NORTHWEST AIDS EDUCATION AND TRAINING CENTER

HIV and Hepatitis B

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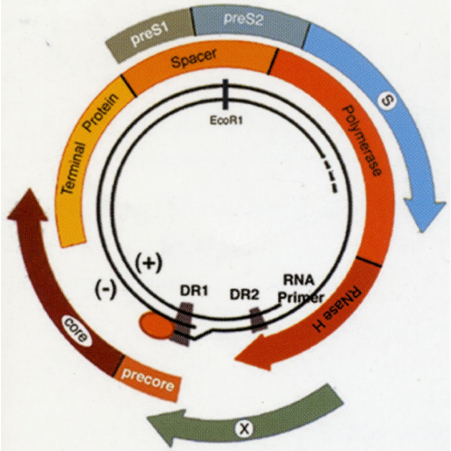
Outline

- **Hepatitis B**
  - Basics
  - Epidemiology
  - Testing & Monitoring
  - Natural History
  - Treatment

Hepatitis B – The Basics

- Partially ds DNA virus
- Covalently closed circular (ccc) DNA
- Spread vertically, horizontally, percutaneously and sexually
- Can cause differing severity of disease or phases
- Safe and effective vaccine is available and is standard for children in US



Hepatitis B – US Epidemiology

~700,000 Americans with chronic HBV

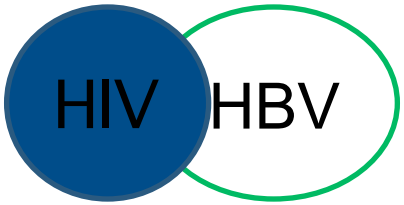
Asia

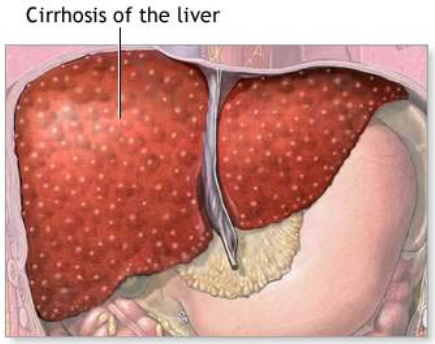
Africa

South America

HIV and HBV: Epidemiology

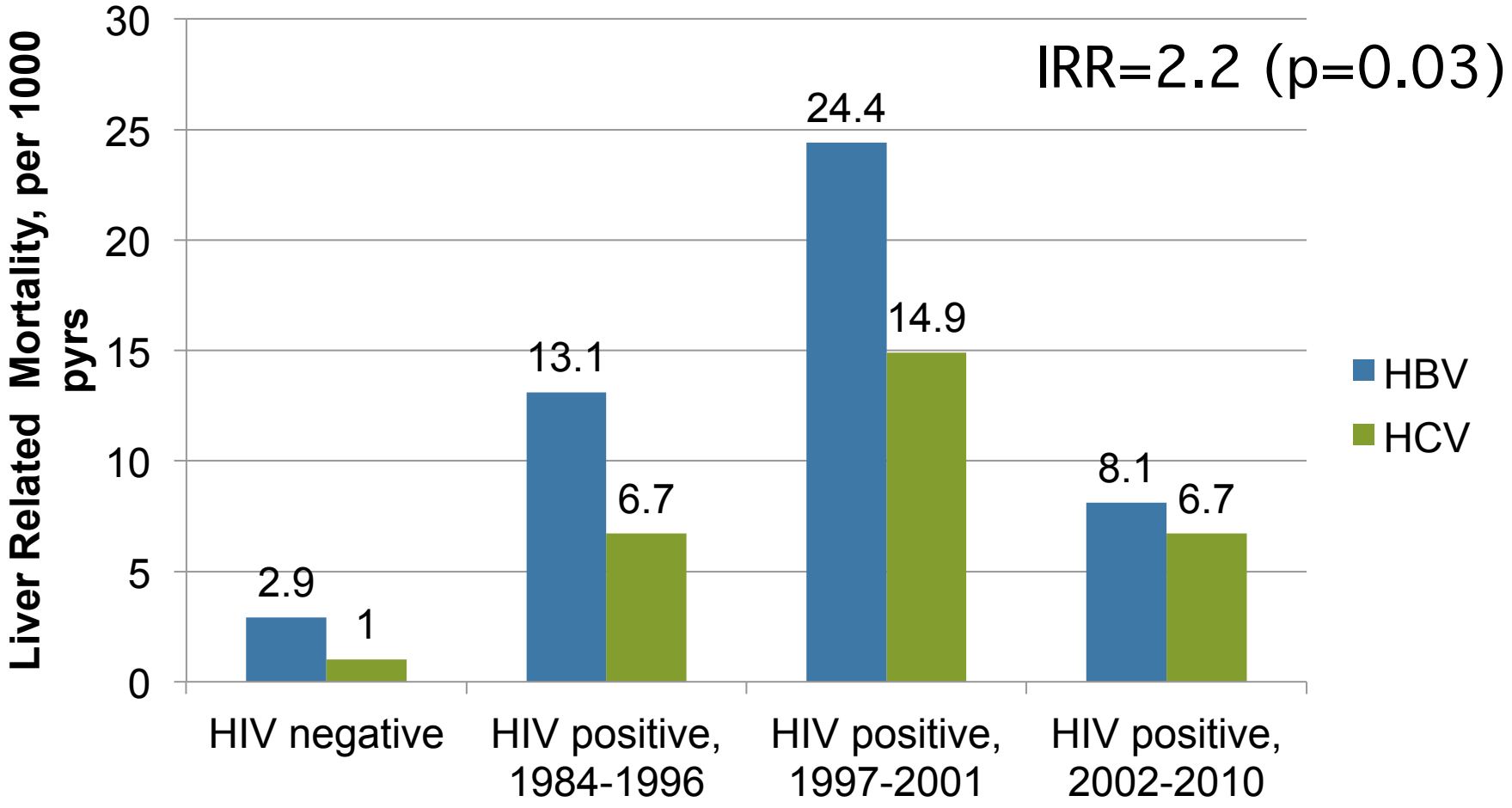
- ✓ Shared routes of transmission (IDU, MSM)
- ✓ 5-10% of HIV+ also have chronic HBV
- ✓ Liver-related disease is a growing cause of death in HIV+ patients





Chun HM. JID 2012; 205:185-93. Smith, et al. J Urban Health. 2003 Dec;80(4):676-88.

Quick Quiz: What is worse, HIV/HCV or HIV/HBV?



Falade-Nwulia O, et al. Clin Infect Dis 2012; 55:507-13.

Testing: Interpreting HBV Serologies

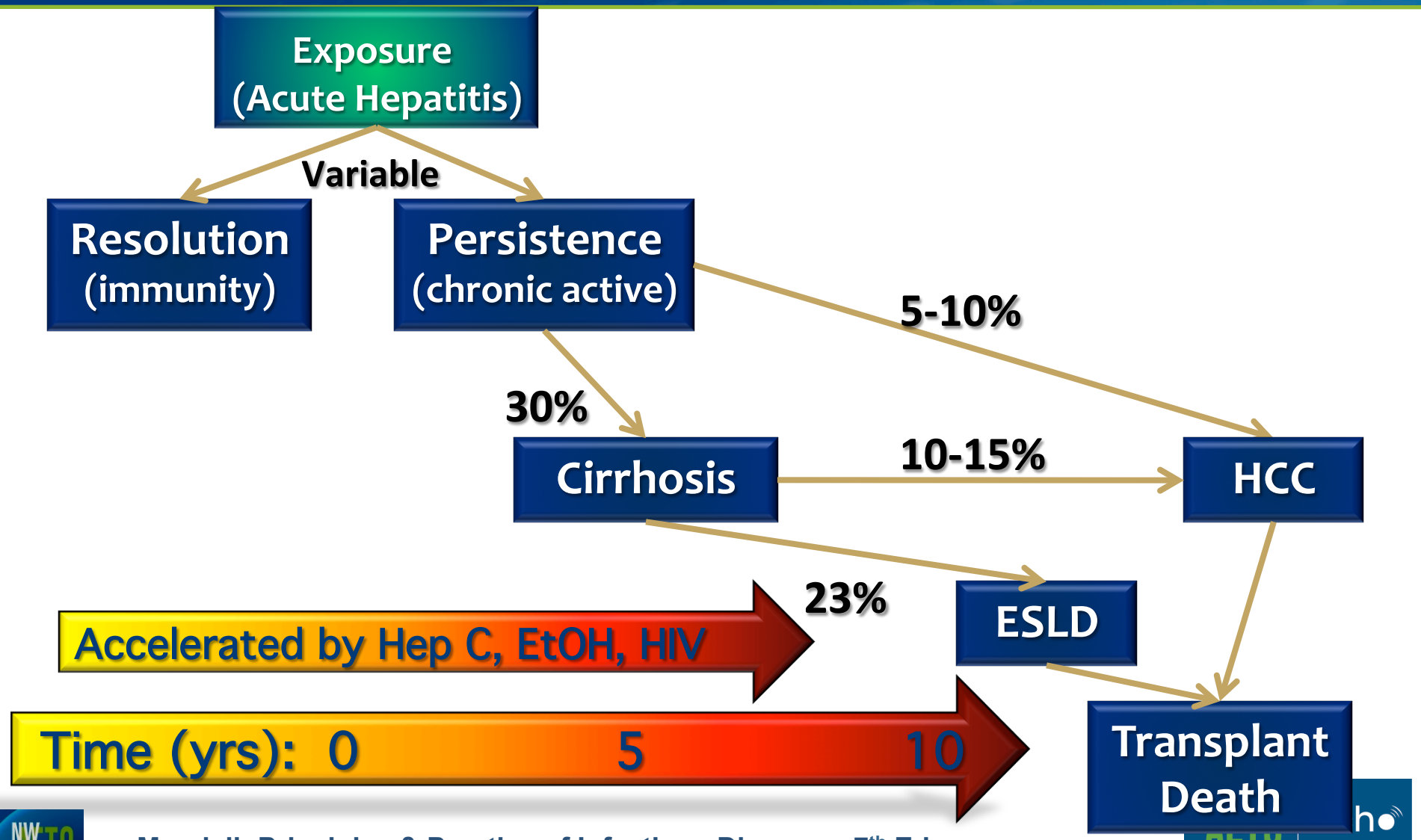
Staging	IgM cAb	e Ag	e Ab	HBV DNA	ALT	Histology
Acute HBV	+	+	-	**High**	High	Acute inflammation
Chronic HBV - **Immune Tolerant**	-	+	-	**High**	Normal	Normal
Chronic HBV - **Immune Active**	-	+	+/-	**High**	High	Chronic inflammation
Chronic HBV - **Immune Active (pre-core mutant)**	-	-	+	**High**	Variable	Chronic inflammation
Chronic HBV - **Inactive Carrier**	-	-	+	**Low**	Normal	Normal

Monitoring

- If on therapy
  - HBV DNA q 3-6 mos
  - LFTs q 3-6 mos
  - eAg q 6 mos if baseline positive
  - sAg q 6-12 mos if eAg negative at baseline

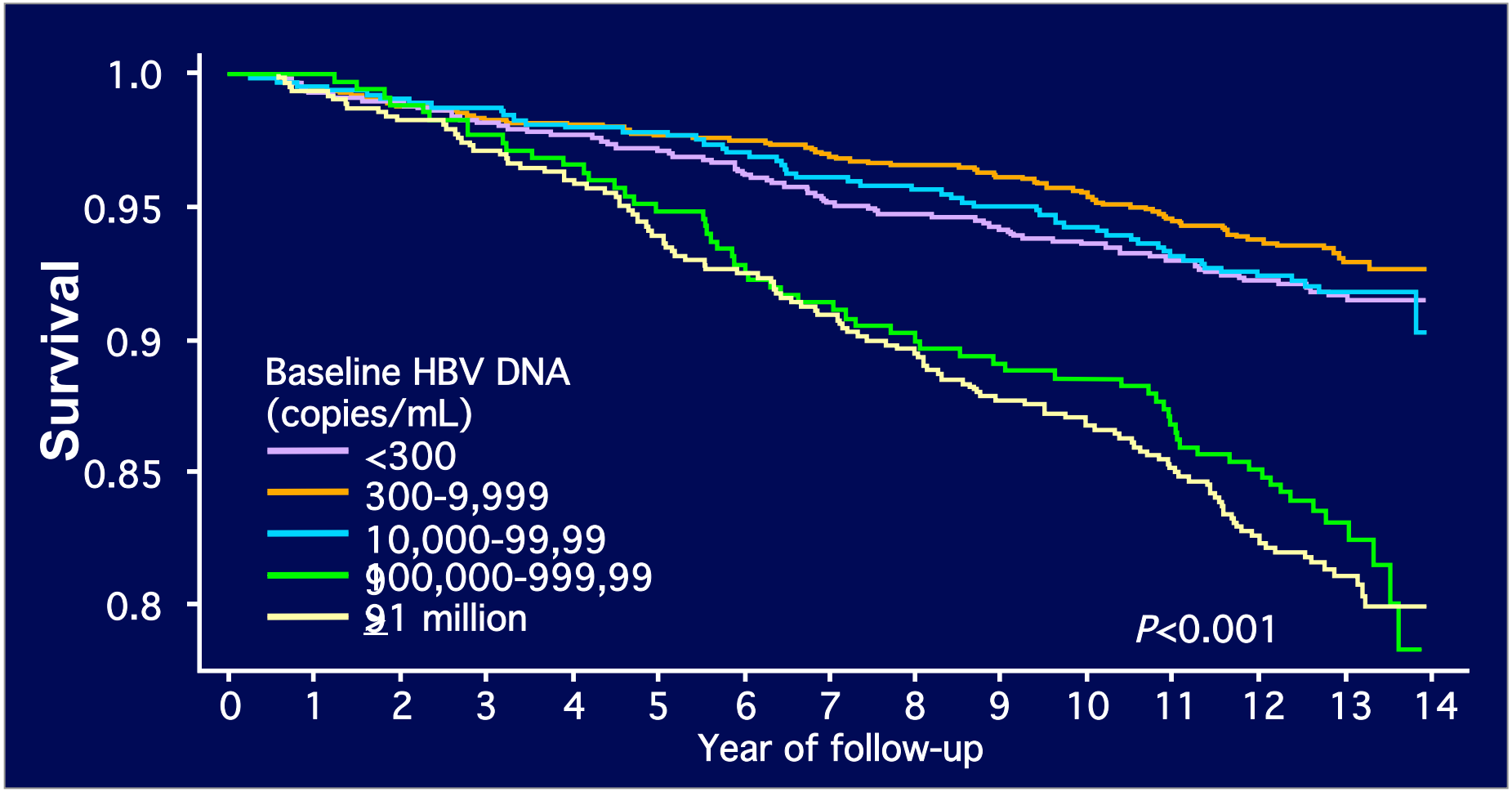
- If not on therapy
  - LFTs q 6 mos
  - U/S for HCC surveillance (known cirrhosis, age >40 yo)

Natural History



Mandell: Principles & Practice of Infectious Diseases, 7th Ed

Natural History: HBV DNA correlates with survival and HCC risk



Iloeje UH, et al. *Gastroenterology.* 2006;130:678-686.

HBV Therapy in Context of HIV

Medication	Trade Name	HBV Activity	HIV Activity	Selection of HIV Resistance Reported
Lamivudine	*Epivir-HBV* (100 mg) *Epivir*	Yes	Yes	Yes
Adefovir	*Hepsera*	Yes	No[a]	No
Entecavir	*Baraclude*	Yes	Partial	Yes
Emtricitabine	*Emtriva*	Yes	Yes	Yes
Telbivudine	*Tyzeka*	Yes	Partial[b]	No
Tenofovir	*Viread*	Yes	Yes	Yes

[a] = anti-HIV activity at higher doses; more potent against HBV
[b] = No in vitro activity observed against HIV, but HIV RNA decline reported

Source: www.hepwebstudy.com

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HBV Treatment Options in HIV/HBV Coinfected Patients

Treatment	Regimen	Comment
HIV and HBV	Regimen should include either Tenofovir: 300 mg QD + Emtricitabine: 200 mg QD *OR* Tenofovir: 300 mg QD + Lamivudine: 300 mg QD	Simultaneous treatment of HIV and HBV is preferred if therapy for either virus is initiated.
HBV Only	Prefer starting HAART with regimen listed above. Alternative, less favored options if HAART not started (expert consultation advised): Peginterferon alpha: 180 mcg sq once weekly *OR* Telbivudine: 600 mg QD *OR* Adefovir: 10 mg QD *OR* Telbivudine: 600 mg QD + Adefovir: 10 mg QD	Most experts urge HAART initiation unless contraindicated. Limited safety and efficacy data exist for peginterferon in HIV-HBV coinfected patients. Limited data on telbivudine in HIV-HBV coinfected patients; possible partial activity against HIV. Adefovir has reduced potency against HBV compared with other antivirals.
HIV Only	Expert Consultation Advised	Selecting an antiretroviral therapy regimen without activity against hepatitis b is complex

Lok AS, et al. *Hepatology.* 2007;45:507-539.
European AIDS Clinical Society Guidelines. Available at: http://www.eacs.eu.

Antiviral Efficacy

Therapeutic Endpoints	Placebo	Peginterferon	Lamivudine	Adefovir	Entecavir	Telbivudine[a]	Tenofovir[b]
Undetectable HBV DNA	0-17%	25%	40-44%	21%	67%	60%	76%
Loss of HBeAg	6-12%	30-34%[c]	17-32%[d]	24-46%[e]	22%	26%	6-12%
HBeAg/Ab seroconversion	4-6%	27-32%[c]	16-21%[d]	12-33%[e]	21%	22%	21%
Loss of HBsAg	0-1%	3%[f]	<1%	0%	2%	<1%	3%
ALT normalization	7-24%	39%	41-75%[d]	48%	68%	77%	68%
Histologic improvement	23-25%	38%[f]	49-56%[d]	53%	72%	65%	74%

All responses at 48 weeks, unless otherwise noted

[a] 52 week data.

[b] Marcellin P, et al. N Engl J Med. 2008;359:2242-59.

[c] At end of therapy (week 48) and 24 weeks after end of therapy (week 72).

[d] At 48 weeks and 52 weeks into therapy.

[e] At 48 weeks and 96 weeks into therapy.

[f] At 72 weeks (24 weeks after end of therapy)

What to do with HBV failures or TDF not an option?

- Failure: persistently detectable HBV DNA >12 mos on active antiviral or HBV DNA increased by >1 log on 2 occasions
- Option: Add Entecavir or Peginterferon

Take Home Points

- When following patients with hepatitis B, key labs are ALT and HBV DNA level
- Remember to screen and vaccinate for Hep B in HIV + patients
- Lamivudine, emtricitabine and tenofovir are dually active against HIV and HBV, so Truvada is typically a good regimen

Web Resources

- http://hab.hrsa.gov/publications/hcvguide2011.pdf
- www.nlm.nih.gov/medlineplus/hepatitisc
- www.nwaetc.org
- www.hepwebstudy.org
- www.hivwebstudy.org
- www.clinicaloptions.com
- www.cdc.gov/hiv
- www.cdc.gov/hepatitis

THANK YOU!!