Vaccine Basics & Understanding the ACIP Schedule

Training on Immunization Practice Strategies
(T.I.P.S)

June 24, 2021

tapi
whyimmunize.org

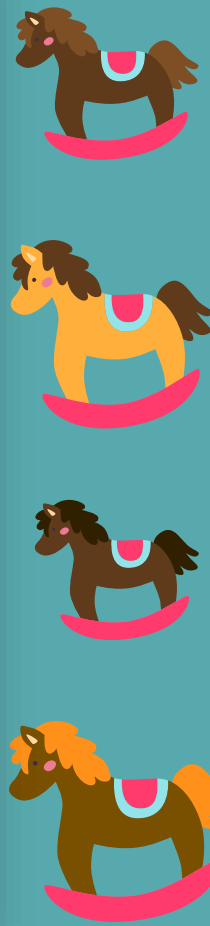
Herd Immunity or Community Immunity

A situation in which a sufficient proportion of a population is immune to an infectious disease (through vaccination and/or prior illness) to make its spread from person to person unlikely. Even individuals not vaccinated (such as newborns and those with chronic illnesses) are offered some protection because the disease has little opportunity to spread within the community.

- CDC Vaccine Glossary

Herd Immunity Thresholds of vaccine-preventable diseases[6]

Disease	Transmission	Basic reproduction number	Herd Immunity Threshold
Measles	Airborne	12–18	92–95%
Pertussis	Airborne droplet	12–17	92–94%
Diphtheria	Saliva	6–7	83–86%
Rubella	Airborne droplet	6–7	83–86%
Smallpox	Airborne droplet	5–7	80–86%
Polio	Fecal-oral route	5–7	80–86%
Mumps	Airborne droplet	4–7	75–86%
SARS	Airborne droplet	2–5	50–80%
Ebola	Bodily fluids	1.5–2.5	33–60%
Influenza	Airborne droplet	1.5–1.8	33–44%



SUMMARY

- We have room to improve in Arizona
- ALL populations are equally important to immunize!

Use the **chat feature** to tell us your key takeaways!

What do you want to make sure your friends remember?

YOU

are the protectors
of our community's
immunity.

VACCINE PREVENTABLE DISEASES

- Measles (Rubeola)
- German Measles (Rubella)
- Whooping cough (Pertussis)
- Diphtheria
- Tetanus
- Hepatitis A
- Shingles (Zoster)
- Human papillomavirus (HPV)
- Hepatitis B
- Haemophilus influenza type B (Hib)
- Pneumoccocal
- Rotavirus
- Chickenpox (Varicella)
- Influenza (Flu)
- COVID-19
- Polio
- Mumps

PRIZE!

$50 GIFT CARD!

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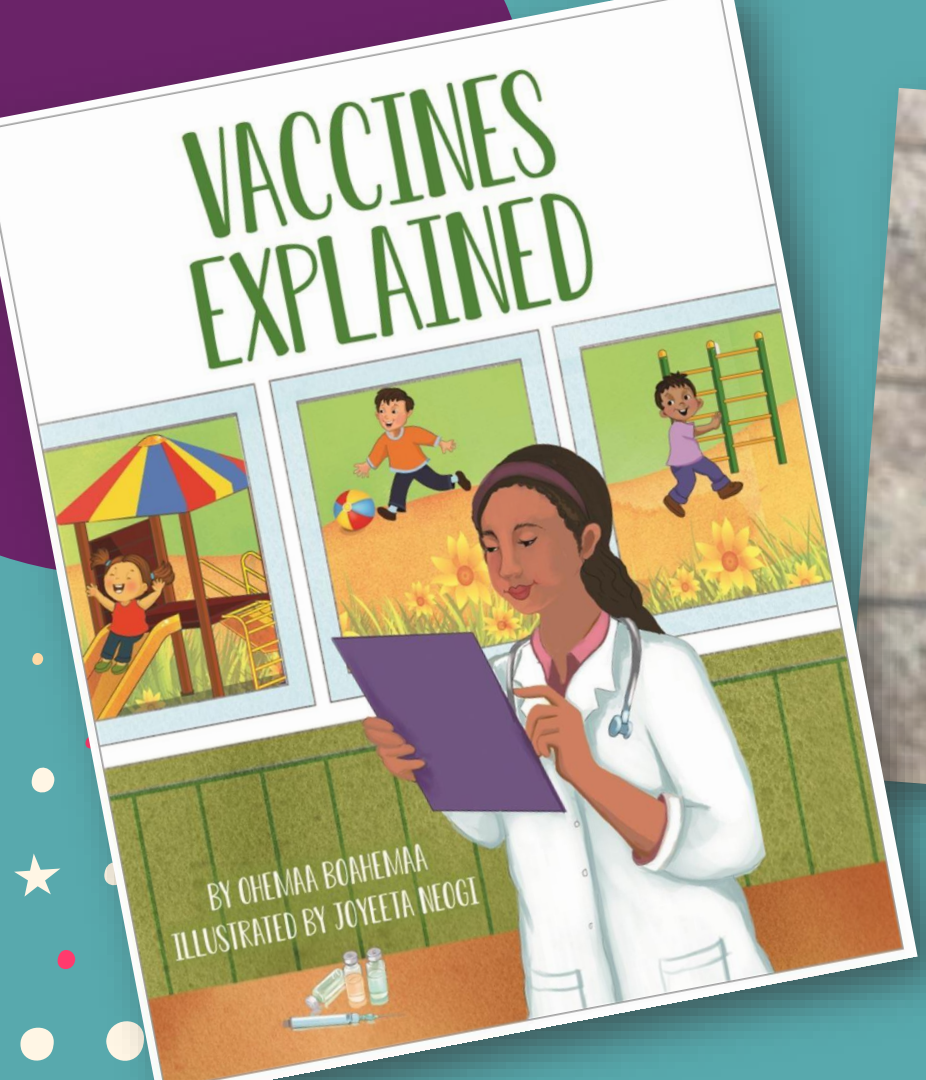

VACCINES EXPLAINED
BY OHEMAA BOAHEMAA
ILLUSTRATED BY JOYEETA NEOGI


EDUCATED
VACCINATED
Vaccines protect
you, me and
the community

VACCINE

BASICS

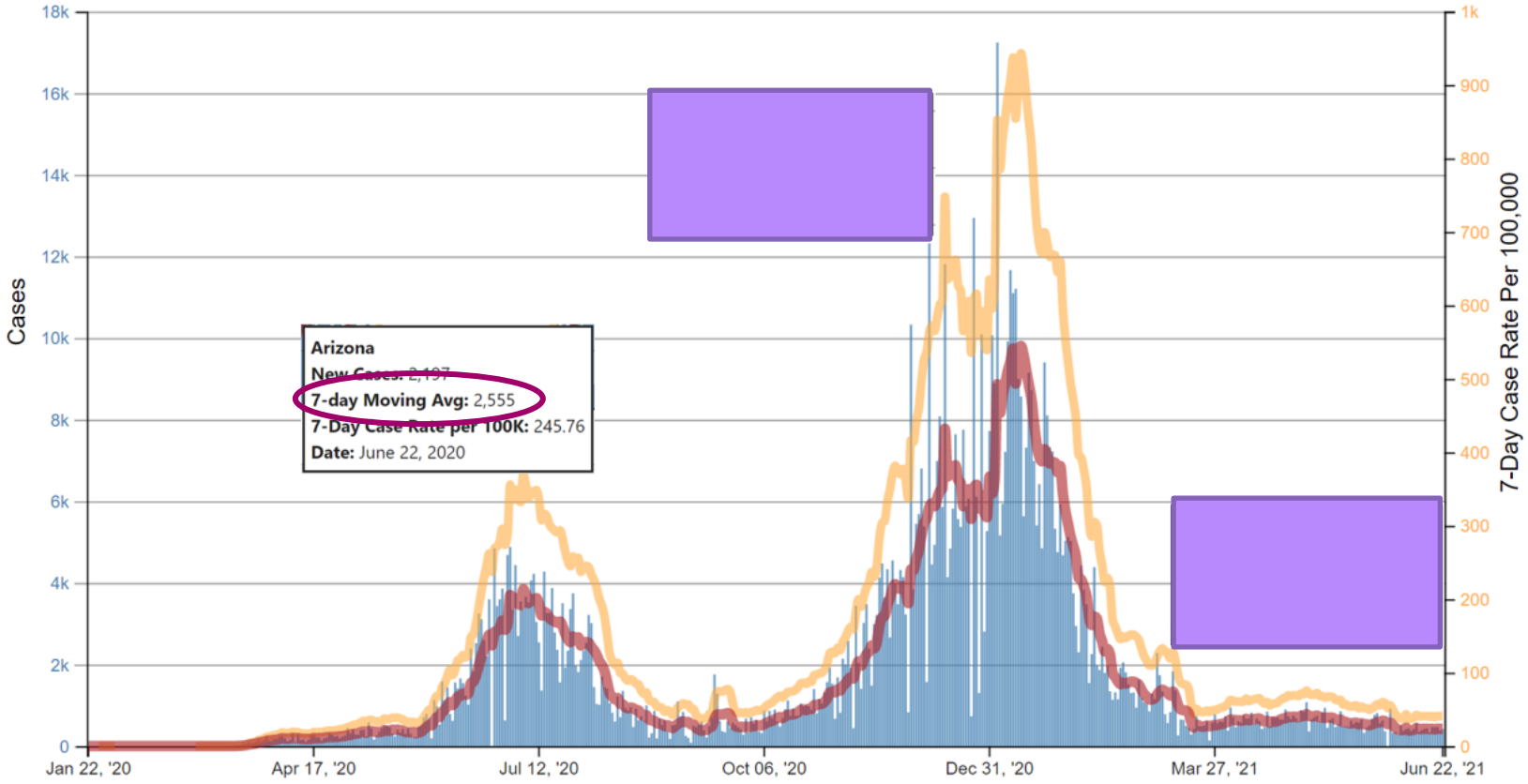
WHY immunize?

Prevent Disease

Establish Herd Immunity

Protect the Most Vulnerable

Trends in Daily COVID-19 Cases and 7-Day Cumulative Incidence Rate of COVID-19 Cases in Arizona Reported to CDC, per 100,000 population



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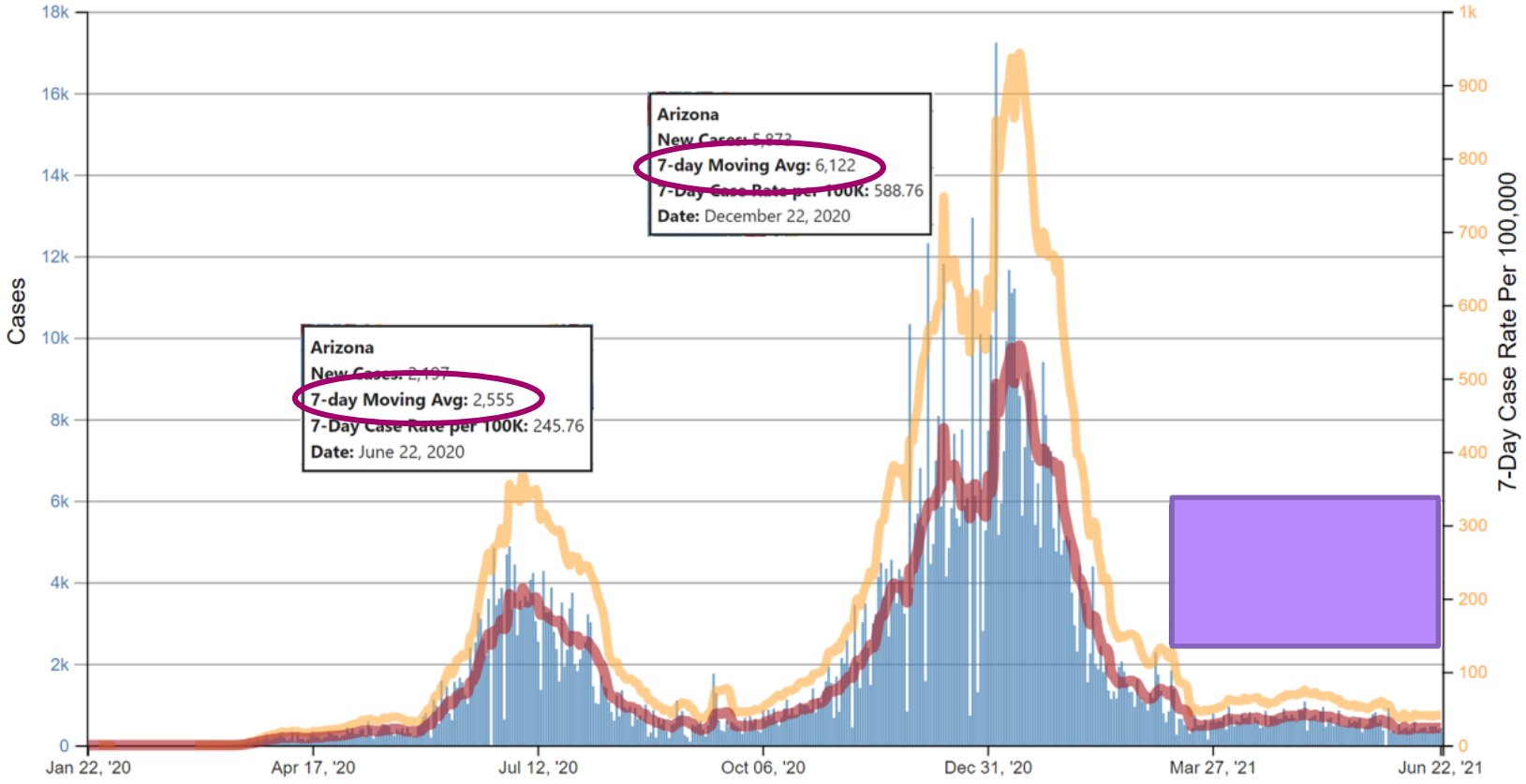

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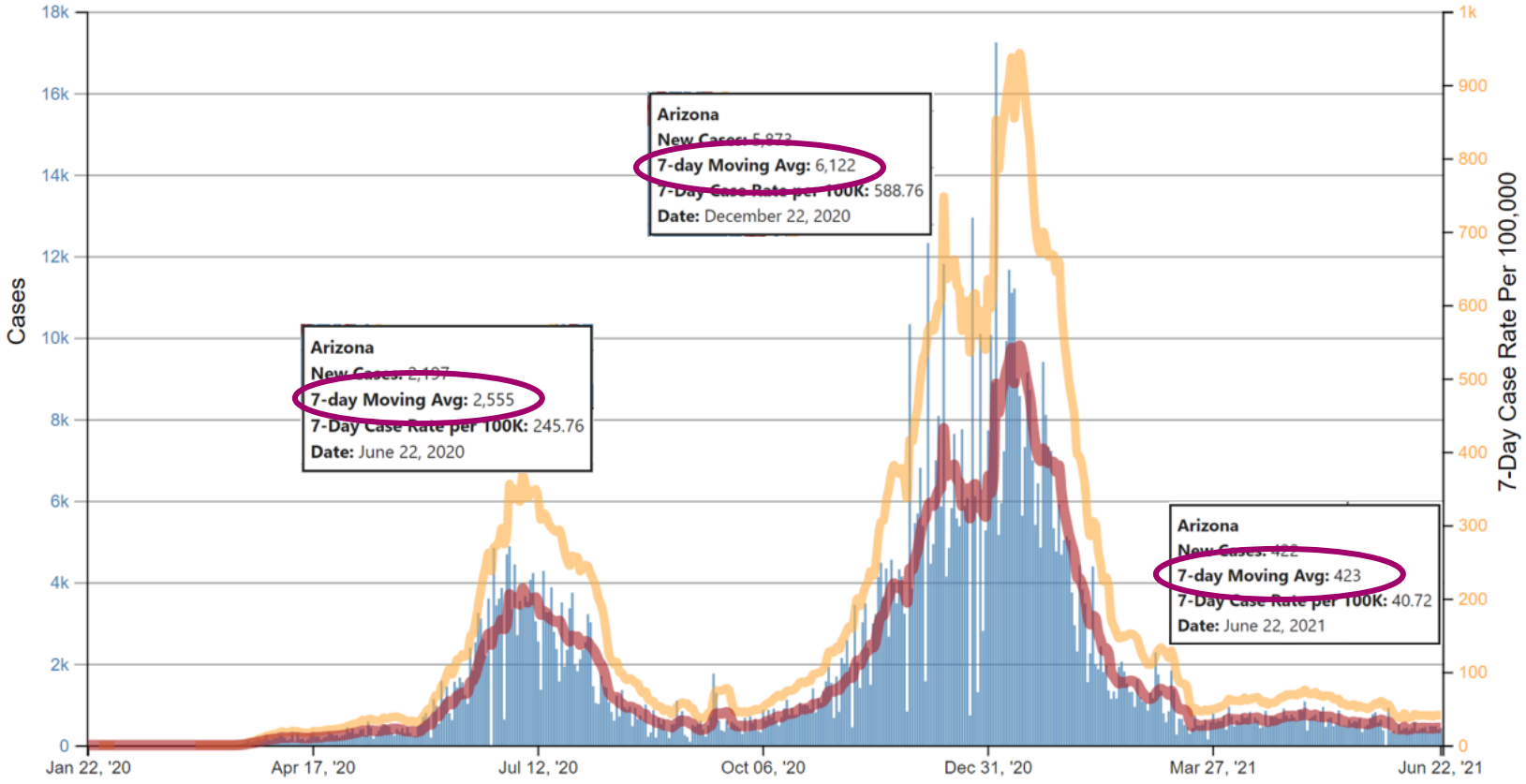

Types of Immunity

Herd

"A situation in which a sufficient proportion of the population (herd) is immune to an infectious disease (through vaccination &/or prior disease) to make its spread from person to person unlikely."

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Passive

- Mother to infant
- Blood products
- Immune globulin
- Temporary

Types of Immunity

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Passive

- Mother to infant
- Blood products
- Immune globulin
- Temporary

Active

- Natural disease
- Immunization
- Long-lasting

Vaccine Types

- Inactivated vaccines
- Live-attenuated vaccines
- Messenger RNA (mRNA) vaccines
- Subunit, recombinant, polysaccharide and conjugate vaccines
- Toxoid vaccines
- Viral vector vaccines

- Attenuated (weakened) form of the "wild" virus or bacterium
- Must replicate to be effective
- Immune response similar to natural infection
- Usually produce immunity with one dose*

*except those administered orally

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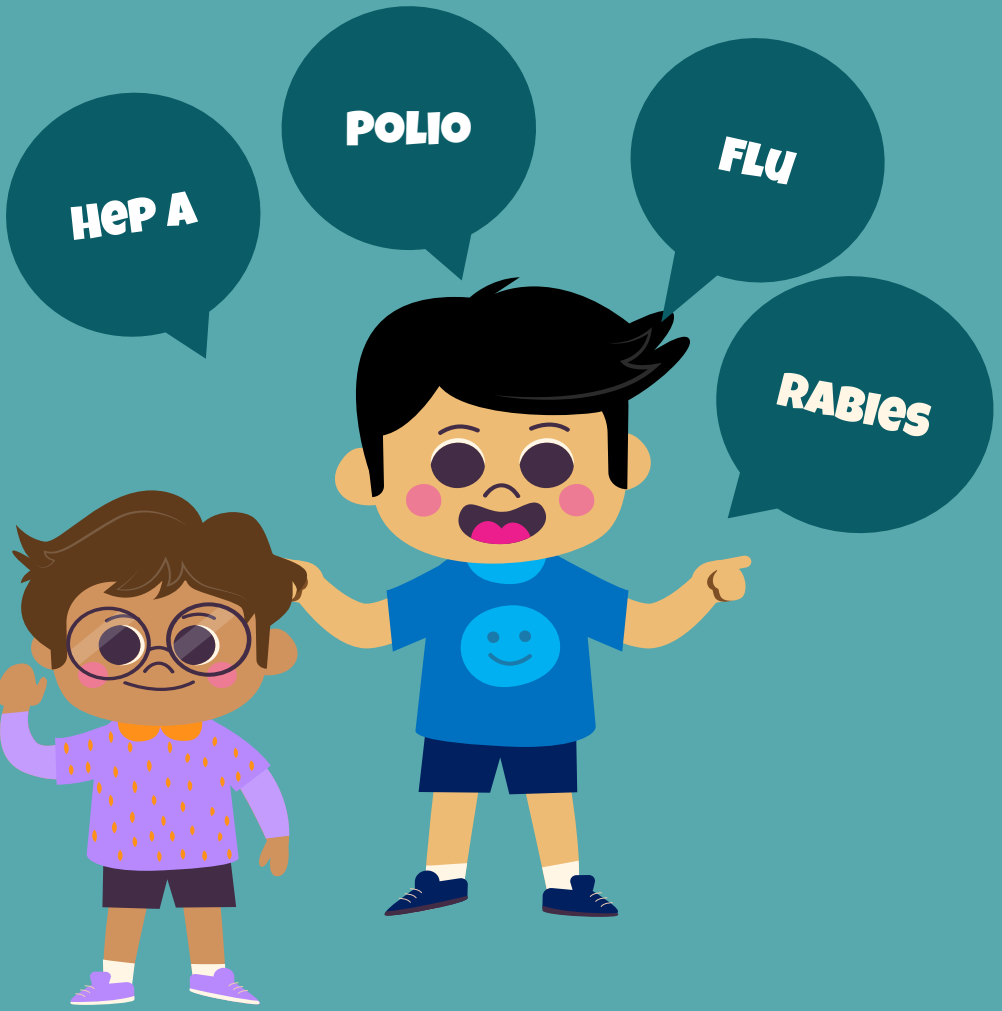
Inactivated

- Cannot replicate
- Different immune response (humoral)
- Unaffected by antibody in the blood
- Generally require 3-5 doses
- Antibody titer diminishes with time
- Adverse events mostly local with or without fever



INACTIVATED

- Cannot replicate
- Different immune response (humoral)
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- Generally require 3-5 doses
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Messenger RNA

Messenger RNA

Win a prize!

What kinds of questions are you getting about mRNA vaccines?

Subunit, Recombinant, Polysaccharide and Conjugate

- Hib
- Hepatitis B
- HPV
- Whooping cough
- Pneumococcal disease
- Meningococcal disease
- Shingles

More Vaccine Types

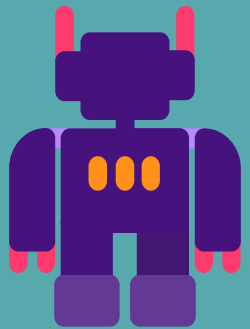
Viral Vector

COVID-19

Toxoid

Diptheria

Tetanus



General Rule

1

The more similar a vaccine is to the disease-causing form of the organism, the better the immune response to the vaccine

QUIZ

How many vaccines can be given at one time?

General Rule

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

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.

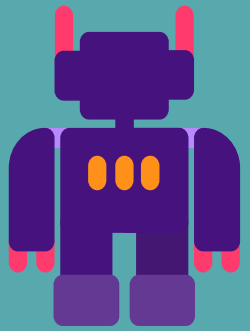
Contraindications & Precautions

Three permanent contraindications to vaccines:

- Severe allergic reaction to a vaccine component or following a prior dose
- Encephalopathy (brain swelling) without known cause within seven days of administration of a previous dose of DTP, DTaP or Tdap vaccine
- Severe combined immunodeficiency (rotavirus vaccine)

Two temporary contraindications to *live* vaccines

- Pregnancy
- Immunosuppression



ACIP

Advisory Committee on Immunization Practices

- Panel of 15 experts
- Develops written recommendations
- Establishes schedule
- Meets 4 times/ year ***(well, not in "COVID times")***
- Does not recommend alternate schedules

Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger

UNITED STATES 2021

Vaccines in the Child and Adolescent Immunization Schedule*

Vaccines	Abbreviations	Trade names
Diphtheria, tetanus, and acellular pertussis vaccine	DTaP	Daptacel® Infanrix®
Diphtheria, tetanus vaccine	DT	No trade name
Haemophilus influenzae type b vaccine	Hib (PRP-T)	ActHIB® Hiberix® PedvaxHIB®
	Hib (PRP-OMP)	Havrix® Vaqta®
Hepatitis A vaccine	HepA	Engerix-B® Recombivax HB®
Hepatitis B vaccine	HepB	Gardasil 9®
Human papillomavirus vaccine	HPV	Multiple
Influenza vaccine (inactivated)	IIV	FluMist® Quadrivalent
Influenza vaccine (live, attenuated)	LAIV4	
Measles, mumps, and rubella vaccine	MMR	
Meningococcal serogroup A, C, W, Y vaccine	MenACWY	
Meningococcal serogroup B vaccine	MenB	
Pneumococcal 13-valent conjugate vaccine	PCV13	
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	
Poliovirus vaccine	IPV	
Rotavirus vaccine	RV	
Tetanus, diphtheria vaccine	Td	
Tetanus and diphtheria vaccine	Tdap	
Varicella vaccine	VAR	

Combination vaccines

DTaP, hepatitis B, and inactivated poliovirus vaccine	DTaP-HepB-IPV Pediarix®
DTaP, inactivated poliovirus, and Hib vaccine	DTaP-IPV-Hib Pentacel®
DTaP and inactivated poliovirus vaccine	DTaP-IPV Kinrix® Quadracel®
DTaP, inactivated poliovirus, and hepatitis B vaccine	DTaP-IPV-HepB Vaxelis™

*Administer recommended vaccines if a child or adolescent has missed a dose. Use the minimum intervals between doses and minimum ages for administration. For those who fall behind or start late, see the catch-up schedule. To determine the minimum intervals between doses, see the minimum interval between doses table. For vaccines not routinely recommended, see the vaccines not routinely recommended for children ages 18 years or younger table. For guidance on travel vaccines, see the travel vaccines table. For guidance on vaccines for children with certain high-risk conditions, see the vaccines for children with high-risk conditions table.

How to use the child/adolescent immunization schedule

1. Determine recommended vaccine by age **(Table 1)**
2. Determine recommended interval for catch-up vaccination **(Table 2)**
3. Assess need for additional recommended vaccines by medical condition and other indications **(Table 3)**
4. Review vaccine types, frequencies, intervals, and considerations for special situations **(Notes)**

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American Academy of Pediatrics (www.aafp.org), American Academy of Family Physicians (www.acog.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), and American Academy of Physician Assistants (www.aapa.org).

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021

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)	1st dose	←— 2nd dose —→			←———— 3rd dose ————→												
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1st dose	2nd dose	See Notes												
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1st dose	2nd dose	3rd dose		←— 4th dose —→					5th dose					
Haemophilus influenzae type b (Hib)			1st dose	2nd dose	See Notes		←— 3rd or 4th dose, See Notes —→										
Pneumococcal conjugate (PCV13)			1st dose	2nd dose	3rd dose		←— 4th dose —→										
Inactivated poliovirus (IPV <18 yrs)			1st dose	2nd dose	←———— 3rd dose ————→							4th dose					
Influenza (IIV)					Annual vaccination 1 or 2 doses									Annual vaccination 1 dose			
or																	
Influenza (LAIV4)												Annual vaccination 1 or 2 doses		Annual vaccination 1 dose			
Measles, mumps, rubella (MMR)					See Notes		←— 1st dose —→					2nd dose					
Varicella (VAR)							←— 1st dose —→					2nd dose					
Hepatitis A (HepA)					See Notes		2-dose series, See Notes										
Tetanus, diphtheria, acellular pertussis (Tdap ≥7 yrs)														Tdap			
Human papillomavirus (HPV)															See Notes		
Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)					See Notes									1st dose			
Meningococcal B															See Notes		
Pneumococcal polysaccharide (PPSV23)													See Notes				

Range of recommended ages for all children | Range of recommended ages for catch-up immunization | Range of recommended ages for certain high-risk groups | Recommended based on shared clinical decision-making or *can be used in this age group | No recommendation/ not applicable

Recommended Adult Immunization Schedule for ages 19 years or older

UNITED STATES 2021

How to use the adult immunization schedule

1. Determine recommended vaccinations by age
2. Assess need for additional recommended vaccinations by medical condition and other indications **(Table 2)**
3. Review vaccine types, frequencies, and intervals and considerations for special situations **(Notes)**

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American College of Physicians (www.acponline.org), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), and American Academy of Physician Assistants (www.aapa.org).

Report

- Suspected cases of reportable vaccine-preventable diseases or outbreaks to the local or state health department
- Clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System at www.vaers.hhs.gov or 800-822-7967

Table 2 Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2021

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count <200 mm³	HIV infection CD4 count ≥200 mm³	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
IIV or RIV4 or LAIV4	1 dose annually										
Tdap or Td	1 dose Tdap each pregnancy	Not Recommended									
MMR	Not Recommended*	Not Recommended									
VAR	Not Recommended*	Not Recommended									
RZV											
HPV	Not Recommended*	3 doses through age 26 years									
PCV13											
PPSV23											
HepA											
HepB											
MenACWY											
MenB											
Hib											

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count <200 mm³	HIV infection CD4 count ≥200 mm³	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
IIV or RIV4 or LAIV4											
Tdap or Td	Precaution	1 dose Tdap, then Td or Tdap booster every 10 years								1 dose annually	
MMR		1 or 2 doses depending on indication									
VAR		2 doses									
RZV		2 doses at age ≥50 years									
HPV		2 or 3 doses through age 26 years depending on age at initial vaccination or condition									
PCV13		1 dose									
PPSV23		1, 2, or 3 doses depending on age and indication									
HepA		2 or 3 doses depending on vaccine									
HepB		2, 3, or 4 doses depending on vaccine or condition									
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		1 dose									

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count <200 mm³	HIV infection CD4 count ≥200 mm³	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
IIV or RIV4 or LAIV4											
Tdap or Td											
MMR											
VAR											
RZV											
HPV											
PCV13											
PPSV23											
HepA											
HepB											
MenACWY											
MenB											
Hib	3 doses HSCT recipients only										

<60 years | ≥60 years

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 | Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction | Recommended vaccination based on shared clinical decision-making | Not recommended/ contraindicated—vaccine should not be administered. *Vaccinate after pregnancy. | No recommendation/ Not applicable

1. Precaution for LAIV4 does not apply to alcoholism. 2. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. 3. Hematopoietic stem cell transplant.

POLL

How often do patients request an alternate schedule?

SCHEDULE OF ACTIVE IMMUNIZATION
FOR INFANTS AND CHILDREN

Age		*Preparation*
1½–2	mo. D.P.T.*	Poliomyelitis vaccine†
3	mo. D.P.T.	Poliomyelitis vaccine
4	mo. D.P.T.	Poliomyelitis vaccine
10–12	mo.	Smallpox vaccine
12–18	mo. D.P.T.	Poliomyelitis vaccine
3–4	yr. D.P.T.	Poliomyelitis vaccine
5–6	yr.	Smallpox vaccine
8	yr. D.T. (Adult type)	Poliomyelitis vaccine
12	yr. D.T. (Adult type)	Poliomyelitis vaccine
16	yr. D.T. (Adult type)	Poliomyelitis vaccine

* D.P.T. = Diphtheria, pertussis, tetanus.

† Poliomyelitis vaccine for primary immunization of infants may be given as a separate injection or in a commercially prepared quadruple vaccine with D.P.T.

tussis, and tetanus antigens and poliomyelitis vaccine.

There are few contraindications to poliomyelitis vaccination. It may be performed safely at any time of the year, even when poliomyelitis is prevalent. Reactions are extremely rare. The amount of penicillin present in most of the vac-

PEDIATRICS, August 1960

Table 1.—*Recommended Schedule for Active Immunization and Tuberculin Testing of Normal Infants and Children**

Age	Immunization or Test
2-3 Months	DTP*, type 1 OPV or trivalent OPV
3-4 Months	DTP, type 3 OPV or trivalent OPV
4-5 Months	DTP, type 2 OPV or trivalent OPV
9-11 Months	Tuberculine test
12 Months	Measles vaccine
15-18 Months	DTP, trivalent OPV, smallpox
2 Years	Tuberculine test
3 Years	DTP, tuberculin test
4 Years	Tuberculin test
6 Years	TD-smallpox vaccine, tuberculin test Trivalent OPV
8 Years	Tuberculin
10 Years	Tuberculin
12 Years	TD, smallpox vaccine, tuberculin test
14 Years	Tuberculin
16 Years	Tuberculin

* DTP indicates diphtheria and tetanus toxoids and pertussis vaccine combined; OPV, oral poliovaccine—if trivalent OPV is used, interval should be six weeks or longer; TD, tetanus and diphtheria toxoids, adult type.

—Vol 15, Oct 1967

The recommended immunization schedule by the AAP in the 1966 Red Book. The first measles vaccine was approved in 1963.

TABLE 1. Recommended schedule for active immunization of normal infants and children (See individual ACIP recommendations for details.)

Recommended age*	Vaccine(s)†	Comments
2 mo.	DTP-1,§ OPV-1¶	Can be given earlier in areas of high endemicity
4 mo.	DTP-2, OPV-2	6-wks-2-mo. interval desired between OPV doses to avoid interference
6 mo.	DTP-3	An additional dose of OPV at this time is optional for use in areas with a high risk of polio exposure
15 mo.**	MMR††	
18 mo.**	DTP-4, OPV-3	Completion of primary series
4-6 yr.§§	DTP-5, OPV-4	Preferably at or before school entry
14-16. yr	Td¶¶	Repeat every 10 years throughout life

*These recommended ages should not be construed as absolute, i.e. 2 mos. can be 6-10 weeks, etc.

†For all products used, consult manufacturer's package enclosure for instructions for storage, handling, and administration. Immunobiologics prepared by different manufacturers may vary, and those of the same manufacturer may change from time to time. The package insert should be followed for a specific product.

§DTP—Diphtheria and tetanus toxoids and pertussis vaccine.

¶OPV—Oral, attenuated poliovirus vaccine contains poliovirus types 1, 2, and 3.

**Simultaneous administration of MMR, DTP, and OPV is appropriate for patients whose compliance with medical care recommendations cannot be assured.

††MMR—Live measles, mumps, and rubella viruses in a combined vaccine (see text for discussion of single vaccines versus combination).

§§Up to the seventh birthday.

¶¶Td—Adult tetanus toxoid and diphtheria toxoid in combination, which contains the same dose of tetanus toxoid as DTP or DT and a reduced dose of diphtheria toxoid.

1983 childhood immunization schedule

Chat in your questions about the schedule!

Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021

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)	1st dose	◂---- 2nd dose ----▸			◂---------- 3rd dose ----------▸												
Rotavirus (RV): RV1 (2-dose series), RV5 (3-dose series)			1st dose	2nd dose	See Notes												
Diphtheria, tetanus, acellular pertussis (DTaP <7 yrs)			1st dose	2nd dose	3rd dose			◂---- 4th dose ----▸				5th dose					
Haemophilus influenzae type b (Hib)			1st dose	2nd dose	See Notes		◂ 3rd or 4th dose, See Notes ▸										
Pneumococcal conjugate (PCV13)			1st dose	2nd dose	3rd dose		◂---- 4th dose ----▸										
Inactivated poliovirus (IPV <18 yrs)			1st dose	2nd dose	◂---------- 3rd dose ----------▸							4th dose					
Influenza (IIV)					Annual vaccination 1 or 2 doses								Annual vaccination 1 dose only				
or													or				
Influenza (LAIV4)											Annual vaccination 1 or 2 doses		Annual vaccination 1 dose only				
Measles, mumps, rubella (MMR)					See Notes		◂---- 1st dose ----▸					2nd dose					
Varicella (VAR)							◂---- 1st dose ----▸					2nd dose					
Hepatitis A (HepA)					See Notes		2-dose series, See Notes										
Tetanus, diphtheria, acellular pertussis (Tdap ≥7 yrs)														Tdap			
Human papillomavirus (HPV)														See Notes			
													*				
Meningococcal (MenACWY-D ≥9 mos, MenACWY-CRM ≥2 mos, MenACWY-TT ≥2years)			See Notes											1st dose		2nd dose	
Meningococcal B															See Notes		
Pneumococcal polysaccharide (PPSV23)											See Notes						

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Recommended based on shared clinical decision-making or *can be used in this age group

No recommendation/ not applicable

Chat in your questions about the schedule!

Table 2 Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who Are More than 1 month Behind, United States, 2021

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 *and* 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**
Haemophilus influenzae 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 1st 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 ***and*** first dose was administered at younger than age 7 months ***and*** 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 ***and*** first dose was administered at age 7 through 11 months; OR if current age is 12 through 59 months ***and*** first dose was administered before the 1st birthday ***and*** second dose was administered at younger than 15 months; OR if both doses were PRP-OMP (PedvaxHIB, Comvax) ***and*** were administered before the 1st birthday.	**8 weeks (as final dose)** This dose only necessary for children age 12 through 59 months who received 3 doses before the 1st 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 1st birthday. **8 weeks (as final dose for healthy children)** if first dose was administered at the 1st birthday or after.	**No further doses needed** for healthy children if previous dose was 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 administered 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 2 years MenACWY-TT	**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 1st birthday. **6 months (as final dose)** if first dose of DTaP/DT or Tdap/Td was administered at or after the 1st birthday.	**6 months** if first dose of DTaP/DT was administered before the 1st birthday.	
Human papillomavirus	9 years	**Routine dosing intervals are recommended.**			
Hepatitis A	N/A	**6 months**			
Hepatitis B	N/A	**4 weeks**	**8 weeks *and* 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.			

Minimum Ages/ Intervals

Spacing between vaccine doses

- Minimum age for receiving initial doses
- Minimum intervals between doses
- Grace period of 4 days for all vaccines
  includes initial doses and intervals between doses
- If dose of vaccine is given at a shorter interval (allowing grace period)
  even one day shorter - it doesn't count as a valid dose
- Doses too close can reduce vaccine effectiveness

POLL

What have you tried that you would recommend to others?

Table 2 Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2021

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 mm³	≥200 mm³							
IIV or RIV4	1 dose annually										
or										or	
LAIV4	Not Recommended						Precaution			1 dose annually	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	Not Recommended*	Not Recommended		1 or 2 doses depending on indication							
VAR	Not Recommended*	Not Recommended		2 doses							
RZV	2 doses at age ≥50 years										
HPV	Not Recommended*	3 doses through age 26 years	2 or 3 doses through age 26 years depending on age at initial vaccination or condition								
PCV13	1 dose										
PPSV23	1, 2, or 3 doses depending on age and indication										
HepA	2 or 3 doses depending on vaccine										
HepB	2, 3, or 4 doses depending on vaccine or condition								<60 years		
									≥60 years		
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
- 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
- Recommended vaccination based on shared clinical decision-making
- Not recommended/ contraindicated—vaccine should not be administered.
- No recommendation/ Not applicable

*Vaccinate after pregnancy.

1. Precaution for LAIV4 does not apply to alcoholism. **2.** See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. **3.** Hematopoietic stem cell transplant.

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2021

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or **Influenza recombinant** (RIV4)	1 dose annually			
or				
Influenza live, attenuated (LAIV4)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	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)			2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal conjugate (PCV13)	1 dose			1 dose
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			
	19 through 23 years			
***Haemophilus influenzae* 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

TIPS & TOOLS

- Have a calendar available in each exam room
  See our TAPI handout!
- Count weeks between shots
- Check the age of the child to assure accurate time for shots

www.WhyImmunize.org

ASIIS Reminder Recall

T.I.P.S. VIRTUAL VACCINE CONVERSATIONS

Training on Immunization Practice Strategies (T.I.P.S.)

REGISTER NOW!

Plan to attend each session to be eligible for a FREE PRIZE!

TAPI, in collaboration with the Arizona Department of Health Services Immunization Program, presents free trainings that improve immunization practices in public and private providers' offices. Participants receive valuable information on immunization friendly office practices, vaccine handling, state requirements, how to give shots and the state immunization registry.

Schedule of Virtual Conversations

Training on Immunization Practice Strategies (T.I.P.S.) is a series of 5 sessions **for medical assistants and vaccine coordinators**.

Session #1 – Thursday, June 10th, 12:00-1:00 PM

Why Vaccines are Important: Protecting Herd Immunity

Session #2 – Thursday, June 24th, 12:00-1:00 PM

Vaccine Basics and Understanding the ACIP Schedule

Session #3 – Thursday, July 8th, 12:00-1:00 PM

Protecting the Cold Chain and Preparing for Patients

Session #4 – Thursday, July 22nd, 12:00-1:00 PM

Empowering Patients and Administering Vaccines

Session #5 – Thursday, August 5th, 12:00-1:00 PM

Best Practices for Immunization Delivery in Arizona

***Shown in AZ Time**

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Register ONCE & you can attend ALL SESSIONS!

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Remember THE POST-TEST!

For more information, visit www.WhyImmunize.org or call 602.288.7568

THANK YOU FOR SAVING LIVES EVERY DAY!

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