



## Viral hepatitis treatment for people with HIV in African settings

*Dr Mark Sonderup*  
*Division of Hepatology and Department of Medicine*  
*University of Cape Town & Groote Schuur Hospital*  
*Cape Town, South Africa*


---

---

---

---

---

---

---

---

### Brief outline

1. Focus on sub Saharan Africa
2. Hepatitis B
3. Hepatitis C

---

---

---

---

---

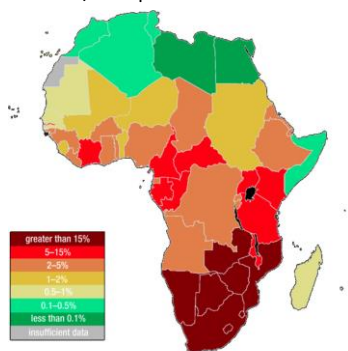
---

---

---



HIV/AIDS prevalence in Africa




---

---

---

---

---

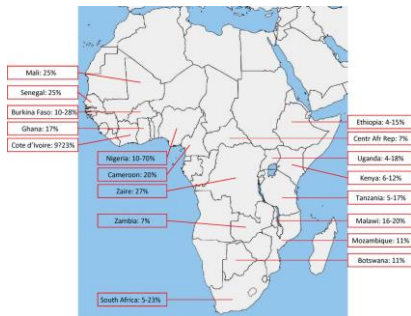
---

---

---

## Hepatitis B

. HBsAg prevalence rates in sub-Saharan African HIV-infected individuals per country



Barth RE. *Int J Infectious Dis*. 2010; 10: 1024

### HIV/Hepatitis B co-infection prevalence: South Africa

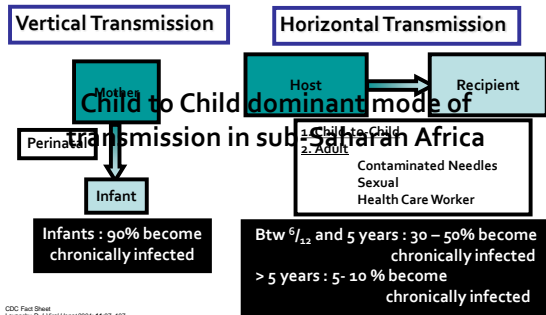
- no community based data available

#### Available data :

1. Urban HIV clinic in Johannesburg:  
5% HBsAg-positive (47% exposure)
2. ARV program in mining industry in Johannesburg:  
17% HBsAg-positive

*SAMJ*. 98 (7) July 2008 543 – 544  
*AIDS* 2007. 21(10):1301-1308  
*J Med Virology* 2008. 80:1232-1236

## Transmission of HBV



## Chronic Hepatitis B virus infection

### Sub-Saharan Africa:

- HBV endemic
- Mostly genotypes A,D,E
- Prevalence ranges:
  - \* HBsAg 0.3% - 25%
  - \* HB core IgG 5% - 80% exposure rate

Vardas E et al. J Medical Virology 1999; 58: 111-11  
Burnett R.L. Liver International 2005; 25: 201-213

## HIV/Hepatitis B co-infection

### Patterns of Co-Infection in Africa

- **Majority** - infected or exposed to HBV in childhood prior to HIV acquisition as adults
- **Less commonly**
  - Perinatal transmission of HIV (and HBV)
  - Reactivation of infection in immunocompromised
  - De novo adult acquisition of both HBV and HIV

**Developed world** → HIV and HBV share a similar mode of transmission

Liver International 2005; 25: 201 – 213  
AIDS Read 2004; 14(3): 122-137  
J Hep 44 (2006) 56-59

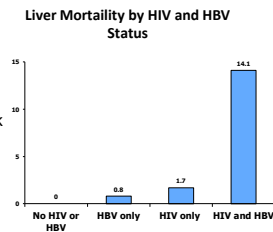
## Alterations in the Natural History of HBV Infection in Persons With HBV/HIV Coinfection

- More likely to become chronic HBV carrier (HBsAg positive)<sup>a</sup>
- More likely to be HBeAg positive<sup>b</sup>
- Less likely to be anti-HBe positive<sup>b</sup>
- Less likely to convert HBeAg to anti-HBe<sup>b</sup>
- More likely to go from HBeAg negative back to HBeAg positive<sup>c</sup>
- Can revert from anti-HBs to HBsAg positive<sup>d</sup>
- Higher levels of HBV DNA<sup>c,e</sup>

a. Mallet V, et al. *Liver Int.* 2011; 31(Suppl 1):135-139. b. Piroth L, et al. *AIDS.* 2007;21:1323-1331. c. Gilson RJ, et al. *AIDS.* 1997;11:597-606. d. Roupheal NG, et al. *AIDS.* 2007;21:771-774. e. Colin JF, et al. *Hepatology.* 1999;29:1306-1310.

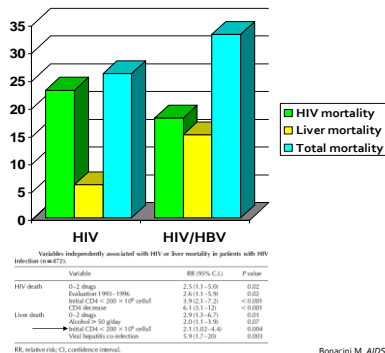
## HIV Co-infection Increases the Risk of ESLD due to HBV

- MACS, 4,967 men
  - HIV, 47%
  - HBV, 6% (n=326)
  - HIV/HBV, 4.3% (n=213)
- HIV/HBV: 17-fold higher risk of liver death compared to HBV alone



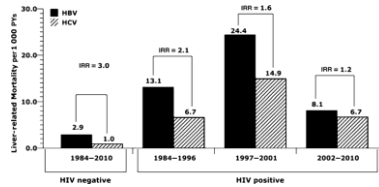
Thio C *et al. Lancet* 2002;360:9349.

## Effects of HIV on HBV - Liver related mortality



Bonacini M. *AIDS* 2004; 18:2039-2045

## Time trend of all-cause liver related mortality for HBV and HCV co-infected



Falade-Noulla *CID* 2012 55(4): 507-13

## Serological and virological characteristics

\* At time of liver biopsy

## Management of HIV-HBV Co-infection

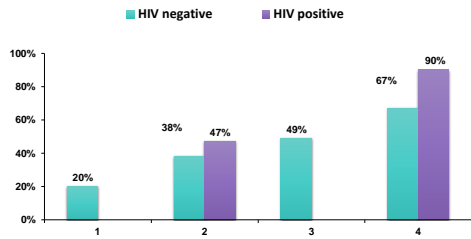
- HBV/HIV-coinfected patients who require HBV therapy should be treated<sup>[1]</sup>

Not on or Anticipating Antiretroviral Therapy*	Planning Antiretroviral Therapy	Already Receiving Antiretroviral Therapy
<ul style="list-style-type: none"> <li>Treat with antiviral therapy that is not active against HIV (e.g., pegIFN or LAM).</li> <li>Although LAM is not target HIV, it should not be used in this circumstance.</li> </ul>	<ul style="list-style-type: none"> <li>Treat with therapies that are effective against both viruses: TDF + (FTC or LAM) preferred (plus ≥ 1 other anti-HIV agent)</li> </ul>	<ul style="list-style-type: none"> <li>If regimen does not include drug active against HBV, may add pegIFN or ADV</li> <li>If LAM resistance, add TDF</li> </ul>

Guidelines recommend that any HBV/HIV-coinfected patient in whom HBV treatment is indicated should initiate a fully suppressive antiretroviral regimen containing 2 drugs with anti-HBV activity.<sup>[2]</sup>

1. Lok AS, et al. *Hepatology*. 2009;50:661-662. 2. DHHS Adults and Adolescents Guidelines. 2009.

## Incidence of LAM Resistance in HBV and HBV/HIV Patients



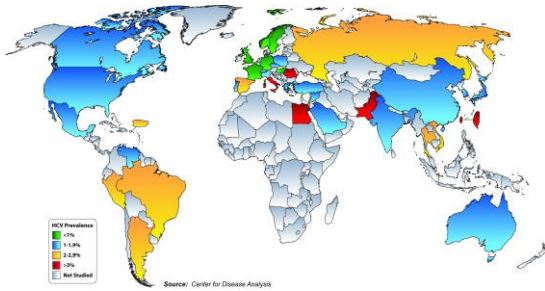
Benhamou et al., *Hepatology*, 1999)

## HBV co-infected patients : summary

- Progressive move towards TDF based cART therapy – funded through Global Fund etc.
- Given changes in ART guidelines limited need for Rx in people not requiring ART (eg. IFN, entecavir)
- Downside:
  - often no screening for HBsAg : missed surveillance opportunity
  - missed opportunity to vaccinate or offer HBIG for PMTCT
  - HBV mono-infected are mostly excluded

## Hepatitis C

## Hepatitis C prevalence in Africa




---

---

---

---

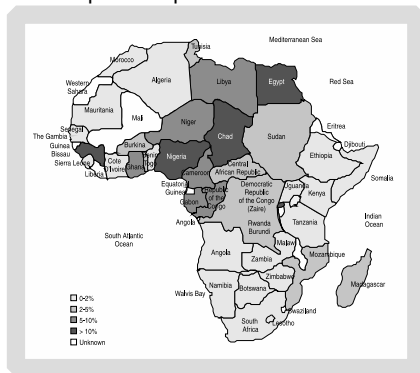
---

---

---

---

## Hepatitis C prevalence in Africa




---

---

---

---

---

---

---

---

## Hepatitis C genotypes in Africa




---

---

---

---

---

---

---

---

## HIV HCV co-infection in Africa

Country	Year	Total population	Prevalence of HIV	Prevalence of HCV	Co-infection
<b>West Africa</b>					
Benin	2005	10.7	0.2%	0.1%	0.1%
Cote d'Ivoire	1994/95	15.5	0.2%	0.1%	0.1%
Ghana	1995	15.5	0.2%	0.1%	0.1%
Niger	1995	15.5	0.2%	0.1%	0.1%
Togo	1994/95	6.5	0.2%	0.1%	0.1%
<b>East Africa</b>					
Ethiopia	1995	55.5	0.2%	0.1%	0.1%
Kenya	1995	15.5	0.2%	0.1%	0.1%
Malawi	2005	15.5	0.2%	0.1%	0.1%
Senegal	1995	15.5	0.2%	0.1%	0.1%
Tanzania	1994/95	45.5	0.2%	0.1%	0.1%
Togo	1995	15.5	0.2%	0.1%	0.1%
Zambia	1995	15.5	0.2%	0.1%	0.1%
<b>South Africa</b>					
South Africa	1995	45.5	0.2%	0.1%	0.1%
South Africa	1995	45.5	0.2%	0.1%	0.1%
South Africa	2005	45.5	0.2%	0.1%	0.1%
Zambia	1995	15.5	0.2%	0.1%	0.1%
Zimbabwe	2005	15.5	0.2%	0.1%	0.1%
<b>Central Africa</b>					
Cameroon	1994/95	15.5	0.2%	0.1%	0.1%
Cameroon	1995	15.5	0.2%	0.1%	0.1%
Cameroon	2005	15.5	0.2%	0.1%	0.1%
DR Congo	1995	15.5	0.2%	0.1%	0.1%
DR Congo	1995	15.5	0.2%	0.1%	0.1%
DR Congo	1995	15.5	0.2%	0.1%	0.1%
DR Congo	1995	15.5	0.2%	0.1%	0.1%
DR Congo	1995	15.5	0.2%	0.1%	0.1%

- Data on co-infection rates very limited
- Thought to be low
- Dominant mode of transmission unclear – vertical rates low
- IDU and other modes of transmission uncommon in Africa
- ? Sub-populations more at risk

Modi, Field AIDS Review 2007, 9: 25-39  
 Njoum P. AJTMH. 2005 75: 260-6  
 Kallestrup P. AIDS 2003, 17:1400-2

## Access to HCV therapy

- Almost non-existent
- To date need for ART been major focus
- Peg-RBV combination
  - costly
  - difficult to manage
  - poor response rates
- Simple DAA combos eagerly awaited
  - cost will remain an issue!!

