



From Hepatitis A to Zoster:
2024 Update on Immunization Recommendations
for People With and At-risk for HIV

Dorothy A. Knutsen, MD

Clinical Assistant Professor, Department of Medicine
NYU Grossman School of Medicine
New York, NY



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Learning Objectives

- Review the current immunization guidelines in people living with HIV.
- Appreciate the differences in vaccine recommendations based on CD4 counts, particularly with live-virus vaccines.
- Be familiar with mpox vaccine practices in at-risk populations.

Outline

- Overview of guideline-making groups and resources
- Specific vaccine recommendations
- Cases
- Concerning outbreaks
- Vaccine equity and hesitancy
- New vaccines
- Important considerations

BACKGROUND

Helpful Resources

- Centers for Disease Control and Prevention (CDC)
 - Advisory Committee on Immunization Practice (ACIP)
 - VAERS (CDC & FDA) - Vaccine Adverse Event Reporting System
- National Institutes of Health (NIH)
 - **ClinicalInfo** - A service of the U.S. Department of Health and Human Services (HHS), maintained by the Office of AIDS Research (OAR)
 - <https://clinicalinfo.hiv.gov>
- Infectious Diseases Society of America (IDSA)
- Immunize.org
- State and local health departments

ACIP Guidelines

- Most of the vaccination recommendations from the ACIP for people living with HIV are the same as the general population, with some notable exceptions
 - The live-attenuated flu vaccine is contraindicated at ALL CD4 counts
 - If HIV+ then NO intranasal flu vaccine
 - Certain live attenuated vaccines are contraindicated when the CD4 count is less than 200 cells/mm³
 - COVID-19, HAV, HBV, meningococcal, and pneumococcal vaccines have specific indications related to HIV status

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Vaccine Vocabulary, According to the CDC

- Adjuvant - A vaccine component distinct from the antigen that enhances the immune response to the antigen.
- Recombinant - Of or resulting from new combinations of genetic material or cells; the genetic material produced when segments of DNA from different sources are joined to produce recombinant DNA.
- Live attenuated - A vaccine in which a live virus is weakened (attenuated) through chemical or physical processes in order to produce an immune response without the severe effects of the disease.
- Conjugate - A vaccine in which two compounds (usually a protein and polysaccharide) are joined to each other to increase the vaccine's effectiveness.
- Acellular - A vaccine containing partial cellular material as opposed to complete cells.
- Toxoid – A vaccine that uses inactivated toxins to target the toxin activity of the bacteria
- Inactivated - A vaccine made from viruses and bacteria that have been killed through physical or chemical processes, or contain parts proteins of the infectious agents.
- mRNA - A vaccine that uses mRNA to teach our cells how to make a protein—or even just a piece of a protein—that produces an immune response to a disease.

Source: CDC.gov – Vaccines & Immunizations, *Glossary*

RESPIRATORY INFECTIONS

Monday's Clinic Visit

- 67 yo lady with a Hx of well-controlled HIV on DTG/RPV (CD4 500 cells/mm³, VLUD) presents for regular follow up. You last saw her 6 months ago and she tells you that she's otherwise been well, but caught COVID on a summer cruise to Alaska with her girlfriends in June. She had very mild symptoms and recovered without issue. Since 2020, she's had 4 COVID vaccines, combination of Johnson & Johnson and Moderna, last COVID vaccine in November 2023. She wants this year's flu shot, but doesn't think that she needs the new COVID vaccine.
- What do you recommend?
 - Does she even need a COVID shot?
 - If she does, which one would you use?
 - What about timing from her previous COVID episode?
 - When should she get a booster?



COVID-19

- Available vaccines as of August 30th, 2024 (FDA EUA)
 - 2024-2025 Moderna (mRNA) - SPIKEVAX
 - 2024-2025 Pfizer-BioNTech (mRNA) - COMINARTY
 - 2024-2025 Novavax (adjuvanted)
- Moderna and Pfizer-BioNTech target KP.2 Omicron variant
- Novavax targets JN.1 variant
- Considered "up-to-date" with one dose of this season's vaccine
 - If never vaccinated, do not use Novovax as initial dose
- Boosters are NOT recommended if you are 65 years or older
- Moderately to severely compromised people have separate recommendations

Source: CDC.gov, Staying Up To Date with COVID-19 Vaccines

COVID-19 and Moderately to Severely Compromised People

- Qualifiers specific to HIV
 - CD4 < 200 cells/mm³
 - AIDS defining illness w/o evidence of immune reconstitution
 - Symptomatic HIV
- Number of doses to be considered "up-to-date" is dependent on previous doses
 - Goal is for three total doses (of mRNA)
 - If received 1, then need 2 more doses
 - If received 2, then need 1 more dose
 - If already received 3 or more, then need 1 dose
- Consider booster after 2 months, shared decision making w/ medical provider



Source: CDC.gov - Vaccines for Moderately to Severely Immunocompromised People

COVID-19 – Never Vaccinated

- Plan for 2 or 3 doses of the same brand
- Pfizer-BioNTech
 - First dose
 - Second dose – 3 weeks after 1st dose
 - Third dose – At least 4 weeks after the 2nd dose
- Moderna
 - First dose
 - Second dose – 4 weeks after 1st dose
 - Third dose – At least 4 weeks after the 2nd dose
- Novavax
 - First dose
 - Second dose – At least 3 weeks after the 1st dose

Source: CDC.gov - Vaccines for Moderately to Severely Immunocompromised People

COVID-19 – One Previous Dose

- Pfizer-BioNTech
 - Second dose – 3 weeks after 1st dose
 - Third dose – At least 4 weeks after the 2nd dose
- Moderna
 - Second dose – 4 weeks after 1st dose
 - Third dose – At least 4 weeks after the 2nd dose
- Novavax
 - Second dose – 8 weeks after 1st dose – either type

Source: CDC.gov - Vaccines for Moderately to Severely Immunocompromised People

COVID-19 – Multiple Previous Doses

- Pfizer-BioNTech
 - Two previous doses
 - Third dose - At least 4 weeks after the 2nd dose
 - Three or more previous doses
 - One dose at least 8 weeks after last dose – either type
- Moderna
 - Two previous doses
 - Third dose - At least 4 weeks after the 2nd dose
 - Three or more previous doses
 - One dose at least 8 weeks after last dose – either type

Source: CDC.gov - Vaccines for Moderately to Severely Immunocompromised People

Monday's Follow Up

- She should get this year's COVID vaccine because it has been > three months since her recent COVID episode
 - Vaccination immediately post-COVID is not needed
- She just needs one of the available vaccines
 - With her previous vaccine history, all vaccines are reasonable options
- She can get the COVID vaccine at the same time as her flu shot
- Boosters are not recommended by the CDC at this time

Influenza

- 9 available TRIVALENT flu vaccines this season
 - Egg-based inactivated (IIV)
 - A/Victoria/4897/2022 (H1N1)pdm09-like virus
 - A/Thailand/8/2022 (H3N2)-like virus
 - B/Austria/1359417/2021 (B/Victoria lineage)-like virus
 - Recombinant hemagglutinin (RIV)
 - A/Wisconsin/67/2022 (H1N1)pdm09-like virus
 - A/Massachusetts/18/2022 (H3N2)-like virus
 - B/Austria/1359417/2021 (B/Victoria lineage)-like virus
 - Live-attenuated (intranasal) – CONTRAINDICATED in PLWH



Source: CDC.gov – Influenza, *Information for the 2024-2025 Flu Season*

Influenza

- Indications - EVERYONE
 - High-dose for those HIV > 65 years
 - Safe in pregnancy
- Live-attenuated intranasal version contraindicated in PLWH
- Egg-allergic people can receive any vaccine, without added precautions
 - Standard post-vaccine monitoring per protocol

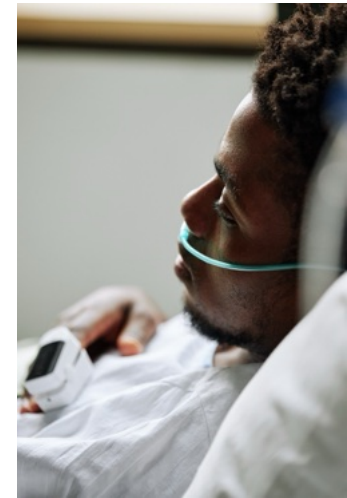
2024-2025 Influenza Vaccines

Manufacturer	Trade Name (vaccine abbreviation) ¹	How Supplied
AstraZeneca	FluMis (IIV3)	0.2 mL (single-use nasal spray)
GSK	Fluarix (IIV3)	0.5 mL (single-dose syringe)
	FluLaval (IIV3)	0.5 mL (single-dose syringe)
Sanofi	Flublok (RIV3)	0.5 mL (single-dose syringe)
	Fluzone (IIV3)	0.5 mL (single-dose syringe)
		0.5 mL (single-dose vial)
		5.0 mL multi-dose vial (0.25 mL dose)
		5.0 mL multi-dose vial (0.5 mL dose)
Fluzone High-Dose (HD-IIV3)	0.5 mL (single-dose syringe)	
CSL Seqirus	Afluria (IIV3)	5.0 mL multi-dose vial (0.25 mL dose)
		5.0 mL multi-dose vial (0.5 mL dose)
		0.5 mL (single-dose syringe)
	Fluad (aIIV3)	0.5 mL (single-dose syringe)
	Flucelvax (ccIIV3)	0.5 mL (single-dose syringe)
		5.0 mL multi-dose vial (0.5 mL dose)

Source: Immunize.org - Influenza Vaccine Products for the 2024–2025 Influenza Season

RSV

- Available vaccines
 - Arexvy (GSK) – recombinant, adjuvanted
 - Abrysvo (Pfizer) – recombinant
 - Safe in pregnancy
 - mResvia (Moderna) – mRNA
- Ideal vaccination time between August and October
- Indication: Adults ages 75 and older and for adults ages 60-74 who are at increased risk of severe RSV disease
 - Moderate or severe immune compromise (either attributable to a medical condition or receipt of immunosuppressive medications or treatment)



Source: CDC.gov – RSV, *Vaccines for Adults Ages 60 and Over*

Pneumococcal

- Available vaccines
 - PCV20 [Prevar20 (Pfizer)] - conjugate
 - 1, 3, 4, 5, 6A, 6B, 7F, 8, 9V, 10A, 11A, 12F, 14, 15B, 18C, 19A, 19F, 22F, 23F, and 33F
 - PCV15 [Vaxneuvance (Merck)] – conjugate
 - PCV13 no longer available
 - PPSV23 [Pneumovax (Merck)] – polysaccharide Ag
- Indications – ALL people with HIV
- Dosing schedule dependent on age and previous vaccine history
 - PCV20 can be given by itself, but PCV15 must be followed by PPSV23 at least 8 weeks later
 - Maximum three doses of PPSV23

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Situation	Recommendation
PCV13 and PPSV23 received at age \geq65 years	<ul style="list-style-type: none"> - No further doses of PPSV23 are needed. - Consider PCV20 at least 5 years after the last pneumococcal vaccine dose (shared decision-making recommended).
PCV13 and PPSV23 received at age <65 years	<ul style="list-style-type: none"> - One dose of PCV20 at least 5 years after the last pneumococcal vaccine dose (alternative to additional PPSV23 doses). - Additional PPSV23 doses as follows (if PCV20 not given):
Only PPSV23 received	<ul style="list-style-type: none"> - Administer either PCV20 or PCV15 \geq1 year after the last PPSV23 dose to complete the pneumococcal vaccination series.
Only PCV13 received	<ul style="list-style-type: none"> - Administer one dose of PCV20 at least 1 year later OR - Administer PPSV23 at least 8 weeks later and then complete the PPSV23 series as recommended.
2nd dose of PPSV23 given before age 65 years	<ul style="list-style-type: none"> - Administer a second dose of PPSV23 at least 5 years after the first dose. - If age 65 or older at the time of the second dose, no further PPSV23 needed. - If under 65 at the second dose, administer a third dose of PPSV23 at or after age 65, at least 5 years after the second PPSV23 dose.

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV



Tetanus/Diphtheria/Pertussis

- Vaccine formulations – tetanus and diphtheria toxoids, acellular pertussis
 - Adacel (Sanofi Pasteur)
 - Boostrix (GSK)
- Indications
 - Did not receive Tdap at age 11 years – one dose of Tdap, followed by Tdap or Td every 10 years
 - Pregnancy – Every pregnancy, GW 27-36 weeks

HEPATITIS

Tuesday's Clinic Visit

- 58yo gentleman with a Hx of well-controlled HIV on DTG/3TC. He and his boyfriend have an open relationship, and his partner had a recent syphilis exposure, so he's in clinic for treatment. He mentions that he's headed to India in a few months for a friend's wedding and wants to know if he's up-to-date on his vaccines. You see in his chart that he received the hepatitis B vaccine series in 2018. In addition to needing this year's flu and COVID vaccines, you decide to go over his hepatitis serologies.
 - HAV total Ab negative
 - HBV core Ab negative, HBV surface Ab negative, HBV surface Ag negative
 - HCV Ab negative
- What do you recommend?
 - If requiring vaccination, which vaccines would you use?



Hepatitis A

- Vaccine formulations
 - Two dose, single antigen, inactivated
 - Havrix (GSK) - 0, 6-12 months
 - Vaqta (Merck) - 0, 6-12 months
 - Three dose, combination HAV + HBV
 - Twinrix (GSK) - 0, 1, 6 months
- Indication - **ALL** non-immune persons with HIV
- Consider assessing Ab response 1-2 months after completion of the series; if negative, consider re-vaccinating, ideally when $CD4 > 200 \text{ cell/mm}^3$
- Post-exposure prophylaxis
 - HAV vaccine and immune globulin at 2 separate anatomical sites within 2 weeks of exposure...the earlier the better



Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Hepatitis B

- Vaccine formulations
 - Three dose, single antigen, recombinant
 - High-dose Engerix-B (GSK) or high-dose Recombivax (Merck) – 0, 1, 6 months
 - Specific to HIV
 - ACIP does not recommend high-dose
 - Two dose, conjugated (CpG TLR-9 agonist adjuvant)
 - Heplisav (Dynavax) – 0, 1 month
 - Safety and efficacy not established in people with HIV
 - Three dose, combination HAV + HBV
 - Twinrix (GSK) - 0, 1, 6 months
- Indications – **ALL** non-immune persons with HIV
- Check anti-HBsAb 1-2 months after series is completed



Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Hepatitis B

- Vaccine non-responders
 - Consider waiting until CD4 > 200 cells/mm³
 - Repeat vaccine series w/ Energix-B, Recombivax, or Heplisav
 - Use a different brand for the second attempt
- Isolated anti-HBcAb positivity
 - Vaccinate with one standard dose of HBV vaccine
 - Repeat anti-HBsAb
 - ≥100 mIU/mL – no further vaccinated required
 - <100 mIU/mL, then vaccinate with a complete series of HepB (double dose) followed by anti-HBs testing
- Post-exposure prophylaxis
 - Completed vaccine series but immunity not known – administer single dose of vaccine
 - Unvaccinated or incomplete vaccine series - HBIG and vaccine at 2 separate anatomical sites, ideally within 24 hours
 - 7 days for percutaneous exposure and 14 days for sexual exposure

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Recent Hepatitis (A) Outbreaks



Morbidity and Mortality Weekly Report
(MMWR)

Search

Notes from the Field: Increase in Reported Hepatitis A Infections Among Men Who Have Sex with Men — New York City, January–August 2017

Weekly / September 22, 2017 / 66(37);999–1000



[MMWR Morb Mortal Wkly Rep.](#) 2023 Apr 7; 72(14): 362–365.
Published online 2023 Apr 7. doi: [10.15585/mmwr.mm7214a2](https://doi.org/10.15585/mmwr.mm7214a2)

PMCID: [PMC10078849](https://pubmed.ncbi.nlm.nih.gov/37022982/)
PMID: [37022982](https://pubmed.ncbi.nlm.nih.gov/37022982/)

Widespread Community Transmission of Hepatitis A Virus Following an Outbreak at a Local Restaurant — Virginia, September 2021–September 2022

FDA U.S. FOOD & DRUG ADMINISTRATION

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Outbreak Investigation of Hepatitis A Virus Infections: Frozen Strawberries (February 2023)

FDA's investigation is complete. CDC declares outbreak over. Do not eat recalled Frozen Strawberries.



Tuesday's Follow Up

- Non-immune to HAV and HBV non-responder
 - Needs both HAV and HBV vaccine series
- Due to the time constraints, favor Heplisav
 - Likely need high-dose or Heplisav if non-responder
 - Would not use Twinrix

CHILDHOOD VACCINES, REVISITED

Wednesday's Clinic Visit

- 42yo lady presents to clinic for pre-employment evaluation. She was recently diagnosed with advanced HIV with PJP pneumonia about 5 months ago, CD4 count was 4 cells/mm³ and viral load 500,000 copies. She was started on BIC/TAF/FTC and completed treatment for PJP, now on prophylactic TMP-SMX. Her viral load is now undetectable and her CD4 count is 115 cells/mm³. She was born in the USSR, but recently left her country seeking asylum status. She does not have her vaccination records with her but states that she received all appropriate vaccines. You check her titers and see that she is non-immune to measles. She would like to work as a home care attendant. She is requesting the measles vaccine today.
- What do you recommend?
 - How significant is her immune status now that her viral load is suppressed?
 - Can she get the singular component since she doesn't need the other parts?
 - How long does she need to wait?



Measles/Mumps/Rubella

- Vaccine formulations – live-attenuated
 - M-M-R II (Merck)
 - Priorix (GSK)
 - Two dose series, separated by at least a month
- Indications - CD4 count ≥ 200 cells/mm³ and no evidence of immunity to measles, mumps, or rubella
 - Evidence of immunity
 - Birth date before 1957
 - Documentation of receipt of MMR
 - Laboratory evidence of immunity or disease for each pathogen

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Measles/Mumps/Rubella

- Contraindications
 - Low CD4 count (< 200 cells/mm³)
 - Vaccine administration associated with deadly measles-associated pneumonitis
 - Pregnancy
 - If non-immune to rubella, vaccinate with 2 doses after pregnancy if CD4 > 200 cells/mm³
- Post-exposure prophylaxis – MEASLES ONLY
 - Administer MMR within 72 hours of exposure or immune globulin within 6 days of exposure
 - If low CD4 and/or pregnancy, administer immune globulin

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Varicella

- Available formulation – single Ag, live attenuated
 - Varivax (Merck) – Two doses, three months apart
- Indications - CD4 count ≥ 200 cells/mm³ with no evidence of immunity to varicella
 - Evidence of immunity
 - Documented receipt of two doses of VAR or MMRV
 - Diagnosis of varicella or zoster by a health care provider
 - Laboratory evidence of immunity or disease
- Contraindications
 - Low CD4 count
 - Pregnancy

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Herpes Zoster

- Available vaccine
 - Shingrix (GSK) – recombinant; two dose series, 2-6 months apart
 - Zostavax – live-attenuated, NO LONGER USED
- Indications - Age ≥ 18 years, regardless of past episode of herpes zoster or receipt of Zostavax and regardless of CD4 count
 - ACIP recommends ≥ 19 years
- Do not give during an acute episode
 - No specific guidance on timing
- Consider waiting until virologically suppressed or CD4 > 200 cells/mm³

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Wednesday's Follow Up

- Due to her low CD4 count, she CANNOT get the MMR vaccine at this time
 - CD4 count to be > 200 cells/mm³ x 6 months
- Component vaccines do not exist for M-M-R

LOW-RISK VACCINES IN HIGH-RISK POPULATIONS

Thursday's Clinic Visit

- 25yo transwoman recently diagnosed with HIV about 4 months ago. She was promptly started on treatment, CD4 880 cells/mm³ and VLUD now. She is still coming to terms with her diagnosis, upset that her insurance coverage of PrEP had lapsed. Now working towards her PhD in materials science engineering. She was born and raised in NYC so you have access to her full vaccine history. You see that she had received the meningococcal vaccine series (both MenACWY and MenB) prior to matriculation to university 7 years ago.



Meningococcal – MenACWY and MenB

- (MenACWY) – Quadrivalent conjugate
 - Available vaccines
 - MenQuadFi (Sanofi Pasteur) – polysaccharide tetanus toxoid
 - Menveo (GSK) – oligosaccharide diphtheria
 - Dosing schedule
 - Primary series – two doses, 8 weeks apart
 - Booster – every 5 years
 - Indications - Universally indicated in PLWH, boosters q5 years
- Men B – Not universally indicated, only at risk populations
 - Available vaccines – recombinant; NOT interchangeable
 - Bexero (GSK) – two doses, 6 months apart
 - Trumemba (Pfizer) – two doses, 6 months apart

Source: ClinicalInfo.hiv.gov - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

Neisseria meningitidis On the Rise

[CDC Archive Home](#)

Meningococcal Disease Outbreak among Gay, Bisexual Men in Florida, 2021–23

Increase in Invasive Serogroup Y Meningococcal Disease in the United States

[Print](#)



Distributed via the CDC Health Alert Network
March 28, 2024, 1:30 PM ET
CDCHAN-00505



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Ashwin Vasani, MD, PhD
Commissioner

2024 Health Advisory #8: CDC Advisory: Increase in Invasive Serogroup Y Meningococcal Disease in the United States

April 1, 2024



KATHY HOCHUL
Governor

JAMES V. McDONALD, M.D., M.P.H.
Commissioner

JOHANNE E. MORNE, M.S.
Executive Deputy Commissioner



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Ashwin Vasani, MD, PhD
Commissioner

DATE: 08/14/2024

TO: Healthcare Providers, Long Term Care Facilities, Healthcare Facilities, Clinical Laboratories, and Local Health Departments

FROM: New York State Department of Health (NYSDOH), New York City Department of Health and Mental Hygiene (NYC Health Department)

PROVIDER ADVISORY

Discontinue Use of Ciprofloxacin for Invasive Meningococcal Disease Post-Exposure Prophylaxis

Please distribute immediately to: Clinical Laboratories, Hospitals, Long Term Care Facilities, Local Health Departments, Physicians, Physician Assistants, Nurses, Nurse Practitioners, Emergency Medicine, Infectious Disease, Infection Prevention and Control, Epidemiology, Laboratory Medicine, Medical Directors, Directors of Nursing, and all patient care areas



Would Meningitis Vaccines Cover Gonorrhea?

- *Neisseria meningitidis* group B and *Neisseria gonorrhoeae* are genetically similar – 80-90% homology
- A study out of New Zealand (Petousis-Harris et al, 2017), showed 31% reduction of gonorrhea cases with MenB vaccination

JOURNAL ARTICLE CORRECTED PROOF

What if We Had a Vaccine that Prevents *Neisseria gonorrhoeae*? Inspiration, Assumptions, and Aspirations

Myron S Cohen ✉, Jeanne M Marrazzo Author Notes

The Journal of Infectious Diseases, jiae160, <https://doi.org/10.1093/infdis/jiae160>

Published: 17 April 2024 Article history ▼

RECRUITING ⓘ

Safety and Efficacy Study of Meningococcal Group B Vaccine rMenB+OMV NZ (Bexsero) to Prevent Gonococcal Infection

ClinicalTrials.gov ID ⓘ NCT04350138

Sponsor ⓘ National Institute of Allergy and Infectious Diseases (NIAID)

Information provided by ⓘ National Institute of Allergy and Infectious Diseases (NIAID) (Responsible Party)

Last Update Posted ⓘ 2024-08-30

Thursday's Follow Up

- Needs MenACWY booster (one dose) as it has been >5 years since his last vaccine
- No indication for MenB booster
- If she hadn't been vaccinated with either meningococcal vaccine, then would need to start the MenACWY series
 - Officially would not qualify for MenB, unless asplenic or in congregate setting, but the possibly GC coverage is helpful

Human Papillomavirus

- Available vaccines
 - Gardasil 9 (Merck) - recombinant 9-valent
 - Three dose series at 0, 1-2, and 6 months
- Now a routine childhood vaccination
 - Recommendations for adults up to age 26 years
- Routine vaccination is **not recommended** for people ages 27–45 years
 - However, shared clinical decision-making is recommended
- If previously vaccinated with an older version, no official recommendations for a booster with the new 9-valent options



Source: [ClinicalInfo.hiv.gov](https://clinicalinfo.hiv.gov) - Immunizations for Preventable Diseases in Adults and Adolescents with HIV

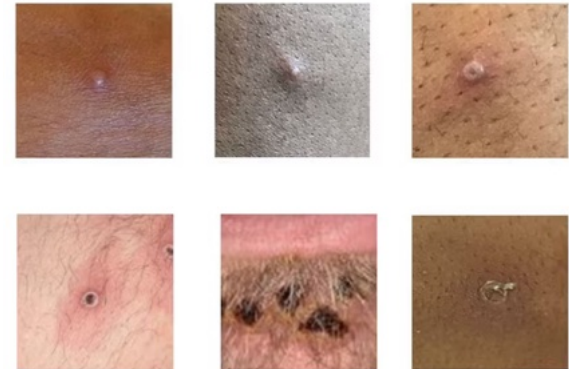
Friday's Clinic Visit

- 36yo gentleman with newly diagnosed HIV, referred from the ED to start treatment. CD4 count 135 cell/mm³ with a viral load of 170,000 copies. He reports active inhalational methamphetamine use. RPR is 1:256 and his pharyngeal swab is positive for gonorrhea. HAV and HBV immune and HCV negative. He is eager to start ART and seems motivated to take the medications. His last HIV testing was about 10 years ago, because he “didn't want to know his status”.
- In addition to antibiotic therapy, would you consider any vaccines at this time?



Mpox

- Available Vaccine
 - Jynneos (Bavarian Nordic) - live, **non-replicating** (smallpox and mpox)
 - 2 dose vaccine series, 4 weeks apart
 - Can be given at CD4 < 200 cells/mm³, but less robust response
- Indications
 - Known or suspected exposure to someone with mpox
 - A sex partner in the past 2 weeks who was diagnosed with mpox
 - MSM or a transgender, nonbinary, or gender-diverse person who in the past 6 months has had any of the following:
 - A new diagnosis of one or more sexually transmitted diseases (e.g., chlamydia, gonorrhea, or syphilis)
 - More than one sex partner
 - Sex at a commercial sex venue (like a sex club or bathhouse) in the past 6 months
 - Sex related to a large commercial event or in a geographic area (city or county for example) where mpox virus transmission is occurring in the past 6 months
 - A sex partner with any of the above risks
 - At risk for occupational exposure to orthopoxviruses



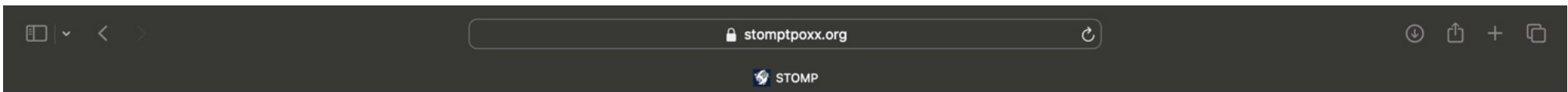
Mpox Outbreak of 2022 – Clade IIb

- Previously thought to be primarily zoonotic, IIb was transmitted person-to-person
- As of January 2024, per the CDC
 - In the US, 32,063 confirmed cases with 58 deaths
 - Many hospitalized patients also had HIV
- 1 out of 4 people eligible for vaccine series have received it
 - Many people only had 1 out of the 2 recommended doses
- Transdermal application – attempt to conserve supply
- Access to vaccines were limited – federally-controlled supply
 - Now commercially available, but supply limited
- Boosters (presently) not recommended
- ACAM2000 (smallpox) NOT recommended for mpox

Friday's Follow Up

- As he has multiple recent STIs and would be at high risk for complications of mpox infection, he should receive the Jynneos vaccine
 - May not have as robust of a response, but some protection is important
- Treat with ceftriaxone and penicillin
- Revisit vaccines at every visit, would offer flu and COVID vaccines soon
 - Consider waiting for some of the other vaccines for when his CD4 count reconstitutes

STOMP Trial – Tecovirimat Treatment



Call Center: 1-855-876-9997 (U.S. only)



[STOMP](#) [About the Study](#) [Participating Research Sites](#) [FAQs](#)

NOW ENROLLING REMOTELY ACROSS THE UNITED STATES!

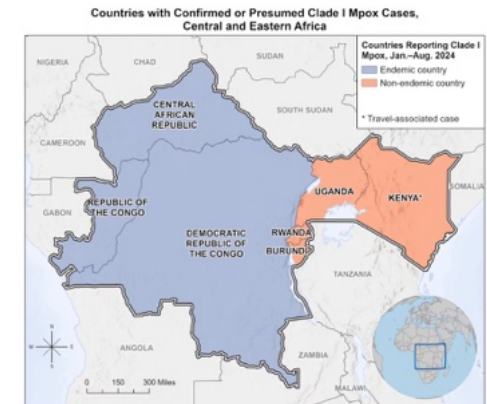
Call today for more information: 1-855-876-9997*

*Call Center staff available to support both English and Spanish speaking callers

*El Personal del centro de llamadas disponible para ayudar a las personas que llaman tanto en inglés como en español

Mpox Activity in 2024

- Clade I, typically found in Congo Basin
 - High rate of mortality – up to 10%
 - Zoonotic, from rodents, often impacting children
 - In 2024, the DRC reported more than 14,000 reported cases and 511 deaths as of August, per the WHO
 - 82% of deaths in 15 years and younger
 - Recent off-shoot from Eastern DRC, clade 1b – more severe than clade II
 - Human-to-human spread, presumed heterosexual contact, sex workers
 - Possibility of worldwide spread – Thailand and Sweden, Uganda, Rwanda, Kenya



Source: WHO Director-General's opening remarks at the media briefing – 7 August 2024
Source: Johns Hopkins Bloomberg School of Public Health, Center for Health Security

Waning Immunity?



Morbidity and Mortality Weekly Report (MMWR)

Search

Monkeypox Virus Infections After 2 Preexposure Doses of JYNNEOS Vaccine – United States, May 2022–May 2024

Weekly / May 23, 2024 / 73(20):460–466

- From May 2022 – May 2024, there were 271 cases of mpox in fully vaccinated people (< 1% of all cases)
 - Concern re: cluster in spring 2023 in Chicago seen in fully vaccinated persons
 - Previous infection considered protective
 - Increased risk associated with more sex partners
 - Clinical significance of waning immunity unclear

Important Vaccines for People on PrEP

Disease	Vaccine	Type of Vaccine
Hepatitis A	Havrix, Vaqta	Inactivated (killed virus)
Hepatitis B	Engerix-B, Recombivax HB	Recombinant (genetically engineered)
HPV (Human Papillomavirus)	Gardasil 9	Recombinant (virus-like particle)
MenACWY (Meningococcal ACWY)	Menactra, Menveo	Conjugate
MenB (Meningococcal B)	Bexsero, Trumenba	Protein-based (meningococcal serotype B)
Mpox (formerly Monkeypox)	Jynneos	Live, non-replicating

Source: Immunize.org – Vaccinations for Men Who Have Sex with Men

VACCINE HESITANCY

Vaccine Hesitancy and Inequity

- COVID-19
 - Based on NIS data, only 14% of Americans has gotten the updated COVID vaccine by November 2023
 - White adults – 15%
 - Non-Hispanic Black adults – 8%
 - Hispanic adults – 8%
 - Adults with incomes below poverty (9%)
 - Adults with incomes over \$75,000 (18%)
- Mpox
 - CDC MMWR, April 2023: Racial and Ethnic Disparities in Mpox Cases and Vaccination Among Adult Males — United States, May–December 2022
 - Vaccination-to-case ratio in males
 - Black - 8.8
 - Hispanic - 16.2
 - White - 42.5
 - Asian - 59.2

Tools to Combat Vaccine Hesitancy

- Regularly bring up vaccinations/immunizations at visits
- Discuss their concerns
 - “Big Pharma”
- Utilize community partners and peer educators
- Incentives
 - More related to insurance companies
- Negotiate
 - Which vaccines are most important and why
- Familial support

New Vaccines

- Pneumococcal conjugate 21 – Capvaxive (Merck)
- Pentavalent meningococcal vaccine – Penbraya (Pfizer)
- Awaiting specific guidelines for people living with HIV

FINAL THOUGHTS

Important Considerations


- Lower CD4 counts and high viral loads could mean blunted immune responses, but these patients can and should receive certain vaccines
- All of the vaccines discussed today can be administered concurrently
 - Previously PCV13 could not be given concurrently with PPSV23 or Menactra
- There isn't a limit on the number of vaccines that can be given in one visit
 - If multiple live vaccines are needed but not given at the same visit, then must be spaced 4 weeks
 - Spacing with COVID vaccine no longer indicated
- COST
- Availability
- Rituximab and other immunosuppression
 - Delay vaccinations 6-12 months after the last dose

Helpful Resources

- [ClinicalInfo.gov](https://clinicalinfo.gov)
- [CDC](https://www.cdc.gov)
 - [ACIP](https://www.acip.gov)
- [Immunize.org](https://www.immunize.org)
- [VAERS](https://www.vaers.hhs.gov)

Take Away Points

- Presume a better immune response with suppressed viral load and CD4 > 200 cells/mm³
- While many vaccines prevent the primary infection, many decrease the risk of severe manifestations
- Vaccines are safe and effective
 - Low risk, great reward
- Review vaccines with your patient at every clinic visit
 - Utilize reminders within your EMR to help
 - Low-barrier, easy-to-access visits



Thank You for Your Attendance!

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