



EpiVac Pink Book Web-on-Demand Series

Principles of Vaccination–2020

Immunization Services Division

National Center for Immunization and Respiratory Diseases

Centers for Disease Control and Prevention

Atlanta, GA

Learning Objectives

- For each vaccine-preventable disease, identify those for whom routine immunization is recommended.
- For each vaccine-preventable disease, describe characteristics of the vaccine used to prevent the disease.
- Describe an emerging immunization issue.
- Locate current immunization resources to increase knowledge of team's role in program implementation for improved team performance.
- Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.

Today's Agenda

EpiVac Pink Book Web-on-Demand Series: Principles of Vaccination–2020

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Principles of Vaccination

EpiVac Pink Book Web-on-Demand Series

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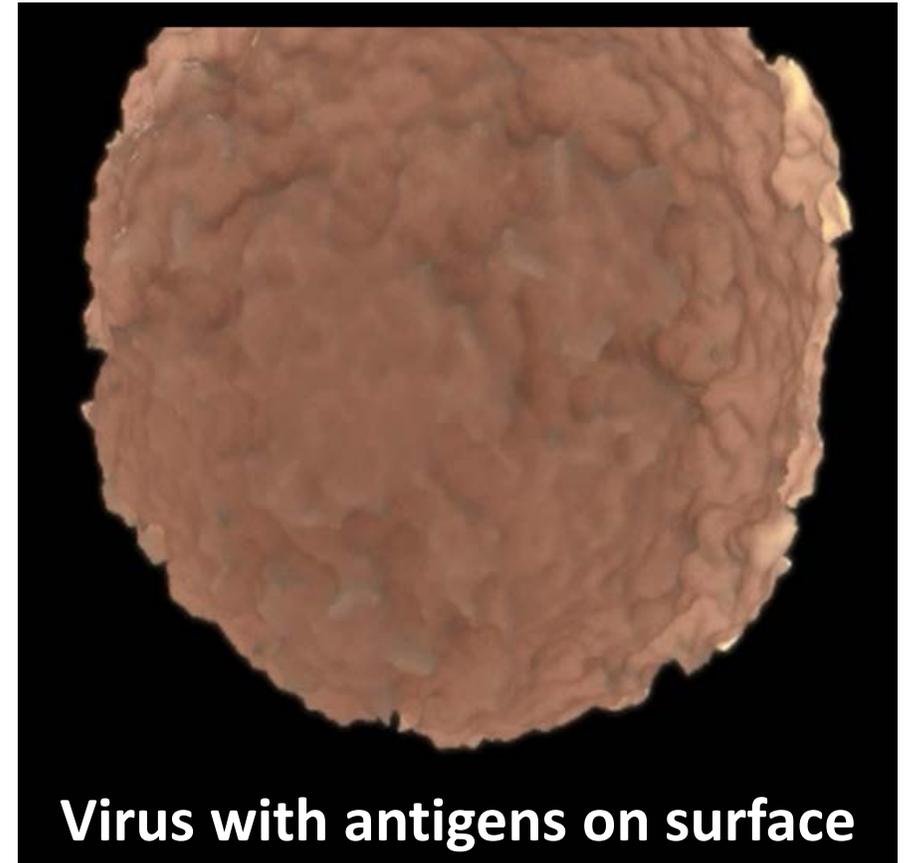
Immunity

Immunity

- Self vs. “nonself”
- Protection from infectious diseases
- Usually indicated by the presence of antibody
- Generally specific to a single organism

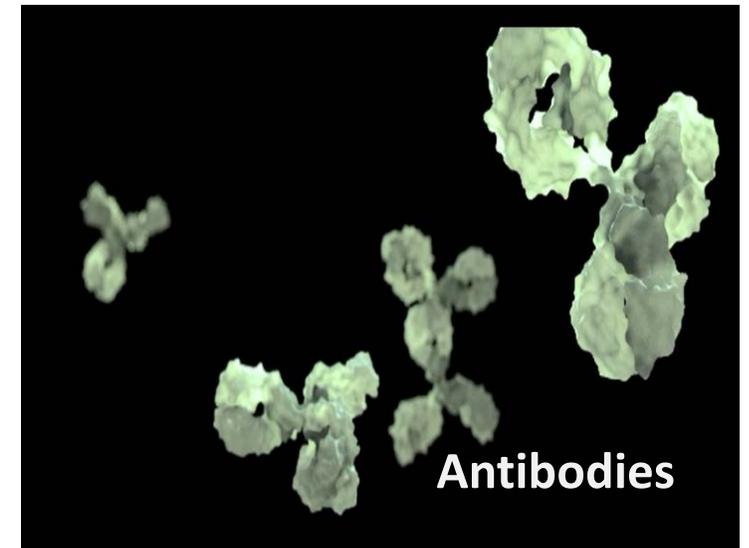
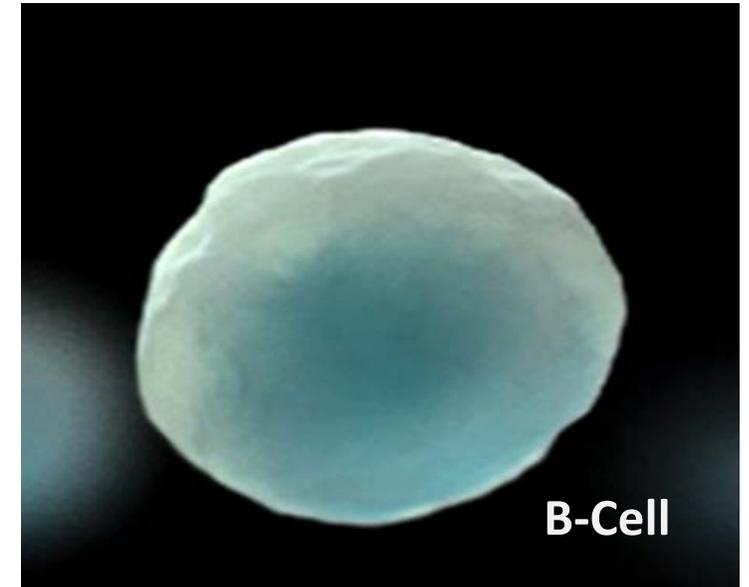
Antigen

- Live or inactivated substances (e.g., viruses, bacteria, toxins)
 - Capable of stimulating an immune response
- Antigen = antibody generator



Antibody

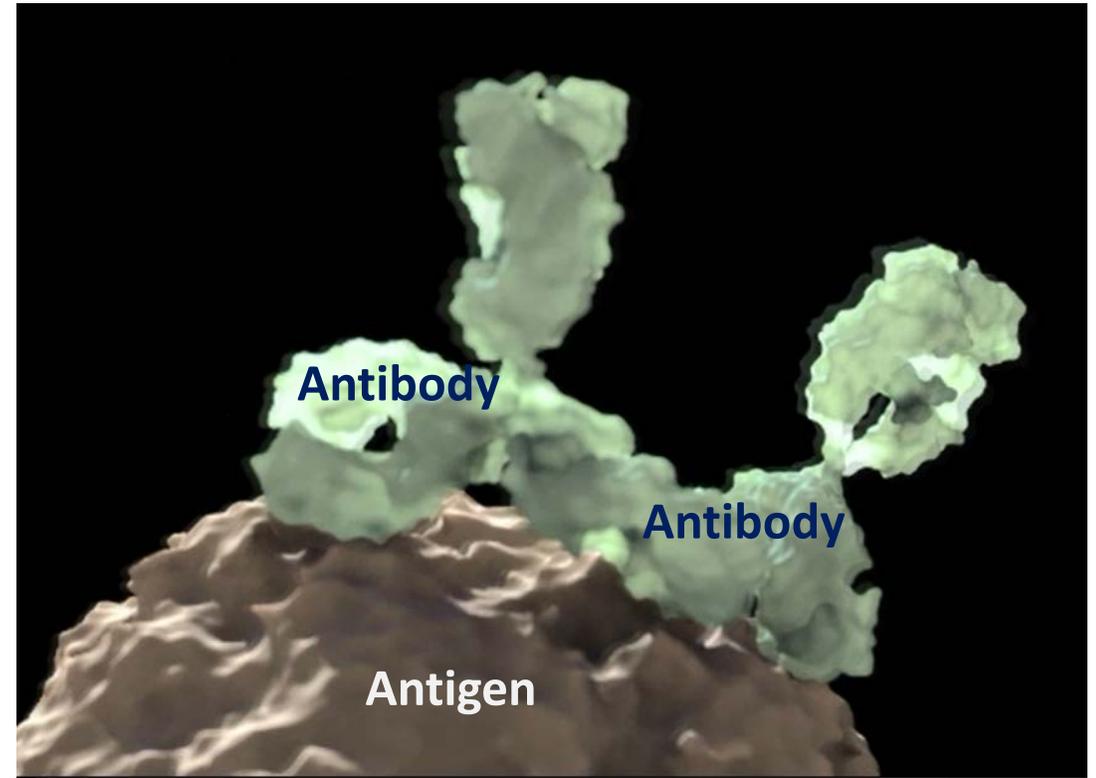
- Protein molecules (immunoglobulins)
 - Produced by B-cells (lymphocytes) to bind to a corresponding antigen (lock and key mechanism)
 - Helps neutralize antigen and prepare it for destruction
 - B-cells develop in the bone marrow



Arms of the Immune System

- Humoral

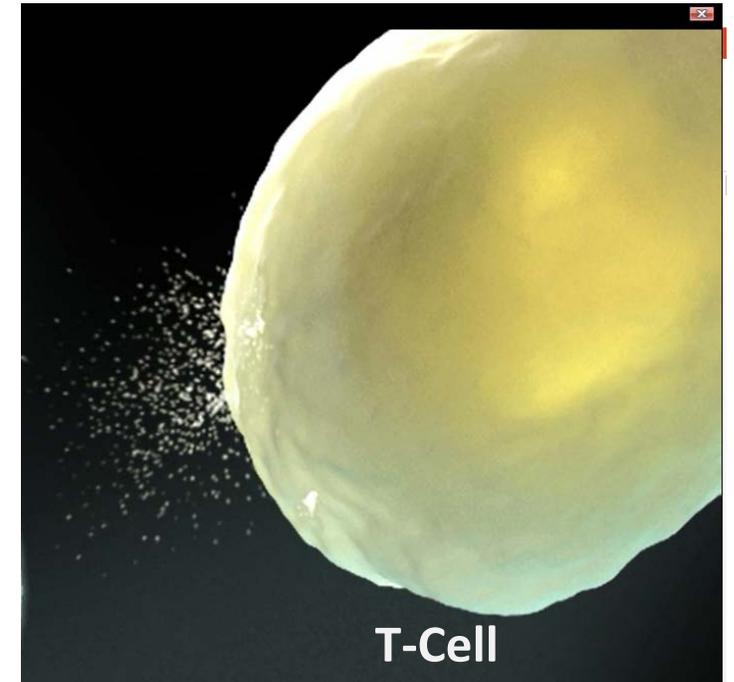
- Production of antibodies that are specific to a certain antigen or group of antigens
- Antibodies attach to invading organism and interfere with its ability to produce more invading organisms



Antibodies attaching to antigens

Arms of the Immune System

- Cell-mediated – T lymphocytes (T-cells)
 - Involves the activation of T-cells, macrophages, and other substances that eliminate the antigen
 - T-cells mature in the thymus gland



Types of Immunity: Active and Passive

Passive Immunity

- Transfer of antibody produced by one human or animal to another
- Temporary protection that wanes with time
- Transfer of antibody through placenta – important to protect infants

Passive Immunity Video



Sources of Passive Immunity

- Many types of blood or blood products
- Homologous pooled human antibody (immune globulin or IG)
 - IgG antibody from the blood of thousands of American adult donors
 - Hepatitis A and measles postexposure prophylaxis (PEP)

Sources of Passive Immunity

- Homologous human hyperimmune globulin (e.g., HBIG)
 - Taken from donors with high concentrations of a specific antibody
 - HBIG, RIG, TIG, VariZIG, VIG
- Heterologous hyperimmune serum
 - Antitoxin (e.g., diphtheria antitoxin)
 - Serum sickness

Sources of Passive Immunity

- Monoclonal antibodies
 - Derived from a single type or clone, of antibody-producing cells (B-cells)
 - Immune globulin from human sources is polyclonal (contains many different kinds of antibodies)
 - Antibody is specific to a single antigen or closely related group of antigens
 - Used for diagnosis of and therapy for certain cancers and autoimmune and infectious diseases, as well as prevention of transplant rejection
 - Monoclonal-antibody-derived drugs end in –mab (i.e., palivizumab)

Antibody for Prevention of RSV

- Palivizumab (Synagis)
 - Monoclonal
 - Contains only RSV antibody
 - Will not interfere with the response to a live-virus vaccine

Active Immunity

- Protection produced by a person's own immune system
- Lasts for many years, often lifetime

Active Immunity Video



Sources of Active Immunity

- Infection with disease-causing form of organism



- Vaccination



Vaccination

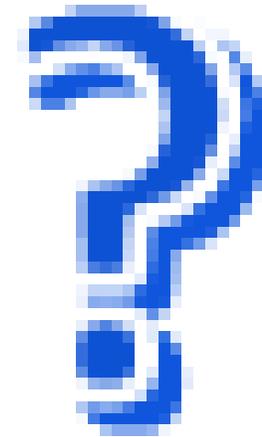
- Active immunity produced by vaccine
 - Vaccine delivers a dead or attenuated (weakened, nonpathogenic) form of the pathogen
- Immunity and immunologic memory similar to natural infection but without risk of disease
 - Immunologic memory allows for an anamnestic response after the primary immune response so that antibody reappears when the antigen is introduced

Factors that Affect Immune Response to Vaccines

- Presence of maternal antibodies
- Nature and amount of antigen in vaccine
- Route of administration
- Presence of an adjuvant (ingredient that promotes a stronger immune response)
- Storage and handling of vaccine
- Vaccine recipient
 - Age
 - Nutritional status
 - Genetics
 - Coexisting disease

Knowledge Check

- Which type of immunity lasts longer?
- A. Passive immunity
- B. Active immunity



Answer

- Active Immunity



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**Classification
of
Vaccines**

Classification of Vaccines

- Live, attenuated (weakened form of the organism)
 - Viral or bacterial
- Inactivated (non-live or fraction of the organism)
 - Viral or bacterial
 - Protein-based (e.g., toxoid or subunit vaccines)
 - Polysaccharide-based (e.g., bacterial cell wall polysaccharide)

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**Principles of
Vaccination**

Principles of Vaccination

- General rule: The more similar a vaccine is to the natural disease, the better the immune response to the vaccine.

Live, Attenuated Vaccine Video

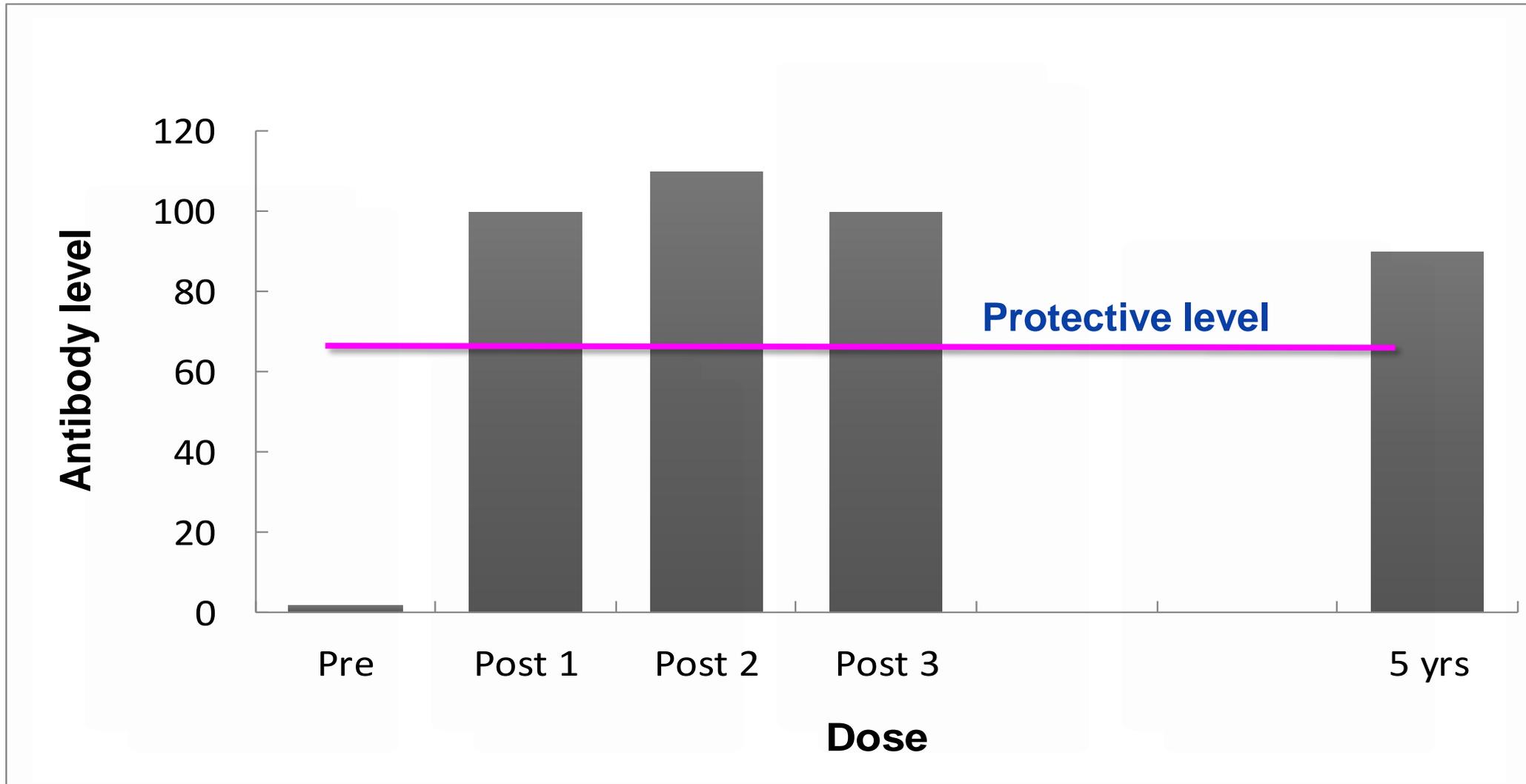


Live, Attenuated Vaccines

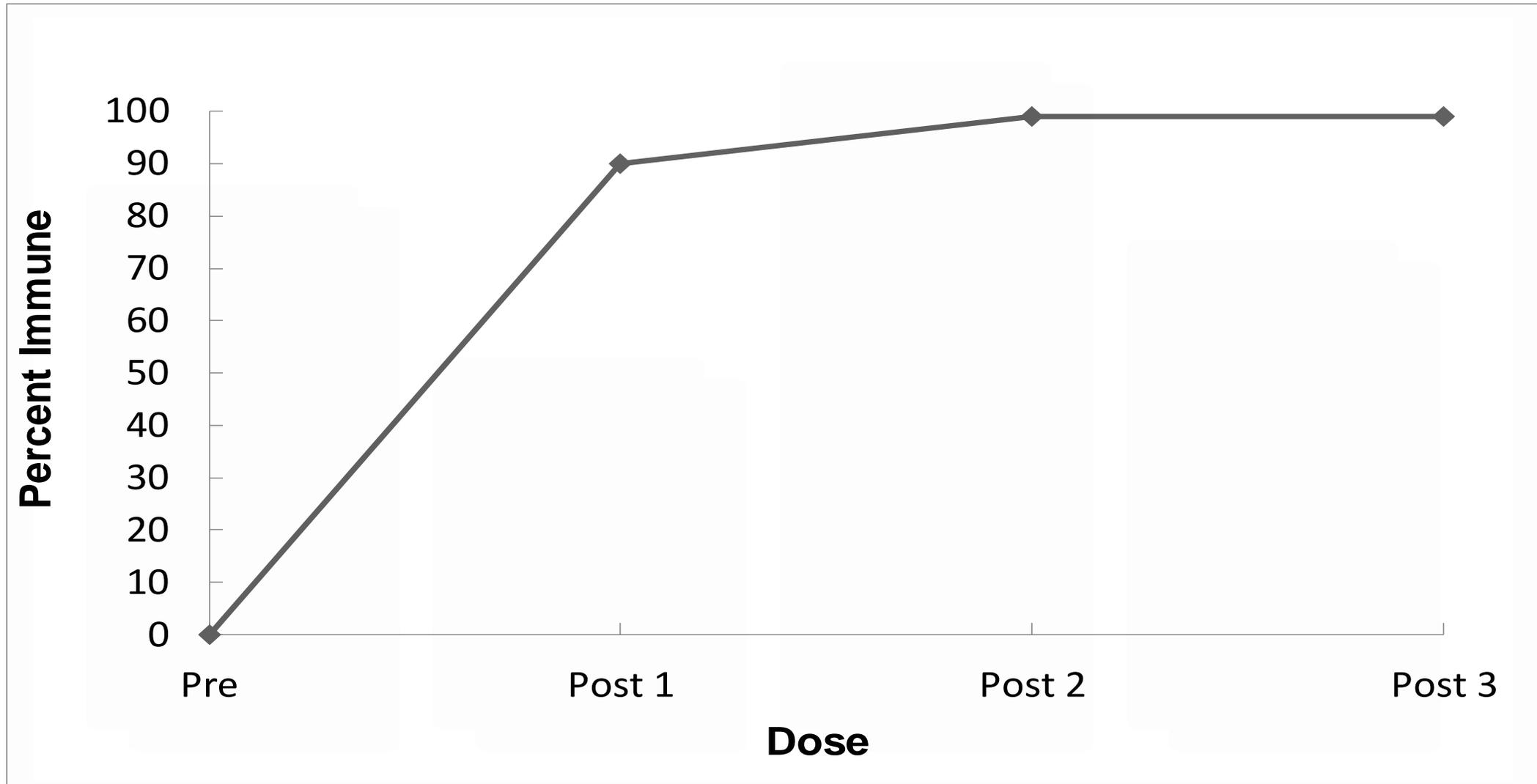
- Attenuated (weakened) form of the "wild" virus or bacterium
- Must replicate to produce an immune response
- Immune response virtually identical to natural infection
- Usually produce immunity with 1 dose*

*Except those administered orally

Individual Response to Live Vaccine

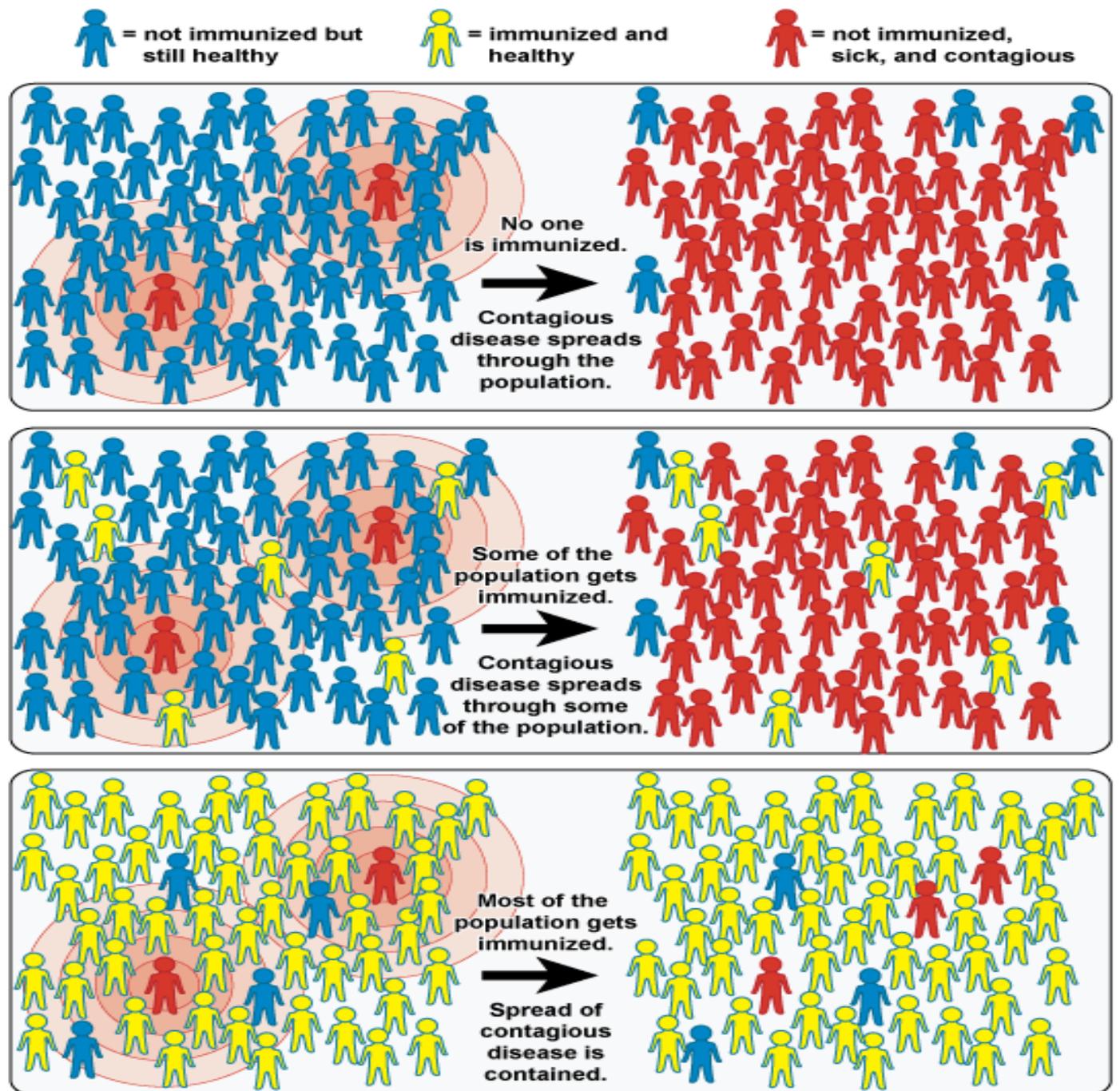


Population Response to Live Vaccine



Herd Immunity/ Community Immunity

- When a significant portion of the population is immune and provides protection for individuals who are not immune



Live, Attenuated Vaccines

- Severe reactions possible
- Interference from circulating antibody
- Fragile – must be stored and handled carefully

Live, Attenuated Vaccines

- Viral

MMR, varicella, zoster vaccine live (ZVL), yellow fever, rotavirus, LAIV (intranasal influenza), smallpox (vaccinia), oral adenovirus,* oral polio,** Ebola vaccine

- Bacterial

BCG,*** oral typhoid, oral cholera

*Live, but not attenuated

**Not used in the United States

***Not used in the United States for routine TB protection

Inactivated Vaccines

- Whole
- Fractional
 - Subunit derived from inactivation
 - Subunit made with genetic technology
 - Toxoids
 - Polysaccharide-based
 - Pure
 - Conjugate

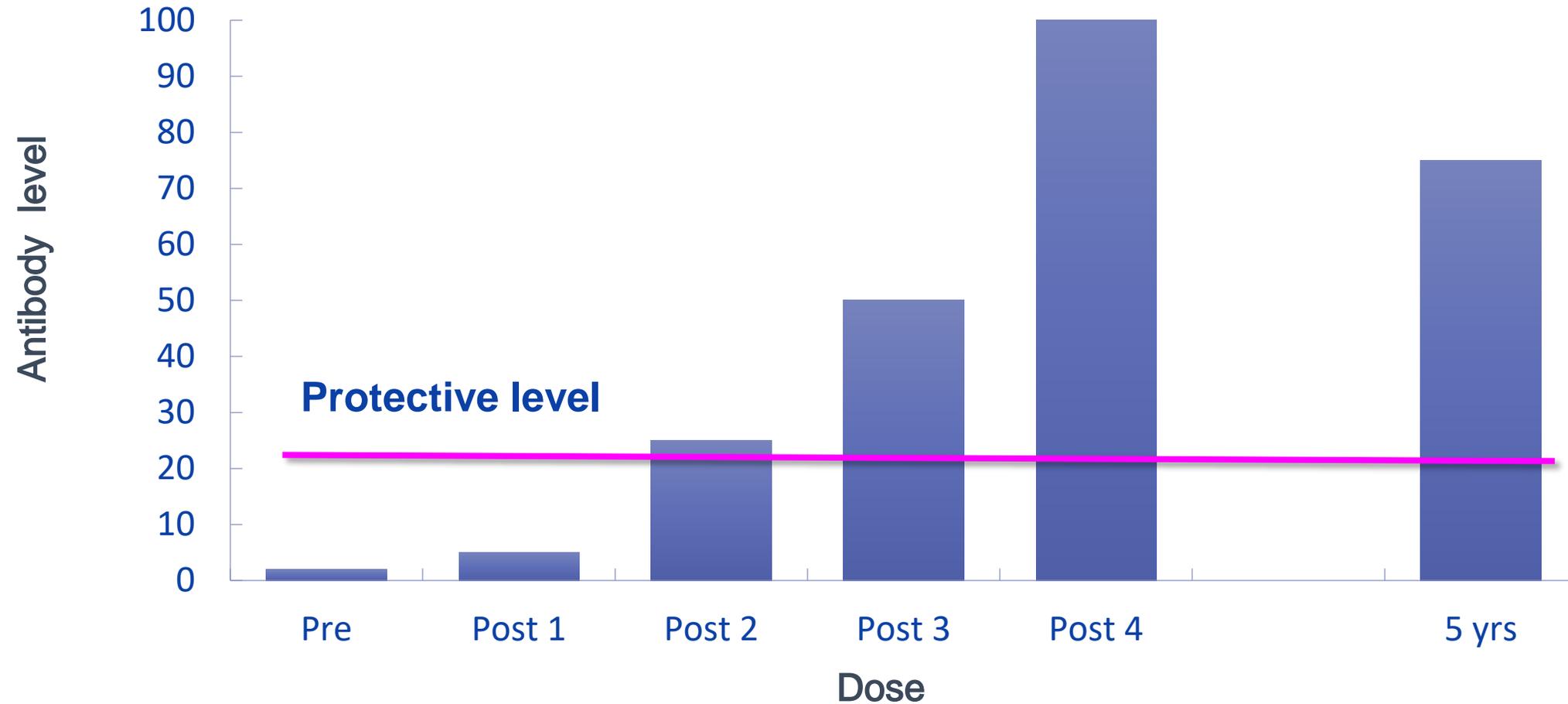
Inactivated Vaccine Video



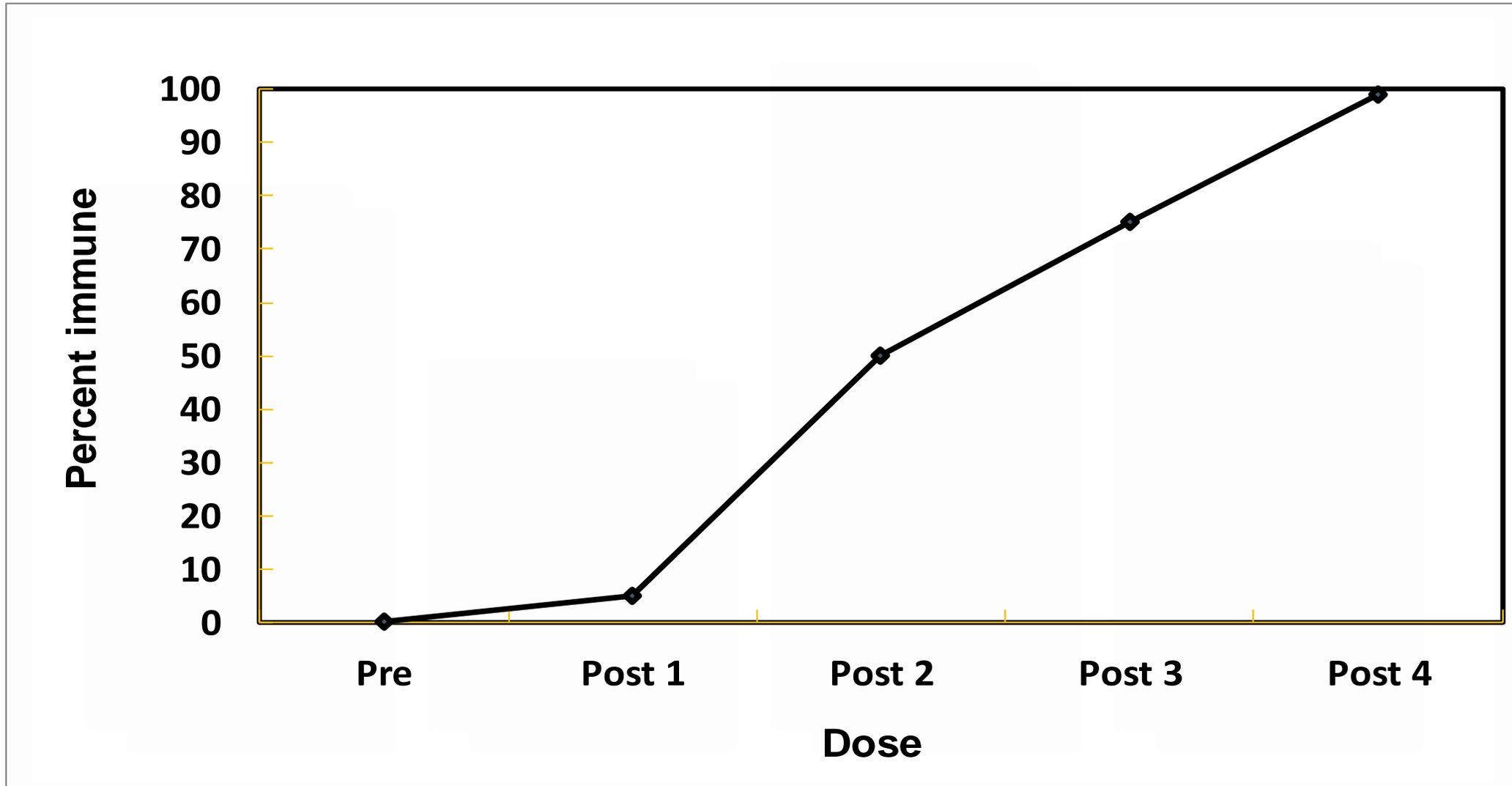
Inactivated Vaccines

- Cannot replicate
- Less affected by circulating antibody than live vaccines
 - Example: HepB vaccine and HBIG for perinatal hepatitis B PEP
- Always require multiple doses
- Immune response mostly humoral
- Antibody titer diminishes with time
- May require periodic supplemental doses

Individual Response to Inactivated Vaccine



Population Response to Inactivated Vaccine



Inactivated Vaccines

- Whole
 - Viral
 - Polio, hepatitis A, rabies, and influenza*
 - Bacterial
 - Pertussis,* typhoid,* cholera,* plague*

Inactivated Vaccines

- Fractional
 - Subunit
 - Derived from inactivation (influenza, acellular pertussis, anthrax, Japanese encephalitis)
 - Generated with genetic technology (hepatitis B, human papillomavirus, serogroup B meningococcal)
 - Polysaccharide vaccines
 - Toxoid
 - Diphtheria, tetanus

Knowledge Check

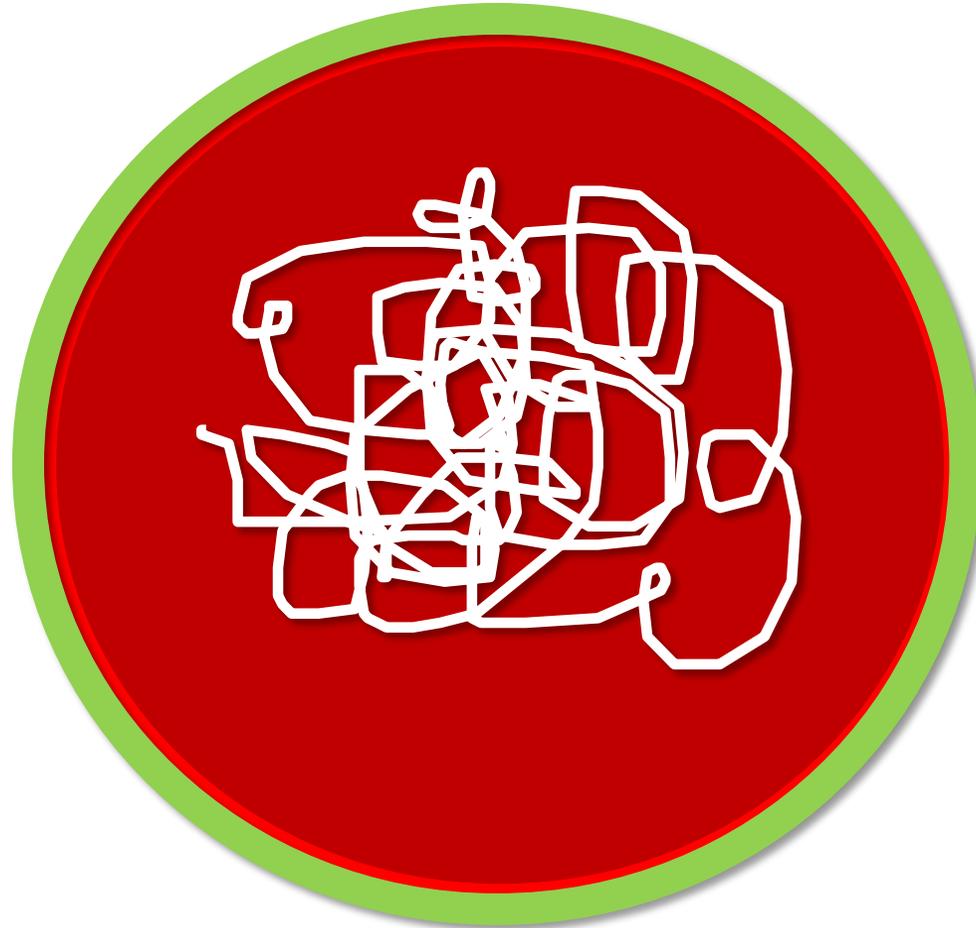
- Which type of vaccine must replicate to generate an immune response?
 - A. Live, attenuated vaccine
 - B. Inactivated vaccine



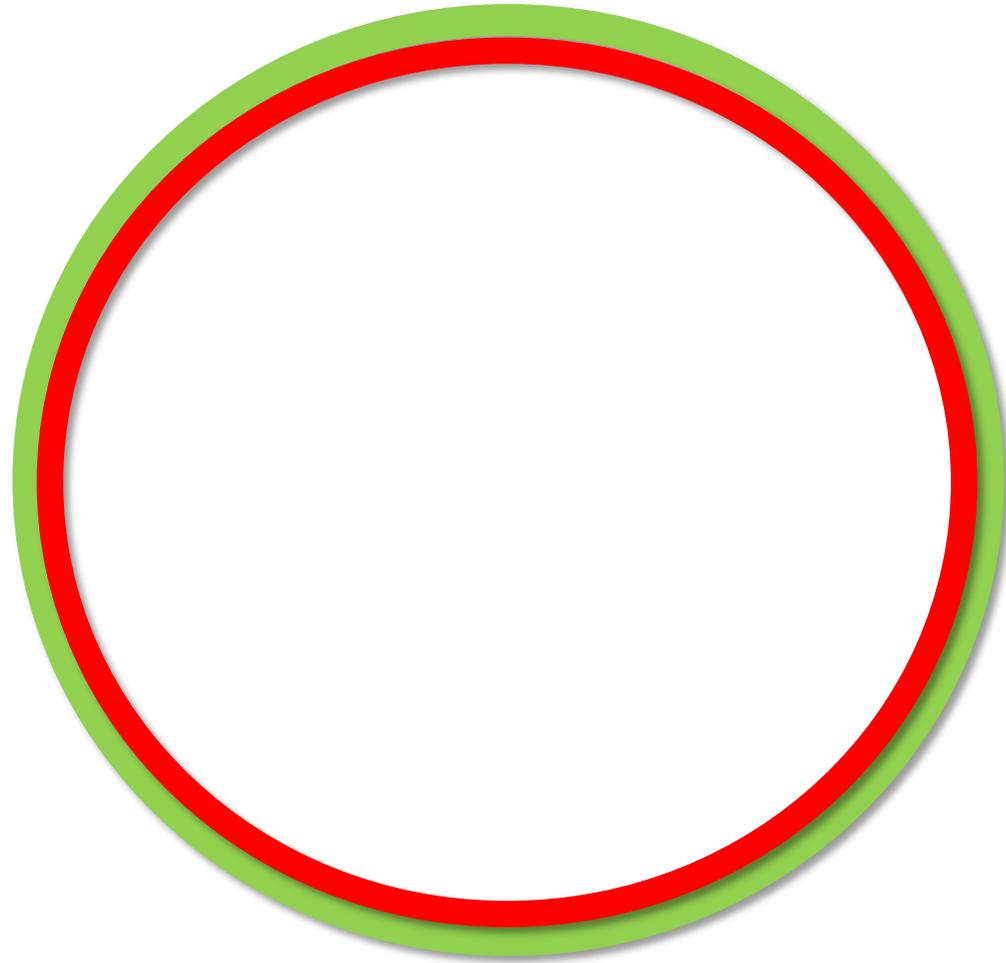
Answer

- Live, attenuated vaccine

Capsular Polysaccharide



Capsular Polysaccharide



Pure Polysaccharide Vaccines

- Immune response typically T-cell-independent
- Not consistently immunogenic in children younger than 2 years of age
- No booster response
- Antibody with less functional activity (IgM rather than IgG)
- Immunogenicity improved by conjugation

Polysaccharide Vaccines

- Pure polysaccharide
 - Pneumococcal (PPSV23)
 - *Salmonella* Typhi (Vi)
- Conjugate polysaccharide
 - *Haemophilus influenzae* type b (Hib)
 - Pneumococcal (PCV13)
 - Meningococcal

Genetically Engineered Vaccines

- Several genetically engineered vaccines are currently available in the United States
 - Hepatitis B
 - HPV
 - Influenza (Flublok brand)
 - Meningococcal B
 - Live typhoid vaccine
 - LAIV
 - RV5 (RotaTeq brand)
 - Ebola vaccine

Immunization Schedules

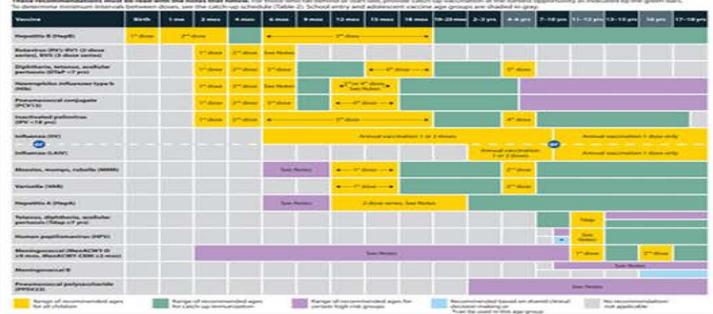
Immunization Schedules



For Health Care Providers

Child and Adolescent Immunization Schedule (birth through 18 years)

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2020



Adult Immunization Schedule (19 years and older)

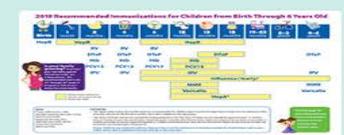
Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2020

Vaccine	19–24 years	25–49 years	50–64 years	65 years
Influenza inactivated (IIV) or influenza recombinant (IRIV)		1 dose annually		
Influenza live, attenuated (LIV)		1 dose annually		
Tetanus, diphtheria, pertussis (Tdap or Td)		1 dose Tdap, then Td or Tdap booster every 10 years		
Mumps, measles, rubella (MMR)		1 or 2 doses depending on indication (see below)		
Varicella (VAR)		2 doses (if born in 1980 or later)		2 doses
Zoster recombinant (RZV) preferred				2 doses
Zoster live (ZVL)				1 dose
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or completion	27 through 45 years		
Pneumococcal conjugate (PCV13)			1 dose	65 years and older
Pneumococcal polysaccharide (PPSV23)			1 or 2 doses depending on indication	1 dose
Hepatitis A (HepA)		2 or 3 doses depending on vaccine		
Hepatitis B (HepB)		2 or 3 doses depending on vaccine		
Meningococcal A, C, W, Y (MenACWY)		1 or 2 doses depending on indication, see notes for booster recommendations		
Meningococcal B (MenB)		1 or 3 doses depending on vaccine and indication, see notes for booster recommendations		
Neisseria meningitidis type 4 (Men4)		19 through 23 years		
Neisseria meningitidis type 9 (Men9)			1 or 3 doses depending on indication	

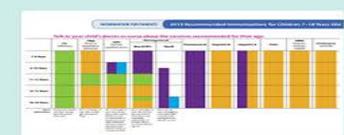
Resources for Health Care Providers



For Parents & Adults



[Parent-Friendly Schedule for Infants and Children \(birth-6 years\)](#)



[Parent-Friendly Schedule for Preteens and Teens \(7-18 years\)](#)



[Resources for Parents](#)



[Resources for Adults](#)

Related Pages

- [Vaccines and Immunizations](#)
- [Advisory Committee on Immunization Practices \(ACIP\)](#)
- [Vaccine Information Statements](#)

 Download "CDC Vaccine Schedules" free for iOS and Android devices.

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2020

These recommendations must be read with the notes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars. To determine minimum intervals between doses, see the catch-up schedule (Table 2). School entry and adolescent vaccine age groups are shaded in gray.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16 yrs	17–18 yrs
Hepatitis B (HepB)	1 st dose	2 nd dose		← 3 rd dose →					[Green bar]								
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1 st dose	2 nd dose	See Notes												
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1 st dose	2 nd dose	3 rd dose	← 4 th dose →		5 th dose		[Green bar]							
<i>Haemophilus influenzae</i> type b (Hib)			1 st dose	2 nd dose	See Notes		← 3 rd or 4 th dose, See Notes →		[Green bar]								
Pneumococcal conjugate (PCV13)			1 st dose	2 nd dose	3 rd dose	← 4 th dose →		[Green bar]									
Inactivated poliovirus (IPV <18 yrs)			1 st dose	2 nd dose	← 3 rd dose →					4 th dose		[Green bar]					
Influenza (IIV)	Annual vaccination 1 or 2 doses										Annual vaccination 1 dose only						
OR																	
Influenza (LAIV)	Annual vaccination 1 or 2 doses										Annual vaccination 1 dose only						
Measles, mumps, rubella (MMR)				See Notes		← 1 st dose →		2 nd dose		[Green bar]							
Varicella (VAR)				See Notes		← 1 st dose →		2 nd dose		[Green bar]							
Hepatitis A (HepA)				See Notes		2-dose series, See Notes					[Green bar]						
Tetanus, diphtheria, acellular pertussis (Tdap ≥7 yrs)														Tdap	[Green bar]		
Human papillomavirus (HPV)													*	See Notes	[Green bar]		
Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos)		See Notes												1 st dose	2 nd dose	[Green bar]	
Meningococcal B														See Notes			
Pneumococcal polysaccharide (PPSV23)												See Notes					

[Yellow box] Range of recommended ages for all children

[Green box] Range of recommended ages for catch-up immunization

[Purple box] Range of recommended ages for certain high-risk groups

[Light blue box] Recommended based on shared clinical decision-making or *can be used in this age group

[Gray box] No recommendation/not applicable

Table 2**Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who are More than 1 month Behind, United States, 2020**

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. **Always use this table in conjunction with Table 1 and the notes that follow.**

Children age 4 months through 6 years					
Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Hepatitis B	Birth	4 weeks	8 weeks <i>and</i> at least 16 weeks after first dose. Minimum age for the final dose is 24 weeks.		
Rotavirus	6 weeks Maximum age for first dose is 14 weeks, 6 days	4 weeks	4 weeks Maximum age for final dose is 8 months, 0 days.		
Diphtheria, tetanus, and acellular pertussis	6 weeks	4 weeks	4 weeks	6 months	6 months
<i>Haemophilus influenzae</i> type b	6 weeks	No further doses needed if first dose was administered at age 15 months or older. 4 weeks if first dose was administered before the 1 st birthday. 8 weeks (as final dose) if first dose was administered at age 12 through 14 months.	No further doses needed if previous dose was administered at age 15 months or older. 4 weeks if current age is younger than 12 months <i>and</i> first dose was administered at younger than age 7 months <i>and</i> at least 1 previous dose was PRP-T (ActHib, Pentacel, Hiberix) or unknown. 8 weeks and age 12 through 59 months (as final dose) if current age is younger than 12 months <i>and</i> first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months <i>and</i> first dose was administered before the 1 st birthday <i>and</i> second dose administered at younger than 15 months; OR if both doses were PRP-OMP (PedvaxHIB, Comvax) <i>and</i> were administered before the 1 st birthday.	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before the 1 st birthday.	
Pneumococcal conjugate	6 weeks	No further doses needed for healthy children if first dose was administered at age 24 months or older. 4 weeks if first dose was administered before the 1 st birthday. 8 weeks (as final dose for healthy children) if first dose was administered at the 1 st birthday or after.	No further doses needed for healthy children if previous dose administered at age 24 months or older. 4 weeks if current age is younger than 12 months and previous dose was administered at <7 months old. 8 weeks (as final dose for healthy children) if previous dose was administered between 7–11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was given before age 12 months.	8 weeks (as final dose) This dose only necessary for children age 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.	
Inactivated poliovirus	6 weeks	4 weeks	4 weeks if current age is < 4 years. 6 months (as final dose) if current age is 4 years or older.	6 months (minimum age 4 years for final dose).	
Measles, mumps, rubella	12 months	4 weeks			
Varicella	12 months	3 months			
Hepatitis A	12 months	6 months			
Meningococcal ACWY	2 months MenACWY-CRM 9 months MenACWY-D	8 weeks	See Notes	See Notes	
Children and adolescents age 7 through 18 years					
Meningococcal ACWY	Not applicable (N/A)	8 weeks			
Tetanus, diphtheria; tetanus, diphtheria, and acellular pertussis	7 years	4 weeks	4 weeks if first dose of DTaP/DT was administered before the 1 st birthday. 6 months (as final dose) if first dose of DTaP/DT or Tdap/Td was administered at or after the 1 st birthday.	6 months if first dose of DTaP/DT was administered before the 1 st birthday.	
Human papillomavirus	9 years	Routine dosing intervals are recommended.			
Hepatitis A	N/A	6 months			
Hepatitis B	N/A	4 weeks	8 weeks <i>and</i> at least 16 weeks after first dose.		
Inactivated poliovirus	N/A	4 weeks	6 months A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.	
Measles, mumps, rubella	N/A	4 weeks			
Varicella	N/A	3 months if younger than age 13 years. 4 weeks if age 13 years or older.			

Table 3

Recommended Child and Adolescent Immunization Schedule by Medical Indication, United States, 2020

Always use this table in conjunction with Table 1 and the notes that follow.

VACCINE	INDICATION									
	Pregnancy	Immunocompromised status (excluding HIV infection)	HIV infection CD4+ count ¹		Kidney failure, end-stage renal disease, or on hemodialysis	Heart disease or chronic lung disease	CSF leaks or cochlear implants	Asplenia or persistent complement deficiencies	Chronic liver disease	Diabetes
			<15% and total CD4 cell count of <200/mm ³	≥15% and total CD4 cell count of ≥200/mm ³						
Hepatitis B	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Rotavirus	Grey	Orange SCID ²	Orange	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Diphtheria, tetanus, & acellular pertussis (DTaP)	Grey	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
<i>Haemophilus influenzae</i> type b	Grey	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Pneumococcal conjugate	Grey	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Inactivated poliovirus	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Influenza (IIV) OR Influenza (LAIV)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Influenza (LAIV)	Red	Red	Red	Red	Orange Asthma, wheezing: 2–4yrs ³	Red	Red	Red	Orange	Orange
Measles, mumps, rubella	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Varicella	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Hepatitis A	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Tetanus, diphtheria, & acellular pertussis (Tdap)	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Human papillomavirus	Pink	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Meningococcal ACWY	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Meningococcal B	Orange	Purple	Purple	Purple	Purple	Purple	Purple	Yellow	Purple	Purple
Pneumococcal polysaccharide	Purple	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Yellow Vaccination according to the routine schedule recommended
Purple Recommended for persons with an additional risk factor for which the vaccine would be indicated
Yellow Vaccination is recommended, and additional doses may be necessary based on medical condition. See Notes.
Red Not recommended/contraindicated—vaccine should not be administered
Orange Precaution—vaccine might be indicated if benefit of protection outweighs risk of adverse reaction
Pink Delay vaccination until after pregnancy if vaccine indicated
Grey No recommendation/not applicable

1 For additional information regarding HIV laboratory parameters and use of live vaccines, see the General Best Practice Guidelines for Immunization, "Altered Immunocompetence," at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html and Table 4-1 (footnote D) at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

2 Severe Combined Immunodeficiency

3 LAIV contraindicated for children 2–4 years of age with asthma or wheezing during the preceding 12 months.

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2020

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or Influenza recombinant (RIV) or Influenza live, attenuated (LAIV)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV) (preferred) or Zoster live (ZVL)			2 doses or 1 dose	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal conjugate (PCV13)	1 dose			65 years and older
Pneumococcal polysaccharide (PPSV23)	1 or 2 doses depending on indication			1 dose
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
Hepatitis B (HepB)	2 or 3 doses depending on vaccine			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
<i>Haemophilus influenzae</i> type b (Hib)	1 or 3 doses depending on indication			

Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection

Recommended vaccination for adults with an additional risk factor or another indication

Recommended vaccination based on shared clinical decision-making

No recommendation/ Not applicable

Table 2

Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2020

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count		Asplenia, complement deficiencies	End-stage renal disease; or on hemodialysis	Heart or lung disease, alcoholism ¹	Chronic liver disease	Diabetes	Health care personnel ²	Men who have sex with men
			<200	≥200							
IIV or RIV or LAIV	1 dose annually										
	NOT RECOMMENDED					PRECAUTION				1 dose annually or	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	NOT RECOMMENDED			1 or 2 doses depending on indication							
VAR	NOT RECOMMENDED			2 doses							
RZV (preferred) or ZVL	DELAY				2 doses at age ≥50 years or						
	NOT RECOMMENDED			1 dose at age ≥60 years							
HPV	DELAY	3 doses through age 26 years			2 or 3 doses through age 26 years						
PCV13		1 dose									
PPSV23		1, 2, or 3 doses depending on age and indication									
HepA					2 or 3 doses depending on vaccine						
HepB						2 or 3 doses depending on vaccine					
MenACWY	1 or 2 doses depending on indication, see notes for booster recommendations										
MenB	PRECAUTION	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations									
Hib		3 doses HSCT ³ recipients only			1 dose						

 Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection
 No recommendation/ Not applicable
 Recommended vaccination for adults with an additional risk factor or another indication
 Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
 Delay vaccination until after pregnancy if vaccine is indicated
 Not recommended/ contraindicated—vaccine should not be administered

1. Precaution for LAIV does not apply to alcoholism. 2. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. 3. Hematopoietic stem cell transplant.

4

Resources

Resources

COURSE RESOURCES

Epidemiology and Prevention of Vaccine-Preventable Diseases

- ▶ Epidemiology and Prevention of Vaccine-Preventable Diseases (Pink Book) Supplement: www.cdc.gov/vaccines/pubs/pinkbook/supplement.html

Overall Resources

- ▶ Current childhood and adult immunization schedules: www.cdc.gov/vaccines/schedules/index.html
- ▶ CDC Vaccine Schedules App for Health Care Providers: www.cdc.gov/vaccines/schedules/hcp/schedule-app.html
- ▶ Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- ▶ CDC General Best Practice Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- ▶ CDC Continuing Education Information: www.cdc.gov/vaccines/ed/ce-credit-how-to.html
- ▶ Health Care Personnel Vaccination Recommendations: www.immunize.org/catg.d/p2017.pdf
- ▶ Pink Book Webinar Series: www.cdc.gov/vaccines/ed/webinar-epv/index.html
- ▶ Vaccines Licensed for Use in the United States Package Inserts: www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm
- ▶ You Call the Shots: www.cdc.gov/vaccines/ed/youcalltheshots.html

Course Intro and Objectives

- ▶ What is the Advisory Committee on Immunization Practices (ACIP)?: www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-acip-color-office.pdf
- ▶ CDC Immunization Resources for You and Your Patients: www.cdc.gov/vaccines/hcp/admin/downloads/Resource-Booklet.pdf
- ▶ Parents' Guide to Childhood Immunizations: www.cdc.gov/vaccines/parents/tools/parents-guide/index.html
- ▶ Order Information for Free CDC Immunization Materials for Providers and Patients: www.cdc.gov/pubs/CDCInfoOnDemand.aspx

Principles of Vaccination

- ▶ Immune System Research: www.niaid.nih.gov/research/immune-system-research
- ▶ What is the Immune System?: www.vaccines.gov/basics/work/prevention
- ▶ Understanding How Vaccines Work: www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-understand-color-office.pdf
- ▶ Vaccines Work: www.vaccines.gov/basics/work/index.html
- ▶ Vaccine Basics: How Vaccines Work: www.vaccineinformation.org/how-vaccines-work/
- ▶ The History of Vaccines: How Vaccines Work: www.historyofvaccines.org/content/how-vaccines-work

General Best Practice Guidelines

- ▶ Ask the Experts-Scheduling Vaccines FAQs: www.immunize.org/askexperts/scheduling-vaccines.asp
- ▶ Ask the Experts-Combination Vaccines FAQs: www.immunize.org/askexperts/experts_combo.asp
- ▶ Ask the Experts-Precautions and Contraindications FAQs: www.immunize.org/askexperts/precautions-contraindications.asp
- ▶ Foreign Language Vaccine-Preventable Disease Terms: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/foreign-products-tables.pdf
- ▶ Guide to Contraindications and Precautions to Commonly Used Vaccines: www.immunize.org/catg.d/p3072a.pdf
- ▶ Guidelines for Vaccinating Pregnant Women: www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html
- ▶ IDSA 2013 Clinical Practice Guideline for Vaccination of the Immunocompromised Host: www.idsociety.org/Guidelines/Patient_Care/IDSA_Practice_Guidelines/Vaccination_of_the_Immunocompromised_Host/
- ▶ Interval Between Antibody-Containing Products and Measles- and Varicella-Containing Vaccines: www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/mmr_ig.pdf



Frequently Asked Questions

Continuing Education Information

- CE credit, go to: www.cdc.gov/GetCE
- Search course number: WD4344-070120
- CE credit expires: July 1, 2022
- CE instructions are available on the EpiVac Pink Book Web-on-Demand Series web page
- Questions and additional help with the online CE system, e-mail CE@cdc.gov

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Not sure how to get started?
Follow these [9 Simple Steps](#) to earn continuing education for the courses you have taken or conferences you have attended!



Welcome to TCEO

Training and Continuing Education Online (TCEO) is a system that provides access to CDC educational activities for continuing education (CE). Use TCEO to search for CE opportunities, complete course

E-mail Your Immunization Questions to Us

NIPINFO@cdc.gov

Write “Web-on-Demand–POV” in
the subject line



EpiVac Pink Book Web-on-Demand Resources

- Comprehensive list of resources for ALL sessions
- Located on the web page for this web-on-demand session at www.cdc.gov/vaccines/ed/webinar-epv/index.html
- Additional materials located on this webpage include:
 - Principles of Vaccination slide set
 - Web-on-demand questions and answers
 - Transcript of this session
 - Continuing education instructions

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- ▶ Vaccines Work: www.vaccines.gov/basics/work/index.html
- ▶ Vaccine Basics: How Vaccines Work: www.vaccineinformation.org/how-vaccines-work/
- ▶ The History of Vaccines: How Vaccines Work: www.historyofvaccines.org/content/how-vaccines-work

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Thank You From Atlanta!

