

Centers for Disease Control and Prevention
National Center for Immunization and Respiratory Diseases



General Best Practice Guidelines for Immunization Part 1

Chapter 2
September 2018

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www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html

Vaccine Recommendations and Guidelines of the ACIP

ACIP Recs Home | CDC • ACIP Recs Home • Comprehensive Recommendations and Guidelines

General Best Practice Guidelines for Immunization

Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP)

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[View the full report](#) (1.14 MB, 175 pages)

INTRODUCTION
Purpose and topics covered in this report...

METHODS
Method of development of: Timing and Spacing, Contraindications and Precautions, Preventing and Managing Adverse Reactions...

TIMING AND SPACING OF IMMUNOBIOLOGICS
Vaccine scheduling, supply and spaced schedule, spacing of doses, simultaneous and non-simultaneous administration, licensed combination

General Best Practice Guidelines = General Recommendations

General Best Practice Guidelines for Immunization

▪ **ACIP MMWR Table of Contents**

- Timing and spacing
- Contraindications and precautions
- Preventing and managing adverse reactions to immunization
- Vaccine administration
- Storage and handling
- Altered immunocompetence
- Special situations
- Vaccination records
- Vaccination programs
- Vaccine information sources

General Best Practice Guidelines for Immunization

▪ **Pink Book chapter**

- Timing and spacing

- Contraindications and precautions

Timing and Spacing Issues

- **Interval between receipt of antibody-containing blood products and live vaccines**

- **Interval between doses of different vaccines not administered simultaneously**

- **Interval between subsequent doses of the same vaccine**

Antibody-Containing Blood Products

- Used to restore a needed component of blood or provide a passive immune response following disease exposure
- Sometimes circumstance dictates the use of antibody-containing blood products along with a vaccine

Antibody and Live Vaccines

General Rule

- Inactivated vaccines are generally not affected by circulating antibody to the antigen
- Live, attenuated vaccines might be affected by circulating antibody to the antigen – an effectiveness concern

Antibody Products and Measles- and Varicella-Containing Vaccines

Product given first

Action

Vaccine	Wait 2 weeks before giving antibody
Antibody	Wait at least 3 months before giving vaccine

Products Containing Type-Specific or Negligible Antibody

- **Palivizumab (Synagis)**
 - Contains only monoclonal RSV antibody
 - Does not interfere with live-virus vaccination

- **Red blood cells (RBCs), washed**
 - Negligible antibody content

Interval Between Doses of Different Vaccines

- **Simultaneous administration**

- **Non-simultaneous administration**

Simultaneous Administration

General Rule

- **All vaccines can be administered at the same visit as all other vaccines.**

- **Exceptions:**
 - PCV13 and PPSV23: Give PCV13 first
 - PCV13 and MenACWY-D (Menactra) in asplenic or HIV-infected persons: Give PCV13 first
 - MenACWY-D and DTaP in asplenic, HIV-infected, or complement component-deficient persons: Give MenACWY-D first

**Non-Simultaneous Administration:
Live Vaccine Effectiveness**

<u>Combination</u>	<u>Minimum interval</u>
2 live injected OR 1 live injected and 1 intranasal influenza vaccine	4 weeks
All other vaccines	None

**Spacing of Live Vaccines Not
Given Simultaneously**

- If 2 live parenteral or intranasal vaccines are given less than 28 days apart, the vaccine given second should be repeated.
- Antibody response from first vaccine interferes with replication of second vaccine.

Intervals Between Doses

General Rule

- Increasing the interval between doses of a multidose vaccine does not diminish the effectiveness of the vaccine.

Extended Interval Between Doses

- Not all variations among all schedules for all vaccines have been studied.
- Available studies of extended intervals have shown no significant difference in final titer.
- It is not necessary to restart the series or add doses because of an extended interval between doses.

Intervals Between Doses

General Rule

- Increasing the interval between doses of a multidose vaccine does not diminish the effectiveness of the vaccine.
- Decreasing the interval between doses of a multidose vaccine may interfere with antibody response and protection.

Vaccine	Age	Doses
DTaP	2 months	4 doses
DTaP	4 months	4 doses
DTaP	6 months	4 doses
DTaP	15-18 months	4 doses
DTaP	4-6 years	4 doses
DTaP	11-12 years	4 doses
DTaP	16-18 years	4 doses
DTaP	65 years	4 doses
DTaP	75 years	4 doses
DTaP	80 years	4 doses
DTaP	85 years	4 doses
DTaP	90 years	4 doses
DTaP	95 years	4 doses
DTaP	100 years	4 doses
DTaP	105 years	4 doses
DTaP	110 years	4 doses
DTaP	115 years	4 doses
DTaP	120 years	4 doses
DTaP	125 years	4 doses
DTaP	130 years	4 doses
DTaP	135 years	4 doses
DTaP	140 years	4 doses
DTaP	145 years	4 doses
DTaP	150 years	4 doses
DTaP	155 years	4 doses
DTaP	160 years	4 doses
DTaP	165 years	4 doses
DTaP	170 years	4 doses
DTaP	175 years	4 doses
DTaP	180 years	4 doses
DTaP	185 years	4 doses
DTaP	190 years	4 doses
DTaP	195 years	4 doses
DTaP	200 years	4 doses

Included in Pink Book Appendix A-13

The "Grace Period"

- ACIP recommends that vaccine doses given up to 4 days before the minimum interval or age be counted as valid
- Should not be used for scheduling future vaccination visits
- Use for reviewing vaccination records

Use of the "Grace Period"

- To schedule a future appointment **NO!**
- When evaluating a vaccination record **Yes**
- Client is in the office or clinic early **Maybe**

Use of the "Grace Period"

- Client is in the office or clinic
 - Client/parent is known and dependable **Reschedule**
 - Client/parent is unknown or undependable **Vaccinate**

Use of the “Grace Period”

▪ **Basic principles**

- The recommended interval or age is preferred.
- The minimum interval can be used to catch up.
- The grace period is last resort.

Violations of Minimum Intervals and Minimum Ages

- **Grace period may conflict with some state school entry requirements.**
- **Immunization programs and/or school entry requirements may not accept some or all doses given earlier than the minimum age or interval - particularly varicella and/or MMR vaccines.**
- **Providers should comply with local and/or state immunization requirements.**

Violations of Minimum Intervals and Minimum Ages

- **Minimum interval/age has been violated**
 - Dose invalid
- **The repeat dose should be administered at least a minimum interval from the invalid dose**

Contraindications and Precautions

Vaccine Adverse Reaction

- **Adverse reaction**
 - Extraneous effect caused by vaccine
 - "Side effect"

Vaccine Adverse Reaction

- **Adverse reaction**
- **Adverse event**
 - Any medical event following vaccination
 - May be true adverse reaction
 - May be only coincidental

Vaccine Adverse Reactions

▪ **Local**

- Pain, swelling, redness at site of injection
- Common with inactivated vaccines
- Usually mild and self-limited

Vaccine Adverse Reactions

▪ **Local**

▪ **Systemic**

- Fever, malaise, headache
- Nonspecific
- May be unrelated to vaccine

Live, Attenuated Vaccines

▪ **Must replicate to produce immunity**

▪ **Symptoms usually mild**

▪ **Occur after an incubation period
(usually 3-21 days)**

Vaccine Adverse Reactions

- Local
- Systemic
- Allergic
 - Due to vaccine or vaccine component
 - Rare
 - Risk minimized by screening

Contraindication

- A condition in a recipient that greatly increases the chance of a serious adverse event

Precaution

- A condition in a recipient that may increase the chance or severity of an adverse event
- May compromise the ability of the vaccine to produce immunity
- Might cause diagnostic confusion

Permanent Contraindications

- Severe allergic reaction to a prior dose of vaccine or to a vaccine component

Permanent Contraindications

- **Rotavirus vaccines only**
 - Severe combined immunodeficiency disease (SCID)
 - History of intussusception
- **Pertussis vaccines only**
 - Encephalopathy not due to another identifiable cause occurring within 7 days of pertussis vaccination

Contraindications and Precautions

<u>Condition</u>	<u>Live</u>	<u>Inactivated</u>
Allergy to component	C	C
Encephalopathy	---	C
Pregnancy	C	V*
Immunosuppression	C	V
Moderate/severe illness	P	P
Recent blood product	P**	V

C=contraindication
P=precaution
V=vaccinate if indicated
*Except HPV
**MMR and varicella-containing (except zoster vaccine and LAIV)

Vaccination of Immunosuppressed Persons

- Live vaccines should not be administered to severely immunosuppressed persons.
- Persons with impaired humoral immunity (aka isolated B-cell deficiency) may receive varicella vaccine.
- Inactivated vaccines are safe to use in immunosuppressed persons, but the response to the vaccine may be decreased.

Immunosuppression

- Disease
 - Congenital immunodeficiency
 - Leukemia or lymphoma
 - Generalized malignancy
- Cancer therapy
 - Alkylating agents
 - Antimetabolites
 - Radiation

Immunosuppressive Drugs

- Immune mediators
- Immune modulators
- Iso-antibodies (therapeutic monoclonal antibodies)
 - Antitumor necrosis factor agents

Corticosteroids and Immunosuppression

- The amount or duration of corticosteroid therapy needed to increase adverse event risk is not well defined.
- Dose generally believed to be a concern:
 - 20 mg or more/day of prednisone for 2 weeks or longer
 - 2 mg/kg per day or more of prednisone for 2 weeks or longer

Corticosteroids and Immunosuppression

- Does NOT apply to aerosols, topical, alternate-day, short courses (less than 2 weeks), physiologic replacement schedules
- Delay live vaccines for at least 1 month after discontinuation of high-dose therapy

Vaccination of Immunosuppressed Persons

- Safety:
 - Immunocompromised persons are at increased risk of adverse events following live vaccines.
 - Live vaccines may be administered at least 3 months following termination of chemotherapy (at least 1 month after high-dose steroid use of 2 weeks or more).
 - LAIV, MMR, varicella, and rotavirus vaccines may be administered to susceptible household and other close contacts.

Vaccination of Immunosuppressed Persons

- **Safety and efficacy**
- **Anti-tumor necrosis factor inhibitors**
 - Wait 3 months after stopping medication before administering live vaccines
 - Do not initiate medication until 1 month after the live vaccine
- **Other iso-antibodies (e.g., anti-B cell antibodies aka lymphocyte depleting agents)**
 - Some experts recommend up to 6 months

Persons with HIV Infection

- **Persons with HIV/AIDS are at increased risk for complications of measles, varicella, influenza, meningococcal, and pneumococcal disease.**

Live, Attenuated Vaccines for Persons with HIV/AIDS*

<u>Vaccine</u>	<u>Asymptomatic</u>	<u>Symptomatic*</u>
Varicella	Yes	No
Zoster <small>FMS(1)</small>	No	No
MMR	Yes	No
MMRV	No	No
LAIV	No	No
Rotavirus	Consider	Consider
Yellow Fever	Consider	No

Yes=vaccinate No=do not vaccinate

*See specific ACIP recommendations for details.

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FMS(1 Still waiting for updated ACIP recommendations for Shingrix in persons with HIV/AIDS. Currently, there is no recommendation one way or the other. Consider adding separate line for RZV and ZVL
Freedman, Mark S. (CDC/OPHPR/DEO), 8/3/2018

What Do You Think?

▪ Increasing the interval between doses of a multidose vaccine series does not diminish the effectiveness of the vaccine.

▪ True

▪ False



PLEASE PLACE QUESTIONS IN THE BASKET
