



EpiVac Pink Book Web-on-Demand Series

Vaccine Storage and Handling; Vaccine Administration—2020

Immunization Services Division

National Center for Immunization and Respiratory Diseases

Centers for Disease Control and Prevention

Atlanta, GA

Learning Objectives

- For each vaccine-preventable disease, identify those for whom routine immunization is recommended.
- For each vaccine-preventable disease, describe characteristics of the vaccine used to prevent the disease.
- Describe an emerging immunization issue.
- Locate current immunization resources to increase knowledge of team's role in program implementation for improved team performance.
- Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.

Today's Agenda

EpiVac Pink Book Web-on-Demand Series: Vaccine Storage and Handling; Vaccine Administration—2020

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Continuing Education Information

- CE credit, go to: www.cdc.gov/GetCE
- Search course number: WD4344-072920
- CE credit expires: July 1, 2022
- CE instructions are available on the EpiVac Pink Book Web-on-Demand Series web page
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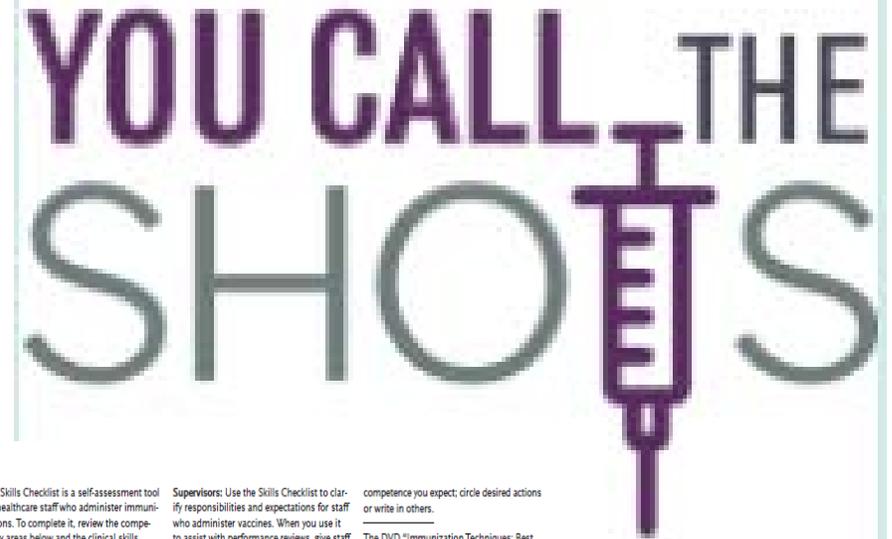
Vaccine Storage and Handling and Vaccine Administration

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**Staff
Training**

Staff Training

- Complete training:
 - As part of employee orientation
 - Annually
 - When recommendations change
 - When new vaccines are added



Skills Checklist for Vaccine Administration

The Skills Checklist is a self-assessment tool for healthcare staff who administer immunizations. To complete it, review the competency areas below and the clinical skills, techniques and procedures outlined for each area. Score yourself in the Self-Assessment column. If you check **Needs to Improve**, you indicate further study, practice, or change is needed. When you check **Meets or Exceeds**, you indicate you believe you are performing at the expected level of competence, or higher.

Supervisors: Use the Skills Checklist to clarify responsibilities and expectations for staff who administer vaccines. When you use it to assist with performance reviews, give staff the opportunity to score themselves in advance. Next, observe their performance as they administer vaccines to several patients, and score in the Supervisor Review columns. If improvement is needed, meet with them to develop a Plan of Action (see bottom of page X) to help them achieve the level of

competence you expect; circle desired actions or write in others. The DVD "Immunization Techniques: Best Practices with Infants, Children, and Adults" helps ensure that staff administer vaccines correctly. It may be ordered online at www.immunize.org/dvd. Another helpful resource is CDC's Vaccine Administration eLearn course, available at www.cdc.gov/vaccines/hcp/admin/resource-library.html.

COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	Self-Assessment		Supervisor Review		PLAN OF ACTION
		NEEDS TO IMPROVE	MEETS OR EXCEEDS	NEEDS TO IMPROVE	MEETS OR EXCEEDS	
A Patient/Parent Education	1. Welcomes patient/family and establishes rapport.					
	2. Explains what vaccines will be given and which type(s) of injection(s) will be done.					
	3. Answers questions and accommodates language or literacy barriers and special needs of patient/parents to help make them feel comfortable and informed about the procedure.					
	4. Verifies patient/parents received Vaccine Information Statements (VISs) for indicated vaccines and has had time to read them and ask questions.					
	5. Screens for contraindications (if within employee's scope of work).					
	6. Reviews comfort measures and aftercare instructions with patient/parents, and invites questions.					
B Medical and Office Protocols	1. Identifies the location of the medical protocols (e.g., immunization protocol, emergency protocol, reference material).					
	2. Identifies the location of epinephrine, its administration technique, and clinical situations where its use would be indicated.					
	3. Maintains up-to-date CPR certification.					
	4. Understands the need to report any needlestick injury and to maintain a sharps injury log.					
	5. Demonstrates knowledge of proper vaccine handling, e.g., maintains vaccine at recommended temperature and protects MMR from light.					

CONTINUED ON THE NEXT PAGE ►

Adapted from California Department of Public Health, Immunization Branch

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

Technical content reviewed by the Centers for Disease Control and Prevention www.immunize.org/icag-d/p7010.pdf - Item #P7010 (10/17)

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**Vaccine
Storage and
Handling**

What Do You Think?

- **Why do vaccine storage and handling matter?**
 1. Improper storage and handling can affect how well vaccines work.
 2. Improper storage and handling can erode patient's confidence in a practice or personnel.
 3. Improper storage can increase costs-staff time, replacement products, etc.
 4. All of the above

Vaccine Storage and Handling Toolkit

- **Primary source for CDC storage and handling recommendations**
 - Most current recommendations
 - Other materials updated based on toolkit contents



Vaccine Storage and Handling Toolkit

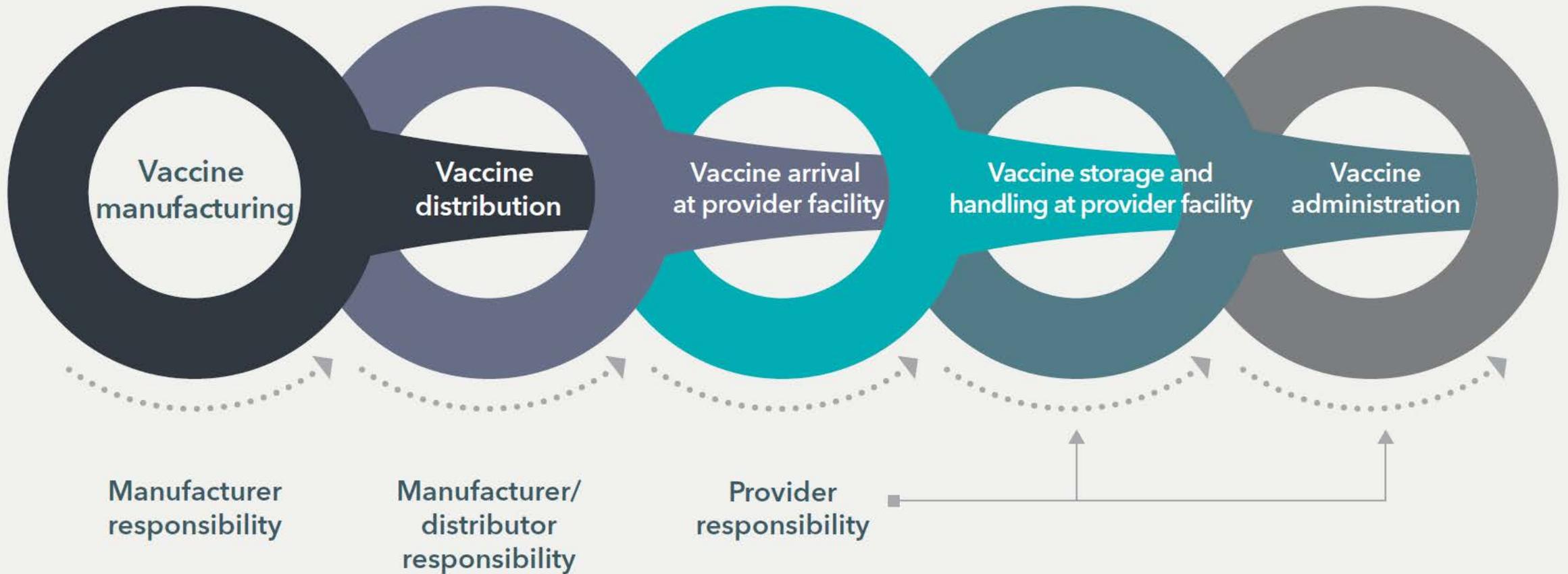


January 2019

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Vaccine Cold Chain

Cold Chain Flowchart



Primary and Alternate Coordinator Duties

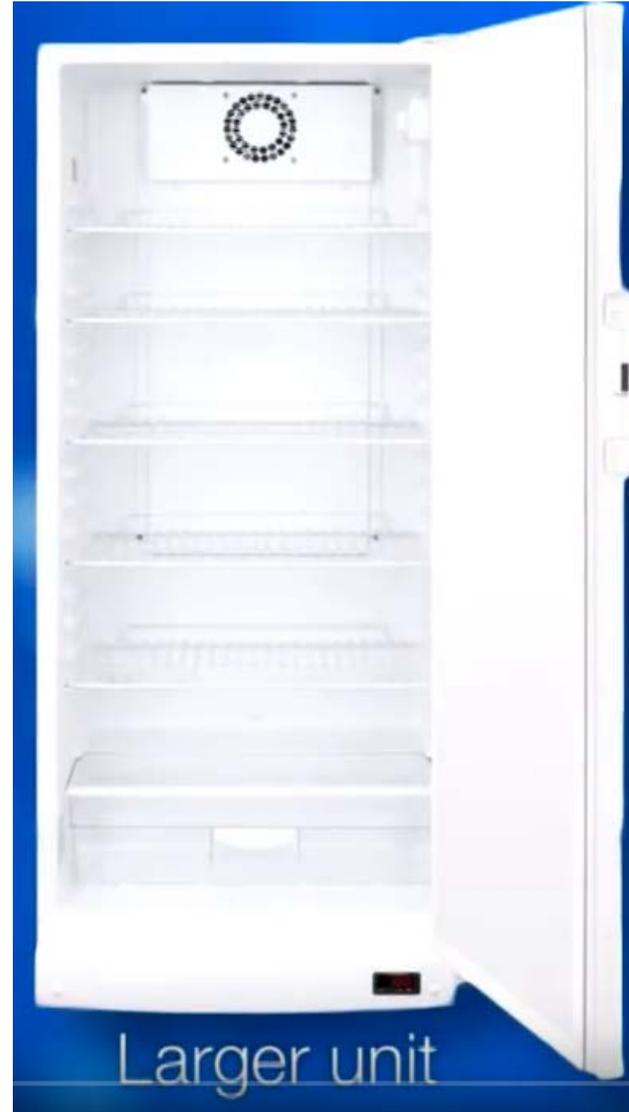
- **Primary coordinator**
 - Responsible for ensuring all vaccines are stored and handled properly
 - Expert on routine and emergency SOPs
 - Review and update SOPs annually
- **Alternate coordinator**
 - Expert that can assist primary and fulfill duties in their absence
- **All other staff**
 - May delegate duties to trained staff



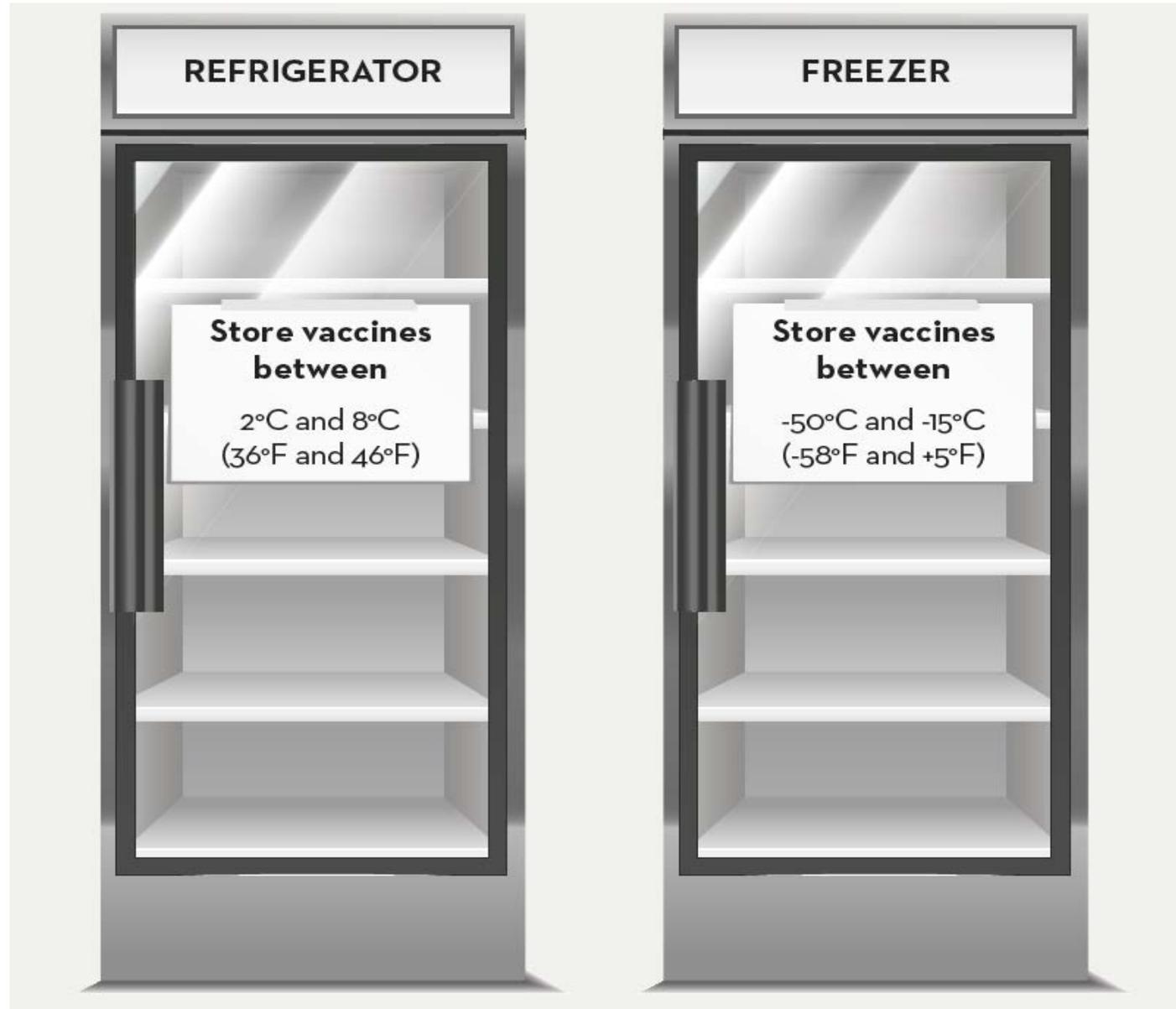
Equipment

Equipment: Vaccine Storage Units

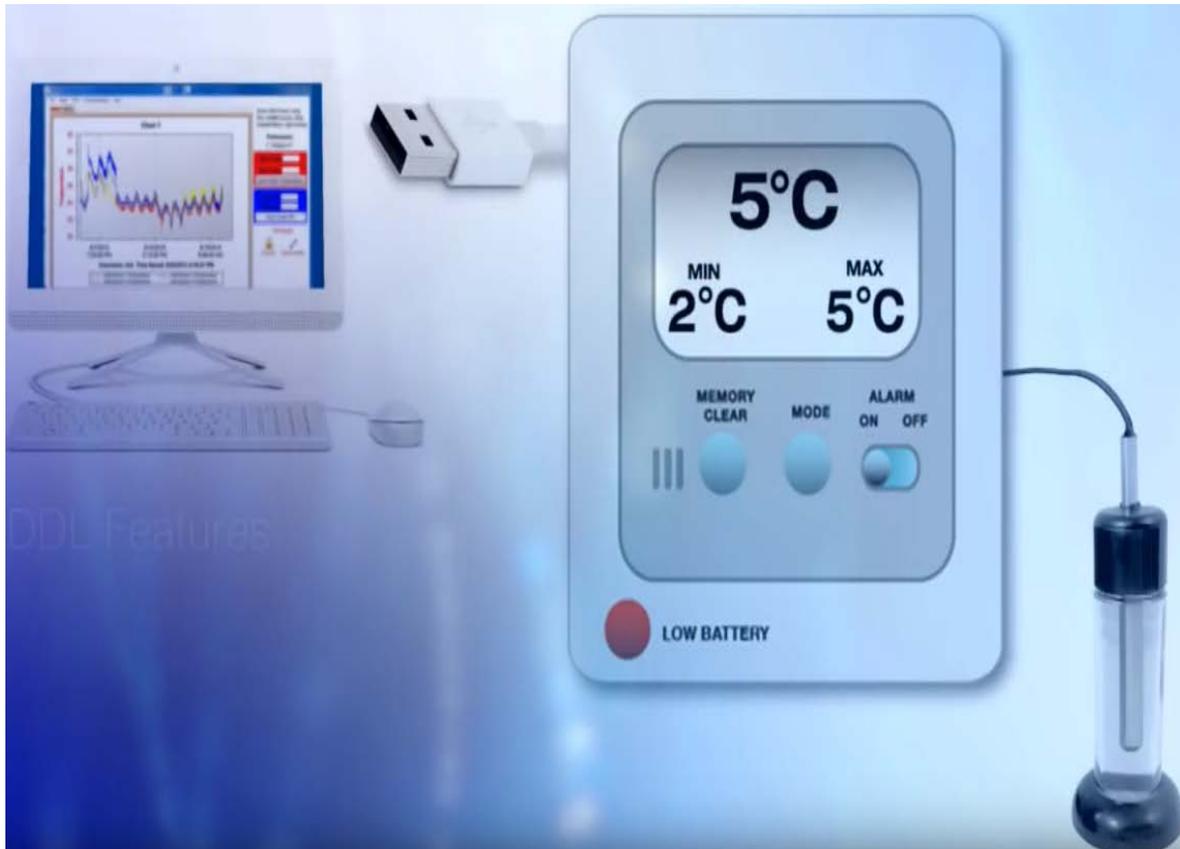
- Purpose-built or pharmaceutical-grade (large or compact)
- Household-grade
 - Do not use freezer



Equipment: Vaccine Storage Units



Equipment: Temperature Monitoring Devices (TMDs)



- **Recommended features**
 - Detachable buffered probe
 - Alarm
 - Low battery indicator
 - Min/max display
 - Uncertainty of $\pm 0.5^{\circ}\text{C}$ ($\pm 1^{\circ}\text{F}$)
 - 30-minute reading rate

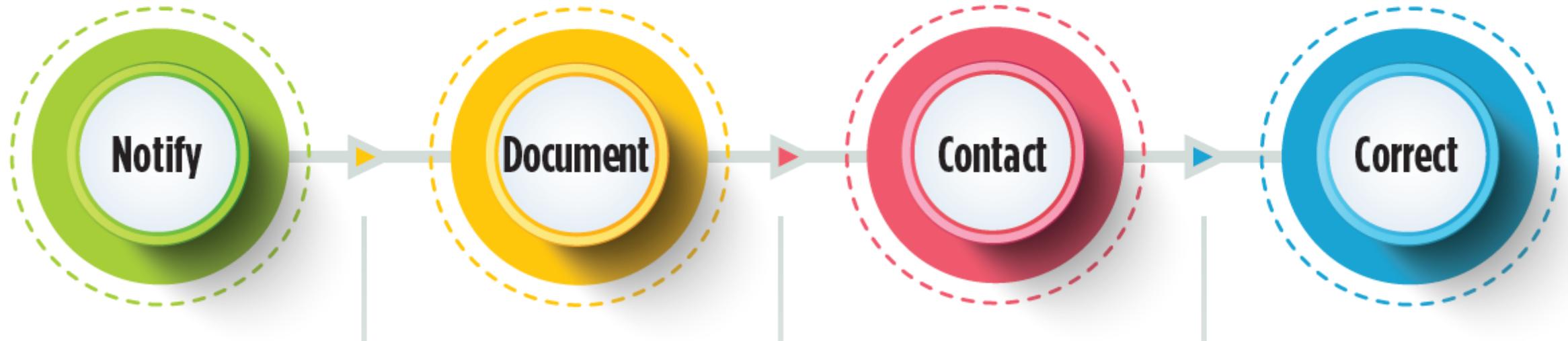
Monitoring Storage Unit Temperatures

- **Device displays min/max, preferably a DDL with buffered probe:**
 - Check and record min/max temperature at the start of each workday.
- **Device does not display min/max:**
 - Check and record current temperature 2 times, at the start and end of the workday.

Temperature Excursion

Handling a Temperature Excursion in Your Vaccine Storage Unit

Any temperature reading outside ranges recommended in the manufacturers' package inserts is considered a temperature excursion. Identify temperature excursions quickly and take immediate action to correct them. This can prevent vaccine waste and the potential need to revaccinate patients.



www.cdc.gov/vaccines/hcp/admin/storage/toolkit/storage-handling-toolkit.pdf

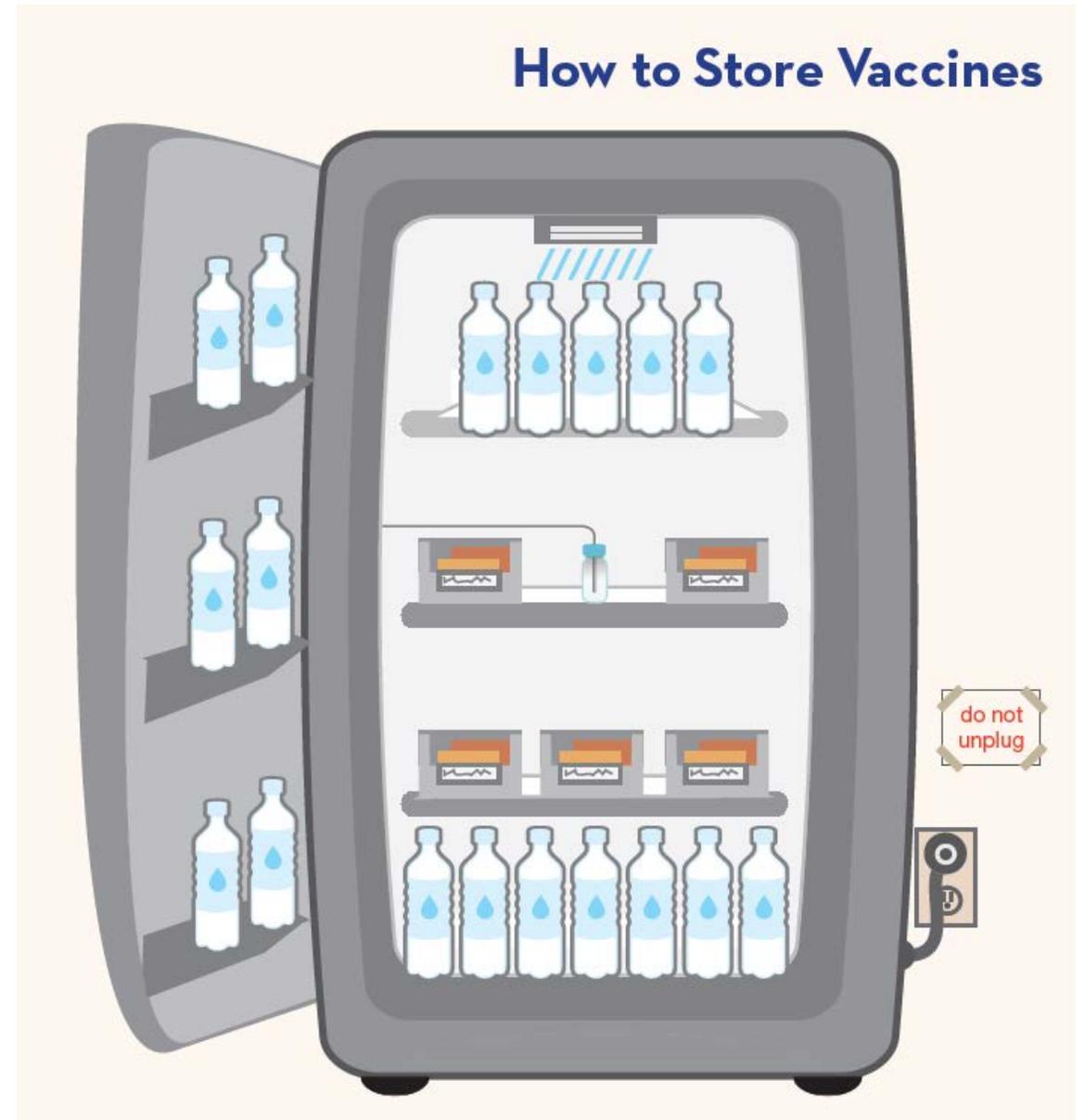
www.cdc.gov/vaccines/hcp/admin/storage/downloads/temperature-excursion-508.pdf

www.immunize.org/handouts/temperature-logs.asp

www.immunize.org/catg.d/p3041.pdf

Organization

- Danger zones
- Labels
- Look-alike/sound-alike
- Air circulation
- Expiring products
- Water bottle placement



Vaccine Inventory Management

Vaccine Delivery

- **Maintain cold chain; immediately check and store vaccines upon arrival:**
 - Unpack
 - Examine and document:
 - Damage
 - Receipt of order
 - Expiration dates
 - Diluents
 - Cold chain monitor
 - Immediately store at recommended temperature.
 - Notify manufacturer or others as appropriate if any issues.

Vaccine Inventory and Stock Records

- **Stock record**
 - Delivery date
 - Name or initials of person who unpacked delivery
 - Manufacturer
 - Lot number and expiration date
 - Number of doses
 - Delivery cold chain monitor reading
 - Number of doses used and balance

Other Inventory Issues

- **Rotate stock so that vaccines that expire first are used first:**
 - Rotate stock weekly and when there are deliveries.
 - Remove expired stock and handle per policy (return, discard, etc.).
- **Avoid overstocking of vaccine supply:**
 - Check stock and anticipate upcoming patient needs (i.e., flu season, back to school, community event, etc.).
 - Reorder at approximately 4 weeks worth of inventory.

Vaccine Disposal

- Expired or compromised vaccine
- Open or broken vials and manufacturer prefilled syringes
- Empty vaccine vials
- Medical waste disposal

Vaccine Transport

Transport Situations

- Off-site or satellite facilities
- Emergencies

Transport Systems

Transport System Recommendations

	Emergency Transport	Transport for Off-Site Clinic, Satellite Facility, or Relocation of Stock
Portable Vaccine Refrigerator or Freezer	Yes	Yes
Qualified Container and Packout	Yes	Yes
Conditioned Water Bottle Transport System[†]	Yes	No
Manufacturer's Original Shipping Container	Yes (last resort only)	No
Food/Beverage Coolers	No	No

Transport Planning

■ Protocols

- Identify trained staff
- Vehicles
- Inventory
- Documentation

■ Emergencies

- Contact emergency vaccine storage facility
- Suspend operations prior to emergency

■ Considerations

- Company or personal vehicle
- Use passenger compartment
- Avoid sunlight
- Monitor vaccine temperature
- Move vaccines into storage unit upon arrival

Temperature Monitoring during Transport

- **For any type of transport:**
 - Use a temperature monitoring device (DDL preferred).
 - Place buffered probe with vaccines.
 - Keep display on top.

Emergency Vaccine Storage and Handling

Emergency Backup Equipment

- **Alternative storage facility**
 - Even if generator is on site
- **Additional storage unit(s)**
 - In use or for emergency use
- **Backup generator**
 - May prevent need for transport
- **Backup battery power source**

Alternative Facility Inaccessible

- Keep storage units and containers closed.
- Use TMDs.
- Use one of the following containers:
 - Qualified containers and packouts
 - Portable vaccine unit (if power source available)
 - *Packing Vaccines for Transport during Emergencies* system

Power Outage

- Record room temperature.
- Record min/max storage unit temperatures:
 - As soon as the power goes out AND during the outage
- Avoid temperature excursions:
 - Shift to transport plan or use alternative containers.
- **If temp reading can only be obtained by opening door and there is no alternative facility, wait until power is restored.**
 - Record room and unit temperatures (min/max, if available) and length of time power was off.
 - Follow procedures for temperature excursion, if one occurred.

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**Vaccine
Preparation**

Vaccine Preparation Best Practices

- Follow strict aseptic medication preparation practices.
- Perform hand hygiene before preparing vaccines.
- Use a designated, clean medication area.
- Prepare medications for one patient at a time.
 - Use a new needle and syringe for each injection.



Expiration Dates: Vaccines

- **When the expiration date has:**
 - A month and year, the product may be used up to and including the last day of that month
 - A month, date, and year, the product may be used through the end of that day

Beyond-Use Dates

- **Reconstituted vaccines** have a limited period for use once the vaccine is mixed with a diluent.
- **Multidose vials** might have a specified period for use once they have been entered with a needle.
- **Manufacturer-shortened expiration dates** may apply when vaccine is exposed to inappropriate storage conditions.

Predrawing Vaccines

- **Generally not recommended, but if you must...**
 - Prepare at site or event in clean area
 - Separate administration stations if multiple vaccines
 - One MDV
 - Monitor patient flow
 - Additional guidance for reconstituted vaccines
- **Best practice: Use manufacturer-filled syringes for large vaccination clinics.**

What Do You Think?

- The label on the vial of vaccine indicates the vaccine expires on 8/22. This vaccine should NOT be used after:
 1. August 1, 2022
 2. August 31, 2022
 3. August 22, 2022

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**Vaccine
Administration**

Before Administering Vaccines

- Review the immunization history:
 - Accept only written, dated records (except influenza and PPSV23 self-report).
 - Use recommended schedule.
- Screen for contraindications and precautions.
- Discuss vaccine benefits and risks and vaccine-preventable disease risks using VISs and other reliable resources.
- Provide after-care instructions.

www.immunize.org/catg.d/p4060.pdf

www.immunize.org/catg.d/p4065.pdf

www.cdc.gov/vaccines/parents/tools/tips-factsheet.pdf

immunize.org/handouts/discussing-vaccines-parents.asp

Information for Healthcare Professionals about the Screening Checklist for Contraindications (Children and Teens)

Are you interested in knowing why we included a certain question on the screening checklist? If so, read the information below. If you want to find out even more, consult the references listed at the end.

1. Is the child sick today? [all vaccines]

There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events.¹¹ However, as a precaution with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (such as otitis media, upper respiratory infections, and diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

NOTE: Live attenuated influenza vaccine (LAIV4; FluMist), is not recommended by CDC's Advisory Committee on Immunization Practices for use in the U.S. during the 2016-17 influenza season. Because LAIV4 is still a licensed vaccine that might be available and that some providers might elect to use, for informational purposes, reference is made to previous recommendations for its use.

Screening Checklist for Contraindications to Vaccines for Children and Teens

PATIENT NAME _____

DATE OF BIRTH _____

For parents/guardians: The following questions will help us determine which vaccines your child may be given today. If you answer "yes" to any question, it does not necessarily mean your child should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	yes	no	don't know
1. Is the child sick today?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the child have allergies to medications, food, a vaccine component, or latex?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has the child had a serious reaction to a vaccine in the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Has the child had a health problem with lung, heart, kidney or metabolic disease (e.g., diabetes), asthma, or a blood disorder? Is he/she on long-term aspirin therapy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If the child to be vaccinated is 2 through 4 years of age, has a healthcare provider told you that the child had wheezing or asthma in the past 12 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If your child is a baby, have you ever been told he or she has had intussusception?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Has the child, a sibling, or a parent had a seizure; has the child had brain or other nervous system problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Does the child or a family member have cancer, leukemia, HIV/AIDS, or any other immune system problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. In the past 3 months, has the child taken medications that affect the immune system such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or had radiation treatments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. In the past year, has the child received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Has the child received vaccinations in the past 4 weeks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FORM COMPLETED BY _____ DATE _____

FORM REVIEWED BY _____ DATE _____

Did you bring your immunization record card with you? yes no

It is important to have a personal record of your child's vaccinations. If you don't have one, ask the child's healthcare provider to give you one with all your child's vaccinations on it. Keep it in a safe place and bring it with you every time you seek medical care for your child. Your child will need this document to enter day care or school, for employment, or for international travel.



Technical content reviewed by the Centers for Disease Control and Prevention
 Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org
www.immunize.org/catg.d/p4060.pdf • Item #P4060 (4/17)

NOTE: Live attenuated influenza vaccine (LAIV4; FluMist), is not recommended by CDC's Advisory Committee on Immunization Practices for use in the U.S. during the 2016-17 influenza season. Because LAIV4 is still a licensed vaccine that might be available and that some providers might elect to use, for informational purposes, reference is made to previous recommendations for its use.

Does the child or a family member have cancer, leukemia, HIV/AIDS, or any other immune system problem? [LAIV, MMR, MMRV, RV, VAR]
 Live virus vaccines (e.g., MMR, MMRV, varicella, rotavirus, and LAIV) are usually contraindicated in immunocompromised children. However, there are exceptions. For example, MMR is recommended for asymptomatic HIV-infected children who do not have evidence of severe immunosuppression. Live virus vaccines should be considered for HIV-infected children with age-specific CD4⁺ T-lymphocyte percentage at 15% or greater and may be considered for children age 5 years and older with CD4⁺ T-lymphocyte counts of greater than or equal to 200 cells/μL. Varicella and MMR vaccines should not be given to a child or teen with a family history of congenital or hereditary immunodeficiency in first-degree relatives (e.g., parents, siblings) unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory. Immunosuppressed children should not receive LAIV. Infants who have been diagnosed with severe combined immunodeficiency (SCID) should not be given a live virus vaccine, including rotavirus (RV) vaccine. Other forms of immunosuppression are a precaution, not a contraindication, to rotavirus vaccine. For details, consult ACIP recommendations.^{14,15}

In the past 3 months, has the child taken medications that affect the immune system such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or had radiation treatments? [LAIV, MMR, MMRV, VAR]
 Live virus vaccines (e.g., LAIV, MMR, MMRV, VAR) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement.¹ Some immune modulator and immune modulator drugs (especially the antitumor necrosis factor agents adalimumab, infliximab, and etanercept) may be immunosuppressive. The use of live vaccines should be avoided in persons taking these drugs.¹⁶ To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 9. LAIV, when recommended, can be given only to healthy non-pregnant people age 2 through 49 years.

In the past year, has the child received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug? [LAIV, MMR, MMRV, VAR]
 Certain live virus vaccines (e.g., LAIV, MMR, MMRV, varicella) may need to be deferred, depending on several variables. Consult the most current ACIP recommendations or the current Red Book for the most current information on intervals between antiviral drugs, immune globulin or blood product administration and live virus vaccines.¹⁷

Is the child/teen pregnant or is there a chance she could become pregnant during the next month? [RV, IPV, LAIV, MMR, MMRV, VAR]
 Live virus vaccines (e.g., MMR, MMRV, varicella, LAIV) are contraindicated one month before and during pregnancy because of the theoretical risk of virus transmission to the fetus.¹⁸ Sexually active young women who receive a live virus vaccine should be instructed to practice careful contraception for one month following receipt of the vaccine.¹⁹ On theoretical grounds, inactivated poliovirus vaccine should not be given during pregnancy; however, it may be given if risk of exposure is imminent (e.g., travel to endemic areas) and immediate protection is needed. Inactivated influenza vaccine and Tdap are both recommended during pregnancy. HPV vaccine is not recommended during pregnancy.

Has the child received vaccinations in the past 4 weeks? [LAIV, MMR, MMRV, VAR, yellow fever]
 Children who were given either LAIV or an injectable live virus vaccine (e.g., MMR, MMRV, varicella, yellow fever) should wait 28 days before receiving another vaccination of this type. Inactivated vaccines may be given at the same time or at any spacing interval.

- 1. Measles, mumps, and rubella – vaccine use strategies for elimination of measles, rubella, congenital rubella syndrome and control of mumps. *MMWR* 1998; 47 (RR-4).
- 2. Prevention of varicella: Recommendations of the Advisory Committee on Immunization Practices. *MMWR* 2007; 56 (RR-4).
- 3. U.S. Live Attenuated Influenza Vaccine (LAIV4) Use: A Practical Guideline for Vaccination of the Immunocompetent Child. *Clinical Infectious Diseases* 2014; 58(3): e64-100.
- 4. Tomblin M, Erwin M, et al. Guidelines for preventing infectious complications among hematopoietic stem cell transplant recipients: a global perspective. *Biol Blood Marrow Transplant* 15:1143-1226; 2009 at www.cdc.gov/vaccines/pubs/immz-cd-transplants.
- 5. CDC. Notice to readers: Revised ACIP recommendation for avoiding pregnancy after receiving a rubella-containing vaccine. *MMWR* 2011; 50 (49).

Infection Control



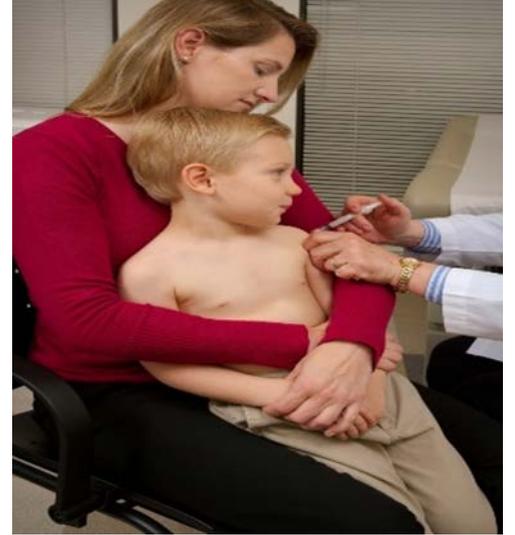
- **Perform hand hygiene:**
 - Before preparing vaccines
 - Between patients
 - Anytime hands become soiled
- **Gloves are not required when administering vaccines unless the person administering the vaccine is likely to come into contact with potentially infectious body fluids or has open lesions on hands:**
 - If gloves are worn, they should be changed between patients.
 - Perform hand hygiene between patients even if wearing gloves.
- **Equipment disposal:**
 - Puncture-proof biohazard container
 - Empty or expired vaccine vials are medical waste.

Procedural Pain Management

- **Inject vaccines:**
 - Rapidly without aspiration
 - That cause the most pain when injected last
- **Breastfeed children 2 years of age and younger during vaccine injections:**
 - Give a sweet-tasting solution if not breastfed.
- **Use topical local anesthetics.**
- **Follow age-appropriate positioning best practices.**

Positioning and Comforting Restraint

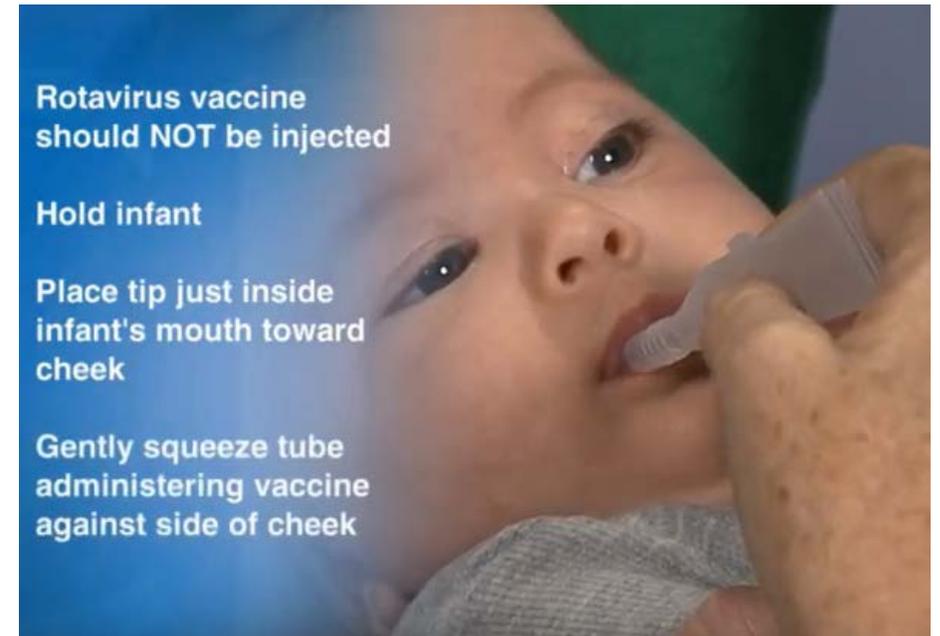
- Encourage parent/guardian to hold child
- Sitting rather than lying down (young child)
- Be aware of the risk for syncope (fainting):
 - Have patient seated or lying down during vaccination.
 - Be aware of symptoms that precede syncope.
 - If patient faints, provide supportive care and protect patient from injury.
 - Observe patient (seated or lying down) for at least 15 minutes after vaccination.



Route and Site

■ Oral (PO):

- Administer liquid inside cheek slowly down one side (between cheek and gum) toward the back of infant's mouth.



■ Intranasal (NAS):

- LAIV4 is the only vaccine administered by the intranasal route.



www.cdc.gov/vaccines/hcp/admin/resource-library.html

www.cdc.gov/mmwr/preview/mmwrhtml/mm6304a4.htm?s_cid=mm6304a4_w

Subcutaneous Injection Route

■ Site:

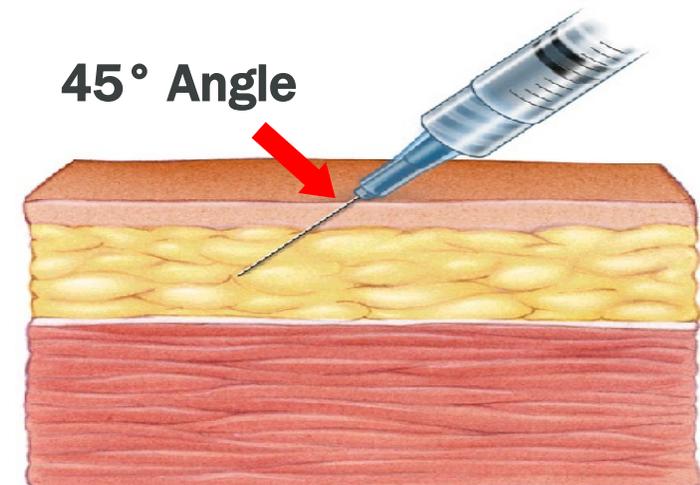
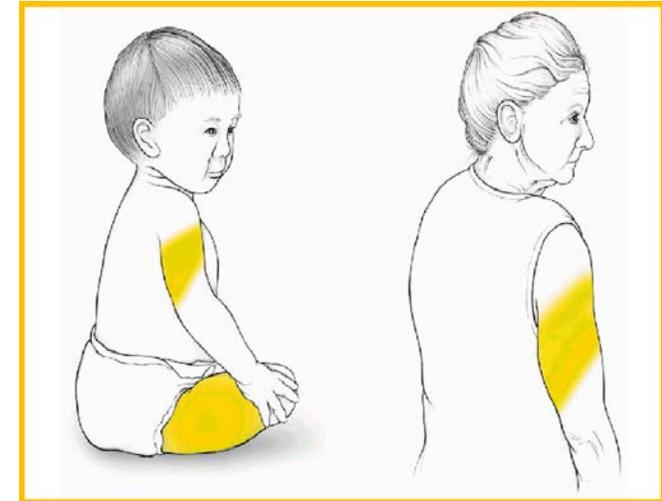
- Thigh for infants <12 months of age
- Upper outer triceps of arm for children >12 months and adults (can be used for infants if necessary)

■ Needle gauge and length:

- 23- to 25-gauge needle, 5/8-inch

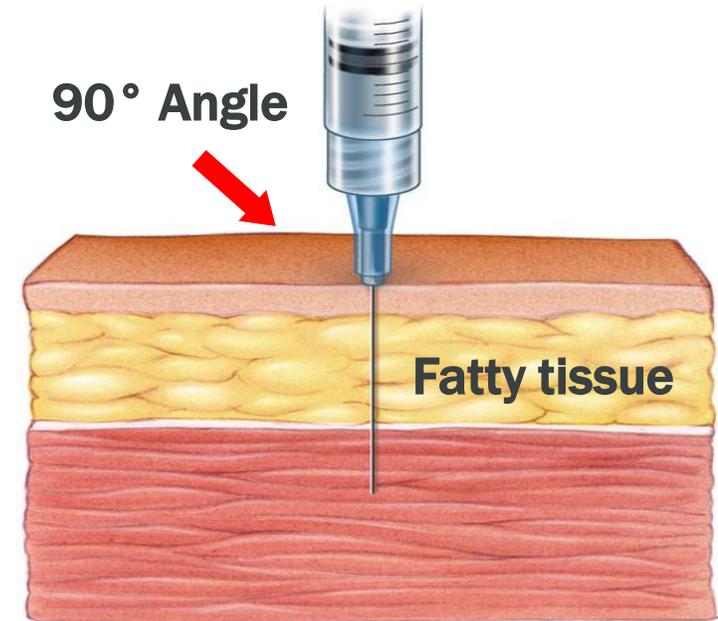
■ Technique:

- To avoid reaching the muscle, pinch up the fatty tissue, insert the needle at a 45° angle, and inject the vaccine into the tissue.



Intramuscular Injection Route

- Spread the skin of the site taut between the thumb and forefinger, isolating the muscle.
- Another technique, acceptable mostly for pediatric and geriatric patients, is to grasp the tissue and “bunch up” the muscle.
- Insert the needle fully into the muscle at a 90° angle and inject.



Aspiration is NOT required

Intramuscular Injection (IM) Route: Infants ≤ 12 Months

■ Site:

- Vastus lateralis muscle (anterolateral thigh)

■ Needle gauge and length:

- 22-to 25-gauge
- Neonates and preterm infants: 5/8 inch (adequate only if the skin is stretched flat between thumb and forefinger)
- 1 month and older: 1 inch



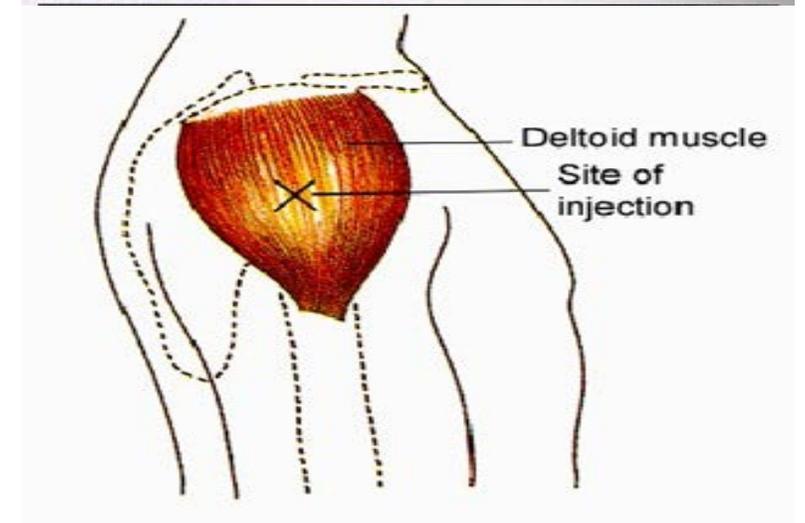
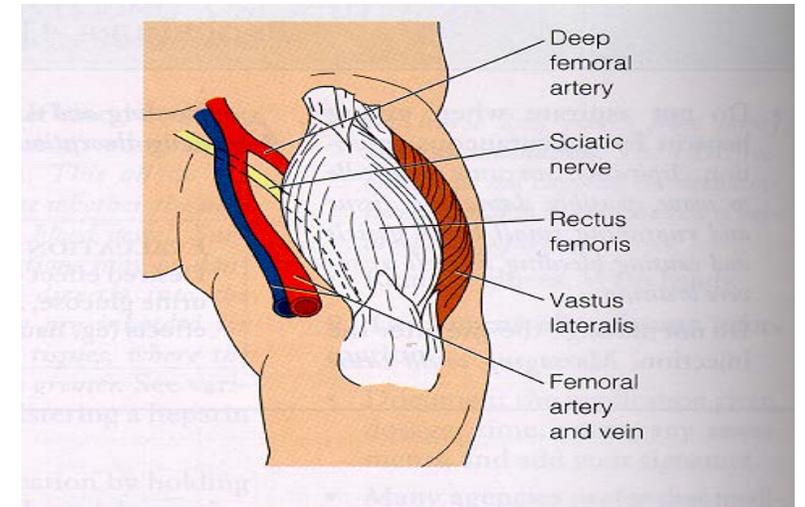
Intramuscular Injection (IM) Route: 1–2 Years

■ Site:

- Vastus lateralis muscle (anterolateral thigh) is preferred.
- Deltoid muscle (upper arm) may be used if the muscle mass is adequate.

■ Needle gauge and length:

- 22- to 25-gauge
- 5/8 to 1 inch (5/8 inch adequate only for the deltoid muscle and only if the skin is stretched flat between thumb and forefinger)



Intramuscular Injection (IM) Route: 3–18 Years

■ Site:

- Deltoid muscle (upper arm) is preferred.
- Vastus lateralis muscle (anterolateral thigh) may be used.

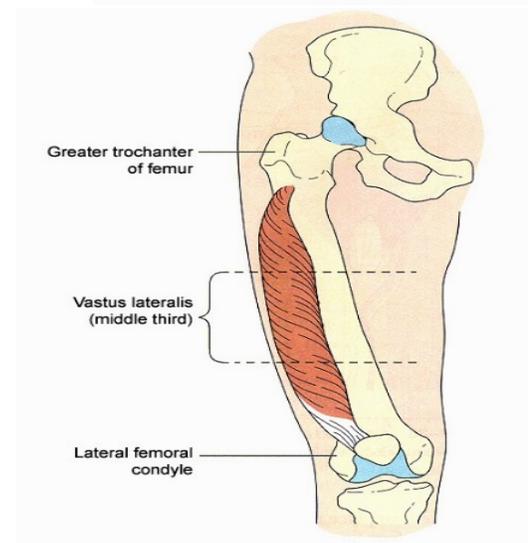
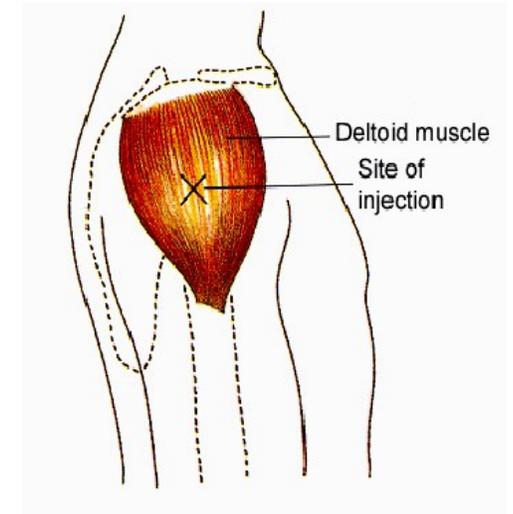
■ Needle gauge and length:

- 22- to 25-gauge
- 5/8 to 1 inch

■ Most young children in this age range require a 1-inch needle:

- 5/8-inch needle is adequate only for the deltoid muscle and only if the skin is stretched flat between thumb and forefinger.

■ Older children and adolescents require a 1-inch needle.



Intramuscular (IM) Route

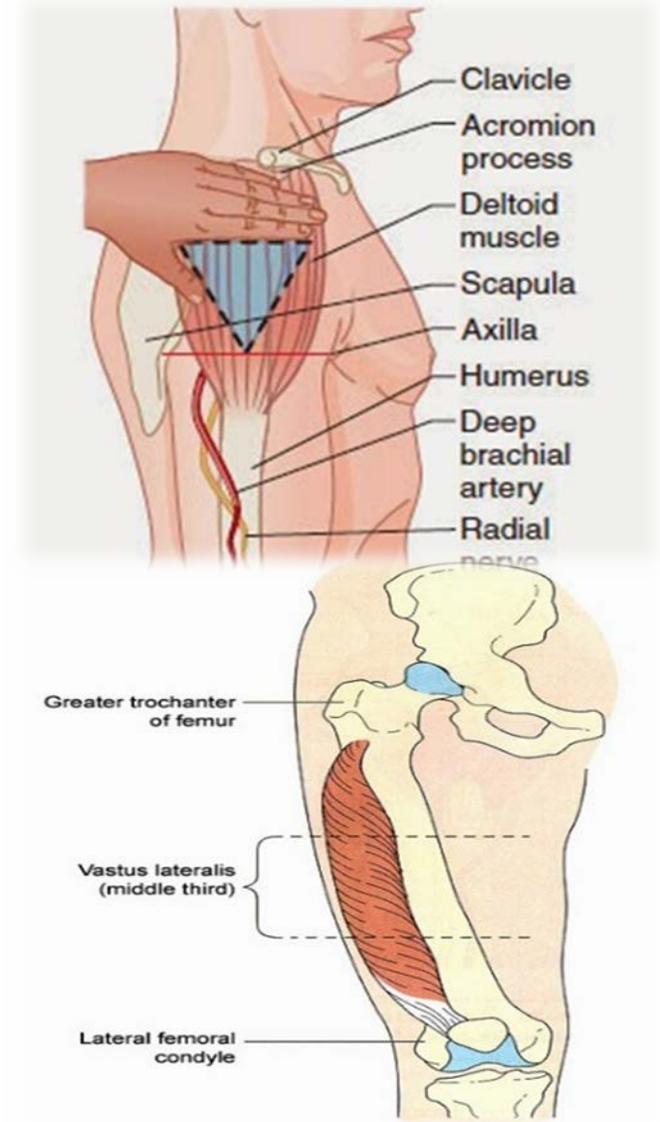
Adults 19 Years and Older

■ Site:

- Deltoid muscle (upper arm) is preferred.
- Vastus lateralis muscle (anterolateral thigh) may be used.

■ Needle gauge: 23- to 25-gauge

■ Needle length varies with patient size.



Multiple Vaccinations

- **Separate injections by at least 1 inch (or more if possible).**
- **Use a separate limb for most reactive vaccines, if possible.**
- **Use combination vaccines when appropriate to reduce the number of injections.**

Documentation

- **Federally required documentation:**
 - Date of administration
 - Vaccine manufacturer
 - Vaccine lot number
 - Name and title of person who administered vaccine and address of clinic or facility where permanent record will reside
 - Vaccine information statement (VIS)
 - Date printed on the VIS
 - Date VIS given to patient or parent/guardian

- **Best practice documentation:**
 - Vaccine type (ACIP abbreviation)
 - Route
 - Dosage (volume)
 - Site



3

**Administration
Errors**

Strategies to Prevent Errors

- Establish an environment that values reporting and investigating errors as part of risk management and quality improvement.
- Determine how it happened and put strategies in place to prevent it in the future.
- Use best practices for storing, handling, preparing, and administering vaccines, including:
 - Promptly remove expired vaccines from the storage unit.
 - Take immediate action and isolate affected vaccine(s) if there is a temperature excursion.

What if a Vaccination Error Occurs?

- Inform the patient/parent of the error.
- Determine the patient's status.
- Explain any needed next steps.
- Know how to correct the error:
 - Contact your local health department, vaccine manufacturer, or nipinfo@cdc.gov for guidance.
- Determine how it happened and put strategies in place to prevent it in the future.
- Record the vaccine as it was given on the medical administration record.

Reporting Vaccination Errors to VAERS

- Providers are encouraged to report vaccination errors with or without health events if they believe the error may pose a safety risk.
- VAERS encourages reports of clinically significant adverse health events.

The screenshot displays the VAERS Home page. At the top, there is a green header with the text "VAERS Home". Below this is a navigation menu with the following items: "VAERS Home", "About VAERS", "Report an Adverse Event" (which is expanded to show "Report Online" and "Report Using a PDF Form"), "VAERS Data", "Resources", "Submit Follow-Up Information", "Frequently Asked Questions", "Contact Us", and "Privacy". To the right of the menu, there is a breadcrumb trail: "Home / Report an Adverse Event" and a link for "en Español". The main content area is titled "Report an Adverse Event". It contains the following text: "Online reporting is strongly encouraged. Please report clinically important adverse events that occur after vaccination of adults and children, even if you are not sure whether the vaccine caused the adverse event." Below this, it states: "The Vaccine Adverse Event Reporting System (VAERS) accepts all reports, including reports of vaccination errors. [Guidance on reporting vaccination errors](#) is available if you have additional questions." A warning box follows: "Knowingly filing a false VAERS report is a violation of Federal law (18 U.S. Code § 1001) punishable by fine and imprisonment." Underneath, there is a section titled "Two Ways to Submit an Online Report to VAERS". This section includes an image of a woman looking at a tablet, followed by "Option 1 - Report Online to VAERS (Preferred)". The text for Option 1 reads: "Submit a VAERS report online. The report must be completed online and submitted in one sitting and cannot be saved and returned to at a later time. Your information will be erased if you are inactive for 20 minutes; you will receive a warning after 15 minutes." To the right of this is a "Checklist" box with the heading "What will I need to fill out the report?" and a bullet point: "Patient information (age, date of birth, sex)". An image of a doctor and a patient is also visible on the right side of the page.

Continuing Education Information

- CE credit, go to: www.cdc.gov/GetCE
- Search course number: WD4344-072920
- CE credit expires: July 1, 2022
- CE instructions are available on the EpiVac Pink Book Web-on-Demand Series web page
- Questions and additional help with the online CE system, e-mail CE@cdc.gov

Training and Continuing Education Online (TCEO)



TRAINING AND CONTINUING EDUCATION ONLINE

- TCEO Home
- Search Courses
- Create Account
- 9 Simple Steps to Earn CE
- Frequently Asked Questions
- Contact TCEO

New to TCEO?
Visit [Create Account](#). Once your account has been created, you will be able to search for courses and complete requirements to receive CE.

Already have a TCEO account from the previous system?
To move your account to the new system please sign in above using your existing TCEO username and password. Once signed in, follow the prompts to verify and update your account. After your account is updated forward you will use this email address and password to sign in.

Not sure how to get started?
Follow these [9 Simple Steps](#) to earn continuing education for the courses you have taken or conferences you have attended!



Welcome to TCEO

Training and Continuing Education Online (TCEO) is a system that provides access to CDC educational activities for continuing education (CE). Use TCEO to search for CE opportunities, complete course

E-mail Your Immunization Questions to Us

NIPINFO@cdc.gov

Write “Web-on-Demand–S&H-Admin” in the subject line



EpiVac Pink Book Web-on-Demand Resources

- Comprehensive list of resources for ALL sessions
- Located on the web page for this web-on-demand session at www.cdc.gov/vaccines/ed/webinar-epv/index.html
- Additional materials located on this webpage include:
 - Principles of Vaccination slide set
 - Web-on-demand questions and answers
 - Transcript of this session
 - Continuing education instructions

COURSE RESOURCES

Epidemiology and Prevention of Vaccine-Preventable Diseases

- ▶ Epidemiology and Prevention of Vaccine-Preventable Diseases (Pink Book) Supplement: www.cdc.gov/vaccines/pubs/pinkbook/supplement.html

Overall Resources

- ▶ Current childhood and adult immunization schedules: www.cdc.gov/vaccines/schedules/index.html
- ▶ CDC Vaccine Schedules App for Health Care Providers: www.cdc.gov/vaccines/schedules/hcp/schedule-app.html
- ▶ Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- ▶ CDC General Best Practice Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- ▶ CDC Continuing Education Information: www.cdc.gov/vaccines/ed/ce-credit-how-to.html
- ▶ Health Care Personnel Vaccination Recommendations: www.immunize.org/catg.d/p2017.pdf
- ▶ Pink Book Webinar Series: www.cdc.gov/vaccines/ed/webinar-epv/index.html
- ▶ Vaccines Licensed for Use in the United States Package Inserts: www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm
- ▶ You Call the Shots: www.cdc.gov/vaccines/ed/youcalltheshots.html

Course Intro and Objectives

- ▶ What is the Advisory Committee on Immunization Practices (ACIP)?: www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-acip-color-office.pdf
- ▶ CDC Immunization Resources for You and Your Patients: www.cdc.gov/vaccines/hcp/admin/downloads/Resource-Booklet.pdf
- ▶ Parents' Guide to Childhood Immunizations: www.cdc.gov/vaccines/parents/tools/parents-guide/index.html
- ▶ Order Information for Free CDC Immunization Materials for Providers and Patients: www.cdc.gov/pubs/CDCInfoOnDemand.aspx

Principles of Vaccination

- ▶ Immune System Research: www.niaid.nih.gov/research/immune-system-research
- ▶ What is the Immune System?: www.vaccines.gov/basics/work/prevention
- ▶ Understanding How Vaccines Work: www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-understand-color-office.pdf
- ▶ Vaccines Work: www.vaccines.gov/basics/work/index.html
- ▶ Vaccine Basics: How Vaccines Work: www.vaccineinformation.org/how-vaccines-work/
- ▶ The History of Vaccines: How Vaccines Work: www.historyofvaccines.org/content/how-vaccines-work

General Best Practice Guidelines

- ▶ Ask the Experts-Scheduling Vaccines FAQs: www.immunize.org/askexperts/scheduling-vaccines.asp
- ▶ Ask the Experts-Combination Vaccines FAQs: www.immunize.org/askexperts/experts_combo.asp
- ▶ Ask the Experts-Precautions and Contraindications FAQs: www.immunize.org/askexperts/precautions-contraindications.asp
- ▶ Foreign Language Vaccine-Preventable Disease Terms: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/foreign-products-tables.pdf
- ▶ Guide to Contraindications and Precautions to Commonly Used Vaccines: www.immunize.org/catg.d/p3072a.pdf
- ▶ Guidelines for Vaccinating Pregnant Women: www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html
- ▶ IDSA 2013 Clinical Practice Guideline for Vaccination of the Immunocompromised Host: www.idsociety.org/Guidelines/Patient_Care/IDSA_Practice_Guidelines/Vaccination_of_the_Immunocompromised_Host/
- ▶ Interval Between Antibody-Containing Products and Measles- and Varicella-Containing Vaccines: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/mmr_ig.pdf



Thank You From Atlanta!

