Immunization 101

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150 YEARS
OF ADVANCING
PUBLIC
HEALTH

Presenter Disclosure Information

I, Laurie Courtney, have been asked to disclose any relevant financial relationships with ACCME-defined commercial entities that are either providing financial support for this program or whose products or services are mentioned during this presentation.

I have no relevant financial relationships to disclose.

I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration, but in accordance with ACIP recommendations

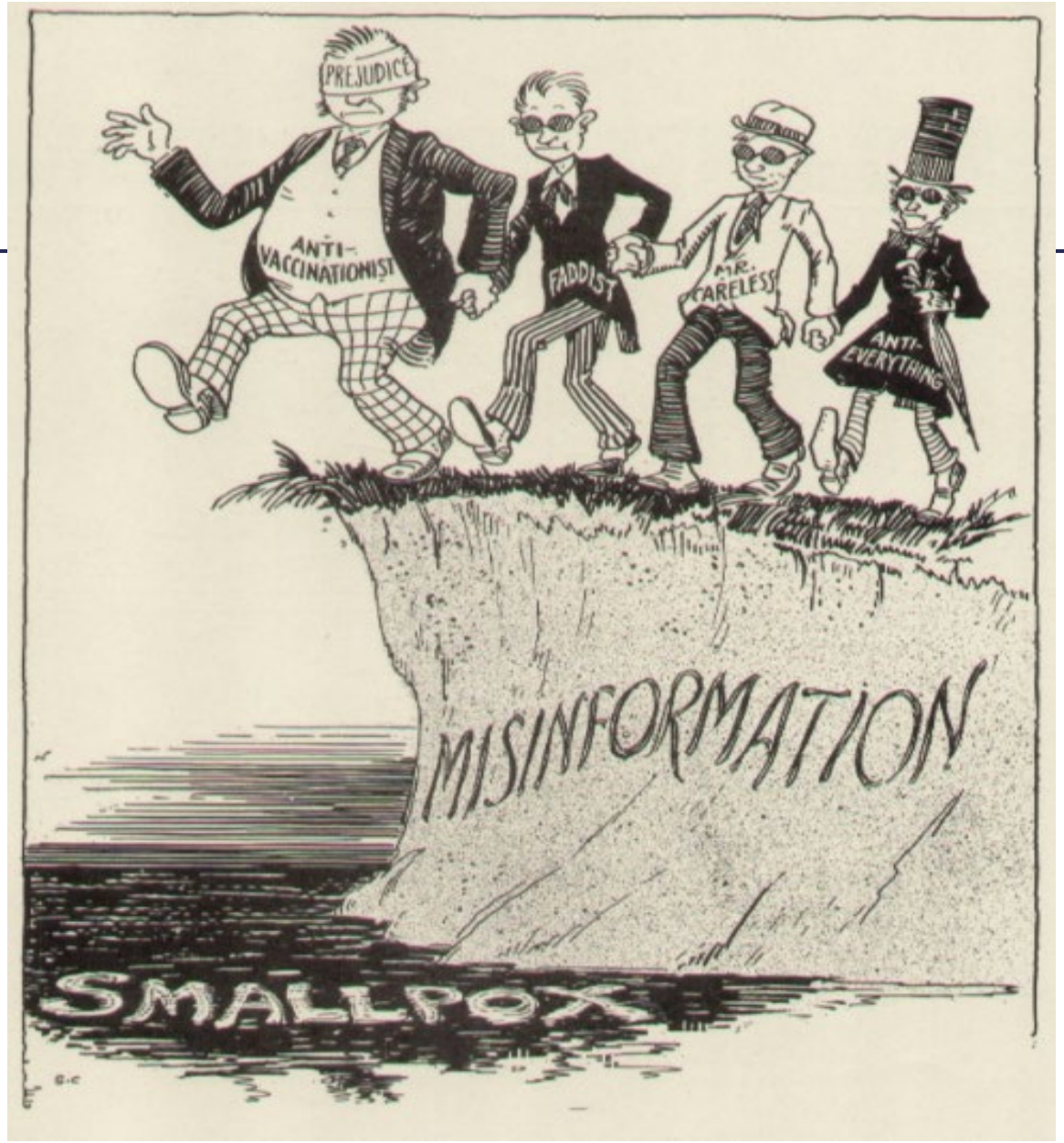
Outline

- Principles of vaccination
- 2023 adult immunization schedule
- Administering vaccines
- Contraindications and precautions to vaccination
- Vaccine administration documentation requirements
- Vaccine safety
- Vaccine adverse events and VAERS reporting
- Vaccination and COVID-19 Pandemic
- Resources

It is no secret that vaccinations have revolutionized global health.

Arguably the single most life-saving innovation in the history of medicine, vaccines have eradicated smallpox, slashed child mortality rates, and prevented lifelong disabilities.

A brief history of vaccines and how they changed the world | World Economic Forum (weforum.org)



Vaccine Cartoons and Caricatures - VAXOPEDIA

What Can You Do?

- Educate yourself
- Strong routine recommendation for vaccines
- Presumptive approach
- Speak from personal experience
- Avoid "missed opportunities"

What you say matters.
How you say it matters even more!

Principles of vaccination

HOW VACCINES WORK

Vaccines contain a modified form of virus or bacteria that doesn't cause disease, but does "teach" your immune system what to do if you are ever attacked by the real, potentially dangerous virus or bacteria.

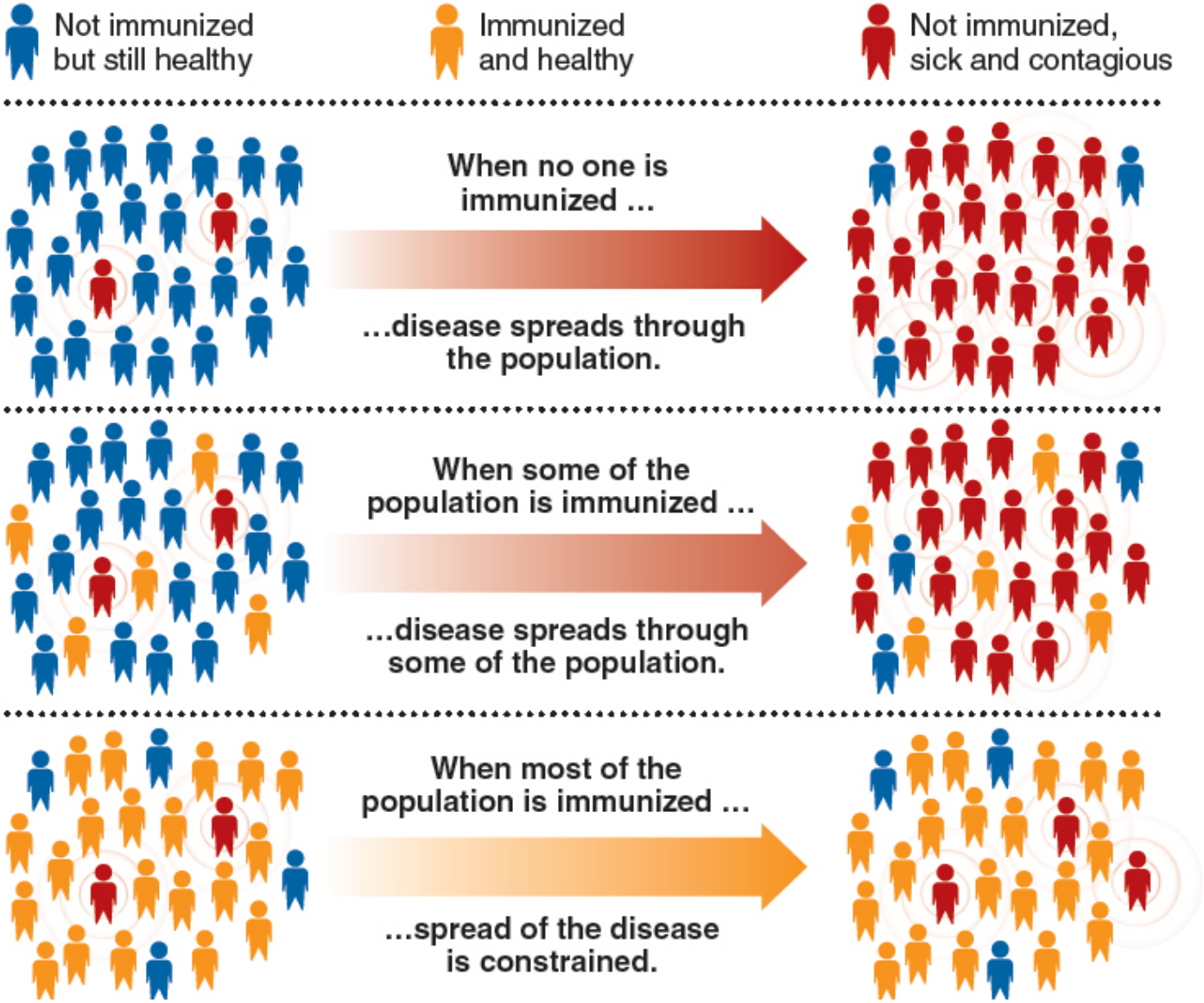
When you get vaccinated, your immune system responds just as it does to any other "intrusion", by creating antibodies to fight off the particular virus or bacteria.

After vaccination your body remembers this specific intruder. If you ever come in contact with the real virus or bacteria, the right antibodies quickly destroy it – before it has the chance to make you sick.

For some diseases, more than one dose of the vaccine, or a booster dose later in life, may be needed to ensure full and lasting protection.

https://www.euro.who.int/__data/assets/pdf_file/0004/365179/how-vaccine-work-eiw2018-eng.pdf

Herd Immunity



https://www.mlive.com/news/2014/12/how_do_vaccinations_work_the_s.html

Types of Vaccines

- Live-attenuated vaccines
  MMR, LAIV, Varicella, oral polio, rotavirus, BCG
- Inactivated vaccines
  Hep A, IIV, IPV, rabies
  - Subunit, recombinant, polysaccharide, and conjugate vaccines
    Pneumococcal, Hep B, MenACWY/B, Shingles, HPV, Hib, Pertussis
  - Toxoid vaccines
    Diphtheria, Tetanus
  - Messenger RNA (mRNA) vaccines
    COVID-19
  - Viral vector vaccines
    COVID-19

https://www.vaccines.gov/basics/types

Timing and Spacing of Vaccines

Refer to ACIP General Best Practice Guidelines

- Guidelines
- Minimum age and interval tables
- Table of combination vaccines
- Spacing of live and inactivated antigens
- Spacing of antibody-containing products and vaccines

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

Minimum Ages & Intervals Table

Appendix A

Recommended and minimum ages and intervals between vaccine doses[a],[b],[c],[d]

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
MMR-1[v]	12-15 months	12 months	3-5 years	4 weeks
MMR-2[v]	4-6 years	13 months	—	—
PCV13-1[j]	2 months	6 weeks	8 weeks	4 weeks
PCV13-2	4 months	10 weeks	8 weeks	4 weeks
PCV13-3	6 months	14 weeks	6 months	8 weeks
PCV13-4	12-15 months	12 months	—	—
PPSV23-1	—	2 years	5 years	5 years
PPSV23-2[w]	—	7 years	—	—
Rotavirus-1[x]	2 months	6 weeks	8 weeks	4 weeks
Rotavirus-2	4 months	10 weeks	8 weeks	4 weeks
Rotavirus-3[x]	6 months	14 weeks	—	—
Td	11-12 years	7 years	10 years	5 years
Tdap[y]	≥11 years	7 years	—	—
Varicella-1[v]	12-15 months	12 months	3-5 years	12 weeks[z]
Varicella-2[v]	4-6 years	15 months[aa]	—	—
RZV-1	≥50 years	50 years[bb]	2-6 months	4 weeks
RZV-2	≥50 years (+2-6months)	50 years	—	—

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

Adult immunization schedule

How Vaccine Recommendations are Made in the U.S.

How are CDC vaccine recommendations developed, and what is the role of the ACIP? In this educational video, you'll learn the purpose of the Advisory Committee on Immunization Practices (ACIP), its role in developing vaccine recommendations, and the process of vaccine recommendation development and approval.

View video

https://www.youtube.com/watch?v=WWf4xVw1-PE

2023 Recommended Adult Immunization Schedules for Persons 19 Years or Older

MMWR Feb 10, 2023: 77(6);141–144

Available at:
https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html (CDC site, schedule with live links)
https://www.cdc.gov/mmwr/volumes/72/wr/mm7206a2.htm
https://www.cdc.gov/mmwr/volumes/72/wr/pdfs/mm7206a2-H.pdf

E-Schedule

Adult Immunization Schedule by Age

Print

Recommendations for Ages 19 Years or Older, United States, 2023

Using the schedule

To make vaccination recommendations, healthcare providers should:

1. Determine needed vaccines **based on age** (Table 1)
2. Assess for **medical conditions and other indications** (Table 2)
3. Review **special situations** (Vaccination Notes)
4. Review **contraindications and precautions to vaccination** (Appendix)

Vaccines You May Need

Recommended vaccines for adults

Get personalized recommendations

Get email updates

The Immunization Schedule

Table 1. By age

Table 2. By indications

Vaccination notes

Appendix

Download the Schedule

Printable schedule, color

Printable schedule, black & white

Download the mobile schedule app

More Schedule Resources

Compliant version of the schedule

Schedule changes and guidance

Vaccines in the schedule

Syndicate the schedules on your website

	27-49 years	50-64 years	≥65 years
	ries and booster (see notes)		
	1 dose annually		
(LAIV4)	or 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)		For healthcare personnel, (see notes)

https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html

Recommended Adult Immunization Schedule
for ages 19 years or older

UNITED STATES
2023

How to use the adult immunization schedule

1. Determine recommended vaccinations by age **(Table 1)**
2. Assess need for additional recommended vaccinations by medical condition or other indication **(Table 2)**
3. Review vaccine types, dosing frequencies and intervals, and considerations for special situations **(Notes)**
4. Review contraindications and precautions for vaccine types **(Appendix)**

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), American Academy of Physician Associates (www.aapa.org), American Pharmacists Association (www.pharmacist.com), and Society for Healthcare Epidemiology of America (www.shea-online.org).

Vaccines in the Adult Immunization Schedule*

Vaccine	Abbreviation(s)	Trade name(s)
COVID-19 vaccine	1vCOV-mRNA	Comirnaty®/Pfizer-BioNTech COVID-19 Vaccine SPIKEVAX®/Moderna COVID-19 Vaccine
	2vCOV-mRNA	Pfizer-BioNTech COVID-19 Vaccine, Bivalent Moderna COVID-19 Vaccine, Bivalent
	1vCOV-aPS	Novavax COVID-19 Vaccine
Haemophilus influenzae type b vaccine	Hib	ActHIB® Hiberix® PedvaxHIB®
Hepatitis A vaccine	HepA	Havrix® Vaqta®
Hepatitis A and hepatitis B vaccine	HepA-HepB	Twinrix®
Hepatitis B vaccine	HepB	Engerix-B® Heplisav-B® PreHevbrio® Recombivax HB®
Human papillomavirus vaccine	HPV	Gardasil 9®
Influenza vaccine (inactivated)	IIV4	Many brands
Influenza vaccine (live, attenuated)	LAIV4	FluMist® Quadrivalent
Influenza vaccine (recombinant)	RIV4	Flublok® Quadrivalent
Measles, mumps, and rubella vaccine	MMR	M-M-R II® Priorix®
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM MenACWY-TT	Menactra® Menveo® MenQuadfi®
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero® Trumenba®
Pneumococcal conjugate vaccine	PCV15 PCV20	Vaxneuvance™ Prevnar 20™
Pneumococcal polysaccharide vaccine	PPSV23	Pneumovax 23®
Poliovirus vaccine	IPV	IPOL®
Tetanus and diphtheria toxoids	Td	Tenivac® Tdvax™
Tetanus and diphtheria toxoids and acellular pertussis vaccine	Tdap	Adacel® Boostrix®
Varicella vaccine	VAR	Varivax®
Zoster vaccine, recombinant	RZV	Shingrix

*Administer recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series if there are extended intervals between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

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

Injury claims
All vaccines included in the adult immunization schedule except PPSV23, RZV, and COVID-19 vaccines are covered by the National Vaccine Injury Compensation Program (VICP). COVID-19 vaccines that are authorized or approved by the FDA are covered by the Countermeasures Injury Compensation Program (CICP). For more information, see www.hrsa.gov/vaccinecompensation or www.hrsa.gov/cicp.

Questions or comments
Contact www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays.

Download the CDC Vaccine Schedules app for providers at www.cdc.gov/vaccines/schedules/hcp/schedule-app.html.

Helpful information
- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- *General Best Practice Guidelines for Immunization* (including contraindications and precautions): www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine information statements: www.cdc.gov/vaccines/hcp/vis/index.html
- Manual for the Surveillance of Vaccine-Preventable Diseases (including case identification and outbreak response): www.cdc.gov/vaccines/pubs/surv-manual
- Travel vaccine recommendations: www.cdc.gov/travel
- Recommended Child and Adolescent Immunization Schedule, United States, 2023: www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html
- ACIP Shared Clinical Decision-Making Recommendations: www.cdc.gov/vaccines/acip/acip-scdm-faqs.html

Scan QR code for access to online schedule

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS310021-C

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2023

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
COVID-19	2- or 3- dose primary series and booster (See Notes)			
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
or	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)			For healthcare personnel, see notes
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)	1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)			See Notes
				See Notes
Hepatitis A (HepA)	2, 3, or 4 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
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

Table 2 Recommended Adult Immunization Schedule by Medical Condition or Other Indication, United States, 2023

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 percentage and count		Asplenia, complement deficiencies	End-stage renal disease, or on hemodialysis	Heart or lung disease; alcoholism[a]	Chronic liver disease	Diabetes	Health care personnel[b]	Men who have sex with men
			<15% or <200 mm³	≥15% and ≥200 mm³							
COVID-19		See Notes									
IIV4 or RIV4	1 dose annually										
or										or	
LAIV4	Contraindicated					Precaution				1 dose annually	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	Contraindicated*	Contraindicated	1 or 2 doses depending on indication								
VAR	Contraindicated*	Contraindicated		2 doses							
RZV		2 doses at age ≥19 years		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							
Pneumococcal (PCV15, PCV20, PPSV23)		1 dose PCV15 followed by PPSV23 OR 1 dose PCV20 (see notes)									
HepA				2, 3, or 4 doses depending on vaccine							
HepB	3 doses (see notes)	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		3 doses HSCT[c] 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
- Recommended vaccination based on shared clinical decision-making
- Precaution–vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
- Contraindicated or not recommended–vaccine should not be administered.

*Vaccinate after pregnancy.

- No recommendation/ Not applicable

Notes

Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2023

For vaccine recommendations for persons 18 years of age or younger, see the Recommended Child and Adolescent Immunization Schedule.

COVID-19 vaccination

Routine vaccination

- **Primary series:** 2-dose series at 0, 4-8 weeks (Moderna) or 2-dose series at 0, 3-8 weeks (Novavax, Pfizer-BioNTech)
- **Booster dose:** see www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

Special situations

Persons who are moderately or severely immunocompromised

- **Primary series**
  - 3-dose series at 0, 4, 8 weeks (Moderna) or 3-dose series at 0, 3, 7 weeks (Pfizer-BioNTech)
  - 2-dose series at 0, 3 weeks (Novavax)
- **Booster dose:** see www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html
- **Pre-exposure prophylaxis (e.g., monoclonal antibodies)** may be considered to complement COVID-19 vaccination. See www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html#immunocompromised

For Janssen COVID-19 Vaccine recipients see COVID-19 schedule at www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html.

Note: Current COVID-19 schedule available at www.cdc.gov/vaccines/covid-19/downloads/COVID-19-immunization-schedule-ages-6months-older.pdf. For more information on Emergency Use Authorization (EUA) indications for COVID-19 vaccines, please visit www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines

Haemophilus influenzae type b vaccination

Special situations

- **Anatomical or functional asplenia (including sickle cell disease):** 1 dose if previously did not receive Hib; if elective splenectomy, 1 dose preferably at least 14 days before splenectomy
- **Hematopoietic stem cell transplant (HSCT):** 3-dose series 4 weeks apart starting 6–12 months after successful transplant, regardless of Hib vaccination history

Hepatitis A vaccination

Routine vaccination

- **Not at risk but want protection from hepatitis A** (identification of risk factor not required): 2-dose series HepA (Havrix 6–12 months apart or Vaqta 6–18 months apart [minimum interval: 6 months]) or 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])

Special situations

Important details

alcoholic liver disease, autoimmune hepatitis, alanine aminotransferase [ALT] or aspartate aminotransferase [AST] level greater than twice the upper limit of normal)

- **HIV infection**
- **Men who have sex with men**
- **Injection or noninjection drug use**
- **Persons experiencing homelessness**
- **Work with hepatitis A virus** in research laboratory or with nonhuman primates with hepatitis A virus infection
- **Travel in countries with high or intermediate endemic hepatitis A** (HepA-HepB [Twinrix] may be administered on an accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months)
- **Close, personal contact with international adoptee** (e.g., household or regular babysitting) in first 60 days after arrival from country with high or intermediate endemic hepatitis A (administer dose 1 as soon as adoption is planned, at least 2 weeks before adoptee's arrival)
- **Pregnancy** if at risk for infection or severe outcome from infection during pregnancy
- **Settings for exposure,** including health care settings targeting services to injection or noninjection drug users or group homes and nonresidential day care facilities for developmentally disabled persons (individual risk factor screening not required)

Hepatitis B vaccination

Routine vaccination

- **Age 19 through 59 years: complete a 2- or 3- or 4-dose series**
  - 2-dose series only applies when 2 doses of Heplisav-B* are used at least 4 weeks apart
  - 3-dose series Engerix-B, PreHevbrio*, or Recombivax HB at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks])
  - 3-dose series HepA-HepB (Twinrix at 0, 1, 6 months [minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months])
  - 4-dose series HepA-HepB (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months

***Note:** Heplisav-B and PreHevbrio are not recommended in pregnancy due to lack of safety data in pregnant persons.

Appendix Recommended Adult Immunization Schedule, United States, 2023

Guide to Contraindications and Precautions to Commonly Used Vaccines

Adapted from Table 4-1 in Advisory Committee on Immunization Practices (ACIP) General Best Practice Guidelines for Immunization: Contraindication and Precautions available at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html and ACIP's Recommendations for the Prevention and Control of 2022-23 Seasonal Influenza with Vaccines available at www.cdc.gov/mmwr/volumes/71/rr/rr7101a1.htm

For COVID-19 vaccine contraindications and precautions see
www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html#contraindications

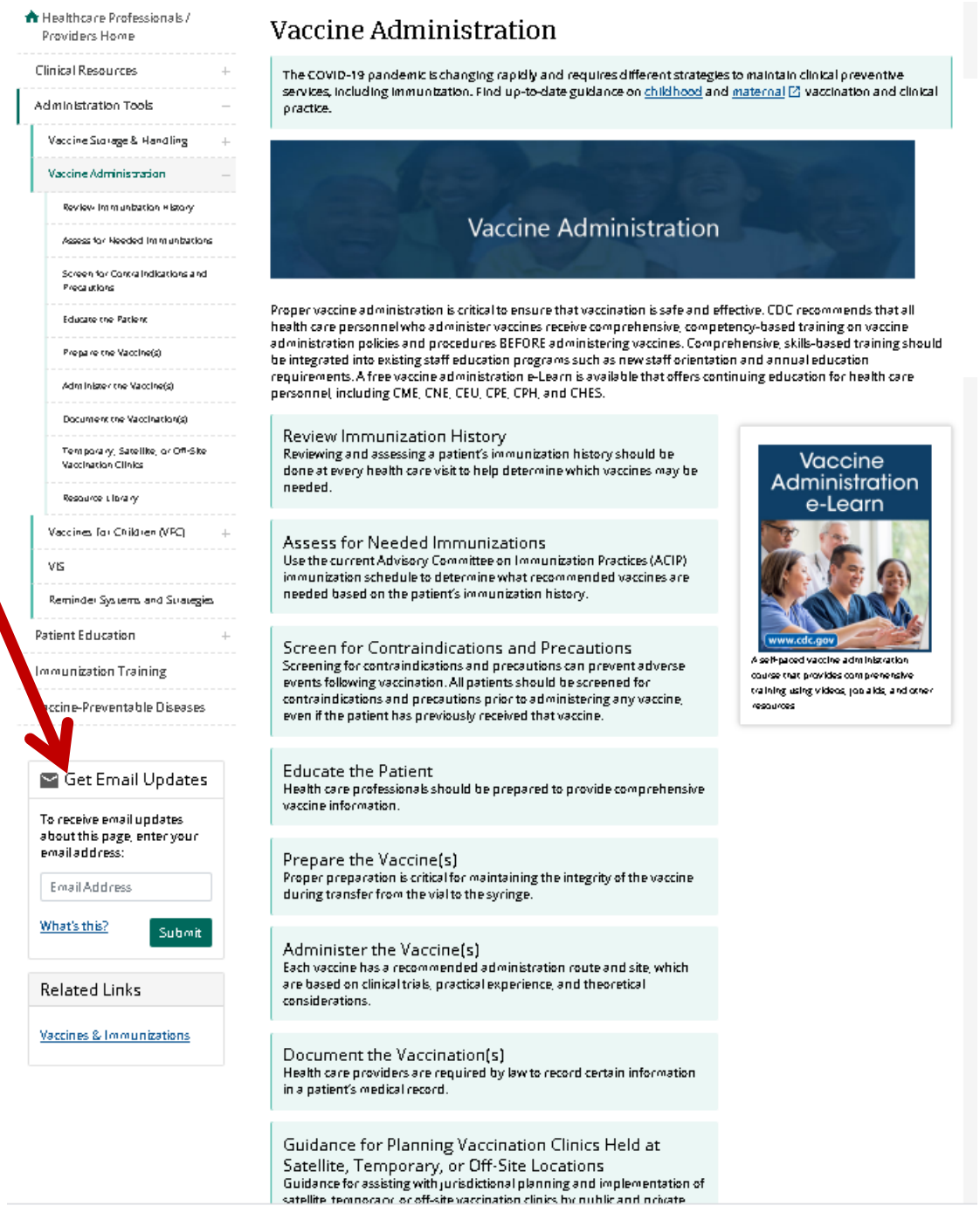
Vaccine	Contraindicated or Not Recommended[1]	Precautions[2]
Haemophilus influenzae type b (Hib)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For Hiberix, ActHib, and PedvaxHIB only: History of severe allergic reaction to dry natural latex	• Moderate or severe acute illness with or without fever
Hepatitis A (HepA)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including neomycin	• Moderate or severe acute illness with or without fever
Hepatitis B (HepB)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including yeast • *Pregnancy: Heplisav-B and PreHevbrio are not recommended due to lack of safety data in pregnant persons. Use other hepatitis B vaccines if HepB is indicated[4]*	• Moderate or severe acute illness with or without fever
Hepatitis A- Hepatitis B vaccine [HepA-HepB, (Twinrix®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] including neomycin and yeast	• Moderate or severe acute illness with or without fever
Human papillomavirus (HPV)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • *Pregnancy: HPV vaccination not recommended*	• Moderate or severe acute illness with or without fever
Measles, mumps, rubella (MMR)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe immunodeficiency (e.g., hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised) • Pregnancy • Family history of altered immunocompetence, unless verified clinically or by laboratory testing as immunocompetent	• Recent (≤11 months) receipt of antibody-containing blood product (specific interval depends on product) • History of thrombocytopenia or thrombocytopenic purpura • Need for tuberculin skin testing or interferon-gamma release assay (IGRA) testing • Moderate or severe acute illness with or without fever
Meningococcal ACWY (MenACWY) [MenACWY-CRM (Menveo®); MenACWY-D (Menactra®); MenACWY-TT (MenQuadfi®)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • For MenACWY-D and MenACWY-CRM only: severe allergic reaction to any diphtheria toxoid–or CRM197–containing vaccine • For MenACWY-TT only: severe allergic reaction to a tetanus toxoid-containing vaccine	• Moderate or severe acute illness with or without fever
Meningococcal B (MenB) [MenB-4C (Bexsero); MenB-FHbp (Trumenba)]	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Pregnancy • For MenB-4C only: Latex sensitivity • Moderate or severe acute illness with or without fever
Pneumococcal conjugate (PCV15, PCV20)	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3] • Severe allergic reaction (e.g., anaphylaxis) to any diphtheria-toxoid–containing vaccine or to its vaccine component[3]	• Moderate or severe acute illness with or without fever
Pneumococcal polysaccharide	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component[3]	• Moderate or severe acute illness with or without fever

Some of the 2023 Changes

- Added COVID-19 vaccines, PreHevbrio™ and Priorix® to the adult schedule
- Added American Pharmacists Association as an approving partner
- HepB vaccination continues to be universally recommended for all adults 19 through 59 years of age. Language has been added stating that persons aged ≥ 60 years with known risk factors for hepatitis B virus infection should complete a HepB vaccine series, while persons aged ≥ 60 years without known risk factors for hepatitis B virus infection may complete a HepB vaccine series.
- Sub-bullet was added stating that any one of quadrivalent high-dose inactivated influenza vaccine, quadrivalent recombinant influenza vaccine, or quadrivalent adjuvanted inactivated influenza vaccine is preferred for adults aged 65 years or older
- The pneumococcal note was substantially updated to reflect ACIP's new recommendations for the use of PCV15 and PCV20 in persons who previously received pneumococcal vaccines. Additionally, a hyperlink to the CDC app that can be used to determine a patient's pneumococcal vaccination needs has been included.
- Poliovirus vaccination note was updated to address polio vaccine recommendations for adults who are at increased risk of exposure to poliovirus although routine poliovirus vaccination of adults residing in the United States is not necessary.

https://www.cdc.gov/vaccines/schedules/hcp/schedule-changes.html
https://www.cdc.gov/mmwr/volumes/72/wr/mm7206a2.htm

Administering vaccines



Vaccine Administration

https://www.cdc.gov/vaccines/hcp/admin/admin-protocols.html

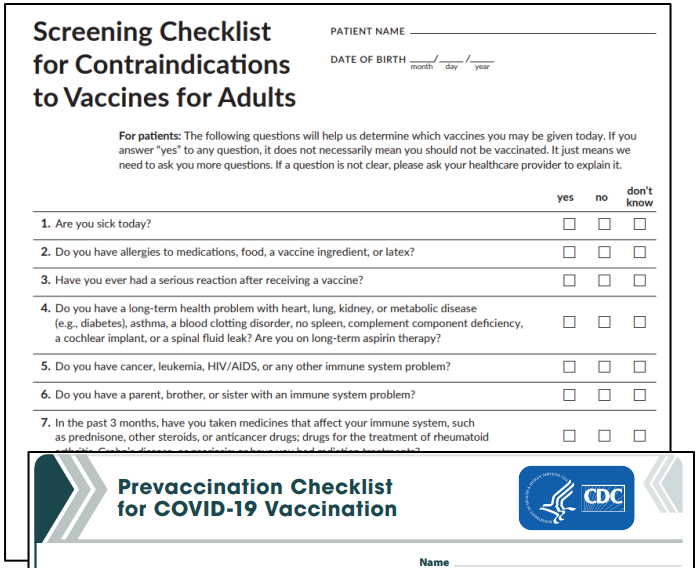
Seven Rights of Vaccine Administration

- Right Patient
- Right Time
- Right Vaccine (and Diluent)
- Right Dosage
- Right Route, Needle, Technique
- Right Injection Site
- Right Documentation

http://www.immunize.org/technically-speaking/20141101.asp

Screening

- Is key to preventing serious adverse reactions
- Specific questions intended to identify contraindications or precautions to vaccination
- Screening must occur at every immunization encounter (not just before the first dose)
- Use of a standardized form facilitate effective screening
- For COVID-19 vaccine, screening will inform the length of the observation period



Screening Checklist for Contraindications to Vaccines for Adults

PATIENT NAME _____

DATE OF BIRTH ___/___/___ (month / day / year)

For patients: The following questions will help us determine which vaccines you may be given today. If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated. It just means we need to ask you more questions. If a question is not clear, please ask your healthcare provider to explain it.

	yes	no	don't know
1. Are you sick today?	☐	☐	☐
2. Do you have allergies to medications, food, a vaccine ingredient, or latex?	☐	☐	☐
3. Have you ever had a serious reaction after receiving a vaccine?	☐	☐	☐
4. Do you have a long-term health problem with heart, lung, kidney, or metabolic disease (e.g., diabetes), asthma, a blood clotting disorder, no spleen, complement component deficiency, a cochlear implant, or a spinal fluid leak? Are you on long-term aspirin therapy?	☐	☐	☐
5. Do you have cancer, leukemia, HIV/AIDS, or any other immune system problem?	☐	☐	☐
6. Do you have a parent, brother, or sister with an immune system problem?	☐	☐	☐
7. In the past 3 months, have you taken medicines that affect your immune system, such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid	☐	☐	☐

Prevaccination Checklist for COVID-19 Vaccination

Name _____

For vaccine recipients (both children and adults):

The following questions will help us determine if there is any reason COVID-19 vaccine cannot be given today. **If you answer "yes" to any question, it does not necessarily mean the vaccine cannot be given.** It just means additional questions may be asked. If a question is not clear, please ask the healthcare provider to explain it.

	Yes	No	Don't know
1. How old is the person to be vaccinated? _____			
2. Is the person to be vaccinated sick today?	☐	☐	☐
3. Has the person to be vaccinated ever received a dose of COVID-19 vaccine?	☐	☐	☐
• If yes, which vaccine product was administered? ☐ Pfizer-BioNTech ☐ Janssen (*Johnson & Johnson*) ☐ Another Product ☐ Moderna ☐ Novavax _____			
• How many doses of COVID-19 vaccine were administered? _____			
• Did you bring the vaccination record card or other documentation?	☐	☐	
4. Does the person to be vaccinated have a health condition or is undergoing treatment that makes them moderately or severely immunocompromised? *This would include, but not be limited to, treatment for cancer, HIV, receipt of organ transplant, immunosuppressive therapy or high-dose corticosteroids, CAR-T-cell therapy, hematopoietic cell transplant [HCT], or moderate or severe primary immunodeficiency.*	☐	☐	☐
5. Has the person to be vaccinated received COVID-19 vaccine before or during hematopoietic cell transplant (HCT) or CAR-T-cell therapies?	☐	☐	☐

https://immunize.org/clinic/screening-contraindications.asp
http://www.immunize.org/handouts/screening-vaccines.asp
https://www.immunize.org/catg.d/p4065.pdf
https://www.cdc.gov/vaccines/covid-19/downloads/pre-vaccination-screening-form.pdf

Contraindication and Precautions

Contraindication

- Increases risk for a serious adverse reaction
- A vaccine should not be administered when present
- Many are temporary, vaccinations can often be administered later when the condition leading to a contraindication no longer exists

Precaution

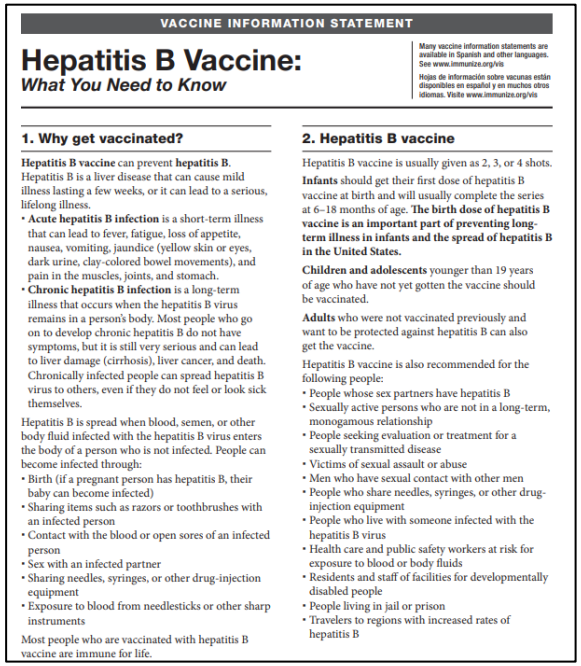
- May increase the risk for a serious adverse reaction, cause diagnostic confusion, or compromise the ability of the vaccine to produce immunity
- In general, vaccinations should be deferred
- However, a vaccination might be indicated in the presence of a precaution if the benefit of protection from the vaccine outweighs the risk for an adverse reaction

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

Vaccine Information Statements (VISs) and EUA Factsheets for Vaccine Recipients

Healthcare provider requirements

- Public and private providers
- Give **before** vaccine is administered
- Applies to **every dose** of a vaccine series not just the first dose
- Opportunities for questions should be provided before each vaccination
- Available in multiple languages



VACCINE INFORMATION STATEMENT

Hepatitis B Vaccine:
What You Need to Know

Many vaccine information statements are available in Spanish and other languages. See www.immunize.org/vis

Hojas de información sobre vacunas están disponibles en español y en muchos otros idiomas. Visite www.immunize.org/vis

1. Why get vaccinated?

Hepatitis B vaccine can prevent **hepatitis B**. Hepatitis B is a liver disease that can cause mild illness lasting a few weeks, or it can lead to a serious, lifelong illness.

- **Acute hepatitis B infection** is a short-term illness that can lead to fever, fatigue, loss of appetite, nausea, vomiting, jaundice (yellow skin or eyes, dark urine, clay-colored bowel movements), and pain in the muscles, joints, and stomach.
- **Chronic hepatitis B infection** is a long-term illness that occurs when the hepatitis B virus remains in a person's body. Most people who go on to develop chronic hepatitis B do not have symptoms, but it is still very serious and can lead to liver damage (cirrhosis), liver cancer, and death. Chronically infected people can spread hepatitis B virus to others, even if they do not feel or look sick themselves.

Hepatitis B is spread when blood, semen, or other body fluid infected with the hepatitis B virus enters the body of a person who is not infected. People can become infected through:

- Birth (if a pregnant person has hepatitis B, their baby can become infected)
- Sharing items such as razors or toothbrushes with an infected person
- Contact with the blood or open sores of an infected person
- Sex with an infected partner
- Sharing needles, syringes, or other drug-injection equipment
- Exposure to blood from needlesticks or other sharp instruments

Most people who are vaccinated with hepatitis B vaccine are immune for life.

2. Hepatitis B vaccine

Hepatitis B vaccine is usually given as 2, 3, or 4 shots.

Infants should get their first dose of hepatitis B vaccine at birth and will usually complete the series at 6–18 months of age. **The birth dose of hepatitis B vaccine is an important part of preventing long-term illness in infants and the spread of hepatitis B in the United States.**

Children and adolescents younger than 19 years of age who have not yet gotten the vaccine should be vaccinated.

Adults who were not vaccinated previously and want to be protected against hepatitis B can also get the vaccine.

Hepatitis B vaccine is also recommended for the following people:

- People whose sex partners have hepatitis B
- Sexually active persons who are not in a long-term, monogamous relationship
- People seeking evaluation or treatment for a sexually transmitted disease
- Victims of sexual assault or abuse
- Men who have sexual contact with other men
- People who share needles, syringes, or other drug-injection equipment
- People who live with someone infected with the hepatitis B virus
- Health care and public safety workers at risk for exposure to blood or body fluids
- Residents and staff of facilities for developmentally disabled people
- People living in jail or prison
- Travelers to regions with increased rates of hepatitis B

https://www.cdc.gov/vaccines/hcp/vis/index.html
http://www.immunize.org/vis/

Preparation & Administration

Vaccines with Diluents: How to Use Them

Be sure to reconstitute the following vaccines correctly before administering them! Reconstitution means that the lyophilized (freeze-dried) vaccine powder or water in one vial must be mixed with the diluent (liquid) in another.

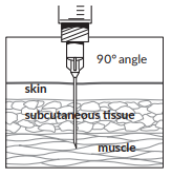
- Only use the diluent provided by the manufacturer for that vaccine as indicated on the chart.
- ALWAYS check the expiration date on the diluent and vaccine. NEVER use expired diluent or vaccine.

Vaccine product name	Manufacturer	Lyophilized vaccine (powder)	Liquid diluent (may contain vaccine)	Time allowed between reconstitution and use, as stated in package insert*	Diluent storage environment
ActHIB (Hib)	Sanofi	Hib	Sodium chloride 0.4%	24 hrs	Refrigerator
Comirnaty (COVID-19, some formulations)	Pfizer-BioNTech	1vCOV-mRNA or 2vCOV-mRNA	Sodium chloride 0.9%, unpreserved	12 hrs†	Refrigerator or room temp
Dengvaxia (DEN4CYD)	Sanofi	Dengue	Sodium chloride 0.4%	30 min	Refrigerator
Hiberix (Hib)	GSK	Hib	Sodium chloride 0.9%	24 hrs	Refrigerator or room temp
Imovax (RAB$_{HDCV}$)	Sanofi	Rabies virus	Sterile water	Immediately‡	Refrigerator
M-M-R II (MMR)	Merck	MMR	Sterile water	8 hrs	Refrigerator or room temp
Menveo[§] **(MenACWY)**	GSK	MenA	MenCWY	8 hrs	Refrigerator
Pentacel (DTaP-IPV/Hib)	Sanofi	Hib	DTaP-IPV	Immediately‡	Refrigerator
ProQuad (MMRV)	Merck	MMRV	Sterile water	30 min	Refrigerator or room temp
RabAvert (RAB$_{PCECV}$)	GSK	Rabies virus	Sterile water	Immediately‡	Refrigerator
Rotarix[§,‖] **(RV1)**	GSK	RV1	Sterile water, calcium carbonate, and xanthan	24 hrs	Refrigerator or room temp
Shingrix (RZV)	GSK	RZV	AS01B[¶] adjuvant suspension	6 hrs	Refrigerator
Varivax (VAR)	Merck	VAR	Sterile water	30 min	Refrigerator or room temp
Vaxchora (CVD 103-HgR)	Emergent	Cholera	Buffer solution plus bottled water	15 min	Refrigerator
YF-VAX (YF)	Sanofi	YF	Sodium chloride 0.9%	60 min	Refrigerator or room temp

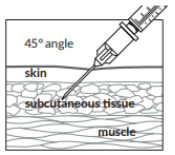
Administering Vaccines to Adults: Dose, Route, Site, and Needle Size

Vaccine	Dose	Route
COVID-19 *For product, scheduling, and dosage information for COVID-19 vaccine primary series and booster doses for both immunocompetent and immunocompromised adults, see CDC's "COVID-19 Vaccine Interim COVID-19 Immunization Schedule for Persons 6 Months of Age and Older."**		IM
Hepatitis A (HepA)	≤18 yrs: 0.5 mL; ≥19 yrs: 1.0 mL	IM
Hepatitis B (HepB)	*Engerix-B; Recombivax HB* ≤19 yrs: 0.5 mL; ≥20 yrs: 1.0 mL *Heplisav-B; PreHevbrio* ≥18 yrs: 0.5 mL	IM
HepA-HepB (Twinrix)	≥18 yrs: 1.0 mL	IM
Human papillomavirus (HPV)	0.5 mL	IM
Influenza, live attenuated (LAIV4)	0.2 mL (0.1 mL in each nostril)	Intranasal spray
Influenza, inactivated (IIV4) and • Cell-culture based (ccIIV4, Flucelvax), 3+ yrs • Recombinant (RIV4, Flublok) 18+ yrs • Adjuvanted (aIIV4, Fluad) 65+ yrs	0.5 mL	IM
Influenza, inactivated, high-dose (IIV4-HD) 65+ yrs	0.7 mL	IM
Measles, Mumps, Rubella (MMR)	0.5 mL	Subcut
Meningococcal serogroups A, C, W, Y(MenACWY)	0.5 mL	IM
Meningococcal serogroup B (MenB)	0.5 mL	IM
Monkeypox (Jynneos)	0.5 mL	Subcut†
Pneumococcal conjugate (PCV)	0.5 mL	IM
Pneumococcal polysaccharide (PPSV23)	0.5 mL	IM or Subcut
Tetanus, Diphtheria (Td) **with Pertussis** (Tdap)	0.5 mL	IM
Varicella (VAR)	0.5 mL	Subcut
Zoster (RZV, Shingrix)	0.5‡ mL	IM

Intramuscular (IM) injection



Subcutaneous (SubCut) injection



Intranasal (NAS) administration of Flumist (LAIV) vaccine

https://www.immunize.org/catg.d/p3040.pdf
https://www.immunize.org/catg.d/p3084.pdf

Most Vaccine Administration Errors are Preventable

- Dose administered too early (minimum age or interval)
- Wrong vaccine, route, dosage, diluent
- Mixing errors
- Expired vaccine or diluent
- Improper storage/watching for temperature excursions
- Injecting air (instead of a vaccine)

https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/d/vaccine-administration-preventing-errors.pdf

Prevent Vaccine Administration Errors

- Avoid distractions
- Segregate storage of the vaccines
- Verify patient identity, age, and the vaccine(s) requested
- Involve parent/caregiver checks
- Verify the vaccine history
- Label vaccine syringes
- Use barcode technology
- Check, and be sure to document administration in EHR/MIIS
- Report errors

Patient Care After Vaccine Administration

After-Care Instructions

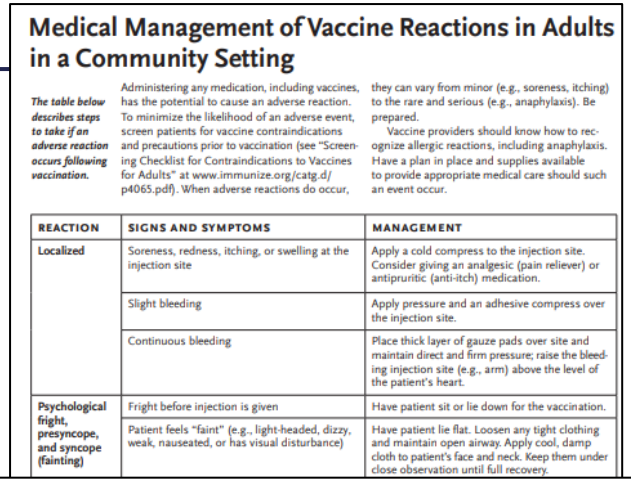
- Common side effects such as injection site pain or fever
- Comfort measures
- When to notify the HCP

Observation Period/Managing Acute Reactions

- Have a plan
- Syncope
- Severe allergic reactions

Managing Acute Vaccine Reactions

- Staff must have appropriate training and equipment to manage reactions
- Staff should be familiar with signs and symptoms of hypersensitivity/anaphylaxis
- All vaccination providers should be currently certified in CPR
- Severe reactions are rare
- Screening can help prevent reactions
- Post vaccination observation
- Have an emergency plan for dealing with reactions and be sure all staff are familiar with that plan
- Have Emergency Treatment Standing Orders signed before a clinic



Medical Management of Vaccine Reactions in Adults in a Community Setting

The table below describes steps to take if an adverse reaction occurs following vaccination.

Administering any medication, including vaccines, has the potential to cause an adverse reaction. To minimize the likelihood of an adverse event, screen patients for vaccine contraindications and precautions prior to vaccination (see "Screening Checklist for Contraindications to Vaccines for Adults" at www.immunize.org/catg.d/p4065.pdf). When adverse reactions do occur, they can vary from minor (e.g., soreness, itching) to the rare and serious (e.g., anaphylaxis). Be prepared.

Vaccine providers should know how to recognize allergic reactions, including anaphylaxis. Have a plan in place and supplies available to provide appropriate medical care should such an event occur.

REACTION	SIGNS AND SYMPTOMS	MANAGEMENT
Localized	Soreness, redness, itching, or swelling at the injection site	Apply a cold compress to the injection site. Consider giving an analgesic (pain reliever) or antipruritic (anti-itch) medication.
	Slight bleeding	Apply pressure and an adhesive compress over the injection site.
	Continuous bleeding	Place thick layer of gauze pads over site and maintain direct and firm pressure; raise the bleeding injection site (e.g., arm) above the level of the patient's heart.
Psychological fright, presyncope, and syncope (fainting)	Fright before injection is given	Have patient sit or lie down for the vaccination.
	Patient feels "faint" (e.g., light-headed, dizzy, weak, nauseated, or has visual disturbance)	Have patient lie flat. Loosen any tight clothing and maintain open airway. Apply cool, damp cloth to patient's face and neck. Keep them under close observation until full recovery.

TABLE 5-1: Rapid overview: Emergent management of anaphylaxis in infants and children[a]

Diagnosis is made clinically:	The most common signs and symptoms are cutaneous (e.g., sudden onset of generalized urticaria, angioedema, flushing, pruritus). However, 10 to 20% of patients have no skin findings.
	Danger signs: Rapid progression of symptoms, evidence of respiratory distress (e.g., stridor, wheezing, dyspnea, increased work of breathing, retractions, persistent cough, cyanosis), signs of poor perfusion, abdominal pain, vomiting, dysrhythmia, hypotension, collapse.
Acute management:	The first and most important therapy in anaphylaxis is epinephrine. There are NO absolute contraindications to epinephrine in the setting of anaphylaxis.
	Airway: Immediate intubation if evidence of impending airway obstruction from angioedema. Delay may lead to complete obstruction. Intubation can be difficult and should be performed by the most experienced clinician available. Cricothyrotomy may be necessary.
	IM epinephrine (1 mg/mL preparation): Epinephrine 0.01 mg/kg should be injected intramuscularly in the mid-outer thigh. For large children (>50 kg), the maximum is 0.5 mg per dose. If there is no response or the response is inadequate, the injection can be repeated in 5 to 15 minutes (or more frequently). If epinephrine is injected promptly IM, patients respond to one, two, or at most, three injections. If signs of poor perfusion are present or symptoms are not responding to epinephrine injections, prepare IV epinephrine for infusion (see below).
	Place patient in recumbent position, if tolerated, and elevate lower extremities.
	Oxygen: Give 8 to 10 L/minute via facemask or up to 100% oxygen, as needed.
	Normal saline rapid bolus: Treat poor perfusion with rapid infusion of 20 mL/kg. Reevaluate and repeat fluid boluses (20 mL/kg), as needed. Massive fluid shifts with severe loss of intravascular volume can occur. Monitor urine output.
	Albuterol: For bronchospasm resistant to IM epinephrine, give albuterol 0.15 mg/kg (minimum dose: 2.5 mg) in 3 mL saline inhaled via nebulizer. Repeat, as needed.
	H1 antihistamine: Consider giving diphenhydramine 1 mg/kg (max 50 mg) IV given over 5 minutes, or cetirizine (children age 6 months to 5 years can receive 2.5 mg IV, those 6 to 11 years of age can receive 5 or 10 mg IV, over 2 minutes).
	H2 antihistamine: Consider giving famotidine 0.25 mg/kg (max 20 mg) IV, over at least 2 minutes.
	Glucocorticoid: Consider giving methylprednisolone 1 mg/kg (max 125 mg) IV.
	Monitoring: Continuous noninvasive hemodynamic monitoring and pulse oximetry monitoring should be performed. Urine output should be monitored in patients receiving IV fluid resuscitation for severe hypotension or shock.

https://www.immunize.org/catg.d/p3082.pdf
https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/adverse-reactions.html

Healthcare Provider Documentation

Providers must ensure that the recipient's permanent medical record (whether paper-based or electronic) contains all of the required vaccine administration documentation, which shall consist of the following:

- Date of administration of the vaccine
- Vaccine manufacturer and lot number of the vaccine
- Name and title of person administering the vaccine
- The address of the facility where the permanent record will reside
- Date printed on the appropriate VIS
- Date the VIS was given to the vaccine recipient, or the parents/legal representative
- Best practices also include documenting: dosage, site, route, vaccine expiration date, any adverse events, and any vaccine refusal
- The patient or parent should be provided with a personal immunization record that includes the vaccination(s) and date administered

- All MA licensed health care providers must report administered IZs to the MIIS

https://www.cdc.gov/vaccines/pubs/pinkbook/vac-admin.html

Vaccine safety and adverse event reporting

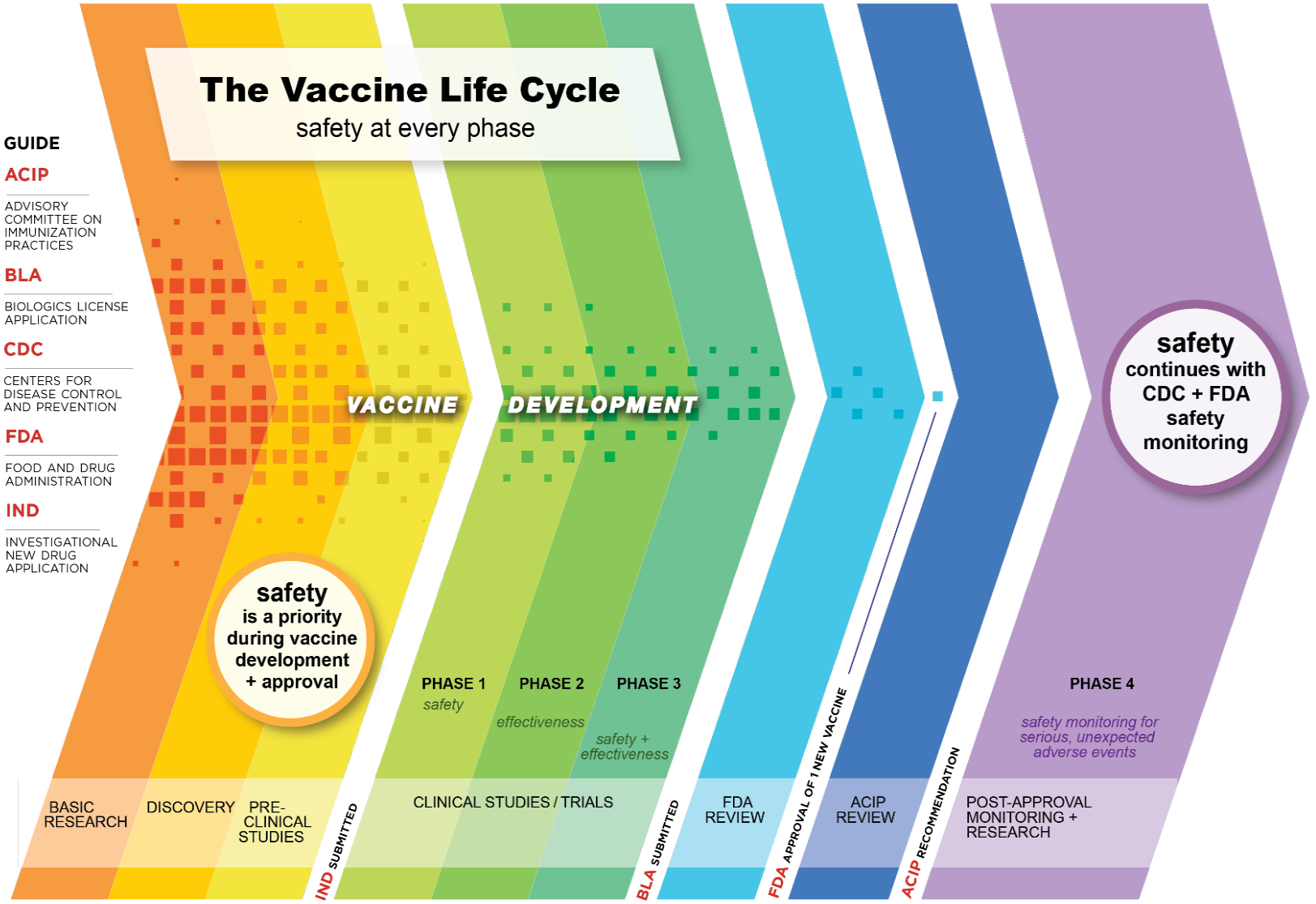
Importance of Vaccine Safety

Public confidence in vaccine safety is critical

- Higher standard of safety is expected of vaccines
- Vaccines generally given to healthy people to prevent disease (vs. ill to treat, for drugs)
- Lower public risk tolerance for adverse reactions, especially in healthy children
- Vaccination universally recommended and mandated

Safety is a priority

during all phases of vaccine development, authorization or approval, and use



https://www.cdc.gov/vaccinesafety/ensuringsafety/history/index.html#anchor_1593624850886

Vaccine Adverse Reactions

Adverse reaction

- An untoward effect caused by a vaccine
- A vaccine side effect

Adverse event

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

investigation is needed to distinguish between these

https://www.cdc.gov/vaccines/pubs/pinkbook/genrec.html

CDC Vaccine Safety Monitoring

- Authorized COVID-19 vaccines are being administered under **the most intensive vaccine safety monitoring effort in U.S. history**
- Strong, complementary systems are in place—both new and established

v-safe	VAERS	VSD	CISA Project

Full list of U.S. COVID-19 vaccine safety monitoring systems

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html

VAERS is the nation's early warning system for vaccine safety

CDC + FDA

VAERS

Vaccine Adverse Event Reporting System

http://vaers.hhs.gov

https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vaers/index.html
https://vaers.hhs.gov/about.html

VAERS

VAERS accepts all reports from everyone regardless of the plausibility of the vaccine causing the event or the clinical seriousness of the event

key strengths

- National data
- Rapidly detects safety signals
- Can detect rare adverse events
- Data available to public

key limitations

- Reporting bias
- Inconsistent quality and completeness of information
- Lack of unvaccinated comparison group
- Not designed to assess causality

CDC + FDA VAERS

What to Report to VAERS

- Providers are required by law to report to VAERS:
  - Any adverse event listed on the VAERS Table of Reportable Events Following Vaccination
  - Any adverse event listed by the vaccine manufacturer as a contraindication to further doses
- Providers are encouraged to report:
  - Any adverse event following the administration of a vaccine, whether or not it is clear the vaccine caused the event
  - Vaccine administration errors
- Manufacturers are required to report:
  - All adverse events that come to their attention

https://vaers.hhs.gov/resources/infoproviders.html
https://vaers.hhs.gov/reportevent.html

COVID-19: What to Report to VAERS

Required to report:

- **Vaccine administration errors**, whether or not associated with an adverse event
- **Serious AEs** regardless of causality. Serious AEs per FDA are defined as:
  - Death
  - A life-threatening AE
  - Inpatient hospitalization or prolongation of existing hospitalization
  - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions
  - A congenital anomaly/birth defect
  - An important medical event that based on appropriate medical judgement may jeopardize the individual and may require medical or surgical intervention to prevent one of the outcomes listed above
- Cases of Multisystem Inflammatory Syndrome
- Cases of COVID-19 that result in hospitalization or death

Encouraged to report:

- **Any additional clinically significant AEs** following vaccination, **even if they are not sure if vaccination caused the event.**

https://vaers.hhs.gov/faq.html
https://www.cdc.gov/vaccines/covid-19/vaccination-provider-support.html

What to Report to VAERS

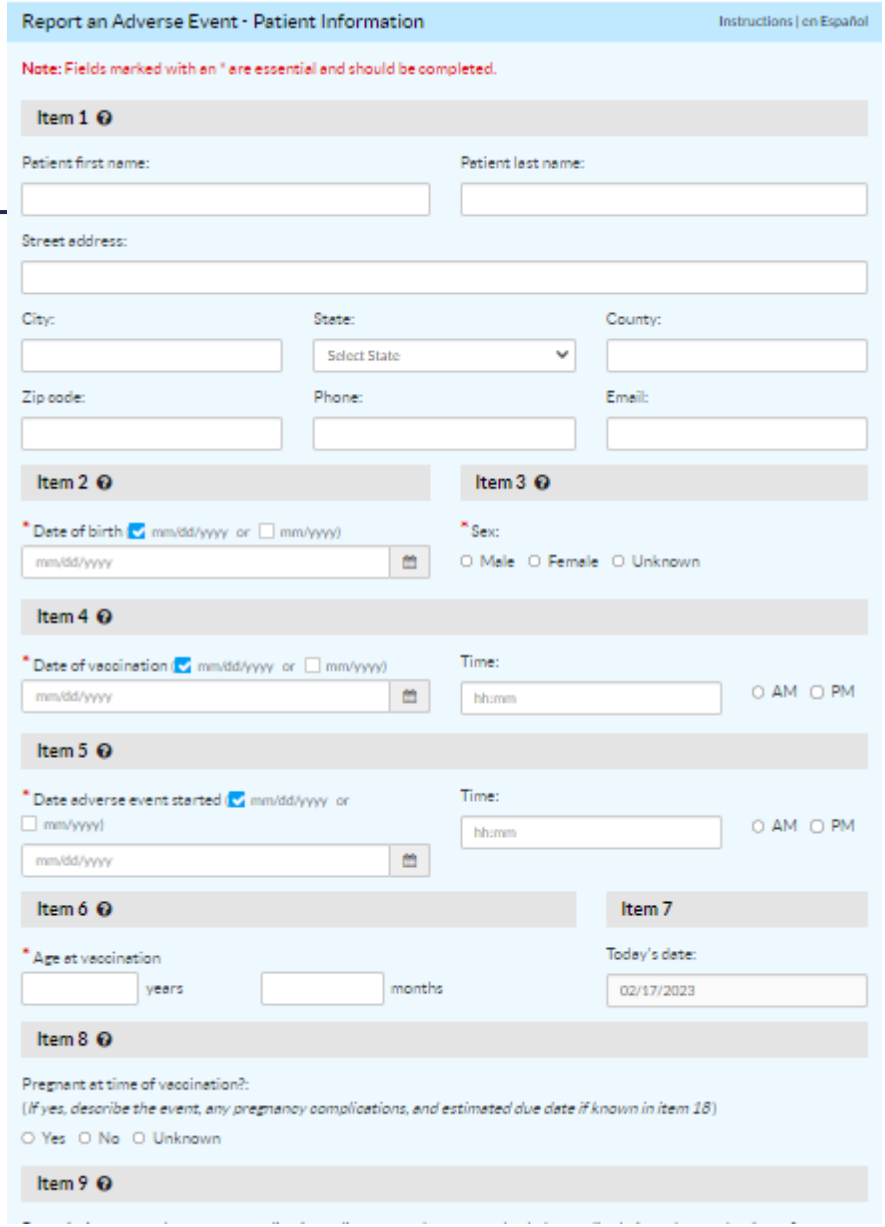
- Any **clinically significant or medically important** adverse event following immunization even if you are not certain the vaccine caused the event

- Some examples of adverse events to report
  - Local: unusual redness, swelling, pain at injection site
  - Systemic: unusual fever, myalgia, headache
  - Allergic: hives, pruritus, anaphylaxis
  - Vaccination errors (e.g., wrong drug administered)

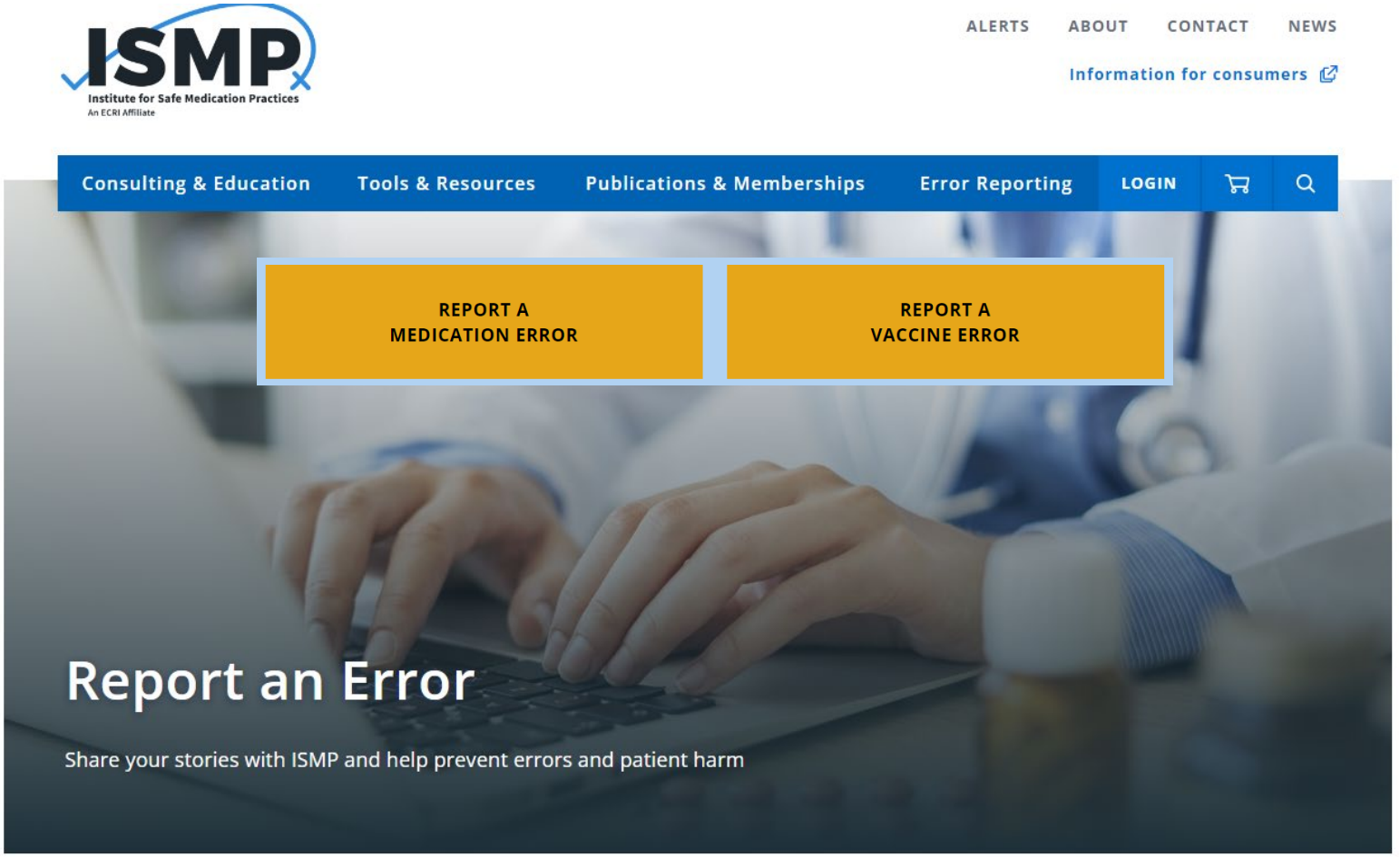
https://vaers.hhs.gov/reportevent.html
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/adverse-reactions.html

VAERS Form

- One page online form, found at: https://vaers.hhs.gov/
- Asks for information on:
  - Patient
  - Vaccine
  - Adverse event
  - Outcome of adverse event
- For help:
  - Call: 1-800-822-7967
  - Email: info@VAERS.org
  - Video instructions https://youtu.be/sbCWhcQADFE
- If COVID-19 vaccine related:
  - Put "*[brand name]* COVID- 19 Vaccine EUA" in the description



Institute for Safe Medication Practices



https://www.ismp.org/

Vaccination and COVID-19 pandemic

COVID-19 Pandemic Effects on Routine Vaccination

- During the COVID-19 pandemic, we saw a concerning drop in routine immunizations for adults and children
- Routine vaccination is rebounding but unevenly and has not yet recovered among all groups
- Despite the tremendous benefit of vaccines, **at least 3 out of every 4 adults are missing one or more routinely recommended vaccines**
- Need to take steps to help get everyone back on schedule with their routine immunizations

Routine Immunizations on Schedule for Everyone (RISE)

Initiative to get all Americans back on-schedule with their routine immunizations

Understand the size, scope and cause of declines in routine vaccinations resulting from COVID-19 pandemic	Devise an evidence-based strategy and operational plan to better direct CDC routine vaccination catch-up activities	Equip partners with evidence-based strategies and resources to get vaccination back on schedule	Share data and insights on trends in routine vaccination rates to find and protect communities that have fallen behind on vaccinations

https://www.cdc.gov/vaccines/partners/routine-immunizations-lets-rise.html

Insurance Coverage

The 2022 Inflation Reduction Act removes some cost barriers to vaccination for older adults and adults on public insurance.

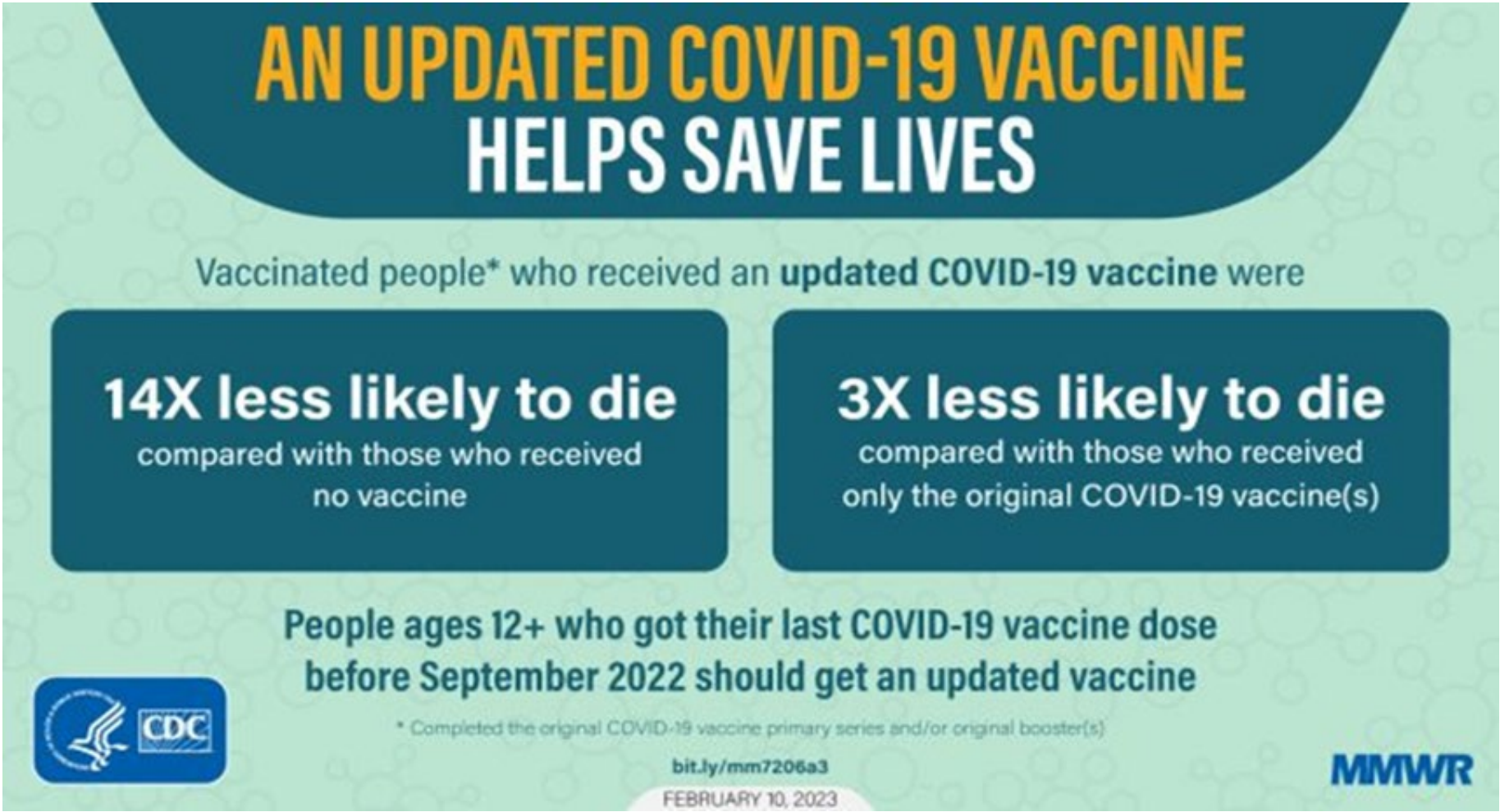
- Effective January 1st, 2023, adult vaccines recommended by ACIP are available to people with Medicare Prescription Drug Coverage (Part D) at no cost to them
- Effective October 1st, 2023, adults in Medicaid also will be guaranteed coverage of ACIP-recommended vaccines at no cost
- Includes vaccines with shared clinical decision-making recommendations and travel vaccines.

https://adultvaccinesnow.org/home/avac-welcomes-passage-of-inflation-reduction-act-to-help-close-longstanding-gaps-in-vaccination-coverage-in-medicare-and-medicaid/

Ways To Take Action

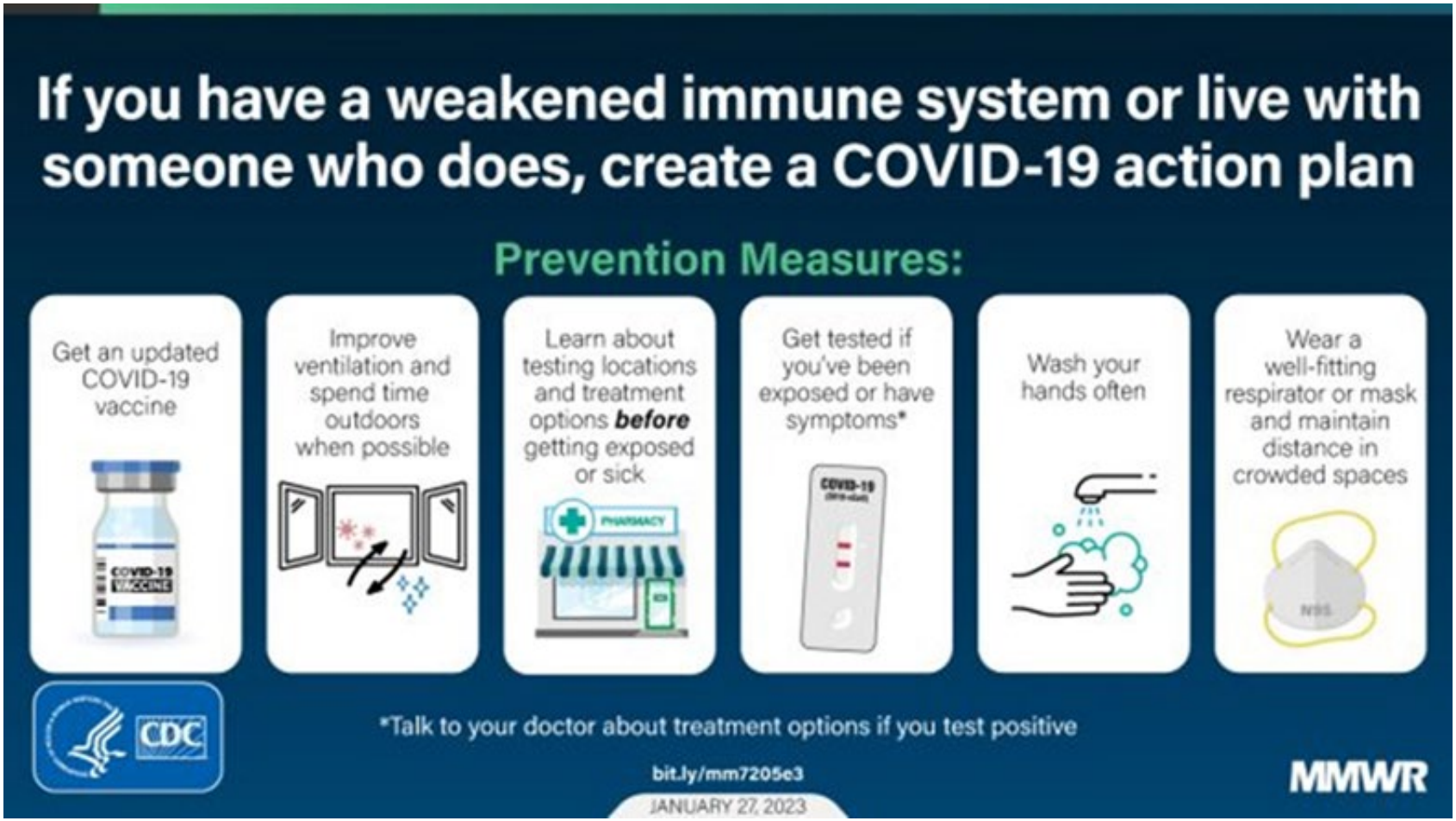
- Support a culture of vaccination within your practice
- Assess immunization status of all your patients at every clinical encounter
- Strongly recommend vaccines that patients need.
  - Share tailored reasons why vaccination is right for the patient
  - Highlight positive experiences with vaccination
  - Address patient questions and concerns
  - Remind patients that vaccines protect them and their loved ones against a number of common and serious diseases
  - Explain the potential costs of getting sick
- Administer, or refer your patients to a vaccination provider
- Call to Action: Protect All Adults from Vaccine-Preventable Disease
  - 12-minute video on best practices standards for adult immunization: https://www.youtube.com/watch?v=hWsX2vu3PQU

One Bivalent Booster Dose



https://www.cdc.gov/mmwr/volumes/72/wr/mm7206a3.htm

Encourage People to Have an Action Plan



https://www.cdc.gov/mmwr/volumes/72/wr/mm7205e3.htm

Resources

COVID-19 Vaccine Resources

- COVID-19 Vaccination Clinical & Professional Resources
  https://www.cdc.gov/vaccines/covid-19/index.html

- COVID-19 Specific Training and Education
  https://www.cdc.gov/vaccines/covid-19/training-education/index.html

- Interim Clinical Considerations
  https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html
  - People who received COVID-19 vaccine outside the United States (Appendix B)
    https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-b
  - Vaccine administration errors and deviations (Appendix D)
    https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-d
  - Triage of people with a history of allergies or allergic reactions (Appendix E)
    https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-e

Voices for Vaccines

The Vaccine Quest

How do vaccines work? How can I tell if the science I am reading about is valid? Who is making sure vaccines are safe? Where do vaccines go once they are inside my body?

It's normal to have questions about vaccines, and it's normal to want to answer questions about vaccines. We have developed an online quest to help you do both. Embark on The Vaccine Quest and learn everything you need to know about vaccines.

This course is free, fun, and made for people from all walks of life.

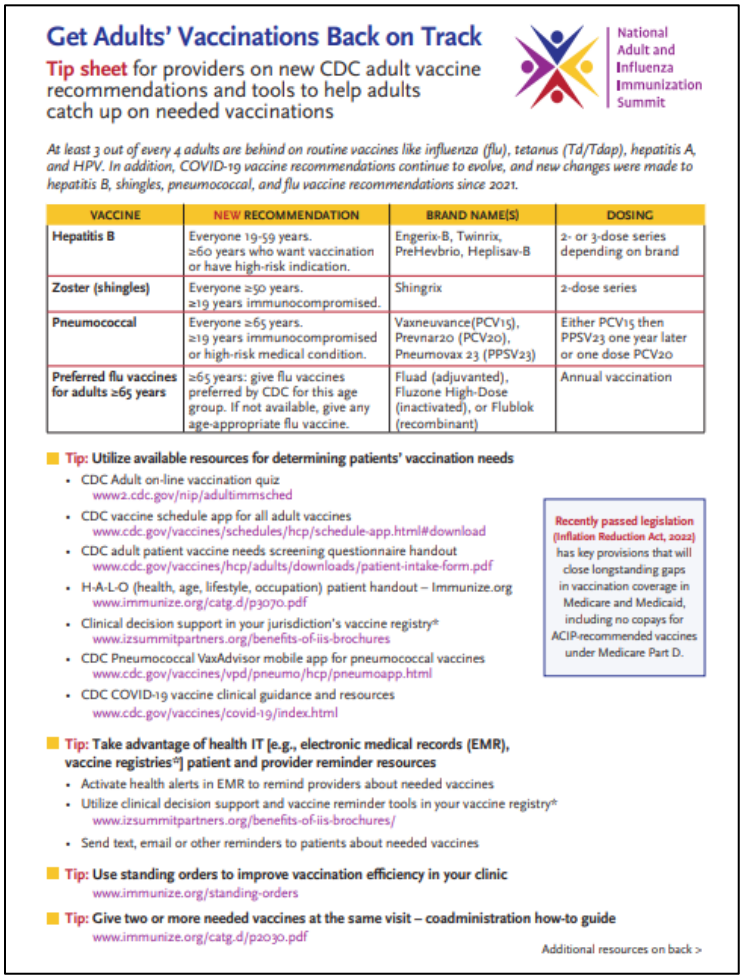
Account Dashboard & Log in

Enroll Now

https://www.voicesforvaccines.org/course/the-vaccine-quest/
https://www.voicesforvaccines.org/resources/

Get Adults' Vaccinations Back on Track

The National Adult and Influenza Immunization Summit has developed a [tip sheet for providers on CDC adult vaccine recommendations](https://www.izsummitpartners.org/content/uploads/Tip-Sheet-on-New-Adult-Vaccine-Recommendations-and-Implementation-Resources.pdf) and tools to help adults get, and catch up on, their recommended vaccinations.



Get Adults' Vaccinations Back on Track

Tip sheet for providers on new CDC adult vaccine recommendations and tools to help adults catch up on needed vaccinations

National Adult and Influenza Immunization Summit

At least 3 out of every 4 adults are behind on routine vaccines like influenza (flu), tetanus (Td/Tdap), hepatitis A, and HPV. In addition, COVID-19 vaccine recommendations continue to evolve, and new changes were made to hepatitis B, shingles, pneumococcal, and flu vaccine recommendations since 2021.

VACCINE	NEW RECOMMENDATION	BRAND NAME(S)	DOSING
Hepatitis B	Everyone 19-59 years. ≥60 years who want vaccination or have high-risk indication.	Engerix-B, Twinrix, PreHevbrio, Heplisav-B	2- or 3-dose series depending on brand
Zoster (shingles)	Everyone ≥50 years. ≥19 years immunocompromised.	Shingrix	2-dose series
Pneumococcal	Everyone ≥65 years. ≥19 years immunocompromised or high-risk medical condition.	Vaxneuvance(PCV15), Prevnar20 (PCV20), Pneumovax 23 (PPSV23)	Either PCV15 then PPSV23 one year later or one dose PCV20
Preferred flu vaccines for adults ≥65 years	≥65 years: give flu vaccines preferred by CDC for this age group. If not available, give any age-appropriate flu vaccine.	Fluad (adjuvanted), Fluzone High-Dose (inactivated), or Flublok (recombinant)	Annual vaccination

Tip: Utilize available resources for determining patients' vaccination needs

- CDC Adult on-line vaccination quiz
  www2.cdc.gov/nip/adultimmsched
- CDC vaccine schedule app for all adult vaccines
  www.cdc.gov/vaccines/schedules/hcp/schedule-app.html#download
- CDC adult patient vaccine needs screening questionnaire handout
  www.cdc.gov/vaccines/hcp/adults/downloads/patient-intake-form.pdf
- H-A-L-O (health, age, lifestyle, occupation) patient handout – Immunize.org
  www.immunize.org/catg.d/p3070.pdf
- Clinical decision support in your jurisdiction's vaccine registry*
  www.izsummitpartners.org/benefits-of-iis-brochures
- CDC Pneumococcal VaxAdvisor mobile app for pneumococcal vaccines
  www.cdc.gov/vaccines/vpd/pneumo/hcp/pneumoapp.html
- CDC COVID-19 vaccine clinical guidance and resources
  www.cdc.gov/vaccines/covid-19/index.html

Recently passed legislation (Inflation Reduction Act, 2022) has key provisions that will close longstanding gaps in vaccination coverage in Medicare and Medicaid, including no copays for ACIP-recommended vaccines under Medicare Part D.

Tip: Take advantage of health IT [e.g., electronic medical records (EMR), vaccine registries*] patient and provider reminder resources

- Activate health alerts in EMR to remind providers about needed vaccines
- Utilize clinical decision support and vaccine reminder tools in your vaccine registry*
  www.izsummitpartners.org/benefits-of-iis-brochures/
- Send text, email or other reminders to patients about needed vaccines

Tip: Use standing orders to improve vaccination efficiency in your clinic
www.immunize.org/standing-orders

Tip: Give two or more needed vaccines at the same visit – coadministration how-to guide
www.immunize.org/catg.d/p2030.pdf

Additional resources on back >

https://immunize.org/

Favorite Immunize.org Resources

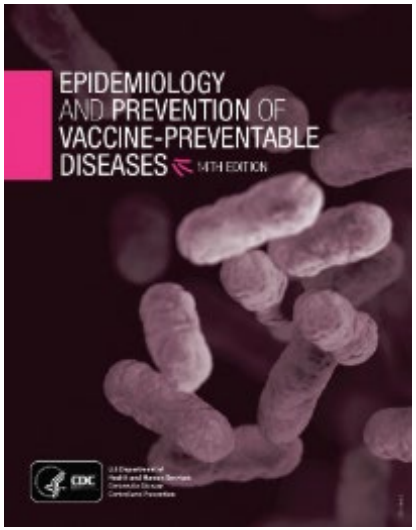
- IAC Express (subscribe) https://immunize.org/subscribe/
- Ask the Experts https://immunize.org/askexperts/
- Key Vaccination Resources for Healthcare Professionals (5-page pdf) https://www.immunize.org/catg.d/p2005.pdf
- Package Inserts https://www.immunize.org/fda/
- Vaccine Terms in Other Languages https://www.immunize.org/catg.d/p5122.pdf
- Hepatitis A and Hepatitis B Vaccines: Be Sure Your Patients Get the Correct Dose https://immunize.org/catg.d/p2081.pdf
- Vaccines with Diluents: How to Use Them https://www.immunize.org/catg.d/p3040.pdf
- Guide to Contraindications and Precautions to Commonly Used Vaccines https://immunize.org/catg.d/p3072a.pdf
- Don't Be Guilty of These Preventable Errors in Vaccine Administration https://www.immunize.org/catg.d/p3033.pdf
- Administering Vaccines (multiple info sheets) https://www.immunize.org/handouts/administering-vaccines.asp

Immunize.org Resources Focused on Clinic and Practice Operations

- *Vaccinating Adults: A Step-by-Step Guide*, a free downloadable book, is a "how to" guide that provides easy-to-use, practical information covering essential adult vaccination activities
- Key Vaccination Resources for Healthcare Professionals is a 5-page annotated list of resources for people who vaccinate or oversee vaccination clinics. The document lists foundational content with which every vaccinator should be familiar, supplemental content useful after completing foundational training, and additional tools to help providers grow in vaccination expertise.
- Topic index on the Clinic Tools main page is a one -stop source of practical information for vaccine providers. You will find "how-to" information about vaccinating in any setting.
- Clinic Tools: Storage and Handling main page offers printable temperature logs to monitor freezers and refrigerators. This site also includes a troubleshooting record to document the occurrence and resolution of questionable or unacceptable vaccine storage events.
- Clinic Tools: Documenting Vaccination main page offers forms to document vaccination or declination of vaccination, as well as various forms and checklists useful to healthcare personnel.

Favorite Pink Book Resources

- Pink Book main page
  https://www.cdc.gov/vaccines/pubs/pinkbook/index.html
- Webinar Series
  https://www.cdc.gov/vaccines/ed/webinar-epv/index.html
- Vaccine Excipient Table
  https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf
- Latex in Vaccine Packaging
  https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/latex-table.pdf
- Vaccine-Preventable Disease Terms in Multiple Languages
  https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/vpd-multiple-languages.pdf



Education Resources

Immunization Education and Training Home Page
https://www.cdc.gov/vaccines/ed/index.html

- You Call the Shots (web-based training course)
  https://www.cdc.gov/vaccines/ed/youcalltheshots.html
- Current Issues in Immunization Webinar (CIIW)
  https://www.cdc.gov/vaccines/ed/ciiw/index.html
- Immunization Courses: Webcasts and Self Study
  https://www.cdc.gov/vaccines/ed/courses.html
- Pink Book Series
  https://www.cdc.gov/vaccines/ed/webinar-epv/index.html

ACIP General Best Practice Guidelines for Immunization
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/

COCA Calls/Webinars
https://emergency.cdc.gov/coca/calls/index.asp

CDC Vaccine Administration webpage
https://www.cdc.gov/vaccines/hcp/admin/admin-protocols.html

NFID Webinars
https://www.nfid.org/about-nfid/continuing-medical-education/webinars/

CDC Recommended and Minimum Ages and Intervals Between Vaccine Doses
https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html#antibody

https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/age-interval-table.pdf

Immunize.org
https://www.immunize.org/

MDPH Immunization events/webinars
https://www.mass.gov/service-details/immunization-division-events

MCAAP Immunization Initiative Webinars
https://mcaap.org/immunization-initiative/

CHOP Vaccine Education Center
https://www.chop.edu/centers-programs/vaccine-education-center

ACIP Recommendations gateway page
https://www.cdc.gov/vaccines/hcp/acip-recs/index.html

https://www.immunize.org/acip/

Toolkit for Prenatal Care Providers
https://www.cdc.gov/vaccines/pregnancy/hcp-toolkit/index.html

Storage and Handling Resources

- MDPH Guidelines for Compliance with Federal and State Vaccine Administration Requirements: https://www.mass.gov/doc/guidelines-for-compliance-with-federal-vaccine-administration-requirements/download

- CDC Storage and Handling Toolkit (with COVID-19 addendum): https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html

Vaccine Safety Resources

- CDC Vaccine Safety main page
  links to info by vaccine, Questions & Concerns, inf for parents, and more
  https://www.cdc.gov/vaccinesafety/index.html
- Vaccine Safety | HHS.gov
  https://www.hhs.gov/immunization/basics/safety/index.html
- "Ask the Experts: Vaccine Safety" web page | Immunize.org
  https://www.immunize.org/askexperts/vaccine-safety.asp
- Ensuring the Safety of Vaccines in the United States | fda.gov
  2-page pdf document
  https://www.fda.gov/files/vaccines,%20blood%20&%20biologics/published/Ensuring-the-Safety-of-Vaccines-in-the-United-States.pdf
- Vaccine Safety Publications
  updated as additional publications become available
  https://www.cdc.gov/vaccinesafety/research/publications/index.html
- COVID-19 Vaccine Safety
  https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html

MDPH Immunization Division Contact Information

Immunization Division Main Number

For questions about immunization recommendations, disease reporting, etc.

Phone: 617-983-6800 (24/7 MDPH Epi/Imm line)

Fax: 617-983-6840

Website: https://www.mass.gov/topics/immunization

MIIS Help Desk

Phone: 617-983-4335

Fax: 857-323-8321

Email questions to: miishelpdesk@mass.gov

Website: https://www.mass.gov/service-details/massachusetts-immunization-information-system-miis

MDPH Vaccine Unit

Phone: 617-983-6828

Email questions to: dph-vaccine-management@mass.gov

Website: https://www.mass.gov/service-details/vaccine-management

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THANK YOU!