

# Prevalence of hepatitis B in pregnancy and vertical transmission rate of HBV in Africa : A systematic review

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# **Outline**

**Background**

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# Why this research questions

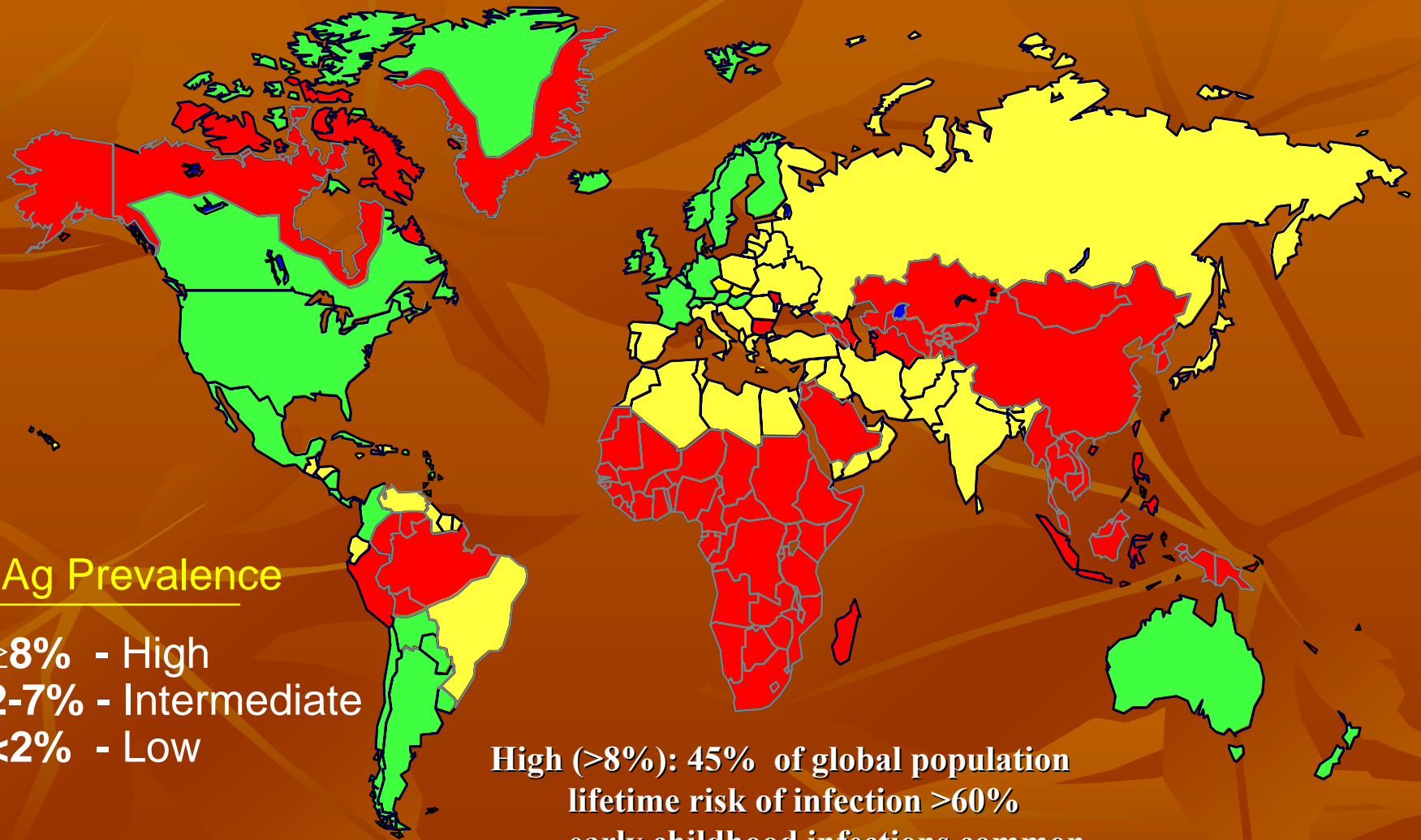
To demonstrate the importance of :

- ◆ Systematic HBV screening during pregnancy in Africa
- ◆ Taking special care of newborns from positive mothers

# Background

- Hepatitis B is a major public health problem in the developing countries of Africa and Asia (prevalence > 8%)
- 2 billion have markers of current or past infection
- 350 million have chronic infection
  - 15-25% will die from chronic liver disease (liver cancer and cirrhosis) at least 1 million deaths per year
  - Young children who become infected with HBV are the most likely to develop chronic infection
  - 25% mortality in perinatal acquired disease
  - Hepatitis B-associated hepatocellular carcinoma is probably the most common tumour affecting males in sub-Saharan Africa

# Geographic Distribution of Chronic HBV Infection



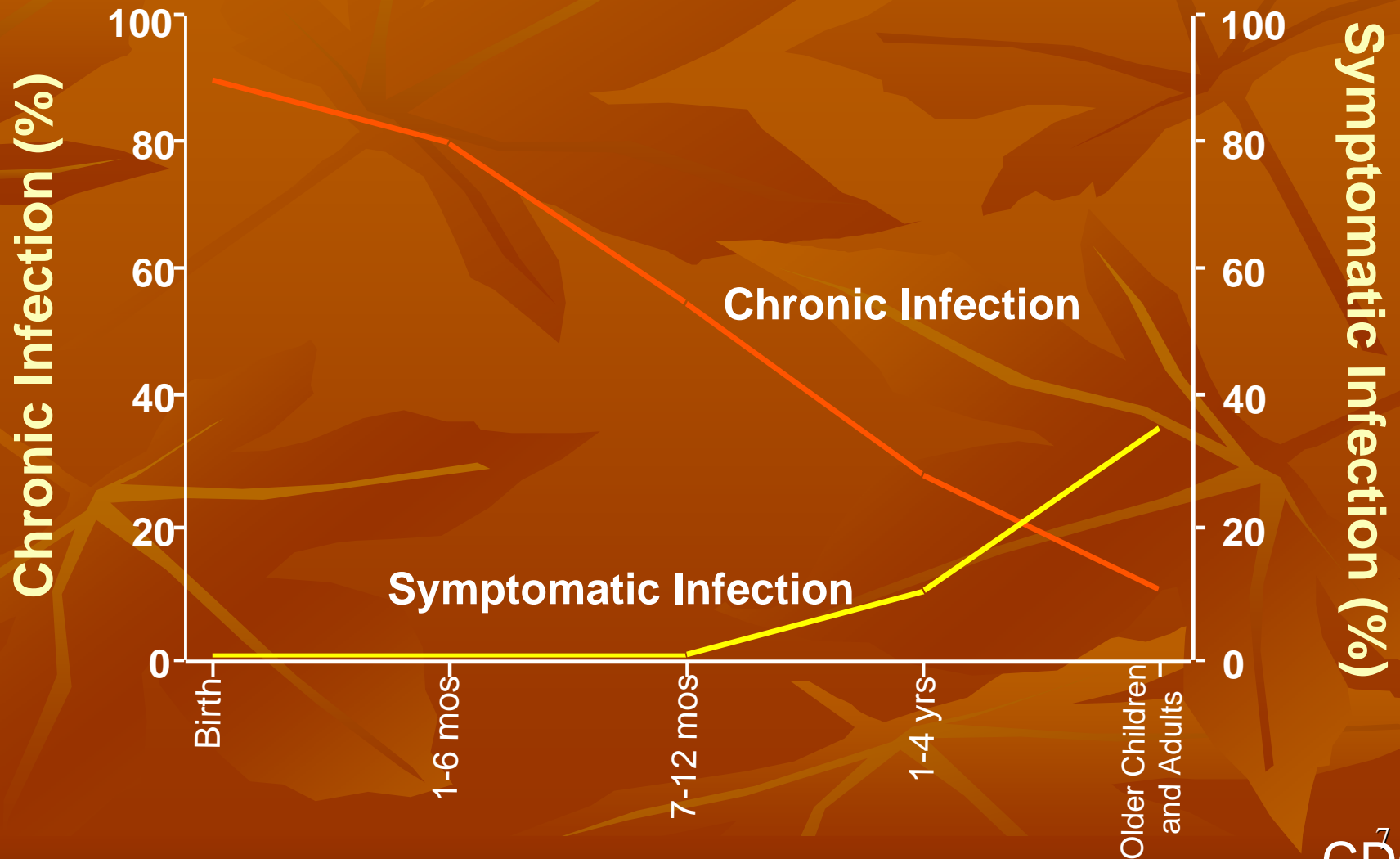
## HBsAg Prevalence

- $\geq 8\%$  - High
- 2-7% - Intermediate
- $< 2\%$  - Low

**High ( $>8\%$ ):** 45% of global population  
lifetime risk of infection  $>60\%$   
early childhood infections common

- The vaccine will not cure chronic hepatitis, but it is 95% effective in preventing chronic infections from developing, and is the first vaccine against a major human cancer.
- In 1991, the WHO called for all children to receive the hepatitis B vaccine.
- Children in the poorest countries, who need the vaccine the most, have not been receiving it because of many reasons.
- Nowadays the vaccine is available in most african countries, and children are getting vaccinated, from six weeks after birth.

# Outcome of Hepatitis B Virus Infection by Age at Infection





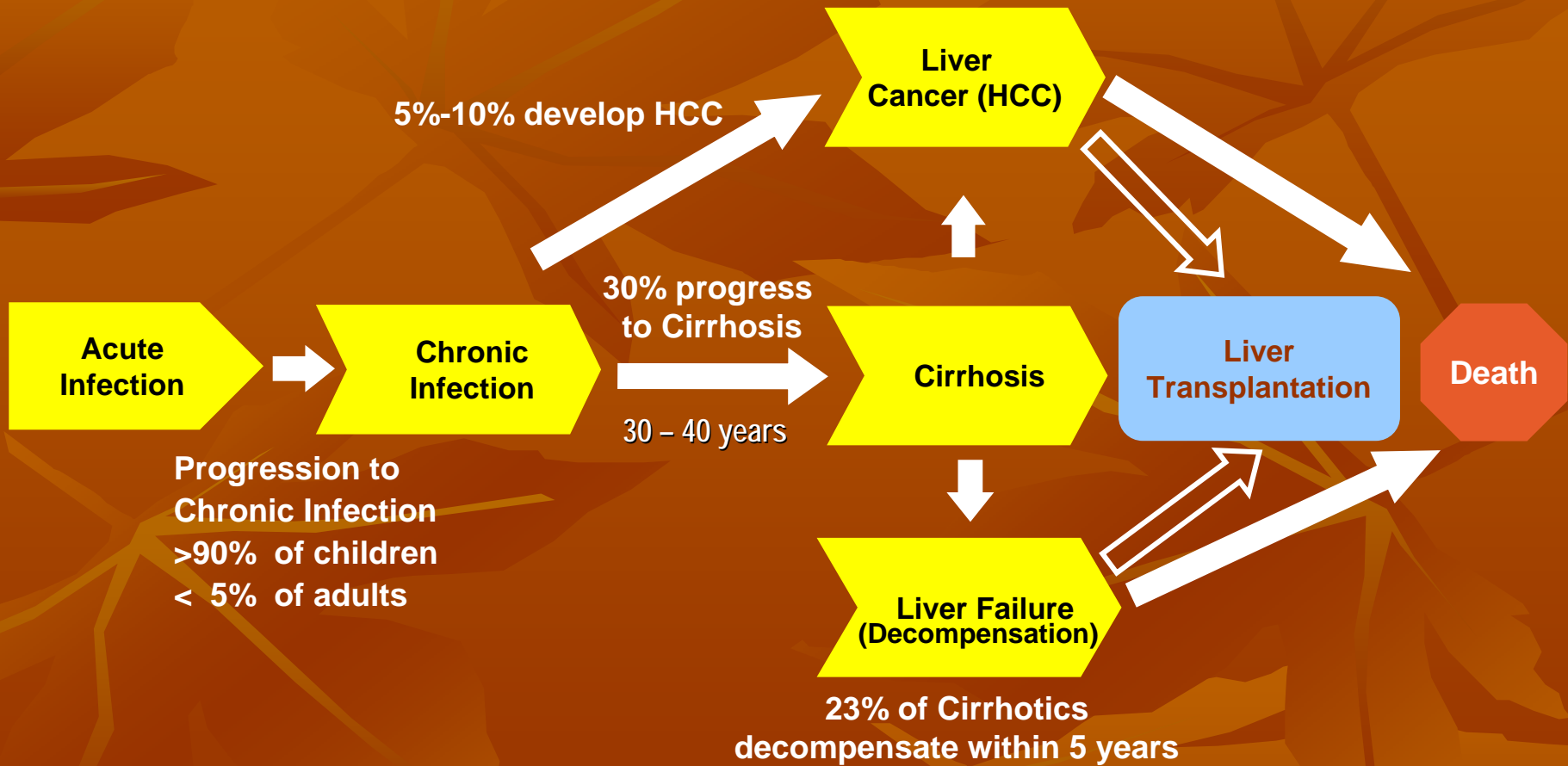
# Hepatitis B – Clinical Features

- **Incubation period:** Average 60-90 days  
Range 45-180 days
- **Clinical illness (jaundice):** <5 yrs, <10%  
>5 yrs, 30%-50%
- **Acute case-fatality rate:** 0.5%-1%
- **Chronic infection:** <5 yrs, 30%-90%  
>5 yrs, 2%-10%
- **Premature mortality from chronic liver disease:** 15%-25%

**Pregnancy is well tolerated by women who are chronic carriers of hepatitis B**



# Hepatitis B Disease Progression



Torresi, J, Locarnini, S. Gastroenterology. 2000.

Fattovich, G, Giustina, G, Schalm, SW, et al. Hepatology. 1995. ; Moyer, LA, Mast, EE. Am J Prev Med. 1994,

# Vertical transmission of HBV

- ♣ Rate of transmission: HBeAg-positive ~85%  
HBeAg-negative ~10%
- ♣ Transmission at birth is more likely if the mother is : HBeAg positive B or has high circulating levels of HBV-DNA
- ♣ The placenta forms an excellent barrier against transmission of this large virus (DNA) and intrauterine infection is rare

*Thus vertical transmission is effective during delivery*

# Prevention of vertical transmission

- ♣ Active (vaccine) and passive (HBIG) immunisation interrupts transmission in over 90%
- ♣ What about Lamivudine during the last trimester of pregnancy ?
- ♣ The best protocol seems to be:
  - ♠ HBV vaccine at birth and every 4 weeks (3 doses)
  - ♠ HBIG at birth and 4 weeks later

# Objectives

- **To provide comprehensive and reliable information on available data on global prevalence of hepatitis B in pregnant women in Africa**
- **To assess the vertical transmission rate of HBV to newborns**

# Methods of review

- **Electronic : Pubmed, WHO regional databases**
- **Manual search of references from original articles**
- **Keywords :**
  - ♣ **Hepatitis B AND pregnancy AND Africa**
- **Inclusion criteria :**
  - ♠ **All studies done in Africa emphasizing on prevalence and vertical transmission**
- **Exclusion criteria : Case report, brief communications**
- **Total of 144 articles were retrieved, 10 were eligible for prevalence, and 4 for vertical transmission.**

# Prevalence rates of HBV in pregnant women

S. N°	Author Year	Country	Study design	Setting sampling frame	Sample size	Prevalence HBsAg	Prev HBeAg
1	Madzime 1997	Zimbabwe	C S	Hospital	984	25%	3.3%
2	Nacro 2000	Burkina Faso	C S	Hospital	917	10.7%	18.2%
3	Rouet 2004	Ivory Coast	C S	Hospital	1002	9%	-
4	Sidibe 2001	Mali	C S	Hospital	829	15.5%	-
5	Ahmed 1995	Malawi	C S	Hospital	253	13%	-
6	Oshitani 1995	Zambia	C S	Hospital	2098	6.5%	16.1%
7	Itoua 1995	Congo brazza	C S	Hospital	292	6.5%	2.7%
8	Ndumbe 1992	Cameroon	C S	Hospital	1014	25%	5.2%
9	Acquaye 1994	Ghana	C S	Hospital	692	6.4%	15%
10	Marinier 1985	Senegal	C S	Hospital	1442	9.8%	19.8%

# Perinatal transmission rates

S. N°	Author Year	Country	Study design	Setting sampling frame	Sample size	Prevalence HBsAg	M-C trans. rate
1	Roingear 1993	Senegal	Cohort	Hospital	152	13.8%	7%
2	Kew 1975	South Africa	Cohort	Hospital	630	0.16%	12.5%
3	Badawy 2000	Egypt	Cohort	Hospital	352	15.3%	51.8%
4	Menendez 1999	Tanzania	Cohort	Hospital	980	6.3%	8%



# Results

Total number of pregnant women tested : 9523

Prevalence of HBsAg : 6.5 to 25%

Prevalence of HBeAg : 2.7 to 19.8% of HBsAg pos.

Vertical transmission : 7 and 57.8% of HBsAg pos.

# Discussion

- All the studies dealing with prevalence and vertical transmission rate are from Africa
- We could not have any study from Africa, talking about care for newborns from infected women
- Prevalence of HBsAg between 6.5 and 25%
- Proportion of infections acquired perinatally in Africa varies between 7 to 51.8%, probably because of low prevalence of HBeAg or low circulating levels of HBV-DNA

# Conclusions

- Africa is an hyperendemic region for HBV
- The prevalence within pregnant women is almost the same as in the general population
- Low proportion of chronic infections acquired perinatally in Africa

# Recommendations

- Systematic screening for hepatitis B during antenatal care (from 28 weeks of pregnancy)
- Early passive/active immunisation of babies born from all HBsAg-positive mothers is advocated. For that, HBIG should be available
- Of course, the national programme of vaccination should be continued, trying to reach all the children.



**Merci pour votre aimable attention**

**Thank you for lending me your ears**

