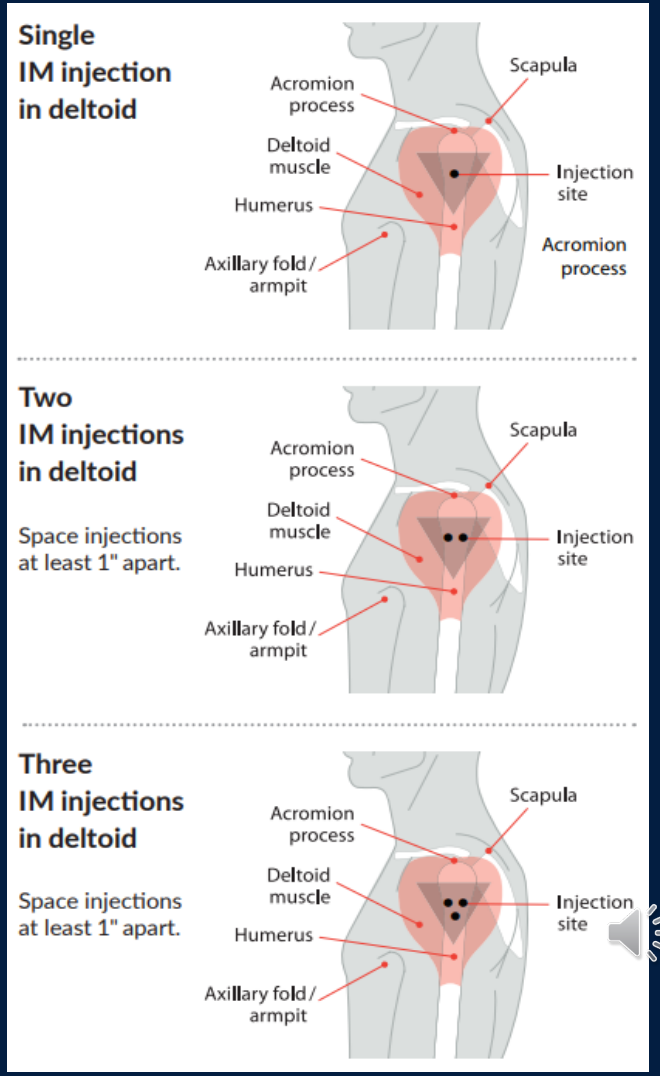
- Use a smooth, steady motion to administer the vaccine
- Activate the needle safety device immediately after injection
- Dispose of the syringe in a Sharps container
- Provide the patient with the appropriate Vaccine Information Statement (VIS)
- Ask the patient to remain in the pharmacy area for 15-20 minutes to monitor for any adverse reactions

Administering the Vaccine

- Sterile Injection Site
  - ALWAYS sanitize your hands in between patients
  - ALWAYS sterilize their arm with alcohol
    - When sanitizing with alcohol, do not blow on the area or fan the area to dry the bandage
    - Re-sanitize the area if the arm sleave of their shirt falls over or the patient touches the area to be vaccinated
    - Sanitizing BOTH the area of the arm and the bandage if touched is important in preventing infections such as cellulitis

Administering Multiple Vaccines – Coadministration

- Administering multiple vaccines at the same visit ensures comprehensive protection for the patient.
- All vaccines available in our pharmacies can be administered simultaneously, eliminating the need for multiple visits.
- Avoid injecting too high on the arm to prevent shoulder injury.
- Space multiple injections at least 1 inch apart and apply separate Inject-Safe Barrier Bandages to each site.



Keep Your Eye on the Needle!

- Always maintain visual contact with the needle during use.
- Position the Sharps container on the same side of your body as the injection site.
- Never recap a used needle.
- Use safety needles for all injections.
- Report any needlestick injuries in SCRT (Safety Compliance Reporting Tool) and notify your supervisor immediately.

Receiving, Storing, and Handling

- Store vaccines in their original packaging from the manufacturer.
- Group vaccines with the same National Drug Code (NDC) numbers together for easy identification.
- Practice stock rotation by placing newer products behind older ones.
- Check expiration dates monthly to prevent the use of expired vaccines.
- Ensure that the TEMPALERT system is installed and functioning in both refrigerator and freezer units containing vaccines.

Emergency Supply Kit

Essential Supplies for Managing Adverse Reactions:

- Epinephrine injections (EpiPen Jr for 22-66 lbs, regular EpiPen for individuals over 66 lbs)
- Diphenhydramine is used for allergic reactions that are mild.
- Alcohol swabs for cleaning affected areas
- Sterile gauze, absorbent pads, and band-aids for wound care
- Blood pressure cuff for monitoring vital signs
- CPR masks for emergency response
- Refer to state-specific guidelines for additional required supplies

Preventing Adverse Reactions

You have a key role in keeping patients safe by ensuring you have proper injection technique for each vaccine you inject.

Always confirm the right patient, right vaccine, and right administration details to ensure safe and effective immunization.

- Needle Length
- Injection Technology
- Sterile Site
- Inject-Safe Barrier Bandages
- Route of Administration

Managing Adverse Events

Event	Symptom	Response
Injection site reaction	Soreness of injection site	Cold compress for 15 minutes
	Inflammation of injection site	Cold compress and Tylenol or NSAID
	Excessive Bleeding	Firm pressure using sterile gauze and raise arm above heart level
	Itching and Swelling	Cold compress, antihistamine, inform patient of signs and symptoms of anaphylaxis

Managing Adverse Events

Event	Symptom	Response
Syncope “fainting”	• Paleness • Sweating • Coldness of extremities • Nausea • Dizziness • Weakness • Visual disturbances • Loss of consciousness	• If patient has fallen, check for injury • Lie patient on their back and elevate their feet • Maintain an open airway • Apply cold compress to face, neck and wrists • Call 911 immediately if patient does not regain consciousness • Call a Code White with location

Managing Adverse Events

Event	Symptom	Response
Anaphylaxis	• Generalized itching • Erythema • Hives • Angioedema • SOB • Shock • Abdominal cramping • Cardiovascular collapse	• Instruct staff to call 911 • Call a Code White • Place patient on back and maintain airway • Assess airway, breathing and circulation • Pharmacist administers 1 dose of epinephrine IM • Consider administration of diphenhydramine as a secondary treatment option • Perform CPR if necessary • Repeat epinephrine every 5-20 minutes up to 3 doses until EMS arrives

Thank you