

# Preventing Common Vaccine Administration Errors

Vaccine administration errors can lead to patient harm, inconvenience, and wasted vaccine and time. Such errors can be prevented by adhering to the 6 “Rights” of Vaccine Administration. By following these recommended practices, one can prevent vaccination errors; minimize adverse events; prevent waste; avoid repeat doses; and ensure that the vaccines given are necessary, potent, effective, and safe.

## The 6 “Rights” of Vaccine Administration

### Right Vaccine

Triple check the label to ensure you are administering the right medication. Always use the right diluent for the right vaccine.

### Right Patient

Verify the patient’s information. Always ask the patient his or her name and date of birth prior to vaccination.

### Right Documentation

Document the Vaccine Information Statement date, vaccine manufacturer and lot number, clinic name, and the person administering the vaccine.

### Right Dosage

Split or partial vaccine doses are NOT recommended.

### Right Time

Follow recommended intervals and age recommendations. Administer vaccine before the expiration date.

### Right Manner/Route

Review the package insert to determine the correct route of administration.

## Tips for Avoiding Common Vaccine Administration Errors

### Do not give expired vaccine.

- Use vaccines with the shortest expiration date first. Rotate vaccines so that those with the shortest expiration dates are in the front of the refrigerator or freezer.
- Check your refrigerator and freezer often to dispose of any expired vaccines.

### Avoid giving the wrong vaccine.

- Do not store sound-alike or look-alike vaccines next to each other. Store vaccines separately from other medications and biologics.
- Label baskets in your refrigerator and freezer with the age indications for the vaccines that are in the baskets.
- Check all vaccine labels at least 3 times before administering.



- Don’t pre-fill syringes unless it is necessary (e.g., immediately before mass vaccination clinics). If you do pre-fill syringes, label each syringe and/or storage bin with the vaccine name. Manufactured pre-filled syringes are another good option, as the name of the vaccine is printed on the syringe.

### Check for contraindications before vaccinating.

- Review with staff the “Guide to Contraindications and Precautions to Commonly Used Vaccines” Chart ([www.immunize.org/catg.d/p3072a.pdf](http://www.immunize.org/catg.d/p3072a.pdf)).

### Post educational materials and reminders in the practice.

- Check Your Vials: Is it Tdap, DTaP, or Td? [www.eziz.org/PDF/IMM-508.pdf](http://www.eziz.org/PDF/IMM-508.pdf)
- Vaccine Acronyms and Abbreviations [www.eziz.org/PDF/IMM-895.pdf](http://www.eziz.org/PDF/IMM-895.pdf)
- Influenza Vaccine Identification Guide [www.eziz.org/PDF/IMM-859.pdf](http://www.eziz.org/PDF/IMM-859.pdf)
- Preparing Reconstituted Vaccines [www.eziz.org/PDF/IMM-897.pdf](http://www.eziz.org/PDF/IMM-897.pdf)

### Immunization Skills Training for Medical Assistants

The Immunization Skills Institute is a 4-hour course that trains medical assistants on safe, effective, and caring immunization skills.

- Topics include the following:
- Proper vaccine administration techniques
  - Immunization documentation
  - Effective communication
  - Proper vaccine storage and handling.

For more information or to register, visit the Immunization Program website at [www.publichealth.lacounty.gov/ip](http://www.publichealth.lacounty.gov/ip), or call (213) 351-7800.

## DILUENT TIP SHEET

### Right Medication = Right Diluent + Right Vaccine

Vaccine	Diluent	Powder
DTaP-IPV/Hib (Pentacel)	DTaP – IPV (Sanofi)	Hib (ActHIB)
Hib (ActHIB)	0.4% Sterile saline (Sanofi)	Hib (ActHIB)
Hib (Hiberix)	0.9% Sterile saline (GlaxoSmithKline)	Hib
MMR (MMR-II)	Sterile water (Merck)*	MMR
MMRV (Proquad)	Sterile water (Merck)*	MMRV
MenACWYCRM (Menveo)	MenCWY (Novartis)	MenA
RV1 (Rotarix)	Sterile water, calcium carbonate, and xanthan (GlaxoSmithKline)	RV1
VAR (Varivax)	Sterile water (Merck)*	VAR
ZOS (Zostavax)	Sterile water (Merck)*	ZOS

\* The only vaccines that share the same diluents are Merck's MMR, MMRV, Varicella, and Zoster vaccines.

#### Important Tips for Reconstitution

Several vaccines in powder form require reconstitution (mixing) prior to administration. An important step in providing the right vaccine is ensuring that the correct diluent (liquid) is used to reconstitute the powder. If the wrong diluent is used, the dose may need to be repeated. Follow these steps to ensure that you mix the right powder with the right diluent.

- Review the manufacturer's packaging to verify the correct diluent (liquid) to be used to reconstitute the powder. Most diluents are not interchangeable.
- Verify the diluent and vaccine with a colleague and/or physician.
- Clearly label your diluents, indicating the vaccine or vaccines for which they should be used.

Check the manufacturer's package information regarding the time limit for using the vaccine once it is reconstituted. The clock is ticking once the vaccine is reconstituted, and the time frame varies by vaccine. Finally, never attempt to make your own combination vaccines.

#### Additional Resources on How to Properly Reconstitute Vaccines

- Attend the Los Angeles County Department of Public Health's Immunization Skills Institute course [www.publichealth.lacounty.gov/ip](http://www.publichealth.lacounty.gov/ip)
- Review the California Department of Public Health's "Preparing Reconstituted Vaccine" Job Aid [www.eziz.org/PDF/IMM-897.pdf](http://www.eziz.org/PDF/IMM-897.pdf)
- Review the Centers for Disease Control and Prevention's "Vaccine Storage and Handling Toolkit" [www2a.cdc.gov/vaccines/ed/sh toolkit/pages/prep\\_disposal.htm#Disposal](http://www2a.cdc.gov/vaccines/ed/sh toolkit/pages/prep_disposal.htm#Disposal)

## Providing the Right Vaccine

Alvin Nelson El Amin, MD, MPH

This column focuses on the first of the 6 “Rights” of Vaccine Administration: the right vaccine. Alvin Nelson El Amin, MD, MPH, medical director of the Immunization Program, Los Angeles County Department of Public Health, responds to questions about how to resolve errors when the wrong vaccine was given, or the wrong diluent was used.



**Q:** I recently gave a patient only the DTaP/IPV (liquid) portion of Pentacel without mixing it with the powder (ActHib). What should I do? Should I recall the patient to repeat the dose?

**A:** Yes, you should recall the patient since he or she did not receive the Hib portion of the vaccine and is not protected against *Haemophilus influenzae* b. You can administer a dose of ActHib or use the Pentacel powder, which is also ActHib. The same diluent may be used for either formulation.

The DTaP/IPV vaccination is valid and does not need to be repeated; however, in the future, please take measures to prevent this error. Also, the DTaP/IPV liquid should not be administered separately even if you have a patient who only needs DTaP and IPV.

**Q:** We mistakenly gave a patient the diluent for Menveo meningococcal conjugate vaccine (MCV4, Novartis) without adding it to the powdered vaccine. Since vaccine is present in the diluent and in the powder, what should we do?

**A:** Menveo’s liquid vaccine component (i.e., diluent) contains the C, Y, and W-135 serogroups and the lyophilized vaccine component (i.e., freeze-dried powder) contains serogroup A. Because the patient received only the diluent, he or she is not protected against invasive meningococcal disease caused by *Neisseria meningitidis* serogroup A. The dose should be repeated with either correctly reconstituted Menveo or with Menactra brand MCV4 with no minimum interval between the incorrect and repeat dose.

**Q:** Our clinic saw a 6-month-old baby who was due for her third DTaP vaccine dose. We accidentally administered Tdap vaccine instead of DTaP vaccine. Was this safe? What are your recommendations for follow-up?

**A:** Tdap contains lower amounts of diphtheria toxoid and some pertussis antigens than pediatric DTaP vaccine

and is not recommended for the primary vaccination series. If a Tdap dose was given instead of DTaP for one of the three doses, the dose is not counted as valid and a replacement dose of DTaP vaccine should be given. There is no minimum interval between the Tdap and DTaP dose, but to optimize immune response, some experts suggest administering it within 72 hours to 4 weeks later. Give all remaining doses in the DTaP series per the routine schedule from the Advisory Committee on Immunization Practices.

There is no reason to be concerned about safety, but the parent/guardian should be notified of the mistake and, as always, any adverse reactions should be reported to the Vaccine Adverse Event Reporting System (VAERS), at [www.vaers.hhs.gov/index](http://www.vaers.hhs.gov/index).

To avoid future errors, store DTaP and Tdap vaccines separately and post the Check Your Vials: Is it Tdap, DTaP, or Td? poster ([www.eziz.org/PDF/IMM-508.pdf](http://www.eziz.org/PDF/IMM-508.pdf)) in immunization areas and exam rooms. Clearly label vaccine vials and consider marking boxes as “pediatric” and “adolescent/adult.” Additional guidance is available at [www.cdc.gov/mmwr/preview/mmwrhtml/rr5503a1.htm?s\\_cid=rr5503a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5503a1.htm?s_cid=rr5503a1_e).

**Q:** A nurse gave a 7-month-old infant her first dose of flu vaccine as the nasal spray (Flu Mist) instead of a flu shot. Should we report this to VAERS since the dose was contraindicated? Do we need to revaccinate with a flu shot?

**A:** The Live Attenuated Influenza Vaccine (LAIV) dose will provide comparable protection against influenza, so it is counted as a valid dose and there is no need to revaccinate with injectable Trivalent Influenza Vaccine (TIV). However, since two flu vaccine doses are recommended for children receiving flu vaccine for the first time, the second dose should be TIV, not the nasal spray.

LAIV is contraindicated for children younger than 24 months of age because these children are more likely to experience wheezing when they receive LAIV. Thus, the parent/guardian should be notified of the mix-up and encouraged to seek care for any respiratory problems. You should also report the error to the Vaccine Adverse Event Reporting System.

To avoid this error in the future, review flu vaccine indications and contraindications with staff and remind them to review the Vaccine Information Statements (VIS) with parents.

For additional guidance, see [www.cdc.gov/mmwr/preview/mmwrhtml/mm5646a4.htm?scid=mm5646a4\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5646a4.htm?scid=mm5646a4_e). 