

## IMMUNIZATION PROCEDURES:

**INTRODUCTION:** This immunization guide is a compilation of the generally accepted recommendations of the United States Department of Health and Human Services' Advisory Committee on Immunization Practices (ACIP) and of the American Academy of Pediatrics (AAP). The recommendations put forth in this publication are to be used as guidelines and not absolute standards. ACIP, AAP, and AAFP currently issue joint guidelines on childhood immunizations annually, the Recommended Childhood and Adolescent Immunization Schedule, United States.

**GENERAL INFORMATION:** Routine immunizations should not be given to persons moderately or severely ill or with marked fever during the previous 24 hours. However, the presence of mild illness with or without fever is not usually a contraindication to immunization. The product description and directions provided by the manufacturer in the package insert should be read carefully. No product may be used beyond its expiration date, or contrary to recommendations in the package insert.

**VACCINE INFORMATION STATEMENTS (VIS):** As required under the National Childhood Vaccine Injury Act (42 U.S.C. §300aa-26), all health care providers in the United States who administer, to any child or adult, diphtheria, tetanus, pertussis, measles, mumps, rubella, polio, hepatitis A, hepatitis B, Haemophilus influenzae type b (Hib), trivalent influenza, pneumococcal conjugate, meningococcal, rotavirus, human papillomavirus (HPV), or varicella (chickenpox) vaccines shall, prior to administration of each dose of the vaccine, provide a copy to keep of the relevant current edition vaccine information materials that have been produced by the Centers for Disease Control and Prevention (CDC) to the parent or legal representative of any child to whom the provider intends to administer such vaccine, and to any adult to whom the provider intends to administer such vaccine. (In the case of an incompetent adult, relevant VISs shall be provided to the individual's legal representative. If the incompetent adult is living in a long-term care facility, all relevant VISs may be provided at the time of admission, or at the time of consent if later than admission, rather than prior to each immunization.) If there is not a single VIS for a combination vaccine, use the VISs for all component vaccines. The materials shall be supplemented with visual presentations or oral explanations, as appropriate.

Other VISs that are available are, Pneumococcal Polysaccharide, Rabies, Yellow Fever, Typhoid, Japanese Encephalitis, Anthrax, Smallpox, and the Zoster (shingles) vaccine. Their use is not required by the National Childhood Injury Act, but is strongly encouraged - and they must be used when giving vaccines purchased through a CDC contract.

**RECORD KEEPING:** Health care providers shall make a notation in each patient's permanent medical record at the time vaccine information materials are provided indicating: (1) the edition date of the VIS distributed, and (2) the date the VIS was provided. This record-keeping requirement supplements the requirement of 42 U.S.C. section 300 a.a. 25 that all health care providers administering these vaccines must record in the patient's permanent medical record (or in a permanent office log): (3) the name, address and title of the individual who administers the vaccine (The address should be the address where the record is kept. For example, if immunizations are given at a shopping mall, the address would be the clinic where the permanent record

will reside after the provider returns it to the clinic.), (4) the date of administration and (5) the vaccine manufacturer and lot number of the vaccine used.

**VACCINES FOR CHILDREN (VFC) ELIGIBILITY SCREENING:** The Vaccines for Children Program is a federally funded state-operated vaccine distribution program. The Los Angeles County Immunization Program (LACIP) participates in this program and receives VFC-purchased vaccines from the state in addition to other federal and state purchased vaccines. Under the VFC Program each child 18 years of age and younger is required to be screened for VFC eligibility before immunization. VFC eligibility criteria are:

1. Medi-Cal or Child Health Disability Program (CHDP) eligible; or
2. No health insurance; or
3. American Indian or Native Alaskan; or
4. Insurance that does not cover vaccines.

VFC eligibility requirements are incorporated in the Immunization Record Card (H-519) and in the County's immunization registry (LINK). Check only one eligibility criterion; if a child meets two or more of the eligibility criteria, check the first one that applies. The child does not need to be rescreened at subsequent visits unless his/her eligibility status has changed.

**STORAGE OF IMMUNOBIOLOGICS:** Vaccines, especially live virus vaccines, are fragile substances. To insure potency, vaccines are to be stored and handled as recommended by the manufacturer in the package insert. All refrigerators should have separate thermometers in both the refrigerator and freezer compartments. Check the temperature of both the refrigerator and freezer at least **twice** daily and record temperatures on a temperature log posted on the refrigerator/freezer. Do not store vaccine in the refrigerator door. (See section in this guide on Storage and Handling of Common Immunobiologics.)

**VACCINE ADVERSE EVENTS REPORTING SYSTEM (VAERS):** VAERS is the national program that monitors the safety of vaccines after they are licensed and is jointly administered by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA). FDA and CDC analyze VAERS data to identify potential new vaccine safety concerns that may need further study. The National Childhood Vaccine Injury Act of 1986 mandates that health care providers report specific adverse events that occur after vaccination. The events that require reporting to VAERS are listed in the Table of Reportable Events and can be found at <http://vaers.hhs.gov/> or contact LACIP for a copy of the table. Providers are also encouraged to report adverse events that are not listed in the Table of Reportable Events. Report all significant adverse events that occur after vaccination of adults and children, even if you are not sure whether the vaccine caused the adverse event. There are three ways to report to VAERS: 1) Online via a secure website at <https://secure.vaers.org>, 2) Fax a completed VAERS form to 1-877-721-0366 (toll-free), or 3) Mail a completed VAERS form to VAERS, P.O. Box 1100, Rockville, MD 20849-1100. Report forms are available for printing at [www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by calling the VAERS Information Line at 1-800-822-7967. Operators are on duty from 9:00 a.m. to 5:00 p.m., Eastern Time, Monday through Friday. After you submit a report, VAERS staff may contact you for additional information. **Providers receiving vaccines through LACIP are requested to send a copy of all VAERS reports to LACIP at 3530 Wilshire Blvd., Suite 700, Los Angeles, CA 90010 or fax a copy to LACIP at**

(213) 351-2782. If additional information is needed, contact LACIP at (213) 351-7800, or visit the Immunization Program Website at <http://www.ph.lacounty.gov/ip/>.

**TUBERCULIN SKIN TESTING AND IMMUNIZATION (MANTOUX):** Measles illness, severe acute or chronic infections, HIV infection, and malnutrition can create a relatively anergic state during which the tuberculin skin test (TST) (previously referred to as purified protein derivative [PPD] skin test) might give a false negative reaction. Although any live attenuated measles vaccine can theoretically suppress TST reactivity, the degree of suppression is probably less than that occurring from acute infection from wild-type measles virus.

TST and measles-containing vaccine can be administered at the same visit. Simultaneously administering TST and measles-containing vaccine does not interfere with reading the TST result at 48-72 hours and ensures that the person has received measles vaccine. If the measles-containing vaccine has been administered recently, TST screening should be delayed for at least 4 weeks after vaccination. A delay in performing TST will remove the concern of any theoretical but transient suppression of TST reactivity from the vaccine.

No data exist for the potential degree of TST suppression that might be associated with other injectable, live-attenuated virus vaccines (e.g., varicella, and yellow fever). However, in the absence of data, following guidelines for measles-containing vaccine when scheduling TST screening and administering other live-attenuated virus vaccines is prudent. No information on the effect of LAIV on a TST is available. Until such information is available, it is prudent to apply rules for spacing measles vaccine and TST to LAIV. If the opportunity to vaccinate might be missed, vaccination should not be delayed only because of these theoretical considerations. Because of similar concerns about smallpox vaccine and TST suppression, a TST should not be performed until four weeks after smallpox vaccination.

**TIME INTERVAL BETWEEN DOSES:** Available data indicate that intervals between doses longer than those routinely recommended do not affect seroconversion rate or titer when the schedule was completed. Consequently, it is not necessary to restart the series or add doses of any vaccine because of an extended interval between doses. The only exception to this rule is oral typhoid vaccine in some circumstances. In the case of oral typhoid, some experts recommend repeating the series if the four-dose series is extended to more than 3 weeks.

Vaccine doses should not be administered at intervals less than the recommended minimal intervals or earlier than the minimal ages. Two exceptions to this may occur. The first is for measles vaccine during a measles outbreak, when the vaccine may be administered at an age younger than 12 months (this dose would not be counted, and would be repeated at 12 months of age or older). The second consideration involves administering a dose a few days earlier than the minimum interval or age, which is unlikely to have a substantially negative effect on the immune response to that dose. Vaccine doses administered up to 4 days before the minimum interval or age can be counted as valid. This 4-day recommendation does not apply to rabies vaccine because of the unique schedule for this vaccine. Doses administered 5 days or earlier than the minimum interval or age should not be counted as valid doses and should be repeated as age appropriate. The repeat dose should be spaced after the invalid dose by a time greater than the recommended minimum interval shown in Table 1.

Table 1: Recommended And Minimum Ages And Intervals Between Vaccine Doses<sup>1</sup>

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 (Hep B)-1 <sup>2</sup>	Birth	Birth	1-4 months	4 weeks
HepB-2	1-2 months	4 weeks	2-17 months	8 weeks
HepB-3 <sup>3</sup>	6-18 months	24 weeks	-	-
Diphtheria-tetanus-acellular pertussis (DTaP)-1 <sup>2</sup>	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 <sup>4</sup>	6 months <sup>4,5</sup>
DTaP-4	15-18 months	12 months	3 years	6 months <sup>4</sup>
DTaP-5	4-6 years	4 years	-	-
Haemophilus influenzae type b (Hib)-1 <sup>2,6</sup>	2 months	6 weeks	2 months	4 weeks
Hib-2	4 months	10 weeks	2 months	4 weeks
Hib-3 <sup>7</sup>	6 months	14 weeks	6-9 months <sup>4</sup>	8 weeks
Hib-4	12-15 months	12 months	-	-
Inactivated poliovirus (IPV)-1 <sup>2</sup>	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	4 weeks
IPV-4	4-6 years	18 weeks	-	-
Pneumococcal conjugate (PCV)-1 <sup>6</sup>	2 months	6 weeks	2 months	4 weeks
PCV-2	4 months	10 weeks	2 months	4 weeks
PCV-3	6 months	14 weeks	6 months	8 weeks
PCV-4	12-15 months	12 months	-	-
Measles-mumps-rubella (MMR)-1 <sup>8</sup>	12-15 months	12 months	3-5 years	4 weeks
MMR-2 <sup>8</sup>	4-6 years	13 months	-	-
Varicella (Var)-1 <sup>8</sup>	12-15 months	12 months	3-5 years	12 weeks <sup>9</sup>
Var-2 <sup>8</sup>	4-6 years	15 months	-	-
Hepatitis A (HepA)-1 <sup>2</sup>	12-23 months	12 months	6-18 months <sup>4</sup>	6 months <sup>4</sup>
HepA-2	18-41 months	18 months	-	-
Influenza inactivated <sup>10</sup>	6-59 months	6 months <sup>11</sup>	1 month	4 weeks
Influenza live attenuated <sup>10</sup>	-	2 years	1 month	4 weeks
Meningococcal conjugate (MCV) <sup>†</sup>	11-12 years	2 years	-	-
Meningococcal polysaccharide (MPSV)-1	-	2 years	5 years <sup>12</sup>	5 years <sup>12</sup>
MPSV-2 <sup>13</sup>	-	7 years	-	-

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
Tetanus-diphtheria (Td)	11-12 years	7 years	10 years	5 years
Tetanus-diphtheria acellular pertussis (Tdap) <sup>14</sup>	≥11 years	10 years	-	-
Pneumococcal polysaccharide (PPV)-1	-	2 years	5 years	5 years
PPV-2 <sup>15</sup>	-	7 years	-	-
Human papillomavirus (HPV)-1 <sup>16</sup>	11-12 years	9 years	2 months	4 weeks
HPV-2	11-12 years (+ 2 months)	109 months	4 months	12 weeks
HPV-3 <sup>17</sup>	11-12 years (+ 6 months)	114 months	-	-
Rotavirus (RV)-1 <sup>18</sup>	2 months	6 weeks	2 months	4 weeks
RV-2	4 months	10 weeks	2 months	4 weeks
RV-3	6 months	14 weeks	-	-
Zoster <sup>19</sup>	60 years	60 years	-	-

<sup>1</sup> Use of licensed combination vaccines is preferred over separate injections of their equivalent component vaccines. (CDC. Combination vaccines for childhood immunization: recommendations of the Advisory Committee on Immunization Practices [ACIP], the American Academy of Pediatrics [AAP], and the American Academy of Family Physicians [AAFP]. MMWR 1999;48[No. RR-5]). In March 2008, ACIP stated that the use of MMRV is not preferred to the separate administration of MMR and varicella vaccines. When administering combination vaccines, the minimum age for administration is the oldest age for any of the individual components; the minimum interval between doses is equal to the greatest interval of any of the individual components.

<sup>2</sup> Combination vaccines containing the Hepatitis B component are available (HepB-Hib, DTaP-HepB-IPV, HepA-HepB). These vaccines should not be administered to infants younger than 6 weeks of age because of the other components (i.e., Hib, DTaP, IPV, and HepA).

<sup>3</sup> HepB-3 should be administered at least 8 weeks after HepB-2 and at least 16 weeks after HepB-1, and it should not be administered before age 24 weeks.

<sup>4</sup> Calendar months.

<sup>5</sup> The minimum recommended interval between DTaP-3 and DTaP-4 is 6 months. However, DTaP-4 need not be repeated if administered at least 4 months after DTaP-3.

<sup>6</sup> For Hib and PCV, children receiving the first dose of vaccine at age 7 months of age or older require fewer doses to complete the series (CDC.

Recommended childhood and adolescent immunization schedule – United States, 2006. MMWR 2005; 54 [Nos. 51 & 52]:Q1-Q4).

<sup>7</sup> If PRP-OMP (Pedvax-Hib®, Merck Vaccine Division), was administered at 2 and 4 months of age a dose at 6 months of age is not required.

<sup>8</sup> Combination measles-mumps-rubella-varicella (MMRV) vaccine can be used for children 12 months through 12 years of age. Also see footnote 9.

<sup>9</sup> The minimum interval from Var-1 to Var-2 for persons beginning the series at 13 years or older is 4 weeks.

<sup>10</sup> One dose of influenza vaccine per season is recommended for most people. Children younger than 9 years of age who are receiving influenza vaccine for the first time, or received only 1 dose the previous season (if it was their first vaccination season) should receive 2 doses this season.

<sup>11</sup> The minimum age for inactivated influenza vaccine varies by vaccine manufacturer. Only Fluzone (manufactured by sanofi pasteur) is approved for children 6-35 months of age. The minimum age for Fluvirin (manufactured by Novartis) is 4 years. For Fluarix and FluLaval (manufactured by GlaxoSmithKline) and Afluria (manufactured by CSL Ltd), the minimum age is 18 years.

<sup>12</sup> Some experts recommend a second dose of MPSV-3 years after the first dose for people at increased risk for meningococcal disease.

<sup>13</sup> A second dose of meningococcal vaccine is recommended for people previously vaccinated with MPSV who remain at high risk for meningococcal disease. MCV is preferred when revaccinating persons aged 2-55 years, but a second dose of MPSV is acceptable. (CDC. Prevention and Control of Meningococcal Disease Recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 2005; 54: No. RR-7.)

<sup>14</sup> Only one dose of Tdap is recommended. Subsequent doses should be administered as Td. If vaccination to prevent tetanus and/or diphtheria disease is required for children 7 through 9 years of age, Td should be administered (minimum age for Td is 7 years). For one brand of Tdap the minimum age is 11 years. The preferred interval between Tdap and a previous dose of Td is 5 years. In persons who have received a primary series of tetanus-toxoid containing vaccine, for management of a tetanus-prone wound, the minimum interval after a previous dose of any tetanus-containing vaccine is 5 years.

<sup>15</sup> A second dose of PPV is recommended for persons at highest risk for serious pneumococcal infection and those who are likely to have a rapid decline in pneumococcal antibody concentration. Revaccination 3 years after the previous dose can be considered for children at highest risk for severe pneumococcal infection who would be younger than 10 years of age at the time of revaccination. (CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1997;46[No. RR-8]).

<sup>16</sup> HPV is approved only for females 9-26 years of age.

<sup>17</sup> HPV-3 should be administered at least 12 weeks after HPV-2 and at least 24 weeks after HPV-1, and it should not be administered before 114 months of age.

<sup>18</sup> The first dose of Rota must be administered at 6-12 weeks of age. The vaccine series should not be started at 13 weeks of age or older. Rota should not be administered to children 33 weeks of age or older regardless of the number of doses received between 6 and 32 weeks of age.

<sup>19</sup> Herpes zoster vaccine is approved as a single dose for persons 60 years and older with a history of varicella.

Adapted from Table 1, ACIP General Recommendations on Immunization: MMWR 2006;55(No. RR-15)

**IMMUNIZATION FOR FOREIGN TRAVEL:** The only vaccine required by International Health Regulations is yellow fever vaccination for travel to certain countries in sub-Saharan Africa and tropical South America. Meningococcal vaccination is required by the government of Saudi Arabia for annual travel during the Hajj.

Some immunizations are not required under the international health regulations but are recommended to protect the health of the traveler. For some diseases there are no vaccines available, therefore, prevention requires specific behaviors or chemoprophylactic medications. Vaccinations against diphtheria, tetanus, pertussis, measles, mumps, rubella, hepatitis A, hepatitis B, poliomyelitis, *Haemophilus influenzae* type b, varicella, and *Streptococcus pneumoniae*, routinely are administered in the United States, usually in childhood. If persons do not have a history of adequate protection against these diseases, immunizations appropriate to their age and previous immunization status should be obtained.

For certain types of travel, yellow fever vaccine, Japanese encephalitis vaccine, typhoid vaccine, poliomyelitis vaccine, hepatitis A vaccine or immune globulin, and malaria prophylaxis are recommended. Information on travel immunization recommendations is contained in CDC's publication *Health Information for International Travel* (The Yellow Book). The current edition of this publication can be found at: <http://wwwn.cdc.gov/travel/contentYellowBook.aspx>, or information about ordering the Yellow Book and International Certificates of Vaccination and recorded messages on travel-related health topics can be obtained by calling Travelers' Health Automated Information Line at: 877-FYI-TRIP toll free.