Vaccine Administration and Preventing Errors

JoEllen Wolicki, BSN, RN
Nurse Educator
Immunization Services Division

Immunization 411 Webinar
July 21, 2016

Disclosures

- JoEllen Wolicki is a federal government employee with no financial interest in, or conflict, with the manufacturer of any product named in this presentation.
- The speaker will discuss the off-label use of Tdap vaccine.
- The speaker will not discuss a vaccine not currently licensed by the FDA.

Disclosures

- The recommendations to be discussed are primarily those of the Advisory Committee on Immunization Practices (ACIP):
  - Composed of 15 non-government experts in clinical medicine and public health
  - Provides guidance on use of vaccines and other biologic products to DHHS, CDC, and the U.S. Public Health Service

Next ACIP Meeting
October 19-20, 2016

www.cdc.gov/vaccines/acip/meetings/upcoming-dates.htm

General Recommendations

- Failure to adhere to recommendations for storage and handling of vaccines can reduce or destroy their potency, resulting in inadequate or no immune response in the recipient.
- Recommendations for route, site, and dosage of vaccines are derived from data from clinical trials, practical experience, preventative health care visits schedule, and theoretical considerations.
- Immunization providers should be thoroughly familiar with proper vaccine storage and handling and administration practices.

MMWR 2011;60(2):17

Key to Ensuring Vaccines

- **Key to ensuring vaccination is safe and effective as possible, incorporate:**
  - Professional standards for medication administration
  - Manufacturer's vaccine-specific guidelines
  - Evidence-based safe medication administration practices, including proper injection practices

https://www.cdc.gov/injectionsafety/

Infection Control

- **Maintain proper infection control practices while preparing and administering vaccines**
  - Always use aseptic technique
  - Use a new syringe and needle for each injection
- **Perform hand hygiene:**
  - Before preparing vaccines
  - Between patients
  - Any time 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

Knowledgeable Staff

- **Before administering vaccines, all personnel who will administer vaccine should:**
  - Receive competency-based training
  - Have knowledge and skills validated
- **Integrate competency-based training into:**
  - New staff orientation
  - Annual education requirements
- **Ongoing education:**
  - Whenever vaccine administration recommendations are updated
  - When new vaccines are added to inventory

Skills Checklist for Immunization

The Skills Checklist is a self-assessment tool for health care staff who administer immunizations. To complete it, review the competency areas below and the clinical skills, techniques, and procedures outlined for each of them. Score yourself in the Self-Assessment column. If you check **Need 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 for performance reviews, give staff the opportunity to score themselves in advance. Next, observe their performance as they provide immunizations to several patients and score in the **Supervisor Review** columns. If improvement is needed, meet with them to develop a **Plan of Action** (p. 2) that will 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" ensures that staff administer vaccines correctly. Order online at **www.immunize.org/dvd**

		Self-Assessment		Supervisor Review		
Competency	**Clinical Skills, Techniques, and Procedures**	**Need to Improve**	**Meets or Exceeds**	**Need to Improve**	**Meets or Exceeds**	**Plan of Action***
A. Patient/Parent Education	1. Welcomes patient/family, establishes rapport, and answers any questions.					
	2. Explains what vaccines will be given and which type(s) of injection will be done.					
	3. 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 the Vaccine Information Statements for indicated vaccines and had time to read them and ask questions.					
	5. Screens for contraindications. (MA: score NA–not applicable–if this is MD function.)					
	6. Reviews comfort measures and after care instructions with patient/parents, inviting questions.					
B. Medical Protocols	1. Identifies the location of the medical protocols (i.e. immunization protocol, emergency protocol, reference material).					
	2. Identifies the location of the 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.					
C. Vaccine Handling	1. Checks vial expiration date. Double-checks vial label and contents prior to drawing up.					
	2. Maintains aseptic technique throughout.					
	3. Selects the correct needle size for IM and SC.					
	4. Shakes vaccine vial and/or reconstitutes and mixes using the diluent supplied. Inverts vial and draws up correct dose of vaccine. Rechecks vial label.					
	5. Labels each filled syringe or uses labeled tray to keep them identified.					
	6. Demonstrates knowledge of proper vaccine handling, e.g. protects MMR from light, logs refrigerator temperature.					

Adapted from California Department of Public Health • Immunization Branch

Immunization Action Coalition • Saint Paul, Minnesota • (651) 647-9009 • www.vaccineinformation.org • www.immunize.org

www.immunize.org/catg.d/p7010.pdf • Item #P7010 (2/14) page 1 of 2

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

Patient Care Before Administering Vaccines

- **Obtain complete immunization history at every health care visit:**
  - Accept only written, dated records (except influenza and PPSV23 self-report)
  - Use recommended schedule to determine vaccines needed based on age, medical condition, and risk factors
- **Screen for contraindications and precautions prior to administering any vaccine(s)**
- **Discuss vaccine benefits and risks and vaccine-preventable disease risks using VISs and other reliable resources**
- **Provide after-care instructions**

http://www.immunize.org/catg.d/p4060.pdf
http://www.immunize.org/catg.d/p4065.pdf
http://publichealth.lacounty.gov/ip/immunization/parents/comfort-bethereE.pdf

Prepare Vaccines Properly

- **Prepare vaccines in a designated clean medication area that is not adjacent to areas where potentially contaminated items are placed**
- **Use a separate, sterile syringe and needle for each injection**
  - 1-mL or 3-mL sterile syringe for each injection
  - Select the appropriate needle based on route, patient size, and injection technique
- **Inspect vaccine and diluent vials for damage or contamination**
- **Check the expiration dates on the syringe, needle, vaccine, and diluent (if needed)**

Interpreting Expiration Dates

- **Most MDVs may be used through the expiration date on the vial unless contaminated or compromised in some way.**
- **Some MDVs have a specified time frame for use once the vial is entered.**
- **Exceptions:**
  - Reconstitution with a beyond use date or time (BUD)
  - Multidose vial with BUD once opened
  - Manufacturer-shortened expiration date
- **<u>NEVER</u> use expired vaccine, diluent or equipment**

Vaccine Preparation
Single Dose Vial

- **Use a single-dose vial for 1 patient ONLY.**
  - Discard any leftover vaccine.
  - Do NOT administer it to another patient.
- **Open a single-dose vial only when ready to use.**
  - Once protective cap is removed, vaccine must be used. If not used. Discard unused vaccine at end of workday.

Vaccine Preparation

- **Once a manufacturer-filled syringe is activated, vaccine should be used or discarded at end of workday**
  - Activated = syringe cap removed or needle attached

Provider Predrawn Syringes

- **Predrawing vaccine is not recommended:**
  - Increases risk for administration errors
  - May lead to vaccine waste
  - Can cause growth of microorganisms in vaccines that do not contain a preservative
  - Administration syringes are not designed for storage

- **Consider using manufacturer-filled syringes for large immunization events because they are designed for both storage and administration.**

Provider Predrawn Syringes

- At clinic site, no more than 1 multidose vial or 10 doses should be drawn up at one time by each vaccinator.
- If more than one vaccine type is being administered, set up separate administration stations for each vaccine type to prevent medication errors.
- Patient flow should be monitored to avoid drawing up unnecessary doses.
- Discard any remaining vaccine in syringes predrawn by providers at end of workday.

Prepare Vaccines Properly

- Use only the manufacturer-supplied diluent to reconstitute a vaccine
- Agitate the vial to thoroughly mix the vaccine
- Inspect the vaccine for discoloration, precipitate, and resuspension
- Only the number of doses indicated in the manufacturer's package insert should be withdrawn from a vaccine vial. After the maximum number of doses has been withdrawn, the vial should be discarded, even if the expiration date has not been reached

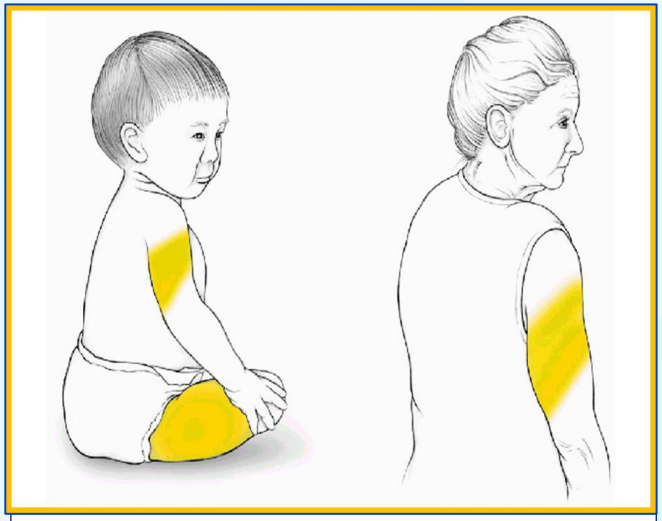
Vaccine Preparation “Nevers”

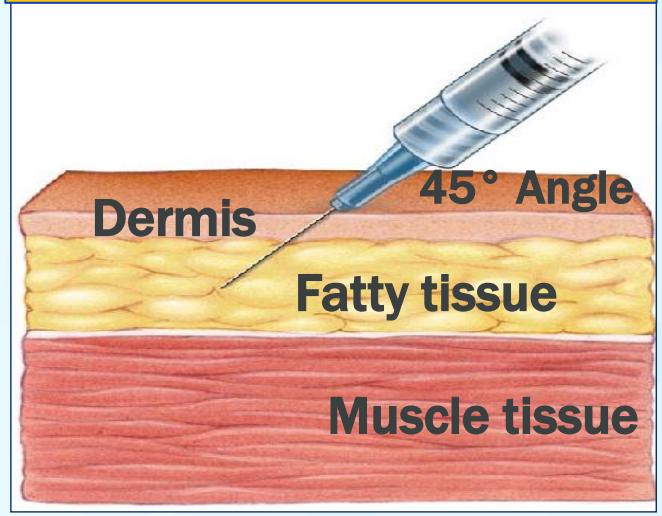
- Never combine vaccines into a single syringe
- Never transfer vaccine from one syringe to another
- Never draw partial doses of vaccine from separate vials to obtain a full dose
- Never use a single dose vial for more than 1 patient

Administer Vaccines Using the Right Route

Vaccines	Route	Abbreviation
DTaP, DT, Tdap, Td, Hep A, Hep B, Hib, HPV, IIV, MenACWY, MenB, PCV13, IPV*, PPSV23*	Intramuscular injection	IM
MMR, VAR, ZOS	Subcutaneous injection	Subcut or SC
Rotavirus	Oral	PO
LAIV	Intranasal	NAS
IIV (Fluzone Intradermal)	Intradermal	ID

Subcutaneous (Subcut) Route

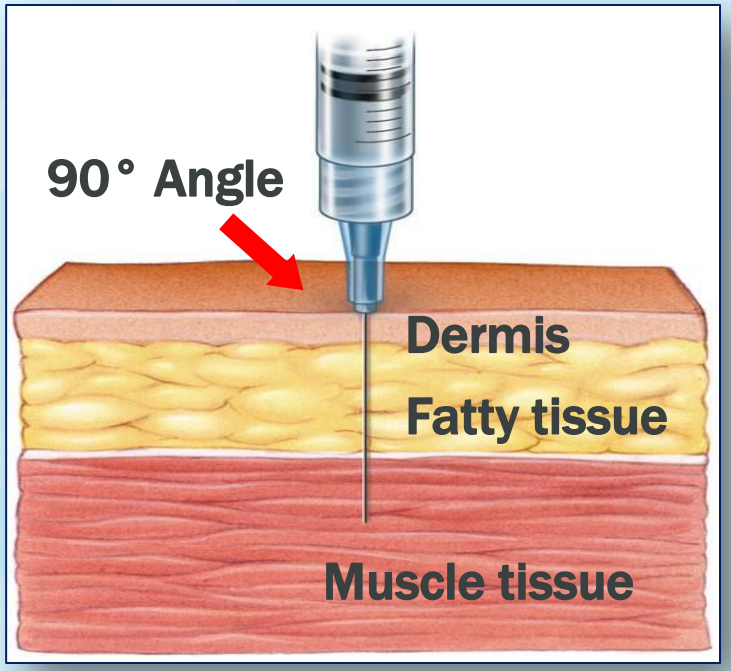




- **Site:**
  - Thigh for infants younger than 12 months of age
  - Upper outer triceps of arm for children older than 12 months and adults (can be used for infants if necessary)
- **Needle gauge and length:**
  - 23- to 25-gauge needle, 5/8-inch
- **Technique:**
  - To avoid reaching the muscle, pinch up the fatty tissue, insert the needle at a 45° angle, and inject the vaccine into the tissue

Intramuscular (IM) 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 (IM) Route
Infants 12 Months and Younger

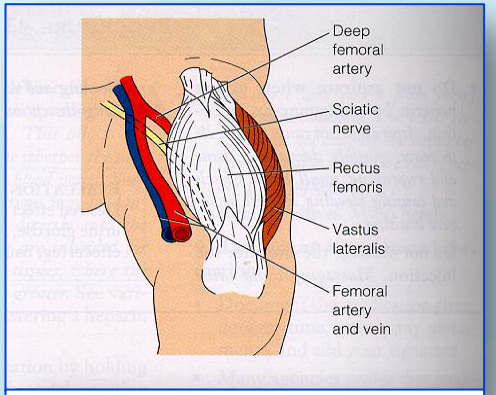
- **Site:**
  - Vastus lateralis muscle (anterolateral thigh)

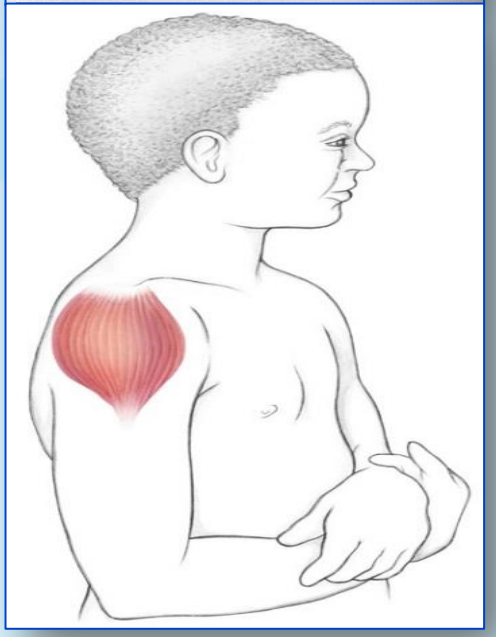
- **Needle gauge and length:**
  - 22- to 25-gauge
  - Neonates and preterm infants: 5/8-inch (adequate only if the skin is stretched flat between thumb and forefinger)
  - 1 month and older: 1-inch

Intramuscular (IM) Route
1 through 2 Years

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

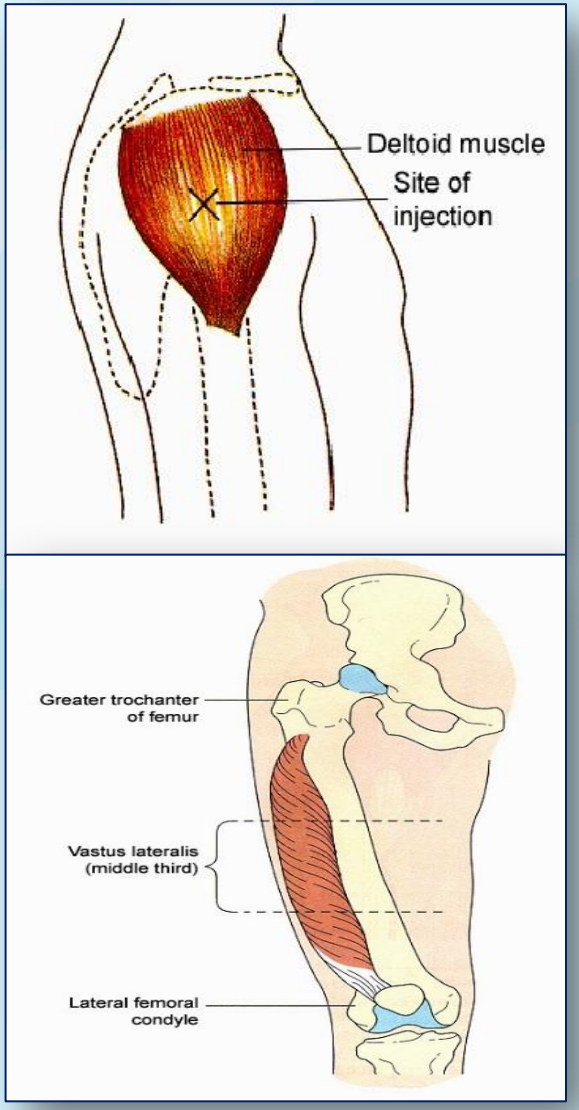
- **Needle gauge and length:**
  - 22- to 25-gauge
  - 5/8- to 1-inch (5/8-inch adequate only for the deltoid muscle and only if the skin is stretched flat between thumb and forefinger)





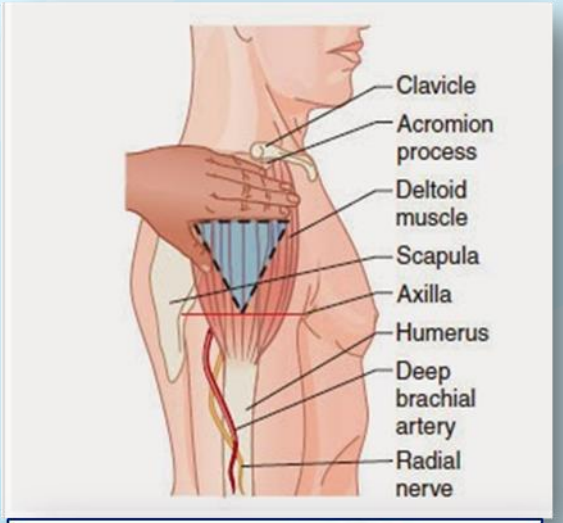
Intramuscular (IM) Route
3 through 18 Years

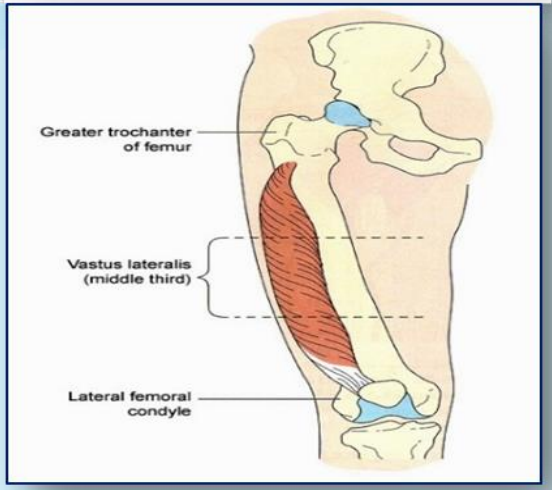
- **Site:**
  - Deltoid muscle (upper arm) is preferred
  - Vastus lateralis muscle (anterolateral thigh) may be used
- **Needle gauge and length:**
  - 22- to 25-gauge
  - 5/8- to 1-inch
- **Most young children in this age range require a 5/8- or 1-inch needle:**
  - 5/8-inch needle is adequate only 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**





Common Intramuscular Injection Errors

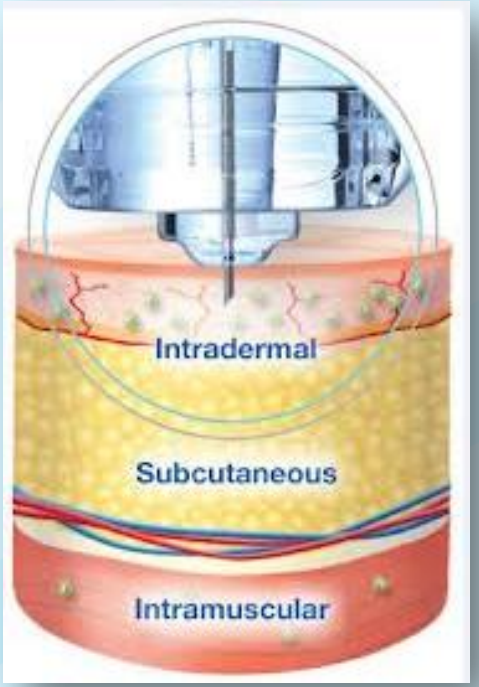
Too High

Too Low

“No Butts”

Intradermal (ID) Route

- **Site: Deltoid region of upper arm**
- **Needle gauge and length: 30-gauge, microneedle**
- **Technique:**
  - Hold the syringe between the thumb and the middle finger and using a short quick motion, insert the needle perpendicular to the skin



Route and Site

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

- **Nasal (NAS):**
  - LAIV4 is the only vaccine administered by the intranasal route

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

Positioning and Comforting Restraint

- **Encourage parent/guardian to hold child**
- **Sitting rather than lying down**
- **Be aware of 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

Procedural Pain Management

- **Evidence-based strategies to ease pain:**
  - Breastfeeding
  - Sweet-tasting liquids
  - Injection technique (aspiration may increase pain)
  - Order of injections (administer most painful vaccine last)
  - Tactile stimulation (rub/stroke area near injection site prior to and during injection)
  - Distraction
  - Topical anesthetic

http://www.nejm.org/doi/full/10.1056/NEJMvcm1411127?query=pediatrics
https://www.youtube.com/watch?v=KgBwVSYqfps
https://www.youtube.com/watch?v=WkR_e1L6zxI

Documentation

- **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

Vaccine Administration Errors

- **Vaccination error**
  - Any preventable event that may cause or lead to inappropriate use or patient harm. Such events may be related to professional practice, immunization products (vials, needle, syringes), storage, dispensing, and administration*

- **Vaccine adverse health events**
  - Health effects that occur after immunization that may or may not be causally related to the vaccination.

*CDC Immunization Safety Office, VAERS Medication Error Study workgroup. Adapted in part from U.S. Pharmacopeia (USP) medical error definition from http://www.usp.org/sites/default/files/usp_pdf/EN/members/patientSafety.pdf.

In the News

Vaccination Errors: Kids' Clinic Gave Expired Shots, Wrong Vaccines to Five Children

Two children were given wrong vaccines, two were given expired vaccines, and one was given a higher dose of medicine than needed.

Jul 07, 2015 09:03 PM EDT

The administration of wrong vaccines was discovered during an annual state audit. (Photo : Google Commons)

Authorities discovered during an annual state compliance audit for the Shots for Tots program that a Salem County, N.J. clinic for uninsured kids gave expired shots and wrc vaccines to at least five children.

The audit revealed that one of the children, a two-year-old boy, was given an excessive dose of Gardasil, USA Today reports.

Gardasil, a vaccine used to prevent cervical cancer, is typically given to teenagers to h them avoid HPV infection. Authorities are concerned that the two-year-old boy who was administered Gardasil may suffer from neurological effects.

American Pharmacists Association
Improving medication use. Advancing patient care.
APhA

Connect Login/Register Contact Us Search Join APhA Advanced Search

LEARN PRACTICE GET INVOLVED SHOP ABOUT NEWS

Live Science > Health

Some Babies Mistakenly Injected with Oral Vaccine

By Rachael Rettner, Senior Writer | January 30, 2014 01:00pm ET

300 4 0 0 22 MORE

Credit: A baby visits the doctor via Shutterstock

Some health care providers make a mistake when giving the rotavirus vaccine to babies, injecting the vaccine as a shot instead of placing drops in the infant's mouth as is required, a new report finds.

Between 2006 and 2013, there were 39 reports of the rotavirus vaccine being administered as a shot, according to the publication, from the Centers for Disease Control and Prevention.

In six cases, a nurse who did not receive proper training administered the shots, the report said. In about 50 percent of cases, the child experienced a side effect from the vaccination error, including redness at the injection site. [5 Dangerous Vaccination Myths]

The reasons people made the error included inadequate training, misinterpreting or failing to read vaccine instructions, and confusing the vaccine vial with one used for an injectable vaccine, the report said.

The rotavirus vaccine, which was introduced in the United States in 2006, protects against a stomach bug that can cause severe diarrhea. Before the vaccine, 20 to 60 children younger than age 5 died yearly from the infection, and 55,000 to 70,000 were hospitalized every year, according to the CDC.

The vaccine is one of the few infant vaccines designed to be delivered by mouth (orally). An injected dose is not considered a valid dose, the report said.

"Vaccination providers should follow instructions in package inserts regarding proper administration," the report said. "Administration errors are largely preventable with proper education and training."

Since such mistakes can go unreported, the study likely underestimates the number of rotavirus vaccination errors, the researchers said. Still, with about 55 million doses of the vaccine delivered so far, "these incidents appear to be rare," the report said.

Injection safety and vaccine administration errors at a New Jersey employee influenza vaccination clinic

December 18, 2015

Share This Page

The New Jersey Department of Health (NJDOH) received notice in September 2015 that an experienced nurse had reused syringes at an employee influenza vaccination clinic. The employees were supposed to receive vaccines from prefilled, single-dose syringes, but the nurse brought three multiple-dose vials intended for another event.

The New Jersey Department of Health (NJDOH) received notice in September 2015 that an experienced nurse had reused syringes at an employee influenza vaccination clinic. The employees were supposed to receive vaccines from prefilled, single-dose syringes, but the nurse brought three multiple-dose vials intended for another event. The nurse reported using two syringes from her supplies to administer the vaccine to 67 employees, wiping the syringes with alcohol and using a new needle for each person. Whether or not the needles are reused, reuse of syringes is a serious infection control breach. Vaccine recipients also did not receive the recommended dose. NJDOH, in consultation with CDC, notified the participants of the risk for HIV, hepatitis C, and hepatitis B. It also recommended postexposure prophylaxis with hepatitis B vaccine and readministration of the influenza vaccine. About 17% of adults receive a seasonal influenza vaccine at their workplace. Vaccination outside of traditional health settings can increase vaccine access, but it also presents challenges. CDC recommends that vaccines be delivered directly to the vaccination clinic site whenever possible, and safe injection practices should be followed.

Morbidity and Mortality Weekly Report (12/18/15) Vol. 64, No. 49, P. 1363 Taylor, Laura; Greeley, Rebecca; Dinitz-Sklar, Jill; et al.

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6449a3.htm?s_cid=mm6449a3_e

https://www.pharmacist.com/injection-safety-and-vaccine-administration-errors-new-jersey-employee-influenza-vaccination-clinic
http://www.hngn.com/articles/107366/20150707/vaccination-errors-n-j-kids-clinic-gave-expired-shots-wrong.htm
http://www.livescience.com/42981-rotavirus-vaccination-errors.html

Real Stories from the Field

Morbidity and Mortality Weekly Report

Notes from the Field

Injection Safety and Vaccine Administration Errors at an Employee Influenza Vaccination Clinic — New Jersey, 2015

Laura Taylor, PhD[1]; Rebecca Greeley, MPH[1]; Jill Dinitz-Sklar, MPH[1]; Nicole Mazur, MPH[1]; Jill Swanson, MPH[2]; JoEllen Wolicki, BSN[2]; Joseph Perz, DrPH[4]; Christina Tan, MD[1]; Barbara Montana, MD[1]

On September 30, 2015, the New Jersey Department of Health (NJDOH) was notified by an out-of-state health services company that an experienced nurse had reused syringes for multiple persons earlier that day. This occurred at an employee influenza vaccination clinic on the premises of a New Jersey business that had contracted with the health services company to provide influenza vaccinations to its employees. The employees were to receive vaccine from manufacturer-prefilled, single-dose syringes. However, the nurse contracted by the health services company brought three multiple-dose vials of vaccine that were intended for another event. The nurse reported using two syringes she found among her supplies to administer vaccine to 67 employees of the New Jersey business. She reported wiping the syringes with alcohol and using a new needle for each of the 67 persons. One of the vaccine recipients witnessed and questioned the syringe reuse, and brought it to the attention of managers at the business who, in turn, reported the practice to the health services company contracted to provide the influenza vaccinations.

Reuse of syringes for multiple patients, with or without reuse of needles, is recognized as a serious infection control breach that poses risks for bloodborne pathogen transmission (*1–3*). Upon investigation additional concerns regarding vaccine administration and storage and handling were identified for this event. The nurse used only two multiple dose vials of vaccine (10 doses/vial) to administer vaccines to 67 adult participants; thus, participants did not receive the recommended dose of influenza vaccine. The health services company had shipped the vaccine to the nurse's home, where it was stored in her home refrigerator without temperature monitoring until the event. Vaccine doses were then transported from the nurse's home to the vaccination site using a styrofoam container and cold packs. After the event, unused vaccine doses were transported back to the nurse's home and stored in her refrigerator before being shipped back to the health services company in a container with cold packs.

In response to these injection safety and vaccine administration errors, the NJDOH, in consultation with CDC, recommended notification and testing of the New Jersey business employees who participated in the vaccination clinic for human immunodeficiency virus (HIV), hepatitis C virus, and hepatitis B virus. Postexposure prophylaxis with hepatitis B vaccine and readministration of influenza vaccination were also recommended. NJDOH sent an e-mail on October 2, informing the participants of the potential bloodborne pathogen exposures and recommendations for testing and vaccination. Certified follow-up letters also were sent. A dedicated NJDOH phone number and e-mail address were created to assist the affected patients. The West Windsor Health Department collaborated with an urgent care center to perform blood draws and administer the vaccines on October 5 and 6; HIV and mental health counselors were available on-site. NJDOH also provided letters for participants to bring to their private physicians outlining the situation, risk assessment, and public health recommendations. Forty-seven of 67 participants received services through the urgent care center and the West Windsor Health Department; an unknown number of participants received treatment from their private health care providers. Follow-up clinics were arranged at 1 month and at 4 months for hepatitis B vaccination and testing.

Recommendations for appropriate injection safety and vaccine storage, handling, and administration were not followed at the influenza vaccination clinic (*1–6*). Response to this event required rapid and extensive communication and coordination among public health partners, including CDC, NJDOH, the New Jersey State Board of Nursing, and the West Windsor Health Department, as well as private entities. The contracted nurse voluntarily surrendered her license within 1 week of the initial report.

Approximately 17% of adults receive an annual influenza vaccine at their workplace (*7,8*). Influenza vaccination has been demonstrated to reduce illnesses, medical provider visits, lost work days, and antibiotic use among working adults (*7,9*). Although vaccination events outside of traditional health care settings can increase access to vaccines, training and oversight of health care personnel, and vaccine storage and handling can present special challenges. Companies providing vaccination services should ensure their employees and contracted staff adhere to established guidelines for infection prevention, and vaccine storage, handling, and administration (*1–6*). CDC recommends that, if possible, vaccine be delivered directly to the vaccination clinic site. If this is not possible, CDC recommends transporting influenza vaccine using a suitable portable refrigerator or a passive cooling system specifically designed and tested to maintain appropriate temperatures. A calibrated temperature monitoring device with a current and

www.cdc.gov/mmwr/pdf/wk/mm6449.pdf

- **Occupational flu vaccination clinic where multiple injection and vaccine administration errors occurred including:**
  1. Improperly stored vaccine
  2. Unsafe injection practices
  3. Incorrect amount of vaccine administered

Vaccine Administration Errors

- **Vaccination error reports comprised 6-15% of all reports to VAERS in recent years.**
  - The number and percentage of vaccination error reports have increased in VAERS.
    - 2000: 10 error reports (0.07% of all annual reports)
    - 2013: 4,324 error reports (15% of all annual reports)

- **Three-fourths of vaccination error reports have no reported adverse health event.**
  - However, errors can affect cost, convenience, effectiveness, and confidence in vaccine and providers.

CDC unpublished data

Top Vaccine Administration Errors

- **Inappropriate schedule errors (wrong age, timing between doses) (5,947; 27%)**
  - Most common vaccines involved
    - Quadrivalent human papillomavirus HPV4 (1,516)
    - Rotavirus vaccine (880)
- **Storage errors (4,983, 23%)**
  - Expired vaccine administered (2,746)
    - Seasonal live attenuated influenza (LAIV) (978; 36%)
  - Incorrect storage of vaccine (2,202)
    - Vaccines kept outside of proper storage temp, (too cold)

CDC unpublished data

Top Vaccination Errors

3. Wrong vaccine administered (3,372; 15%)

Common Wrong Vaccine Mix-ups*		
Varicella	with	Herpes zoster
Diphtheria, tetanus and pertussis (DTaP)	with	Tetanus, diphtheria and pertussis (Tdap)
Trivalent inactivated influenza vaccines (IIV3)	with	Another IIV3 of different age indications
Pneumococcal conjugate	with	Pneumococcal polysaccharide
Hepatitis A	with	Hepatitis B

Vaccine mix ups can be either combination (e.g. varicella vaccine instead of herpes zoster vaccine or herpes zoster vaccine instead of varicella vaccine)
CDC unpublished data

Strategies to Prevent Errors

- Establish an environment that values reporting and investigating errors as part of risk management and quality improvement
- Rotate stock and promptly remove expired vaccines
- Take immediate action if there is a temperature excursion
- Color code and label vaccines with type, age, and gender (if applicable)

Strategies to Prevent Errors

- **Store vaccines on separate shelves:**
  - Pediatric and adult formulations
  - Sound-alike and look-alike vaccines on separate shelves
- **Only administer vaccines you have prepared and triple checked**
- **Use standardized ACIP vaccine abbreviations**
  - www.cdc.gov/vaccines/acip/committee/guidance/vac-abbrev.html
- **Consider using standing orders**
  - www.immunize.org/standing-orders/

What if a Vaccine Error Occurs?

- **Inform the patient/parent of the error**
- **Determine the status of the patient**
- **Explain any needed next steps**
- **Know how to "correct" the error.**
  - Contact your local health department, vaccine manufacturer, or nipinfo@cdc.gov for guidance.
  - Not all errors require revaccination.
- **Record the vaccine as it was given on the vaccine administration record and in immunization information system.**

Reporting Vaccination Errors to VAERS

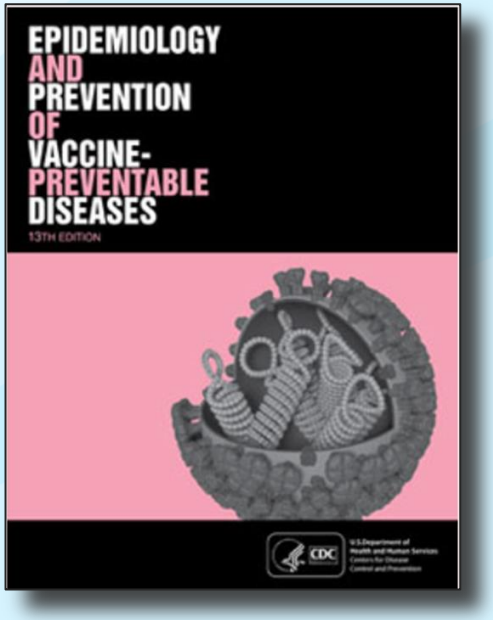
- VAERS accepts all reports.
- VAERS encourages reports of clinically significant adverse health events.
- Providers are encouraged to report vaccination errors without health events if they believe the error may pose a safety risk.

www.vaers.hhs.gov/esub/index

RESOURCES

Epidemiology and Prevention of Vaccine-Preventable Diseases Webinar Series

- **Provides:**
  - Information about vaccine-preventable diseases and the vaccines that prevent them.
  - Opportunities for live Q and A.
- **Over 15 weeks; began June 1, 2016**
  - 2015 sessions available online.
- **Free continuing education available.**
- **For more information: www.cdc.gov/vaccines/ed/webinar-epv/index.html**



Course text available online – view, print, or download.
Bound copies may be purchased.

CDC Immunization Apps for Health Care Personnel

- **Vaccine Schedules:**
  - www.cdc.gov/vaccines/schedules/hcp/schedule- app.html
- **Influenza information:**
  - www.cdc.gov/flu/apps/cdc-influenza-hcp.html
- **Morbidity and Mortality Weekly Report (MMWR)**
  - www.cdc.gov/mobile/applications/mobileframework/mmwrpromo.html
- **Travel Well**
  - www.nc.cdc.gov/travel/page/apps-about

Vaccine and Immunization Resources

- **Questions? E-mail CDC**
  - Providers — nipinfo@cdc.gov
  - Parents and patients — www.cdc.gov/cdcinfo
- **CDC website** — **www.cdc.gov/vaccines**
- **Twitter for health care personnel** — **@CDCIZlearn**
- **Influenza** — **www.cdc.gov/flu**
- **Vaccine Safety** — **www.cdc.gov/vaccinesafety**
- **State Immunization Programs**
  www.cdc.gov/vaccines/imz-managers/awardee-imz-websites.html

VACCINE ADMINISTRATION RESOURCES

Pink Book Vaccine Administration Chapter http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/vac-admin.pdf

CDC's Vaccine Administration Protocols web page http://www.cdc.gov/vaccines/hcp/admin/admin-protocols.html

CDC's Injection Safety web page https://www.cdc.gov/injectionsafety/

Immunization Action Coalition Administering Vaccines Clinic Resources
http://www.immunize.org/handouts/administering-vaccines.asp

Video: Managing Procedural Anxiety in Children
http://www.nejm.org/doi/full/10.1056/NEJMvcm1411127?query=pediatrics

Video: It Doesn't Have to Hurt https://www.youtube.com/watch?v=KgBwVSYqfps

Video: Baby Calming Magic https://www.youtube.com/watch?v=WkR_e1L6zxI

Notes from the Field: Injection Safety and Vaccine Administration Errors at an Employee Influenza Vaccination Clinic—New Jersey, 2015 http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6449a3.htm?s_cid=mm6449a3_w

Notes from the Field: Administration Error Involving a Meningococcal Conjugate Vaccine—United States, March 1, 2010–September 22, 2015 http://www.cdc.gov/mmwr/volumes/65/wr/mm6506a4.htm?s_cid=mm6506a4_w

Morbidity and Mortality Weekly Report: Notes from the Field: Rotavirus Vaccine Administration Errors—United States, 2006–2013 http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6304a4.htm?s_cid=mm6304a4_w

Reporting Vaccine Administration Errors

Vaccine Adverse Event Reporting System: https://vaers.hhs.gov/index

Institute of Safe Medication Practices http://www.ismp.org/

Several state immunization programs offer storage and handling and vaccine administration training and resources/job aids.

Awardee Immunization Websites: http://www.cdc.gov/vaccines/imz-managers/awardee-imz-websites.html

Alliance for Immunization in Michigan (AIM): http://www.aimtoolkit.org/health-care/vaccine-administration.php

California EZIZ Training and Resources: http://eziz.org/eziz-training/ and
http://eziz.org/resources/vaccine-_admin-job-aids/