

Immunization Best Practices

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Disclosures

- ❑ Donna Weaver is a federal government employee with no financial interest or conflict with the manufacturer of any product named in this presentation.
- ❑ The speaker will discuss the off-label use of Hib and RV vaccines.
- ❑ The speaker will not discuss a vaccine not currently licensed by the FDA.

Vaccines and Immunizations

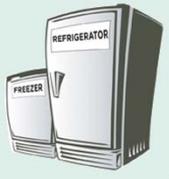
Vaccines Home
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Vaccine Storage and Handling
Recommendations and Guidelines

At a Glance
Proper vaccine storage and handling practices play a very important role in protecting individuals and communities from vaccine-preventable diseases.
Vaccine quality is the shared responsibility of everyone, from the time vaccine is manufactured until it is administered.



Resources on Proper Vaccine Storage and Handling

- Vaccine Storage and Handling Toolkit is a **comprehensive resource** for providers on vaccine storage and handling recommendations and best practice strategies. It includes considerations for equipment both storage units and thermometers, strategies for maintaining the cold chain, routine storage and handling practices, inventory management and emergency procedures for protecting vaccine inventories. *NEW Nov 2012*

Note: The Vaccine Storage and Handling Guide has become outdated and will not be updated. Please consult the [FDA's package inserts](#) found easily on the IAC website. Feb 2013

Note: The Interim Storage and Handling Guidance and FAQs content have been incorporated into the Toolkit.

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CDC Medscape
Running Time: 5:07 min
Date Released: 06/27/2011
CDC Commentary - Make No Mistake: Vaccine Administration, Storage, and Handling
Dr. Andrew Krager offers 7 steps to help prevent vaccine administration errors and vaccine storage.

<http://www.cdc.gov/vaccines/recs/storage/default.htm>

Vaccine Storage & Handling TOOLKIT
November | 2012



Vaccine Storage & Handling Toolkit
May 2014



<http://www.cdc.gov/vaccines/recs/storage/toolkit/default.htm>

Vaccine Storage & Handling Best Practices

- CDC recommendations
 - Stand-alone refrigerators and freezers
 - Digital data logger **thermometers** with temperature probe in thermal buffer (e.g., glycol) that have a **certificate of calibration**
 - Read and document temperatures twice daily and minimum/maximum temperatures once daily
 - Rotate stock and **immediately remove expired vaccines and diluents**
 - **Do not use dormitory-style units** for vaccine storage, even temporarily
 - **Take immediate corrective action** in the event of a temperature excursion

Immunization Poetry Corner



Vaccine Storage

Vaccines are costly and fragile.
When at risk, your team must be agile!
CDC's Toolkit will do...to educate you.
Good storage makes vaccination successful!

Kelly L. Moore, MD, MPH Director, TN Immunization Program
NFID Clinical Vaccinology Conference 2014

Case Study: Logan

- ❑ 6 months old, no known medical problems, new to your practice
- ❑ In the office today for well child visit and routine vaccinations



Case Study: Logan

- ❑ Your office stocks:
 - HepB
 - DTaP
 - IPV
 - DTaP-IPV-HepB (Pediarix)
 - DTaP-IPV (Kinrix)
 - Hib (ActHIB & Hiberix)
 - PCV13
 - RV1 (Rotarix)
 - Flu (Fluzone, Flucelvax, & FluMist)

Preventing Administration Errors

1.

- Assess the patient's immunization history

2.

- Review the current age-appropriate immunization schedule

3.

- Provide VISs and screen for contraindications and precautions

4.

- Select, prepare, and administer vaccines

5.

- Document vaccines administered

1.

- Assess the patient's immunization history

IRIS

IRIS Idaho's Immunization Reminder
Information System

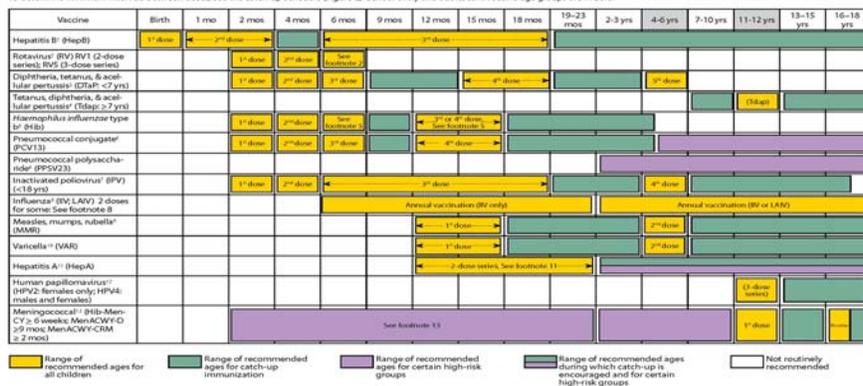
<https://iris.dhw.idaho.gov/IRIS/portallInfoManager.do>

Logan's Immunization History

Birth	2 months	4 months
HepB	DTaP-IPV-HepB (Pediarix)	DTaP-IPV-HepB (Pediarix)
	Hib (ActHIB)	Hib (PedvaxHIB)
	RV5 (RotaTeq)	RV5 (RotaTeq)
	PCV13	PCV13

2. Review the current age-appropriate immunization schedule

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years - United States, 2014.
(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FIGURE 2)).
 These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are in bold.



This schedule includes recommendations in effect as of January 1, 2014. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at <http://www.cdc.gov/vaccines/imz/downloads/index.html>. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (<http://vaers.hhs.gov>) or by telephone (800-822-7967). Suspected cases of vaccine-preventable diseases should be reported to the state or local health departments. Additional information, including precautions and contraindications for vaccination, is available from CDC online (<http://www.cdc.gov/vaccines/imz/downloads/index.html>) or by telephone (800-CDC-INFO [800-232-4636]).

This schedule is approved by the Advisory Committee on Immunization Practices (<http://www.cdc.gov/vaccines/imz/>), the American Academy of Pediatrics (<http://www.aap.org>), the American Academy of Family Physicians (<http://www.aafp.org>), and the American College of Obstetricians and Gynecologists (<http://www.acog.org>).

NOTE: The above recommendations must be read along with the footnotes of this schedule.

Figure 1. Recommended immunization schedule for persons aged 0 through 18 yr (FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE (FI). These recommendations must be read with the footnotes that follow. For those who fail to determine minimum intervals between doses, see the catch-up schedule (Figure 2).

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos
Hepatitis B ¹ (HepB)	1 st dose	2 nd dose			
Rotavirus ² (RV) RV1 (2-dose series); RVS (3-dose series)			1 st dose	2 nd dose	See footnote 2
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)			1 st dose	2 nd dose	3 rd dose
Tetanus, diphtheria, & acellular pertussis ⁴ (Tdap: ≥7 yrs)					
<i>Haemophilus influenzae</i> type b ⁵ (Hib)			1 st dose	2 nd dose	See footnote 3
Pneumococcal conjugate ⁶ (PCV13)			1 st dose	2 nd dose	3 rd dose
Pneumococcal polysaccharide ⁶ (PPSV23)					
Inactivated poliovirus ⁷ (IPV) (<18 yrs)			1 st dose	2 nd dose	
Influenza ⁸ (IIV; LAIV) 2 doses for some; See footnote 8					
Measles, mumps, rubella ⁹ (MMR)					
Varicella ¹⁰ (VAR)					
Hepatitis A ¹¹ (HepA)					
Human papillomavirus ¹² (HPV2: females only; HPV4: males and females)					
Meningococcal ¹³ (Hib-Men-CY ≥ 6 weeks; MenACWY-D ≥ 9 mos; MenACWY-CRM ≥ 2 mos)					

Range of recommended ages for all children
Range of recommended ages for catch-up immunization

This schedule includes recommendations in effect as of January 1, 2014. Any dose not administered generally is preferred over separate injections of its equivalent component vaccines. Vaccine recommendations are available online at <http://www.cdc.gov/vaccines/hcp/vis/current-vis.html> (VAERS) online (<http://www.vaers.fda.gov>) or by telephone (800-332-7967). Suspected cases of precautions and contraindications for vaccination, is available from CDC online (<http://www.cdc.gov>). This schedule is approved by the Advisory Committee on Immunization Practices (<http://www.cdc.gov>) (<http://www.aafp.org>), and the American College of Obstetricians and Gynecologists (<http://www.acog.org>).

NOTE: The above recommendations must be read along with the footnotes.

3. Provide VISs and screen for contraindications and precautions

VACCINE INFORMATION STATEMENT

Polio Vaccine

What You Need to Know

1 What is polio?

Polio is a disease caused by a virus. It enters the body through the mouth. Usually it does not cause serious illness. But sometimes it causes paralysis (can't move arms or legs), and it can cause breathing (control of the lungs or throat). It can kill people who get it, usually by paralyzing the muscles that help them breathe.

Polio used to be very common in the United States. It paralyzed and killed thousands of people a year before we had a vaccine.

2 Why get vaccinated?

Inactivated Polio Vaccine (IPV) can prevent polio.

History: A 1916 polio epidemic in the United States killed 6,000 people and paralyzed 27,000 more. In the early 1950s, there were more than 35,000 cases of polio reported each year. Polio vaccination was begun in 1955. By 1960, the number of reported cases had dropped to about 1,000, and by 1979 there were only about 10. The success of polio vaccination in the U.S. and other countries has sparked a world-wide effort to eliminate polio.

Today: Polio has been eliminated from the United States. But the disease is still common in some parts of the world. It would only take one person infected with polio virus coming from another country to bring the disease back here if we were not protected by vaccine. If the effort to eliminate the disease from the world is successful, one day we won't need polio vaccine. Until then, we need to keep getting our children vaccinated.

3 Who should get polio vaccine and when?

IPV is a shot, given in the leg or arm, depending on age. It keeps the virus at the same time as other vaccines.

Children

Children get 4 doses of IPV, at these ages:

- A dose at 2 months
- A dose at 4 months
- A dose at 6-18 months
- A booster dose at 4-6 years

Some "catch-up" vaccines (ones) different vaccines in the same shot) contain IPV.

Children getting these vaccines may get one more (5th) dose of polio vaccine. This is a one-time problem.

Adults

Most adults 18 and older do not need polio vaccine because they were vaccinated in childhood. But some adults are at higher risk and should consider polio vaccination:

- people traveling to areas of the world where polio is common;
- laboratory workers who might handle polio virus, and
- health care workers treating patients who could have polio.

Adults at these other groups:

- who have never been vaccinated against polio should get 3 doses of IPV.
- Two doses separated by 1 to 2 months, and
- A third dose to 12 months after the second.
- who have had 1 or 2 doses of polio vaccine in the past should get the remaining 1 or 2 doses. It doesn't matter how long it has been since the earlier dose(s).
- who have had 1 or more doses of polio vaccine in the past may get a booster dose of IPV.

Your doctor can give you more information.

VACCINE INFORMATION STATEMENT

DTaP Vaccine

What You Need to Know

1 Why get vaccinated?

Diphtheria, tetanus, and pertussis are serious diseases caused by bacteria. Diphtheria and pertussis are spread from person to person. Tetanus enters the body through cuts or wounds.

DIPHTHERIA causes a thick coating in the back of the throat.

- It can lead to breathing problems, paralysis, heart failure, and even death.

TETANUS (lockjaw) causes painful tightening of the muscles, usually all over the body.

- It can lead to "locking" of the jaw or the trismus (cannot open his mouth or swallow). Tetanus leads to death in 9 to 1 out of 10 cases.

PERTUSSIS (Whooping Cough) causes coughing spells so bad that it is hard for adults to eat, drink, or breathe. These spells can last for weeks.

- It can lead to pneumonia, seizures (jacking and staring spells), brain damage, and death.

Diphtheria, tetanus, and pertussis vaccine (DTaP) can help prevent these diseases. Most children who are vaccinated with DTaP will be protected throughout childhood. Many more children would get these diseases if we stopped vaccinating.

DTaP is a older version of a older vaccine called DTP. DTP is no longer used in the United States.

2 Who should get DTaP vaccine and when?

Children should get 5 doses of DTaP vaccine, one dose at each of the following ages:

- 2 months
- 4 months
- 6 months
- 15-18 months
- 4-6 years

DTaP may be given at the same time as other vaccines.

3 Some children should not get DTaP vaccine or should wait

- Children with severe illnesses, such as a cold, may be vaccinated. But children who are suddenly or severely ill should usually wait until they recover before getting DTaP vaccine.
- Any child who had a life-threatening allergic reaction after a dose of DTaP should not get another dose.
- Any child who had a life-threatening allergic reaction to any other vaccine should not get another dose.
- Talk with your doctor if you child:

 - had a seizure or collapsed after a dose of DTaP
 - cried non-stop for 3 hours or more after a dose of DTaP
 - had a fever over 102°F after a dose of DTaP

Ask your doctor for more information. Some of these children should not get another dose of pertussis vaccine, but may get a vaccine without pertussis, called DT.

4 Older children and adults

DTaP is not licensed for adolescents, adults, or children 7 years of age and older.

But older people still need protection. A vaccine called Tdap is similar to DTaP. A single dose of Tdap is recommended for people 11 through 64 years of age. Another vaccine, called Td, protects against tetanus and diphtheria, but not pertussis. It is recommended every 10 years. There are separate Vaccine Information Statements for these vaccines.

<http://www.cdc.gov/vaccines/hcp/vis/current-vis.html>

7

3.

• Provide VISs and screen for contraindications and precautions

Patient name: _____ Date of birth: ____/____/____
(mo.) (day) (yr.)

Screening Checklist for Contraindications to Vaccines for Children and Teens

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 between the ages of 2 and 4 years, 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"/>

<http://www.immunize.org/handouts/screening-vaccines.asp>

3.

• Provide VISs and screen for contraindications and precautions

Information for Health Professionals about the Screening Checklist for Contraindications (Children & 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 bottom of this page.

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

There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events (1, 2). 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.

2. Does the child have allergies to medications, food, a vaccine component, or latex? [all vaccines]

If a person reports they have an allergy to egg, ask if they can eat lightly cooked eggs (e.g., scrambled eggs). If they can, trivalent influenza vaccine (TIV) may be administered. If after eating eggs or egg-containing foods, they have a reaction consisting of only hives, TIV may be given and the person should be observed for at least 30 minutes. If a person experiences a serious systemic or anaphylactic reaction (e.g., hives and either swelling of the lips or tongue, acute respiratory distress, or collapse) after eating eggs, do not administer TIV or live attenuated influenza vaccine (LAIV). It is possible that they may be eligible to be given TIV, but only after they have seen a physician with expertise in the management of allergic conditions. If a person has anaphylaxis after eating gelatin, do not administer LAIV, measles-mumps-rubella (MMR), MMR+varicella (MMRV), or varicella vaccine. A local reaction is not a contraindication. For a table of vaccines supplied in vials or syringes that contain latex, go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/latex-table.pdf. For an extensive table of vaccine components, see reference 3.

3. Has the child had a serious reaction to a vaccine in the past?

occurred within 6 weeks of a prior influenza vaccination, vaccinate with TIV if at high risk for severe influenza complications.

8. Does the child 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 the intranasal live, attenuated influenza vaccine [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. Likewise, varicella vaccine 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 8 years and older with CD4+ T-lymphocyte counts of greater than or equal to 200 cells/ μ L. 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. For details, consult the ACIP recommendations (4, 5, 6).

9. In the past 3 months, has the child taken medications that weaken their immune system, such as cortisone, prednisone, other steroids, or anticancer drugs, or had radiation treatments? [LAIV, MMR, MMRV, VAR]

Live virus vaccines (e.g., MMR, MMRV, varicella, LAIV) 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). To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 7. LAIV can be

<http://www.immunize.org/handouts/screening-vaccines.asp>

Logan Needs

HepB-3

Hib-3

DTaP-3

RV-3

IPV-3

PCV13-3

Flu

• SELECT, prepare, and administer vaccines

Immunization Action Coalition

Handouts for Patients & Staff Clinic Resources Vaccine Information Statements Diseases & Vaccines Talking about Vaccines Topics

IAC Resources **Package Inserts**

Vaccine index

▶ IAC Home	View all	HPV	Pneumococcal - PPSV	Td
▶ Resources Home	Anthrax	Influenza	Polio - IPV	Tdap
▶ Handouts	Chickenpox (varicella)	Japanese encephalitis	Rabies	Typhoid
▶ Clinic Resources	DTaP	Measles	Rotavirus	Yellow fever
▶ Shop IAC	Hib	Meningococcal	Rubella	
▶ VISs	Hepatitis A	Mumps	Shingles (zoster)	
▶ IAC Image Library	Hepatitis B	Pneumococcal - PCV	Smallpox	

<http://www.immunize.org/packageinserts/>

4.

• **SELECT, prepare, and administer vaccines**

Recommended and Minimum Ages and Intervals Between Doses

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
Hepatitis B (HepB)-1 ³	Birth	Birth	1-4 months	4 weeks
HepB-2	1-2 months	4 weeks	2-17 months	8 weeks
HepB-3 ⁴	6-18 months	24 weeks	—	—
Diphtheria-tetanus-acellular pertussis (DTaP)-1 ³	2 months	6 weeks	2 months	4 weeks
DTaP-2	4 months	10 weeks	2 months	4 weeks
DTaP-3	6 months	14 weeks	6-12 months	6 months ^{3,5}
DTaP-4	15-18 months	12 months	3 years	6 months ⁵
DTaP-5	4-6 years	4 years	—	—
<i>Haemophilus influenzae</i> type b (Hib)-1 ^{3,7}	2 months	6 weeks	2 months	4 weeks
Hib-2	4 months	10 weeks	2 months	4 weeks
Hib-3 ⁸	6 months	14 weeks	6-9 months	8 weeks
Hib-4	12-15 months	12 months	—	—
Inactivated poliovirus (IPV)-1 ³	2 months	6 weeks	2 months	4 weeks
IPV-2	4 months	10 weeks	2-14 months	4 weeks
IPV-3	6-18 months	14 weeks	3-5 years	6 months
IPV-4 ⁹	4-6 years	4 years	—	—

<http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/A/age-interval-table.pdf>

Logan's Immunization History

Birth	2 months	4 months
HepB	DTaP-IPV-HepB (Pediarix)	DTaP-IPV-HepB (Pediarix)
	Hib (ActHIB)	Hib (PedvaxHIB)
	RV5 (RotaTeq)	RV5 (RotaTeq)
	PCV13	PCV13

- ❑ You have Pediarix and Kinrix in your vaccine inventory.
- ❑ Which vaccine do you administer?



- Pediarix
- Kinrix
- Either vaccine may be administered
- Neither vaccine may be administered

Combination Vaccines

ACIP Abbrev.	Age Indications	Includes	Can be used for:
DTaP-IPV-HepB (Pediarix)	6 weeks through 6 years of age	DTaP	DTaP-1, DTaP-2, DTaP-3
		IPV	IPV-1, IPV-2, IPV-3
		HepB	Any HepB dose EXCEPT birth dose
DTaP-IPV (Kinrix)	4 years through 6 years of age	DTaP	DTaP-5
		IPV	IPV-4

Minimum Ages and Intervals

- The minimum interval between doses of a combination vaccine is determined by the component with the longest minimum interval
- Minimum ages/intervals for DTaP and IPV
 - DTaP Dose 2 to 3 = 4 weeks apart
 Dose 3 - at least 14 weeks old
 - IPV Dose 2 to 3 = 4 weeks apart
 Dose 3 - at least 14 weeks old
 - ★ HepB Dose 2 to 3 = 8 weeks AND
 Dose 1 to 3 = 16 weeks AND
 Dose 3 - at least 24 weeks old

- You have Pediarix and Kinrix in your vaccine inventory.
- Which vaccine do you administer?



- ★ Pediarix
 - Kinrix
 - Either vaccine may be administered
 - Neither vaccine may be administered

Logan Needs

- ✓ HepB-3
- ✓ DTaP-3
- ✓ IPV-3
- Hib-3
- RV-3
- PCV13-3
- Flu

Logan's Immunization History

Birth	2 months	4 months
HepB	DTaP-IPV-HepB (Pediarix)	DTaP-IPV-HepB (Pediarix)
	Hib (ActHIB)	Hib (PedvaxHIB)
	RV5 (RotaTeq)	RV5 (RotaTeq)
	PCV13	PCV13

- You have ActHIB and Hiberix in your vaccine inventory.
- Which vaccine do you administer?



- ActHIB
- Hiberix
- Either vaccine may be administered
- Neither vaccine may be administered

Different Brands of Same Type Vaccine w/ Different Schedules

ACIP Abbrev.	Age Indications	Can Be Used For:
Hib (ActHIB)	6 weeks through 59 months of age	Hib – 2, 4, 6, 12*-15 months
Hib (Hiberix)	15 months through 4 years of age	Hib booster dose ONLY at 12*-15 months as long as already received at least 1 Hib dose

*ACIP off-label

- ❑ You have ActHIB and Hiberix in your vaccine inventory.
- ❑ Which vaccine do you administer?



★ ActHIB

- Hiberix
- Either vaccine may be administered
- Neither vaccine may be administered

Standing Orders Can Prevent Errors

Standing Orders for Administering *Haemophilus influenzae* Type B Vaccine to Children

Purpose: To reduce morbidity and mortality from *Haemophilus influenzae* type b disease by vaccinating all children who meet the criteria established by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices.

Policy: Under these standing orders, eligible nurses and other healthcare professionals (e.g., pharmacists), where allowed by state law, may vaccinate children who meet any of the criteria below.

Procedure

1. Identify infants and children in need of vaccination against *Haemophilus influenzae* type b (Hib) based on the following criteria:
 - a. age 6 weeks through 14 months without vaccination or with an incomplete primary series of Hib vaccine
 - b. age 15 months through 59 months without evidence of receiving a dose of Hib vaccine since his or her 1st birthday
 - c. age 5 years or older who are unvaccinated or partially vaccinated and have i) leukemia, ii) malignant neoplasms, iii) anatomic or functional asplenia (including sickle cell disease), iv) human immunodeficiency virus (HIV) infection, or v) other immunocompromising condition.
2. Screen all patients for contraindications and precautions to Hib vaccine:
 - a. **Contraindications:** a history of a severe allergic reaction (e.g., anaphylaxis) after a previous dose of Hib vaccine or to a Hib vaccine component. For a list of vaccine components, go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.
 - b. **Precautions:** moderate or severe acute illness with or without fever

3 Provide all patients (or, in the case of minors, their parent or legal representative) with a copy of the most current federal Vaccine

<http://www.immunize.org/catg.d/p3083.pdf>

Hib Job Aid

Michigan Department of Community Health
MDCH

Hib Vaccine Dose Schedule
Schedule Based on Age at Time of First Dose

Vaccine	Age at 1 st Dose (months)	Primary Series	Booster Dose
ActHib[®] 3-dose primary series + booster Note: Hib component of Pentacel [®] (DTaP-IPV-Hib)	2-6	3 doses, 2 months apart	at 12-15 months*
	7-11	2 doses, 2 months apart	at 12-15 months*
	12-14	1 dose	2 months later
	15-59	1 dose	-----
PedvaxHib[®] 2-dose primary series + booster Note: Hib component of Comvax [®] (HepB-Hib)	2-6	2 doses, 2 months apart	at 12-15 months*
	7-11	2 doses, 2 months apart	at 12-15 months*
	12-14	1 dose	2 months later
	15-59	1 dose	-----

* 2 months from previous dose

- PedvaxHib is a 3-dose series when the primary dose(s) are given using PedvaxHib or Comvax and the booster dose (at/after age 12 months) is given using PedvaxHib, Comvax, ActHib or Pentacel.
 - If at least one of the primary doses is given using ActHib, Pentacel or MenHibrix[®], follow the ActHib (4-dose series) chart
- Children aged 12 through 59 months at high risk for Hib disease are: asplenic (including sickle cell disease), chemotherapy recipients, immunoglobulin deficiency, complement component deficiencies, or HIV
 - If no doses or only 1 dose of Hib vaccine given before 12 months of age, give 2 doses of Hib vaccine separated by 8 weeks
 - If 2 or more doses of Hib vaccine given before 12 months of age, give 1 dose of Hib

http://www.michigan.gov/documents/mdch/Updated_Hib_Schedule_6-30-09_284519_7.pdf

Logan Needs

✓ HepB-3

✓ Hib-3

✓ DTaP-3

RV-3

✓ IPV-3

PCV13-3

Flu

Logan's Immunization History

Birth	2 months	4 months
HepB	DTaP-IPV-HepB (Pediarix)	DTaP-IPV-HepB (Pediarix)
	Hib (ActHIB)	Hib (PedvaxHIB)
	RV5 (RotaTeq)	RV5 (RotaTeq)
	PCV13	PCV13

□ **Should you administer RV1
(Rotarix) since Logan previously
received 2 doses of RotaTeq?**



- Yes
- No

Different Brands of Same Type Vaccine w/ Different Schedules

ACIP Abbrev.	Age Indications	Can Be Used For:
RV1 (Rotarix)	6 weeks to 8* months 0 days of age	2, 4 months
RV5 (RotaTeq)	6 weeks to 8 months 0 days of age	2, 4, 6 months

*ACIP off-label

□ **Should you administer RV1 (Rotarix) since Logan previously received 2 doses of RotaTeq?**



- ★ Yes
- No

Logan Needs

- ✓ HepB-3
- ✓ DTaP-3
- ✓ IPV-3
- ✓ Hib-3
- ✓ RV-3
- PCV13-3**
- Flu**

Immunization Poetry Corner



PPSV23

Never for infants
One for sick, two,
weak defense
All at sixty-five

PCV13

Infants need four
Adults, weak defense,
just one
Others, wait and see

Dr. Matthew Moore, MD, MPH Center for Disease Control and Prevention
NFID Clinical Vaccinology Conference 2014

Pneumococcal Job Aid

Recommendations for Pneumococcal Vaccine Use in Children and Teens

Table 1. Recommended Schedules for Administering Pneumococcal Conjugate Vaccine (PCV)

Child's age now	Vaccination history of PCV7 and/or PCV13	Recommended PCV13 Schedule (For minimum interval guidance for catch-up vaccination, see *)
2 through 6 months	0 doses	3 doses, 8 weeks* apart; 4th dose at age 12–15 months
	1 dose	2 doses, 8 weeks* apart; 4th dose at age 12–15 months
	2 doses	1 dose, at least 8 weeks* after the most recent dose; 4th dose at age 12–15 months
7 through 11 months	0 doses	2 doses, 8 weeks apart*; 3rd dose at age 12–15 months
	1 or 2 doses before age 7 months	1 dose at age 7–11 months; 2nd dose at age 12–15 months, at least 8 weeks after the most recent dose
12 through 23 months	0 doses	2 doses, at least 8 weeks apart
	1 dose before age 12 months	2 doses, at least 8 weeks apart
	1 dose at or after age 12 months	1 dose, at least 8 weeks after the most recent dose
	2 or 3 doses before age 12 months	1 dose, at least 8 weeks after the most recent dose
	4 doses of PCV7 or other age-appropriate complete PCV7 schedule	1 PCV13 dose, at least 8 weeks after the most recent PCV7 dose
24 through 59 months (healthy)	Unvaccinated or any incomplete schedule	1 dose, at least 8 weeks after the most recent dose
	4 doses of PCV7 or other age-appropriate complete PCV7 schedule	1 dose, at least 8 weeks after the most recent dose
24 through 71 months (with risk factor described in Table 3 below)	Unvaccinated or any incomplete schedule of less than 3 doses	2 doses, one at least 8 weeks after the most recent dose and another dose at least 8 weeks later
	Any incomplete schedule of 3 doses	1 PCV13 dose, at least 8 weeks after the most recent PCV7 dose
	4 doses of PCV7 or other age-appropriate complete PCV7 schedule	1 PCV13 dose, at least 8 weeks after the most recent PCV7 dose
6 through 18 years with immunocompromising condition, functional or anatomic asplenia (see specific conditions in Table 3 below), cerebrospinal fluid leak, or cochlear implant	No history of prior PCV13	1 dose of PCV13

www.immunize.org/catg.d/p2016.pdf

Logan Needs

- ✓ HepB-3
- ✓ DTaP-3
- ✓ IPV-3
- ✓ Hib-3
- ✓ RV-3
- ✓ PCV13-3

Flu

□ Which FLU vaccine should you administer?



- Fluzone
- Flucelvax
- FluMist

Different Brands of Same Type Vaccine w/ Different Indications

ACIP Abbrev.	Age Indications
Fluzone	6 months and older
Flucelvax	18 years and older
FluMist	2 years through 49 years who are healthy and not pregnant

□ Which FLU vaccine should you administer?



★ Fluzone

- Flucelvax
- FluMist

4. • SELECT, prepare, and administer vaccines

IIV

(Inactivated Influenza Vaccine)

Ages: 6 months and older
Dosage: 0.25 mL 6 months through 35 months
0.5 mL 3 years and older
Route: Intramuscular (IM) injection

LAIV (FluMist)

Ages: 2 years through 49 years
Give to: Healthy persons who are

- not pregnant or
- do not have a high-risk condition

Route: Intranasal (NAS) spray

Do NOT Inject

<http://www.cdc.gov/vaccines/recs/storage/guide/vaccine-storage-labels.pdf/>

4. • SELECT, prepare, and administer vaccines

Pediatric/Adult Influenza Vaccine 2013-2014

For influenza vaccines licensed only for adults, see page 2.

Age	Manufacturer	Brand Name	Presentation
6-35 months old	Sanofi Pasteur, Inc.	Fluzone [®]	0.25 mL, single-dose syringe
	Sanofi Pasteur, Inc.	Fluzone [®] Quadrivalent	0.25 mL, single-dose syringe
Healthy Persons 2-49 years old	Medimmune Vaccines, Inc.	Flucelvax [®]	0.2 mL, single-dose nasal spray
	Medimmune Vaccines, Inc.	Flucelvax [®] Quadrivalent	0.2 mL, single-dose nasal spray
36 months & Older	GSK/SmithKline Beecham	Fluzone [®]	0.5 mL, single-dose syringe
	GSK/SmithKline Beecham	Fluzone [®] Quadrivalent	0.5 mL, single-dose syringe
	CSL Behring/CSL (SmithKline Beecham)	Flucelvax [®]	0.5 mL [†] , multi-dose vial
	CSL Behring/CSL (SmithKline Beecham)	Flucelvax [®] Quadrivalent	0.5 mL [†] , multi-dose vial
	Sanofi Pasteur, Inc.	Fluzone [®]	0.5 mL, single-dose vial
	Sanofi Pasteur, Inc.	Fluzone [®] Quadrivalent	0.5 mL, single-dose vial
	Sanofi Pasteur, Inc.	Fluzone [®]	0.5 mL, single-dose syringe
	Sanofi Pasteur, Inc.	Fluzone [®] Quadrivalent	0.5 mL, single-dose syringe
	Sanofi Pasteur, Inc.	Fluzone [®]	0.5 mL [†] , multi-dose vial
	Sanofi Pasteur, Inc.	Fluzone [®] Quadrivalent	0.5 mL [†] , multi-dose vial
4 years & Older	Novartis Vaccines and Diagnostics Ltd.	Fluvaxim [®]	0.5 mL [†] , multi-dose vial
	Novartis Vaccines and Diagnostics Ltd.	Fluvaxim [®]	0.5 mL, single-dose syringe
5 years & Older and persons aged 18 and older 1 year and older	CSL Behring	Flucelvax [®]	0.5 mL, single-dose syringe
	CSL Behring	Flucelvax [®]	0.5 mL [†] , multi-dose vial

All influenza vaccines are stored in the refrigerator. Questions? Toll-free: 877-266-WFC (877-243-4832)

† Contains preservatives and should be given within 48 hours of opening. For more information on proper storage and handling, see the package insert for each vaccine.

† Single-dose vials are available through the Vaccine for Children Program in 2013-2014 and can only be used for children 6-35 months of age.

<http://eziz.org/assets/docs/IMM-859.pdf>

4. • SELECT, prepare, and administer vaccines

Tdap or DTaP

Pertussis is widespread—are your patients protected?

Tdap • Tetanus Toxoid, Reduced Diphtheria Toxin, and Acellular Pertussis vaccine • For Those Age 7 Years or Older

DTaP • Tetanus Toxoid, Reduced Diphtheria Toxin, and Acellular Pertussis vaccine • For Those Ages 6 Weeks Through 6 Years

DTaP only

Combination: DTaP + Others

DTaP + IPV + Hib • Pertussis (GSK/SmithKline) • Ages 6 weeks through 6 years

DTaP + IPV + Hib • Pertussis (Sanofi Pasteur) • Ages 6 weeks through 6 years

DTaP + IPV + Hib • Pertussis (GSK/SmithKline) • Ages 6 years through 6 years

Use Tdap or DTaP to stop pertussis. For more info, visit EZIZ.org

<http://eziz.org/assets/docs/IMM-508.pdf>

4. • Select, PREPARE, and administer vaccines

Vaccines with Diluents: How to Use Them

Be sure to reconstitute the following vaccines correctly before administering them! Reconstitution means that the lyophilized (freeze-dried) vaccine powder or wafer in one vial must be reconstituted (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.

Vaccine product name	Manufacturer	Lyophilized vaccine (powder)	Liquid diluent (may contain vaccine)	Time allowed between reconstitution and use ^a	Diluent storage environment
ActHIB (Hib)	sanofi pasteur	Hib	0.4% sodium chloride	24 hrs	Refrigerator
Hiberix (Hib)	GlaxoSmithKline	Hib	0.9% sodium chloride	24 hrs	Refrigerator or room temp
Imovax (RAB _{HOCV})	sanofi pasteur	Rabies virus	Sterile water	Immediately ¹	Refrigerator
M-M-R II (MMR)	Merck	MMR	Sterile water	8 hrs	Refrigerator or room temp
MenHibrix (Hib-MenCY)	GlaxoSmithKline	Hib-MenCY	0.9% sodium chloride	Immediately ¹	Refrigerator or room temp

<http://www.immunize.org/catg.d/p3040.pdf>

4. • Select, prepare, and ADMINISTER vaccines

Correct Route

Notes from the Field: Rotavirus Vaccine Administration Errors – United States, 2006-2013

Weekly
January 31, 2014 / 63(04):81-81

Beth F. Hibbs, MPH¹, Elaine R. Miller, MPH¹, Tom Shimabukuro, MD¹ (Author affiliations at end of text)

Two live rotavirus oral vaccines, RotaTeq (RV5) (Merck & Co., Inc.) and Rotarix (RV1) (GlaxoSmithKline Biologicals) ([Figure](#)), are approved for prevention of rotavirus gastroenteritis (1) and recommended at ages 2, 4 (RV5/RV1), and 6 (RV5) months by the Advisory Committee on Immunization Practices. Because most childhood vaccines are injectable, vaccination providers might have less experience administering oral vaccines. To assess that hypothesis, CDC searched for reports to the Vaccine Adverse Event Reporting System (VAERS) (2) of rotavirus vaccine administration errors involving injection and eye splashes in the United States during the period January 1, 2006–August 1, 2013. A total of 66 reports were found.

There were 39 reports of administration by injection (33 for RV1 and six for RV5). This included a cluster of six reports involving RV1 by a nurse who did not receive proper training or read the package insert. Nineteen of the 39 reports (49%) documented an adverse event: irritability (seven cases) and injection site redness (five) were the most commonly reported adverse events. Thirty of 39 reports (77%) did not have an explanation for the error; for those that did, reasons included misinterpreting package insert instructions, confusing the RV1 oral applicator syringe with a syringe for injection, confusing the RV1 vial with a vial used for injectable vaccine, inadequate training, and not reading the package insert.

There were 27 reports of eye splashes. In 21 cases, infants coughed, sneezed, or spit vaccine into the eyes of vaccination providers (17), parents (one) or themselves (three). These incidents appear to be rare. Vaccination providers should follow instructions in package inserts regarding proper administration. An injected dose of RV1 or RV5 is not considered a valid dose, and a properly administered oral replacement dose should be given within the appropriate age and dosing schedule. Vaccination providers should be aware of the potential for eye splashes. Vaccine should be administered gently inside the cheek to minimize coughing, sneezing, and spitting. If a child does regurgitate, spit out, or vomit during or after administration, administration of a replacement dose is not indicated (1). Administration errors are largely preventable with proper education and training.

As a passive surveillance system, VAERS might capture only a small fraction of vaccine administration errors. However, with approximately 55 million doses (3) distributed, these incidents appear to be rare. Vaccination providers should follow instructions in package inserts regarding proper administration. An injected dose of RV1 or RV5 is not considered a valid dose, and a properly administered oral replacement dose should be given within the appropriate age and dosing schedule. Vaccination providers should be aware of the potential for eye splashes. Vaccine should be administered gently inside the cheek to minimize coughing, sneezing, and spitting. If a child does regurgitate, spit out, or vomit during or after administration, administration of a replacement dose is not indicated (1). Administration errors are largely preventable with proper education and training.

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1. CDC. Prevention of rotavirus gastroenteritis among infants and children: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2009;58(No. RR-2).
2. Varricchio F, Iskander J, DeStefano F, et al. Understanding vaccine safety information from the Vaccine Adverse Event Reporting System. *Pediatr Infect Dis J* 2004;23:287-94.

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

4. • Select, prepare, and ADMINISTER vaccines

Correct Route



RotaTaq Oral



Rotarix Oral

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

Administration Job Aid

How to Administer Intradermal, Intranasal, and Oral Vaccinations

While most vaccines are administered by either intramuscular or subcutaneous injection, there are several vaccines that are administered through other means. These include the intradermal route, the intranasal

route, and the oral route. Here are some simple instructions to use as a guide. Complete information is available in the package inserts and can also be obtained at www.immunize.org/packageinserts.

Intradermal (ID) administration

Fluorine (FluMist) intranasal influenza vaccine

1. Gently shake the microinjection system before administering the vaccine.
2. Hold the system by placing the thumb and middle finger on the finger pads, the index finger should remain free.
3. Insert the needle perpendicular to the skin, in the region of the deltoid, in a short, quick movement.
4. Once the needle has been inserted, maintain light pressure on the surface of the skin and push using the index finger to push on the plunger. Do not aspirate.
5. Remove the needle from the skin. With the needle directed away from you and others, push very firmly with the thumb on the plunger to remove the needle sheath. You will hear a click when the sheath extends to cover the needle.
6. Dispose of the applicator in a sharps container.



Intranasal (IN) administration

FluMist (LAIV) for intranasal administration only. Do not inject FluMist.

1. Remove the rubber tip protector. Do not remove the dose divider clip at the other end of the sprayer.
2. With the patient in an upright position (i.e., head not tilted back), place the tip inside the nostril to ensure LAIV is delivered into the nose. The patient should breathe normally.
3. With a single motion, depress the plunger as rapidly as possible until the dose divider clip prevents you from going further.
4. Push and remove the dose divider clip from the plunger.
5. Place the tip just inside the other nostril, and with a single motion, depress plunger as rapidly as possible to deliver the remaining vaccine.
6. Dispose of the applicator in a sharps container.



Oral administration: Rotavirus vaccines

Rotax by Merck

1. Tear open the pouch and remove the dosing tube. Clear the fluid from the dosing tube by holding the tube vertically and tapping the cap.
2. Open the dosing tube in two easy motions:
 - a) Puncture the dosing tube by turning cap clockwise until it becomes tight.
 - b) Remove the cap by turning it counterclockwise.
3. Administer the dose by gently squeezing liquid into infant's mouth toward the inner cheek until dosing tube is empty. (A residual drop may remain in tip of the tube.)
4. Discard the empty tube and cap in an approved biological waste container according to local regulations.

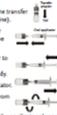
Note: If any more vaccine dose is administered (e.g., after spill or regurgitation of the vaccine), a replacement dose is not recommended.



Rotax by GlaxoSmithKline

1. Remove the cap of the oral aid and push the transfer adapter onto the vial (pre-filled vaccine).
2. Shake the diluent in the oral applicator (white, labeled suspension). Connect the oral applicator to the transfer adapter.
3. Push the plunger of the oral applicator to transfer the diluent into the vial. The suspension will appear white and cloudy.
4. Withdraw the vaccine into the oral applicator from the vial.
5. Twist and remove the oral applicator from the vial.
6. Administer the dose by gently placing the applicator plunger into the infant's mouth toward the inner cheek and gently squeezing the contents until the applicator is empty.
7. Discard the empty vial, cap, and oral applicator in an approved biological waste container according to local regulations.

Note: If for any reason, an incomplete dose is administered (e.g., the infant spits or regurgitates the vaccine), a replacement dose is not recommended.



Saint Paul, Minnesota • 651-644-9009 • www.immunize.org • www.cdc.gov/immunization
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<http://www.immunize.org/catg.d/p2021.pdf>

5. • Document vaccines administered

April 1, 2013 Vaccine Abbreviations Page 1 of 3

Advisory Committee on Immunization Practices
U.S. VACCINE ABBREVIATIONS
 Abbreviations for Vaccines Included in the
 Immunization Schedules for Children, Adolescents, and Adults

Following is a table of standardized vaccine abbreviations, which was developed jointly by staff of the Centers for Disease Control and Prevention, ACIP Work Groups, the editor of the *Morbidity and Mortality Weekly Report (MMWR)*, the editor of *Epidemiology and Prevention of Vaccine-Preventable Diseases* (the "Pink Book"), ACIP members, and liaison organizations to the ACIP.

These abbreviations are intended to provide a uniform approach to vaccine references used in ACIP Recommendations and Policy Notes that are published in the *MMWR*, the *Pink Book*, and the American Academy of Pediatrics *Red Book*, and in the U.S. immunization schedules for children, adolescents, and adults.

Vaccine	Abbreviation*	Trade Name
Diphtheria, tetanus and pertussis-containing vaccines		
	P=Pediatric	A=Adult
• Diphtheria and tetanus toxoids adsorbed (P)	DT	several mfrs ¹
• Diphtheria and tetanus toxoids and acellular pertussis vaccine adsorbed (P)	DTaP	Daptacel, Infanrix
• Tetanus and diphtheria toxoids adsorbed (A)	Td	Tetivac, Decavac generic
• Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine, adsorbed (A)	Tdap	Adacel, Boostrix
• Tetanus toxoid (P,A)	TT	generic
• Diphtheria and tetanus toxoids and acellular pertussis adsorbed, hepatitis B and inactivated poliovirus vaccine (P)	DTaP-HepB-IPV	Pediarix
• Diphtheria and tetanus toxoids and acellular pertussis adsorbed and inactivated poliovirus vaccine (P)	DTaP-IPV	Kinrix
• Diphtheria and tetanus toxoids and acellular pertussis adsorbed	DTaP-IPV/Hib	Pentacel

<http://www.cdc.gov/vaccines/acip/committee/guidance/vac-abbrev.pdf>

5. • Document vaccines administered

(Page 1 of 2)

Vaccine Administration Record for Children and Teens

Patient name: _____ Birthdate: _____ Chart number: _____
 Clinic name and address: _____

Before administering any vaccines, give copies of all pertinent Vaccine Information Statements (VIS) to the child's parent or legal representative and make sure he/she understands the risks and benefits of the vaccine(s). Always provide or update the patient's personal record card.

Vaccine	Type of Vaccine ¹	Date given (month/year)	Funding Source (F,S,P) ²	Route & Site ³	Vaccine		Vaccine Information Statement (VIS)		Vaccinator ⁴ (signature or initials & title)
					Lot #	Exp. date	Date on VIS ⁵	Date given ⁶	
Hepatitis B¹ e.g., Hib, Hib-HepB, DTaP-HepB-IPV Give IM ³									
Diphtheria, Tetanus, Pertussis¹ e.g., DTaP, DTaP/Hib, DTaP-HepB-IPV, DT, DTaP-IPV/Hib, Tdap, DTaP-IPV, Td Give IM ³									
Haemophilus influenzae type B¹ e.g., Hib, Hib-HepB, DTaP-IPV/Hib, DTaP/Hib, Hib-MenCT ¹ Give IM ³									
Polio¹ e.g., IPV, DTaP-HepB, DTaP-IPV/Hib, DTaP-IPV Give IPV SC or IM ³ Give all others IM ³									
Pneumococcal¹ e.g., PCV, PCV13, conjugate, PPSV23, polysaccharide Give PCV IM ³ Give PPSV SC or IM ³									
Rotavirus (RV1, RV5)¹ Give orally (po) ³									

<http://www.immunize.org/catg.d/p2022.pdf>

CDC Safe Injection Practices



http://www.cdc.gov/injectionsafety/IP07_standardPrecaution.html

NCIRD Vaccine Administration



<http://www.cdc.gov/vaccines/recs/vac-admin/default.htm>



Immunization Twitter Just for You

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is a leading source for healthcare providers on immunization training, recommendations and information across the lifespan



CDC Vaccines and Immunization Contact Information

Telephone	www.cdc.gov/info 800-CDC-INFO (800-232-4636) For patients and providers
E-mail	NIPInfo@cdc.gov For providers
Website	www.cdc.gov/vaccines
Twitter	@CDCizlearn
Vaccine Safety	www.cdc.gov/vaccinesafety/