



NORTHWEST AIDS EDUCATION AND TRAINING CENTER

Vaccines for the HIV-infected Patient

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Vaccines: Overview

- Review general principles
- Review recommended vaccines in adults
- Review vaccines not currently recommended
- Special considerations: nonresponse and revaccination

Vaccines: General Principles

- Goal is prevention
- Timing is a consideration
 - HIV+ patients have decreased immunologic response to most vaccines
 - Factors associated with poor response
 - Low CD4 count
 - Lack of virologic suppression
 - Vaccinating early (pro/con):
 - Earlier protection against more common infections
 - Decreased likelihood of response if low CD4 counts
- Live vaccines and immunocompromising conditions

Vaccines: Hepatitis

Hepatitis A:

- Now universal vaccination at age 1 year
- Recommended for non-immune HIV-infected adults who are MSM, IDU, chronic liver disease, travel to endemic countries

Hepatitis B:

- Now universal vaccination at birth
- Recommended for all non-immune HIV-infected adults
- Efficacy 18-72%; possibly greater once viral load suppressed
- ACIP recommends 40mcg (double dose) x 3 or 4 doses
- OI prevention guidelines recommend standard 20mcg x 3 doses
- Special consideration: Isolated core Ab positive

Vaccines: Pneumococcal Disease

Pneumococcal polysaccharide vaccine (PPV23):

- HIV+ patients at higher risk for invasive pneumococcal disease
- Efficacy of vaccine if CD4 count < 200 unknown
- Vaccine should be given to those with CD4 counts < 200, but revaccinate once over 200
- Give booster 5 years after baseline vaccine and again after 65 year old if > 5 years from prior

Vaccines: Influenza

- Influenza can be more severe in patients with HIV
- No increased adverse effects with inactivated vaccine
- Efficacy ranges from 27-78%
- Live vaccine not recommended currently
- Household members can receive live vaccine though

Vaccines: Tdap

- No specific recommendations for HIV+ patients
- Tdap should replace single dose of Td regardless of interval since last Td

Vaccines: HPV

- Not a live vaccine so safe in HIV and other immunocompromising conditions
- 2 vaccines available (bivalent and quadrivalent)
- Females – either vaccine recommended from ages 11-26 years
- Males – quadrivalent vaccine 11-26 years
- No recommendations for HIV+ individuals greater than 26 years

Vaccines: Live Vaccines

- Varicella Vaccine:
 - All adults without evidence of immunity if CD4 count > 200
- Zoster Vaccine:
 - Not currently recommended
 - Safe and immunogenic in adults with CD4 counts > 200 and viral load < 75 copies/mL (Benson C et al. Abstr #96. CROI 2012)
- MMR Vaccine:
 - Not recommended for HIV+ patients with CD4 counts < 200





Special Considerations

- Vaccine nonresponse
 - What is a response?
 - Is there a correlate of immunity?
- Hepatitis B
 - Protective titer ≥ 10 IU
 - Check titer within 1-2 months after completion of doses
 - If subpar, consider repeating series when VL suppressed and/or double dosing (Launay O et al. JAMA 2011;305:1432)
 - Double dose x 4 led to 82% response rate vs. 65% with standard dosing

Vaccines: ACIP 2012 Adult Schedule

INDICATION▶ VACCINE ▼	Pregnancy	Immunocompromising conditions (excluding human immunodeficiency virus [HIV]) ^{4,6,7,14}	HIV infection ^{4,7,13,14} CD4 ⁺ T lymphocyte count		Men who have sex with men (MSM)	Heart disease, chronic lung disease, chronic alcoholism	Asplenia ¹³ (including elective splenectomy and persistent complement component deficiencies)	Chronic liver disease	Diabetes, kidney failure, end-stage renal disease, receipt of hemodialysis	Health-care personnel
			<200 cells/ μL	≥200 cells/ μL						
Influenza ^{2,*}		1 dose TIV annually			1 dose TIV or LAIV annually		1 dose TIV annually			1 dose TIV or LAIV annually
Tetanus, diphtheria, pertussis (Td/Tdap) ^{3,*}		Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 years								
Varicella ^{4,*}		Contraindicated					2 doses			
Human papillomavirus (HPV) ^{5,*} Female		3 doses through age 26 years					3 doses through age 26 years			
Human papillomavirus (HPV) ^{5,*} Male		3 doses through age 26 years					3 doses through age 21 years			
Zoster ⁶		Contraindicated					1 dose			
Measles, mumps, rubella ^{7,*}		Contraindicated					1 or 2 doses			
Pneumococcal (polysaccharide) ^{8,9}							1 or 2 doses			
Meningococcal ^{10,*}							1 or more doses			
Hepatitis A ^{11,*}							2 doses			
Hepatitis B ^{12,*}							3 doses			

* Covered by the Vaccine Injury Compensation Program

	For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection		Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)		Contraindicated		No recommendation
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Vaccines: Resources

- ACIP guidelines:
 - <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6104a9.htm>
- OI prevention guidelines:
 - http://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi_041009.pdf