
GETTING “VAXXED” TO NORMAL: ADULT VACCINE UPDATES

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OBJECTIVES

Identify the various vaccine types and the basics of vaccine-induced immunity



Discuss vaccination of incarcerated individuals from a public health perspective



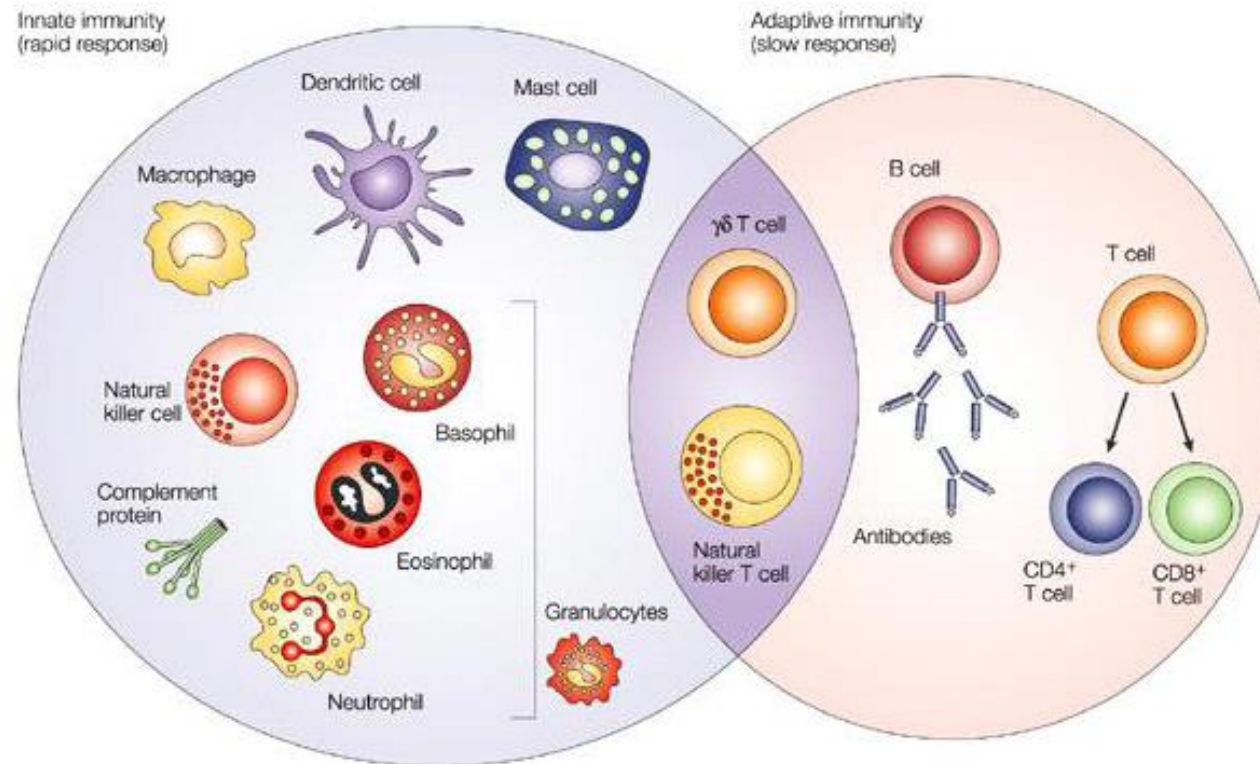
Review the ACIP vaccination recommendations as they apply to the incarcerated population



Review COVID-19 vaccination updates

BASIC IMMUNOLOGY

The body's immune system can be broken down into two systems – Innate and Adaptive

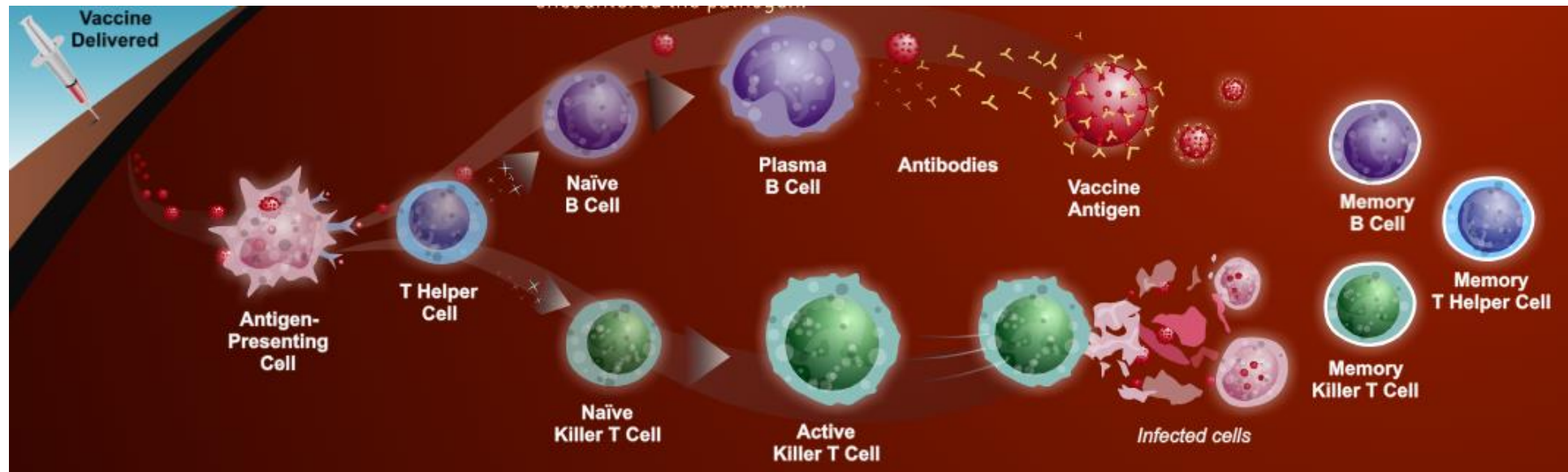


BASIC IMMUNOLOGY – INNATE VS. ADAPTIVE

	Innate	Adaptive
Components	<ul style="list-style-type: none">• Anatomic and physiologic barriers• Complement cascade• Inflammatory response• Phagocytes and granulocytic cells	<ul style="list-style-type: none">• B cells (plasma cells, memory B cells, antibodies)• T cells (Helper T, Killer T)
Activity	<ul style="list-style-type: none">• Always present	<ul style="list-style-type: none">• Normally silent
Response/Potency	<ul style="list-style-type: none">• Immediate• Lower potency	<ul style="list-style-type: none">• Slow (1-2 weeks)• High potency
Specificity	<ul style="list-style-type: none">• General (can recognize general classes) but cannot make fine distinctions	<ul style="list-style-type: none">• Recognizes specific antigens
Course	<ul style="list-style-type: none">• Attempt to immediately destroy pathogen, or hold until adaptive immunity initiates	<ul style="list-style-type: none">• Delayed response; once activated, able to specifically target and contain pathogens
Memory	<ul style="list-style-type: none">• No – same reaction to each pathogen exposure	<ul style="list-style-type: none">• Yes – formation of memory (B and T) cells allows for faster and more potent future response

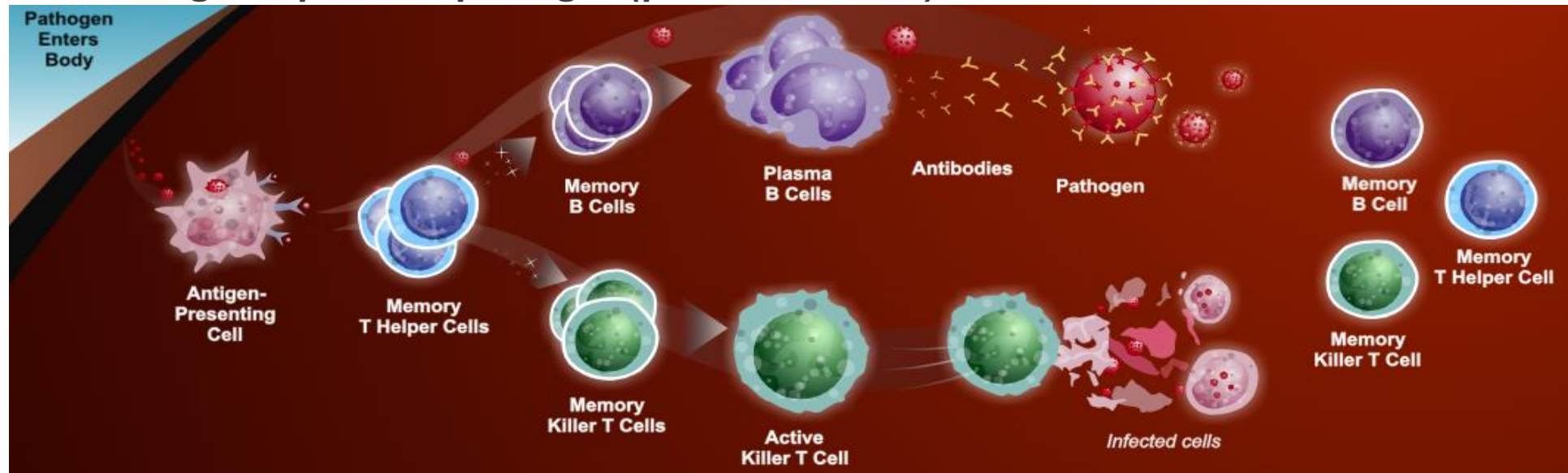
VACCINATION: HOW IT WORKS!

Immunologic response to vaccine



VACCINATION: HOW IT WORKS¹

Immunologic response to pathogen (post-vaccination)



VACCINE TYPES

	Live-attenuated	Inactivated	Subunit, recombinant, polysaccharide, conjugate
Mechanism	<ul style="list-style-type: none">• Weakened, less virulent pathogen	<ul style="list-style-type: none">• Killed, non-virulent pathogen	<ul style="list-style-type: none">• Only a piece of the pathogen (antigen)
Advantages	<ul style="list-style-type: none">• Total immune system activation• Fast, durable immunity	<ul style="list-style-type: none">• Cannot cause disease• More stable, safer• Can be given to immunocompromised	<ul style="list-style-type: none">• Cannot cause disease• Low risk of reaction• Most produce long-term immunity
Disadvantages	<ul style="list-style-type: none">• Avoid in immunocompromised patients• Less stable	<ul style="list-style-type: none">• Not as potent• Boosters, multiple doses	<ul style="list-style-type: none">• Some require multiple doses for long-term immunity
Examples	<ul style="list-style-type: none">• MMR, varicella, influenza (intranasal)	<ul style="list-style-type: none">• Hepatitis A, influenza	<ul style="list-style-type: none">• Hepatitis B, pneumococcal, meningococcal, HPV, shingles

VACCINE TYPES

	Toxoid	mRNA	Viral vector
Mechanism	<ul style="list-style-type: none">Inactivated bacterial toxin	<ul style="list-style-type: none">Purified Viral mRNA (instructions to create antigen)Recipient's body creates the antigen	<ul style="list-style-type: none">Antigen expressed on an unrelated, nonreplicating virusBody can react to antigen without risk of disease
Advantages	<ul style="list-style-type: none">Cannot cause disease	<ul style="list-style-type: none">Cannot cause diseaseRobust immune response	<ul style="list-style-type: none">Cannot cause diseaseLess intense storage requirements
Disadvantages	<ul style="list-style-type: none">Minimal immune response (toxin only)Requires boosters	<ul style="list-style-type: none">High degree of immunogenicity (adverse effects)Storage requirements	<ul style="list-style-type: none">Possibly less robust immune response
Examples	<ul style="list-style-type: none">Tetanus, diphtheria	<ul style="list-style-type: none">SARS-CoV-2	<ul style="list-style-type: none">SARS-CoV-2

WHY VACCINATE IN CORRECTIONS?²

Vulnerable populations

- Disadvantaged social strata, little healthcare access
- Greater history of substance use/abuse
- Higher prevalence of communicable diseases
- Overrepresentation of LGBTQ, sex workers, immigrants

High risk during incarcerations

- Sexual activity, often unprotected, in prisons
- Illicit drug use
- Tattoos/piercings
- Physical violence

Community contact

- Visits/staff/release
- High risk of extreme behavior after release

Accessible population

- Corrections is concentrated in one place
- Population identified and easily located

COST-BENEFIT OF VACCINATION IN CORRECTIONS^{2,3}

Few studies directly measuring cost-effectiveness of vaccination in corrections

For every dollar invested in HBV vaccination, \$2.13 is saved in later treatment and care costs

Combo HAV/HBV vaccine yielded favorable cost-effectiveness

- States with high rates of HAV (>200% national avg) = <\$0 per life-year saved
- States with medium rates of HAV (100-200% national avg) = \$2,131 per life-year saved
- States with low rates of HAV (<100% national avg) = \$22,819 per life-year saved

ROUTINE ADULT VACCINATION OPPORTUNITIES⁴

Vaccine	Applicable Patients
COVID-19	<ul style="list-style-type: none"> • All
Hepatitis A	<ul style="list-style-type: none"> • Unvaccinated high-risk patients
Hepatitis B	<ul style="list-style-type: none"> • All unvaccinated patients ages 19-59 years • Unvaccinated patients ≥60 years at risk for HBV infection
Herpes Zoster (Shingles)	<ul style="list-style-type: none"> • All patients ≥ 50 years • Immunocompromised patients ≥ 19 years
Human papilloma virus	<ul style="list-style-type: none"> • All patients ≤26 years • Some adults 27-45 years based on shared decision making
Influenza	<ul style="list-style-type: none"> • All patients, annually
Measles, mumps, rubella	<ul style="list-style-type: none"> • All patients without evidence of immunity • HIV patients with CD4 count ≥200 cells/mm³ for at least 6 months and no evidence of immunity
Pneumococcal	<ul style="list-style-type: none"> • All patients ≥65 years • Patients 19-64 years with certain underlying medical conditions or risk factors
Tetanus, diphtheria, pertussis	<ul style="list-style-type: none"> • Previously unvaccinated • Pregnancy • Wound management
Varicella Zoster (Chickenpox)	<ul style="list-style-type: none"> • All patients without evidence of immunity

HEPATITIS A AND B VACCINATION – OVERVIEW^{4,5,6}

ACIP Vaccination Recommendations		
	Hepatitis A vaccination	Hepatitis B vaccination
Not at risk, unvaccinated	<ul style="list-style-type: none"> Want protection from HAV 	<ul style="list-style-type: none"> All patients 19-59 years Patients ≥60 years with risk factors
At risk patients, unvaccinated	<ul style="list-style-type: none"> Chronic liver disease¹ HIV infection Men who have sex with men Drug use (injection or noninjection) Persons experiencing homelessness Work with hepatitis A virus Travel in countries with high/intermediate endemic HAV Close, personal contact with international adoptee Pregnancy (if at risk for infection during pregnancy) Residing in settings for exposure² 	<ul style="list-style-type: none"> Chronic liver disease¹ HIV infection Sexual exposure risk Current or recent injection drug use Percutaneous or mucosal risk for exposure to blood (e.g., dialysis, diabetes) Incarcerated persons Travel in countries with high/intermediate endemic HBV Pregnancy (if at risk for infection during pregnancy)
Post-exposure prophylaxis?	<ul style="list-style-type: none"> Yes 	<ul style="list-style-type: none"> Yes
<p>1. Chronic liver disease includes persons with hepatitis B/C, cirrhosis, fatty liver disease, alcoholic liver disease, autoimmune hepatitis, or ALT/AST levels ≥2x ULN</p> <p>2. ACIP considers incarceration a setting of exposure and considers Hepatitis A vaccination in correctional facilities an effective strategy</p>		

HEPATITIS B UPDATE

November 2021 – New HBV vaccine and broadened recommendations

ACIP hepatitis B vaccination recommendation	
“Should” receive HBV vaccine	“May” receive HBV vaccine
<ul style="list-style-type: none">All adults aged 19 to 59 yearsAdults aged ≥60 years with risk factors	<ul style="list-style-type: none">Adults aged ≥60 years without risk factors

Seroprotective rate comparison of hepatitis B vaccines				
	Seroprotective rates following complete vaccination series			
	Engerix-B	Heplisav-B	PreHevbrio	Recombivax HB
Younger cohort ¹	81.3%	95.0%	96.0%	97.0%
Older cohort ²	70.5%	90.1%	83.6%	89%
Diabetes cohort	65.1%	90.0%	83.3%	86%
¹ Younger cohort ages varied by study. Engerix-B and Heplisav-B (18-55 years), PreHevbrio (18-64 years), and Recombivax HB (20-40 years). ² Older cohort ages varied by study. Engerix-B and Heplisav-B (40-70 years), PreHevbrio (≥65 years), and Recombivax HB (≥40 years).				

HEPATITIS A AND B VACCINATION – AVAILABLE PRODUCTS

Vaccine Type	Product	Adult dosing	Cost per series (AWP)
Hepatitis A, inactivated	Havrix	1 mL IM at 0 and 6-12 months	\$183
	Vaqta	1 mL IM at 0 and 6-12 months	\$178
Hepatitis B, recombinant	Engerix-B	20 mcg (1mL) IM at 0, 1, and 6 months	\$231
	Recombivax HB	10 mcg (1mL) IM at 0, 1, and 6 months	\$226
Hepatitis B, recombinant, adjuvanted	Heplisav-B	0.5 mL IM as a 2-dose series at least 1 month apart	\$320
Hepatitis B, recombinant, trivalent	PreHevbrio	1 mL IM at 0, 1, and 6 months	TBD
Hepatitis A and B, inactivated and viral subunit	Twinrix	1 mL IM at 0, 1, and 6 months	\$420

HERPES ZOSTER VACCINATION – OVERVIEW^{7,8}

ACIP Vaccination Recommendations	
Routine Vaccination	Special situations
<ul style="list-style-type: none"> Patients ≥ 50 years¹ 	<ul style="list-style-type: none"> Severe immunocompromising conditions (including HIV infection of all severity)²
1. Even with a history of shingles 2. New FDA approval and ACIP recommendation	

Vaccine Type	Vaccine Brand	Adult Dosing	Cost Per Series (AWP)
Zoster vaccine, recombinant	Shingrix	0.5 mL IM at 0 and 2-6 months (immunocompetent)	\$412
		0.5 mL IM at 0 and 1-2 months (immunocompromised)	

Live attenuated vaccine, Zostavax, is no longer available in the United States as of July 2020

HUMAN PAPILLOMAVIRUS VACCINATION – OVERVIEW⁴

ACIP Vaccination Recommendations	
Routine Vaccination	Special situations
<ul style="list-style-type: none"> • All persons ≤26 years • Some adults 27-45 years (shared decision-making)^I 	<ul style="list-style-type: none"> • N/A
<p>I. Individuals not already immune to HPV through vaccination or natural infection (e.g., unvaccinated, never had sex) and who might be at risk for acquiring a new HPV infection in the future (e.g., plans to have sex with new partner in the future)</p>	

Vaccine Type	Vaccine Brand	Adult Dosing	AWP per series
Human papillomavirus vaccine, inactivated	Gardasil 9	0.5 mL IM at 0, 1-2, and 6 months	\$913

INFLUENZA VACCINATION – OVERVIEW⁹

ACIP Vaccination Recommendations	
Routine Vaccination	Special situations
<ul style="list-style-type: none">• <u>Persons age 6 months or older</u>: Annual dose of any applicable influenza vaccine¹	<ul style="list-style-type: none">• <u>Egg allergy, hives only</u>: Annual dose of any applicable influenza vaccine• <u>Egg allergy, any symptom other than hives</u>: Annual dose of any applicable influenza vaccine – administered in a medical setting under supervision of a health care provider who can recognize and manage severe allergic reactions²
<ol style="list-style-type: none">1. Timing should be before onset in the community, by the end of October. Vaccination may continue as long as there is circulating virus in the community.2. May consider using RIV4 (Flublock) or cclIV4 (Flucelvax) as these are non-egg-based products.	

All vaccines are now
quadrivalent

Influenza vaccines can be
administered with COVID-19
vaccines

New timing recommendation

- Early vaccination (e.g., July/August) should be avoided due to possible waning immunity
- Pregnant women in 3rd trimester should consider early vaccination (e.g. July/August) to confer immunity to the newborn

INFLUENZA VACCINATION – AVAILABLE PRODUCTS

Standard dose, egg-based

- Afluria
- Fluarix
- Flulaval
- Fluzone

Standard dose, cell culture-based

- Flucelvax

Recombinant

- Flublok

High dose, egg-based

- Fluzone High-Dose

Standard dose, egg-based, adjuvanted

- Fluad

Live attenuated, egg-based

- FluMist

INFLUENZA VACCINATION – PRODUCT SELECTION

ACIP has no preference for one product over another

Adults 18-49 years

- Standard-dose inactivated
- Recombinant
- Live-attenuated (FluMist)¹

Adults 50-64 years

- Standard-dose inactivated
- Recombinant

Adults ≥65

- **High-dose inactivated²**
- **Standard-dose inactivated adjuvanted²**
- Standard-dose inactivated
- Recombinant influenza vaccine

1. FluMist is contraindicated in patients who are pregnant, immunocompromised, have CSF leaks or cochlear implants, or who have recently received influenza antivirals
2. Fluzone HD and Fludax have demonstrated stronger immune response in the elderly

MEASLES, MUMPS, RUBELLA VACCINATION – OVERVIEW¹⁰

ACIP Vaccination Recommendations	
Routine Vaccination	Special situations
<ul style="list-style-type: none"> Persons with no evidence of immunity¹ 	<ul style="list-style-type: none"> Health care personnel HIV infection with CD4 count ≥ 200 cells/mm³
1. Evidence of immunity includes: birth before 1957, documentation of receipt of MMR vaccine, laboratory evidence of immunity or disease	

Vaccine Type	Vaccine Brand	Adult Dosing	AWP per series
Measles-mumps-rubella vaccine, live	M-M-R II	0.5 mL SQ x 1 dose (non-healthcare personnel)	\$104
		0.5mL SQ at 0 and 1 month (healthcare personnel, HIV patients, students)	\$209

Note: Live vaccines are contraindicated in pregnant and/or immunocompromised patients (including HIV patients with CD4 count < 200 cells/mm³)

PNEUMOCOCCAL VACCINATION – OVERVIEW¹¹

ACIP adult schedule
2022 will impact
existing institutional
protocols

Prevnar 13 is out,
Prenvar 20 and
Vaxneuvance are in,
Pneumovax 23
remains

Product	Vaccine type	Serotypes included	AWP per dose
Prenvar 13 (PCV13)	Conjugate	13-valent	\$272
Vaxneuvance (PCV15)	Conjugate	15-valent	\$267
Prenvar 20 (PCV20)	Conjugate	20-valent	\$299
Pneumovax 23 (PPSV23)	Polysaccharide	23-valent	\$140

Prenvar 20 will likely be the most efficient and cost-effective option

PNEUMOCOCCAL VACCINATION RECOMMENDATIONS¹¹

CDC recommends pneumococcal vaccination for

- Adults 65 years old and older
- Adults 19 through 64 years old with certain underlying medical conditions or other risk factors:
 - Alcoholism
 - Cerebrospinal fluid leak
 - Chronic heart/liver/lung disease
 - Chronic renal failure*
 - Cigarette smoking
 - Cochlear implant
 - Congenital or acquired asplenia*
 - Congenital or acquired immunodeficiencies*
 - Diabetes
 - Generalized malignancy*
 - HIV infection*
 - Hodgkin disease*
 - Iatrogenic immunosuppression*
 - Leukemia*
 - Lymphoma*
 - Multiple myeloma*
 - Nephrotic syndrome*
 - Sickle cell disease or other hemoglobinopathies*
 - Solid organ transplants*

* Considered an immunocompromising condition

Pneumococcal vaccines

- PCV13:** 13-valent pneumococcal conjugate vaccine (Prenar13[®])
PCV15: 15-valent pneumococcal conjugate vaccine (Vaxneuvance[®])
PCV20: 20-valent pneumococcal conjugate vaccine (Prenar20[®])
PPSV23: 23-valent pneumococcal polysaccharide vaccine (Pneumovax[®])

For those who have never received a pneumococcal vaccine or those with unknown vaccination history

Administer one dose of PCV15 or PCV20.

If **PCV20** is used, their pneumococcal vaccinations are complete.

PCV20

If **PCV15** is used, follow with one dose of PPSV23.

- The recommended interval is at least 1 year.
- The minimum interval is 8 weeks and can be considered in adults with an immunocompromising condition*, cochlear implant, or cerebrospinal fluid leak.
- Their pneumococcal vaccinations are complete.

PCV15

At least 1 year apart
(8 weeks can be considered)

PPSV23

For those who previously received PPSV23 but who have not received any pneumococcal conjugate vaccine (e.g., PCV13, PCV15, PCV20)

You may administer one dose of PCV15 or PCV20.

Regardless of which vaccine is used (PCV15 or PCV20):

- The minimum interval is at least 1 year.
- Their pneumococcal vaccinations are complete.

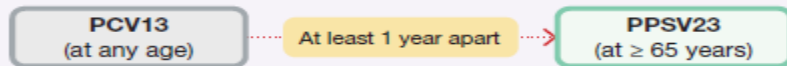
PPSV23

At least 1 year apart

PCV15 or PCV20

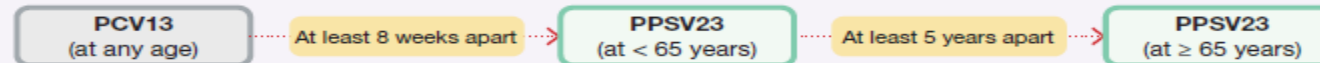
PNEUMOCOCCAL VACCINATION RECOMMENDATIONS¹¹

Adults 65 years or older without an immunocompromising condition, cerebrospinal fluid leak, or cochlear implant



CDC recommends 1 dose of PPSV23 at age 65 years or older.** Administer a single dose of PPSV23 at least 1 year after PCV13 was received. Their pneumococcal vaccinations are complete.

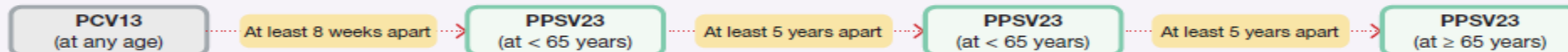
Adults 19 years or older with a cerebrospinal fluid leak or cochlear implant



CDC recommends 1 dose of PPSV23 before age 65 years and 1 dose of PPSV23** at age 65 years or older.** Administer a single dose of PPSV23 at least 8 weeks after PCV13 was received.

- If the adult is 65 years or older, their pneumococcal vaccinations are complete.
- If the adult was younger than 65 years old when the first dose of PPSV23 was given, then administer a final dose of PPSV23 once they turn 65 years old and at least 5 years have passed since PPSV23 was first given. Their pneumococcal vaccinations are complete.

Adults 19 years or older with an immunocompromising condition



CDC recommends 2 doses of PPSV23 before age 65 years and 1 dose of PPSV23** at age 65 years or older.** Administer a single dose of PPSV23 at least 8 weeks after PCV13 was received.

- If the patient was younger than 65 years old when the first dose of PPSV23 was given and has not turned 65 years old yet, administer a second dose of PPSV23 at least 5 years after the first dose of PPSV23. This is the last dose of PPSV23 that should be given prior to 65 years of age.
- Once the patient turns 65 years old and at least 5 years have passed since PPSV23 was last given, administer a final dose of PPSV23 to complete their pneumococcal vaccinations.

PNEUMOCOCCAL VACCINATION RECOMMENDATIONS¹¹

Adults with previous PPSV23 only

- Adults who have only received PPSV23 (Pneumovax 23) may receive a PCV (either Prevnar 20 or Vaxneuvance) ≥ 1 year after their last PPSV23 dose
- When Vaxneuvance is used in those with a history of Pneumovax 23 receipt, it need not be followed by another dose of Pneumovax 23

PNEUMOCOCCAL VACCINE SCENARIOS

Age	Risk Factors	Immunocompromised	PPSV23	PCV13	Recommendation
19-64	Yes	No	Yes (x1)	No	May give one dose PCV15 or PCV20 at least 1 year after PPSV23
19-64	Yes	Yes	Yes (x1)	Yes	Give 2 nd dose of PPSV23 (8 weeks after PCV13, 5 years after PPSV23); 3 rd PPSV23 at age 65
19-64	Yes	Yes	Yes (x2)	Yes	No additional doses; 3 rd PPSV23 at age 65
≥65	No	No	Yes (x1)	No	May give one dose PCV15 or PCV20 at least 1 year after PPSV23
≥65	Yes	No	Yes (x1)	No	
≥65	Yes	Yes	No	Yes	Give one dose PPSV23 (8 weeks after PCV13)
≥65	Yes	Yes	Yes (x1)	Yes	If patient received PPSV23 at or after age 65, no additional doses If patient received PPSV23 before age 65, Give 3 rd PPSV23 (8 weeks after PCV13, 5 years after PPSV23)
≥65	Yes	Yes	Yes (x2)	Yes	

TETANUS, DIPHTHERIA, PERTUSSIS – OVERVIEW^{1,2}

ACIP Vaccination Recommendations	
Routine Vaccination	Special situations
<ul style="list-style-type: none"> Patients who previously did not receive Tdap at or after age 11 years¹ Td or Tdap booster every 10 years² 	<ul style="list-style-type: none"> Patients who previously did not receive primary vaccination series for tetanus, diphtheria, or pertussis³ Pregnancy⁴ Wound management^{5,6}
<ol style="list-style-type: none"> Single dose Tdap, then Td or Tdap every 10 years Either Td or Tdap can now be used for the booster dose 1 dose Tdap, 1 dose Td or Tdap (4 weeks after), one dose Td or Tdap (6-12 months after) Single dose Tdap during each pregnancy, preferably in early part of gestational weeks 27-36 Persons with 3 or more doses of tetanus-toxoid-containing vaccine <ol style="list-style-type: none"> <u>Clean and minor wound</u>: Tdap or Td if ≥10 years since last dose; <u>All other wounds</u>: Tdap or Td if ≥5 years since last dose Persons without complete tetanus series or with HIV or severe immunodeficiency who have contaminated wounds (including minor wounds) should also receive TIG, regardless of their history of tetanus immunization 	

Vaccine Type	Vaccine Brand	AWP per dose
Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine adsorbed (Tdap)	Adacel	\$60
	Boostrix	\$53
Tetanus and diphtheria toxoids adsorbed (Td)	Tenivac	\$45

VARICELLA ZOSTER VACCINATION – OVERVIEW¹³

ACIP Vaccination Recommendations	
Routine Vaccination	Special situations
<ul style="list-style-type: none"> Patients without evidence of immunity¹ 	<ul style="list-style-type: none"> Persons at increased risk of exposure or increased risk for transmission to persons at high risk for severe disease² Healthcare personnel with no evidence of immunity HIV infection with CD4 count ≥ 200 cells/mm³
<p>1. Evidence of immunity: US-born before 1980 (except for pregnant women and healthcare personnel), documentation of 2 dose varicella vaccine, documented diagnosis of varicella or herpes zoster, or laboratory evidence of immunity or disease</p> <p>2. Includes residents and staff in institutional setting</p>	

Vaccine Type	Vaccine Brand	Adult Dosing	AWP per series
Varicella vaccine, live	Varivax	0.5 mL SQ at 0 and 1 month	\$362

Note: Live vaccines are contraindicated in pregnant and/or immunocompromised patients (including HIV patients with CD4 count < 200 cells/mm³)

DISCUSSING VACCINATION WITH PATIENTS

Patients are not always receptive during initial phase of incarceration – consider follow-up discussion

It's okay to have concerns – but we can help improve understanding

Benefits far outweigh the risks

- COVID-19 vaccines reduce severity and risk of hospitalization/death
- Flu vaccines reduce severity and risk of hospitalization/death

COVID-19 VACCINE UPDATES

Most children and all teens can get COVID-19 vaccines

- Everyone 5 years and older should get a COVID-19 vaccine
- Moderna/J&J authorized for adults, Pfizer authorized down to age 5
- Pfizer has delayed authorization request for 6 months to 4 years
 - Two-dose series did not generate strong enough response in 2-4 year olds, may require three-dose series

Everyone ages 12 years and older should get a COVID-19 booster

- At least 5 months after completing primary series

Immunocompromised patients require a 3 dose primary series

- Booster (4th shot) given at least 3 months after primary series
- Recipients of J&J will get a total of 3 injections (booster included)

Primary series interval expanded for young males

- Mitigate risk of myocarditis

Novavax and Sanofi/GSK pending FDA authorization

- Novavax is a recombinant, adjuvanted vaccine
- Sanofi/GSK is a protein based vaccine

PATIENT CASE #1

BW is a 37 year old Hispanic male with a history of HTN, T2DM, and anxiety. He smoked 1 pack/day prior to admission. You are seeing BW in November. He had Chickenpox as a child, and a Tdap in the ER 2 years ago. Which vaccines would be appropriate for BW?

COVID-19

Hepatitis A

Hepatitis B

Herpes
Zoster
(Shingles)

Human
papilloma
virus

Influenza

Measles,
mumps,
rubella

Pneumococcal

Tetanus,
diphtheria,
pertussis

Varicella
Zoster
(Chickenpox)

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Measles,
mumps,
rubella

Pneumococcal

Tetanus,
diphtheria,
pertussis

Varicella
Zoster
(Chickenpox)

PATIENT CASE #2

AT is a 24 year old African American female with no significant medical history. She is a current smoker and is currently pregnant. She has previously received a full HPV vaccination series. Which vaccines would be appropriate for AT?

COVID-19

Hepatitis A

Hepatitis B

Herpes
Zoster
(Shingles)

Human
papilloma
virus

Influenza

Measles,
mumps,
rubella

Pneumococcal

Tetanus,
diphtheria,
pertussis

Varicella
Zoster
(Chickenpox)

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Hepatitis A

Hepatitis B

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Zoster
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Human
papilloma
virus

Influenza

Measles,
mumps,
rubella

Pneumococcal

Tetanus,
diphtheria,
pertussis

Varicella
Zoster
(Chickenpox)

PATIENT CASE #3

WR is a 34 year old white male with a history of asthma and HIV. He's already received his COVID-19 and influenza vaccines. He has a documented history of chickenpox as a child. Which vaccines would be appropriate for WR?

COVID-19

Hepatitis A

Hepatitis B

Herpes
Zoster
(Shingles)

Human
papilloma
virus

Influenza

Measles,
mumps,
rubella

Pneumococcal

Tetanus,
diphtheria,
pertussis

Varicella
Zoster
(Chickenpox)

PATIENT CASE #3

WR is a 34 year old white male with a history of asthma and HIV. He's already received his COVID-19 and influenza vaccines. He has a documented history of chickenpox as a child. Which vaccines would be appropriate for WR?

COVID-19

Hepatitis A

Hepatitis B

Herpes
Zoster
(Shingles)

Human
papilloma
virus

Influenza

Measles,
mumps,
rubella

Pneumococcal

Tetanus,
diphtheria,
pertussis

Varicella
Zoster
(Chickenpox)

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QUESTIONS?



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