

Viral Hepatitis in Reproductive Health

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Epidemiology of Hepatitis B

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Epidemiology of Hepatitis C

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Hepatitis B Vaccination Programs

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Treatment of VHB and VHC

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Vietnam Hepatitis B/C project

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Viral Hepatitis and Pregnancy

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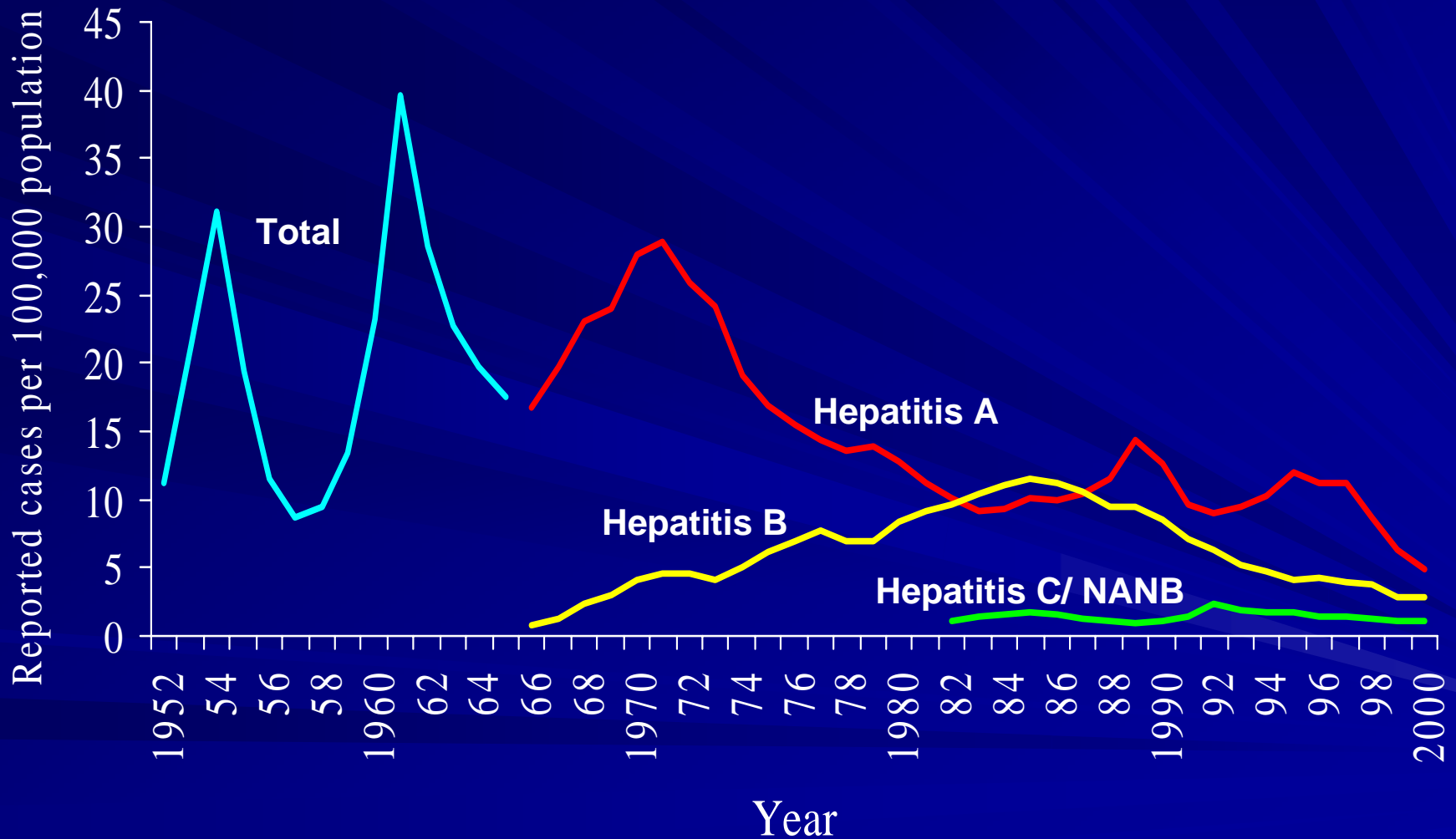
Epidemiology and Prevention of Viral Hepatitis

Worldwide chronic carriers

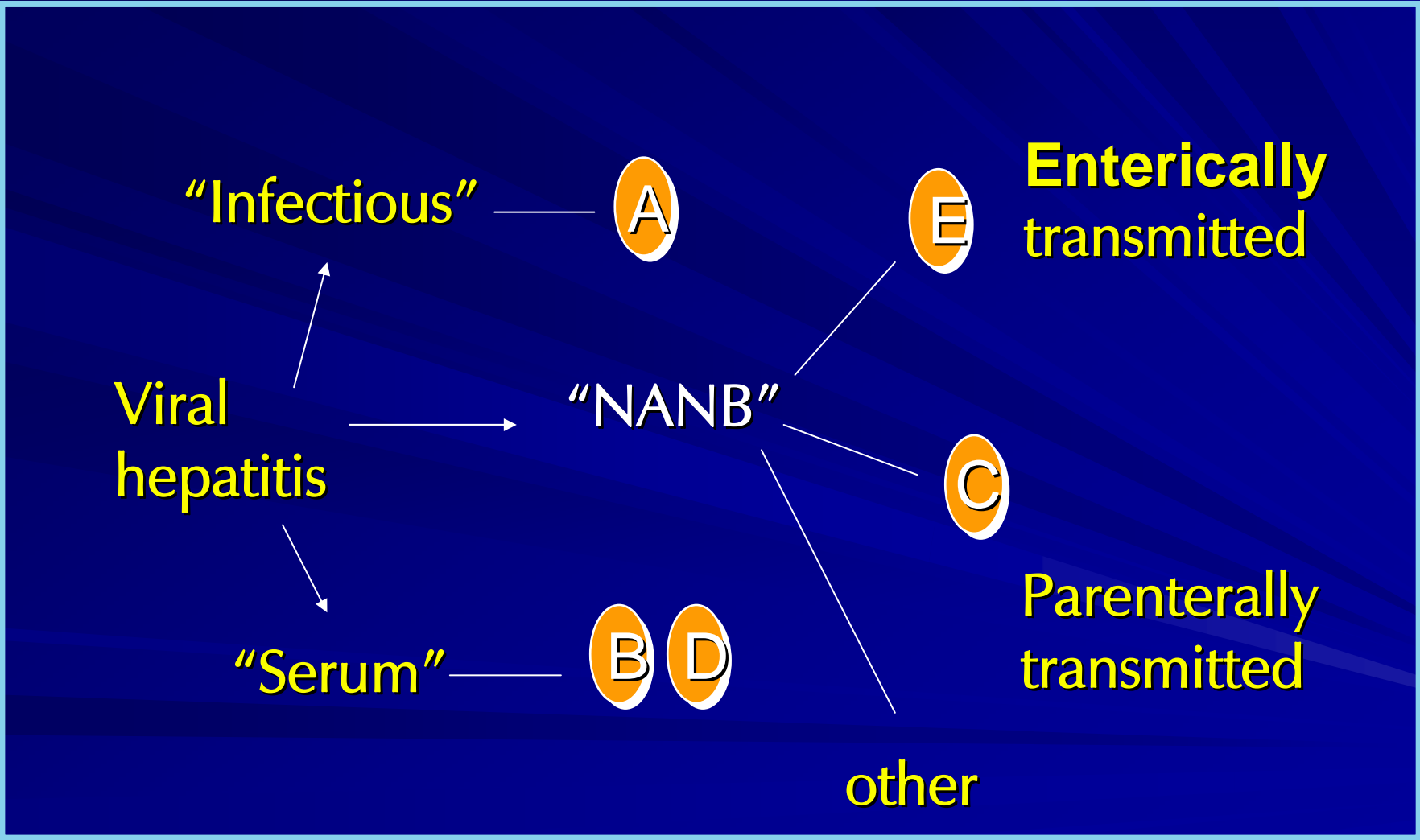
VHB	350'000'000
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VHC	200'000'000
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Acute Viral Hepatitis A, B and C/NANB by Year, United States, 1952-2000



Viral Hepatitis – Historical Perspective



Viral Hepatitis Overview

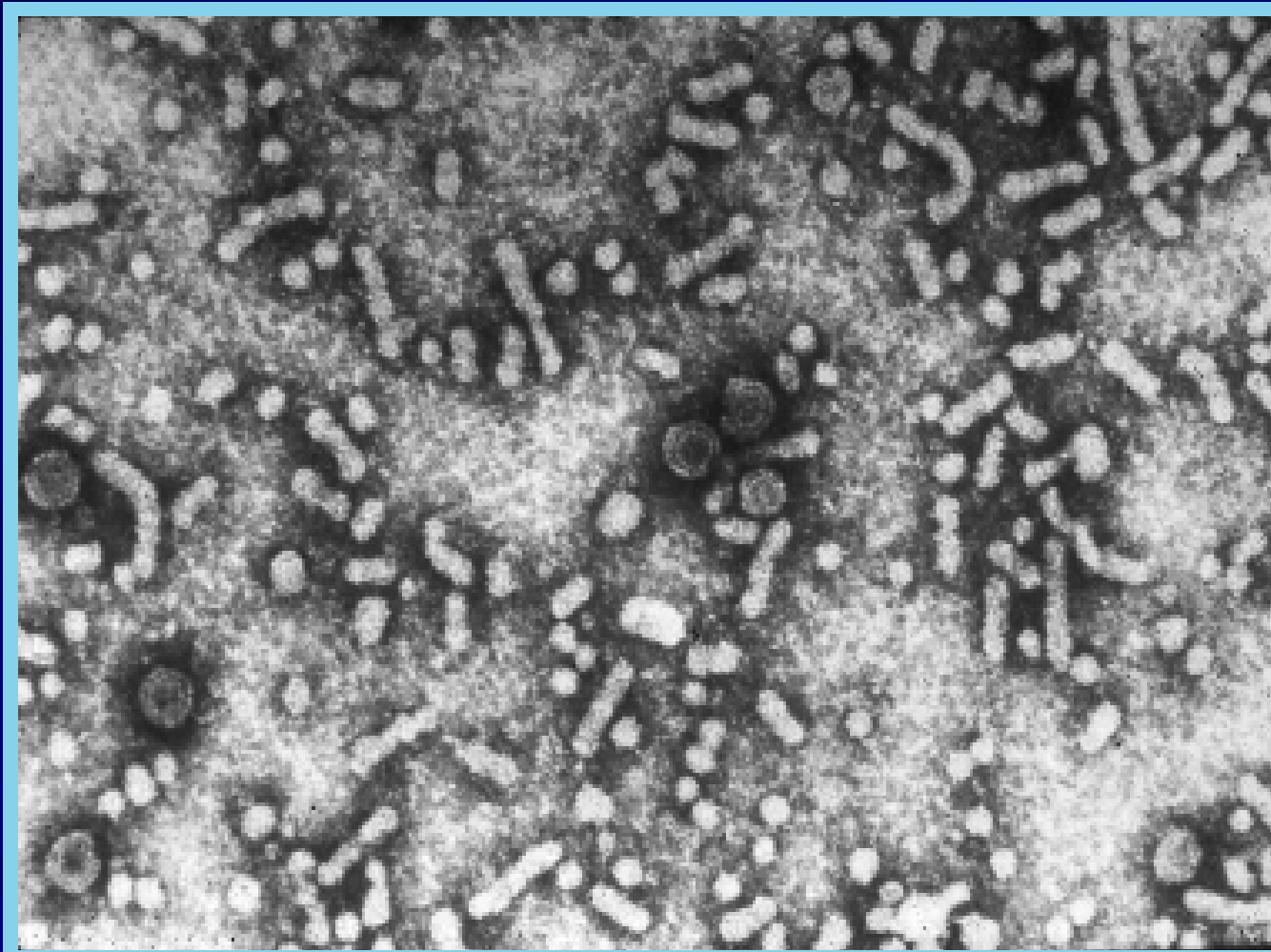
Types of Viral Hepatitis

	A	B	C	D	E
Source of virus	feces	blood/ blood-derived body fluids	blood/ blood-derived body fluids	blood/ blood-derived body fluids	feces
Route of transmission	fecal-oral	percutaneous permucosal	percutaneous permucosal	percutaneous permucosal	fecal-oral
Chronic infection	no	yes	yes	yes	no
Prevention	pre- exposure immunization	pre/post- exposure immunization	blood donor screening; risk behavior modification	pre/post- exposure immunization; risk behavior modification	ensure safe drinking water

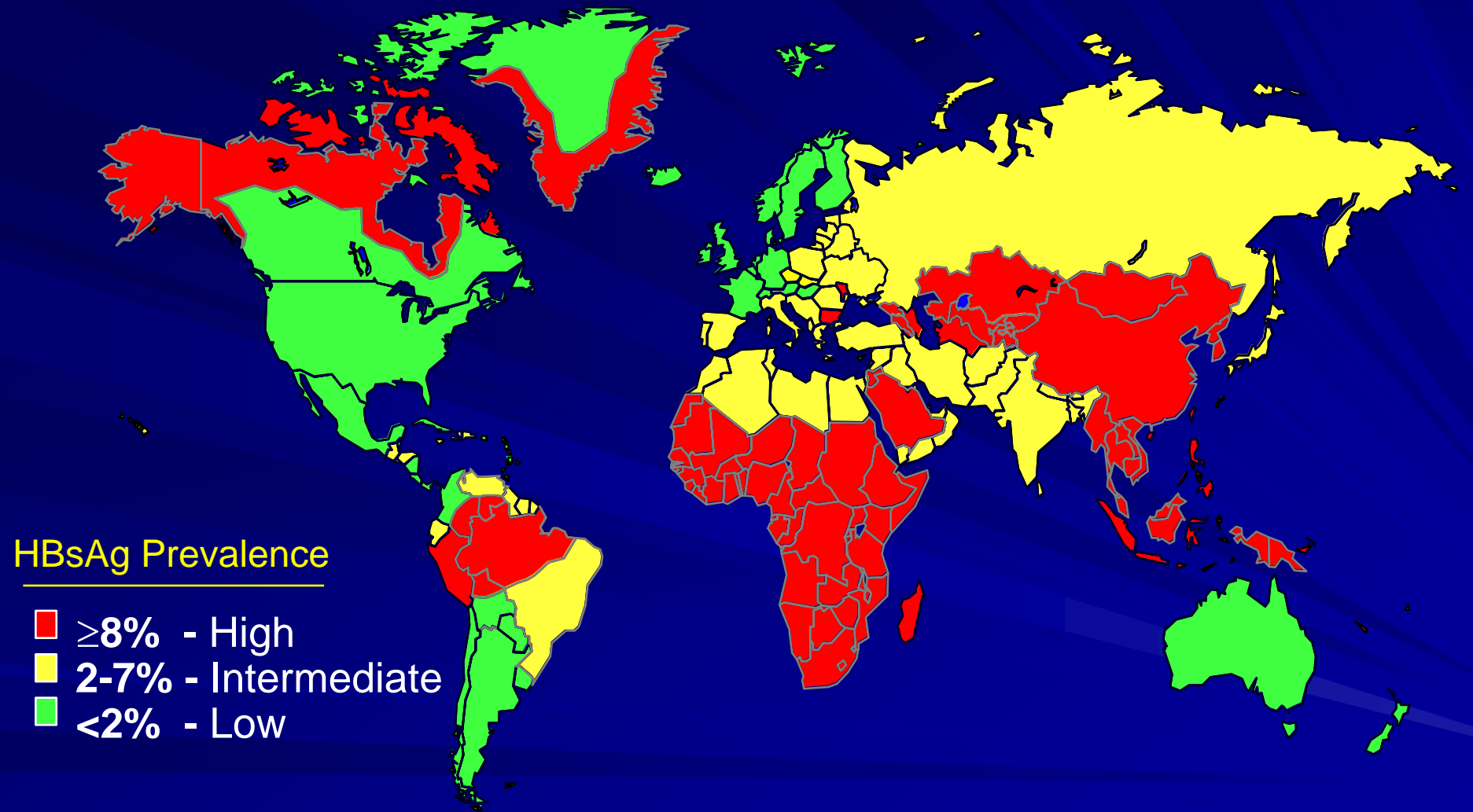
A, B, Cs of Viral Hepatitis

- **A**
 - fecal-oral spread: hygiene, drug use, men having sex with men, travelers, day care, food
 - **vaccine-preventable**
- **B**
 - sexually transmitted – **100x** more infectious than HIV
 - blood-borne (sex, injection drug use, mother-child, and health care)
 - **vaccine-preventable**
- **C**
 - blood borne (injection drug use primarily)
 - 4-5 times more common than HIV
 - **NOT vaccine-preventable!**

Hepatitis B Virus



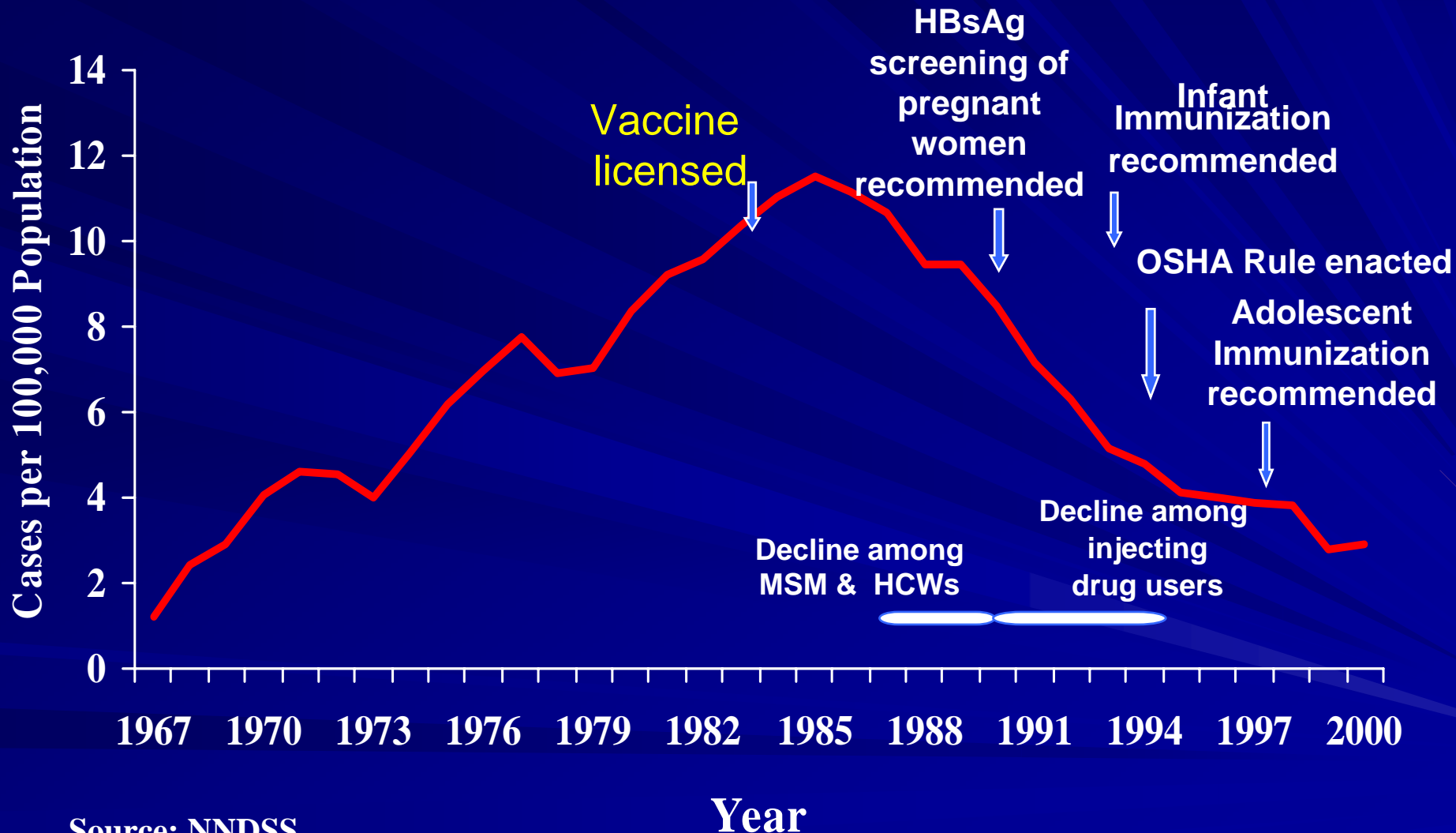
Geographic Distribution of Chronic HBV Infection



Global Patterns of Chronic HBV Infection

- High (>8%): 45% of global population
 - lifetime risk of infection >60%
 - early childhood infections common
- Intermediate (2%-7%): 43% of global population
 - lifetime risk of infection 20%-60%
 - infections occur in all age groups
- Low (<2%): 12% of global population
 - lifetime risk of infection <20%
 - most infections occur in adult risk groups

Hepatitis B by Year (USA 1966-2000)

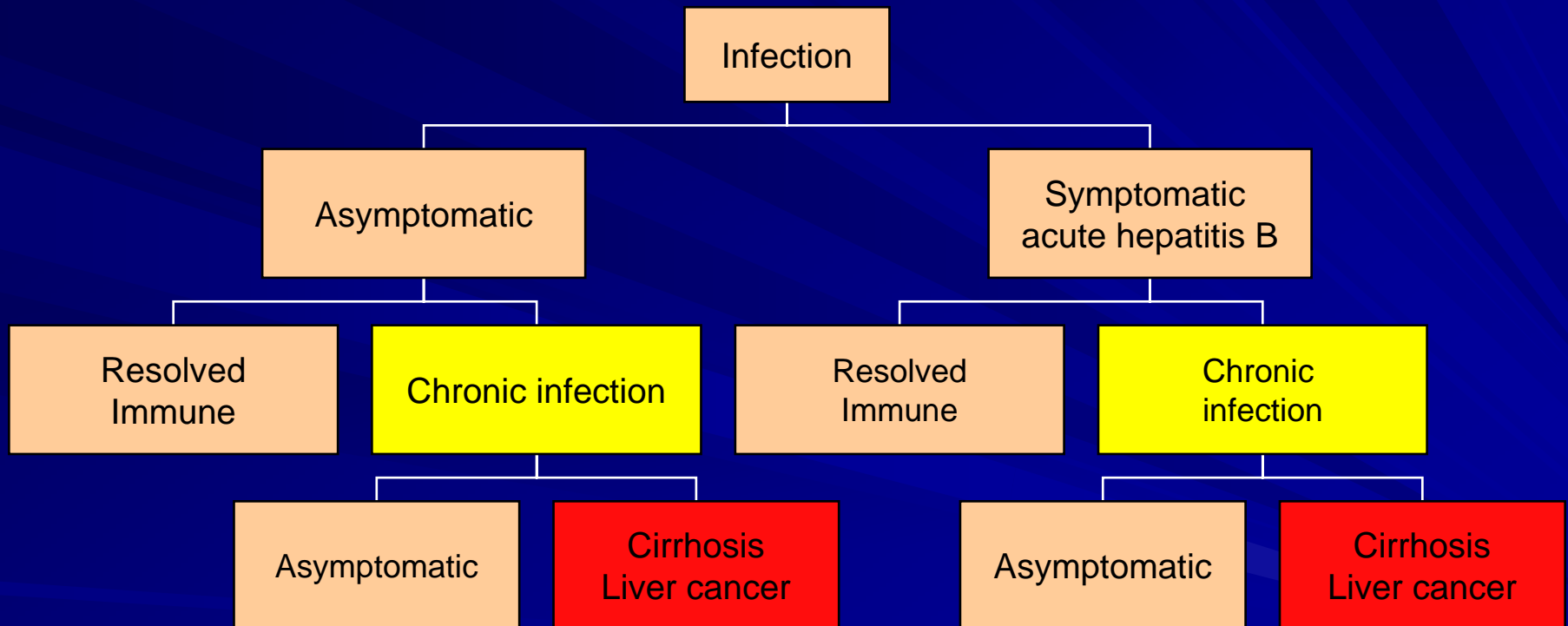


Source: NNDSS

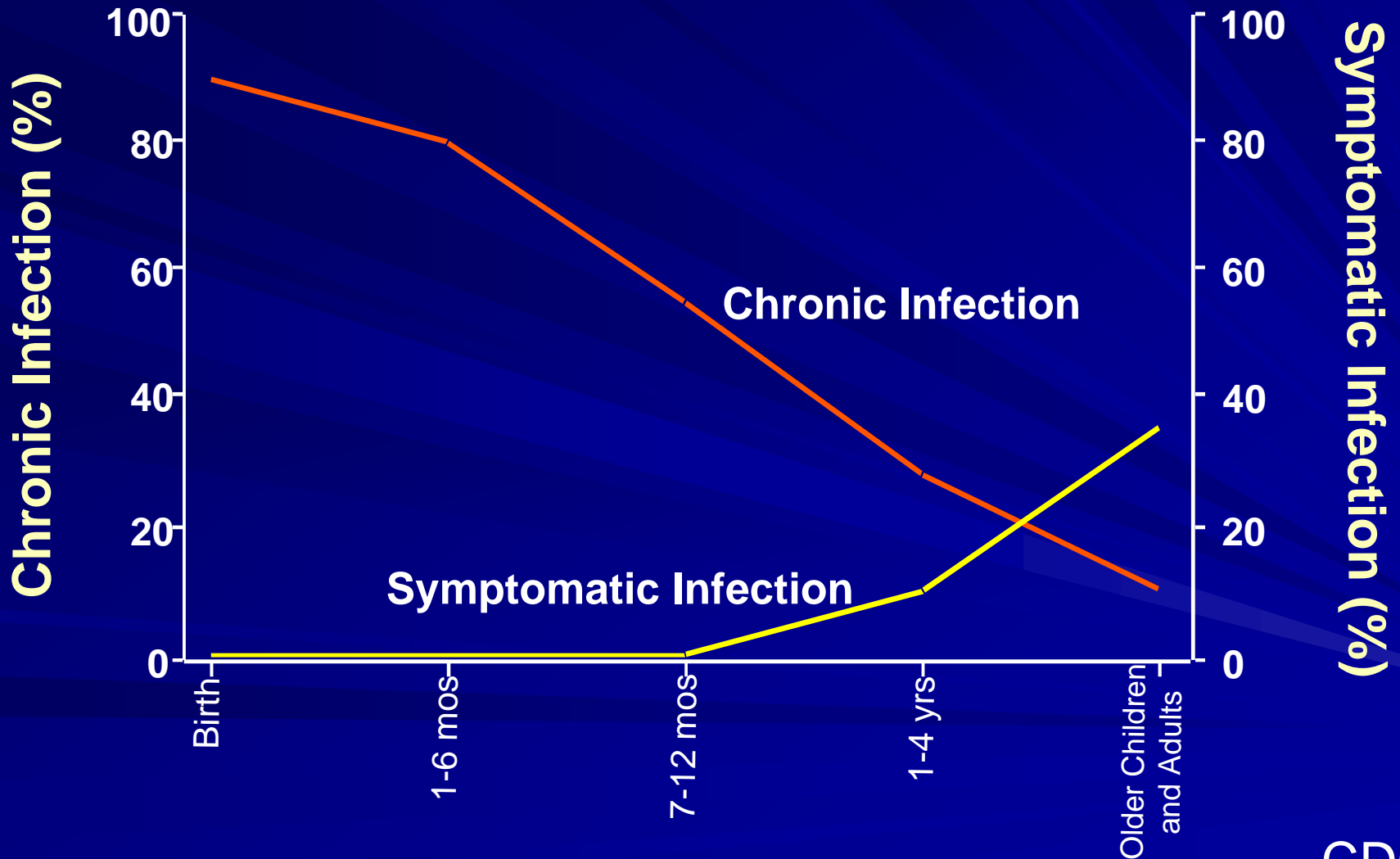
Hepatitis B – Clinical Features

- **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%

Outcome of HBV Infection

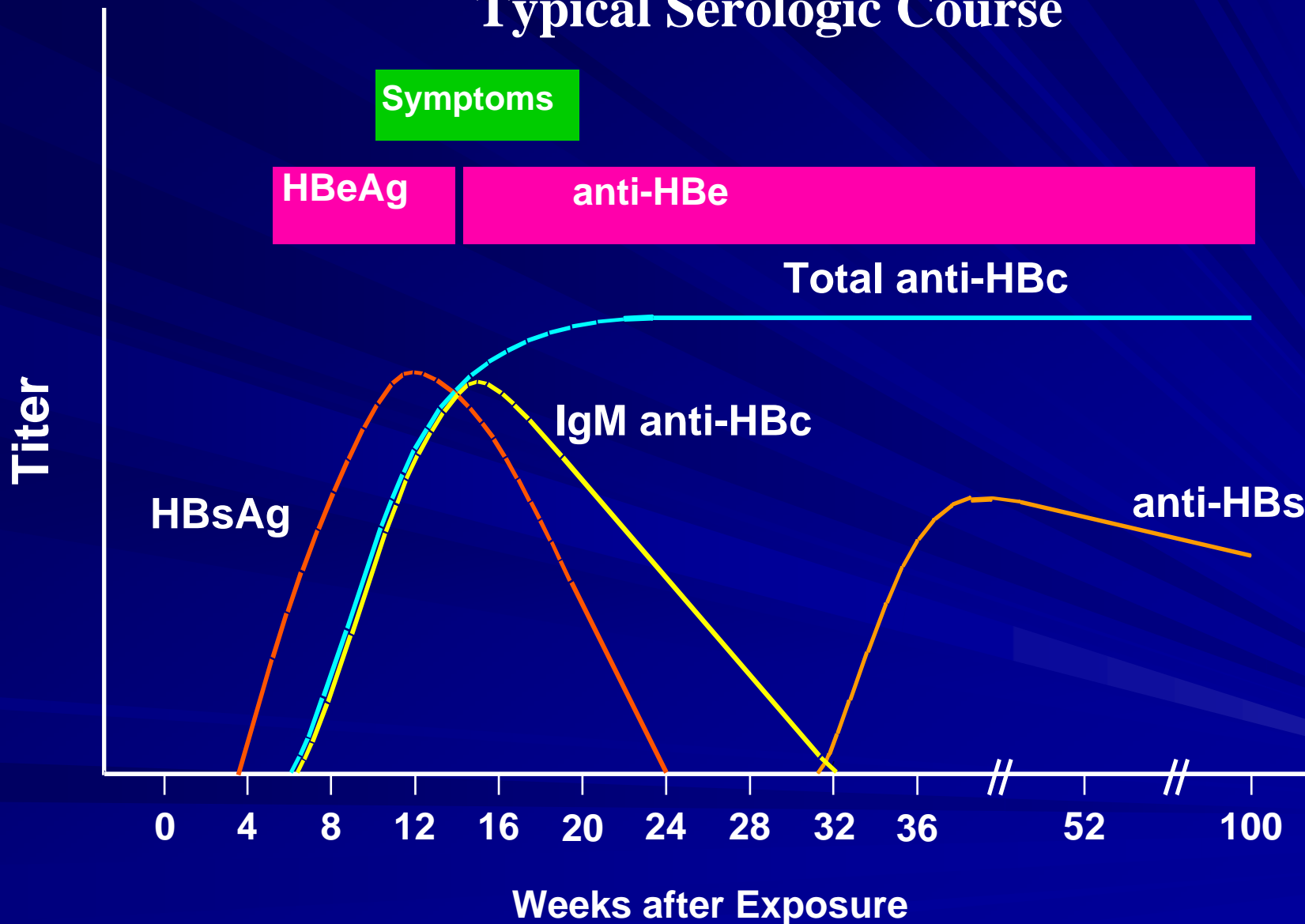


Outcome of Hepatitis B Virus Infection by Age at Infection



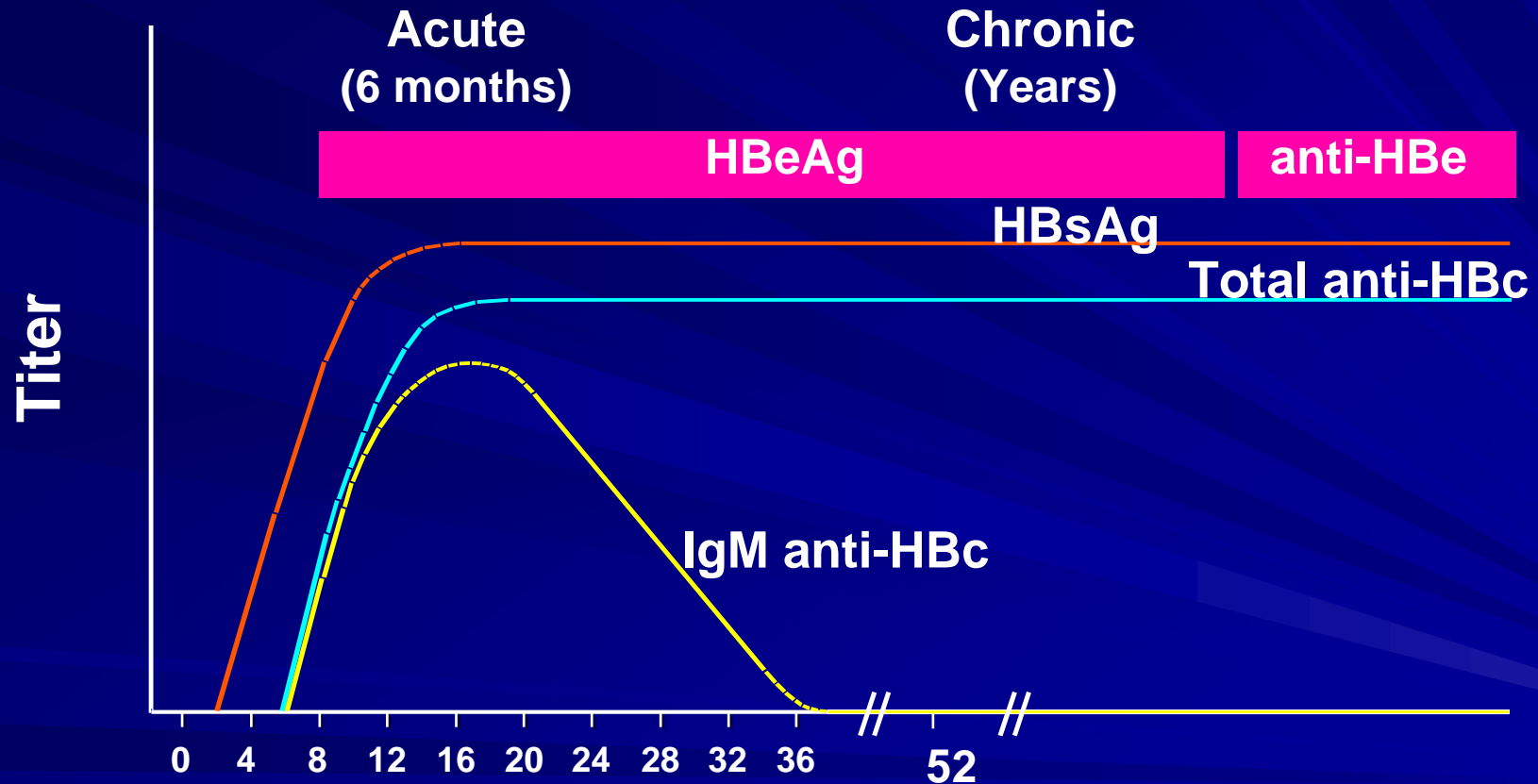
Acute Hepatitis B Virus Infection with Recovery

Typical Serologic Course



Progression to Chronic Hepatitis B Virus Infection

Typical Serologic Course



HBV Modes of Transmission

- Sexual



- Parenteral

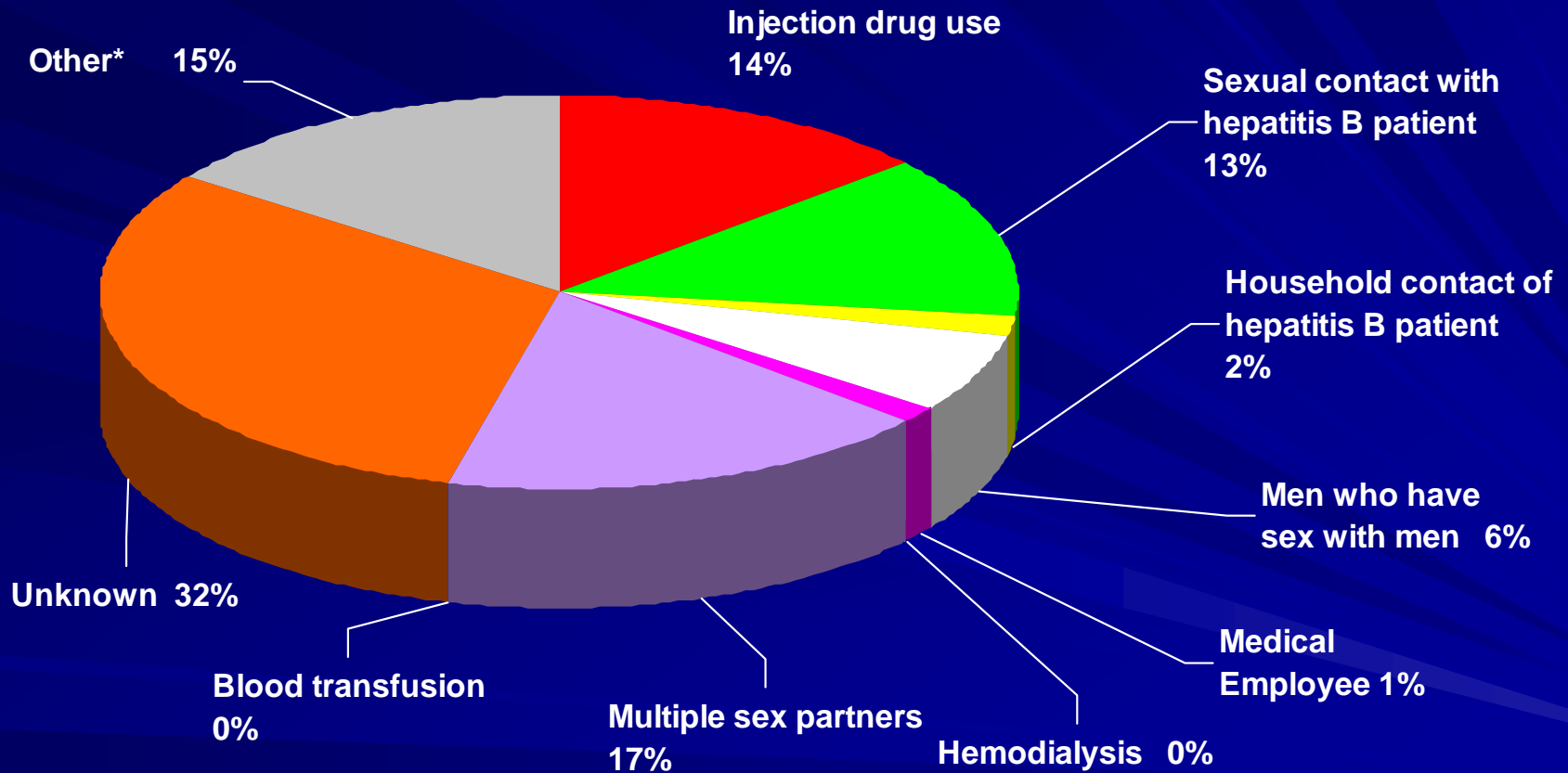
- Perinatal



Concentration of HBV in Various Body Fluids

High	Moderate	Low/Not Detectable
blood	semen	urine
serum	vaginal fluid	feces
wound exudates	saliva	sweat
		tears
		breast milk

Risk Factors Associated with Reported Hepatitis B, 1990-2000, USA



*Other: Surgery, dental surgery, acupuncture, tattoo, other percutaneous injury

Prevalence of VHB

HBV serologic markers in USA

■ Chinese/SEA	13%
■ drug users	6%
■ homosexual males	6%
■ HIV infected	8%
■ pregnant females	0.4 – 1.5 %

Phases of hepatitis B infection

■ immunotolerance

- virus is non pathogenic for liver cells
- may last several years

■ immunoelimination

- active hepatitis, high ALT, fibrosis, cirrhosis
- HBeAg positive chronic hepatitis

■ inactive carrier of HBsAg

- low viremia, HBeAg negative

■ reactivation

- viral mutation, HBeAg negative

Complications of viral hepatitis

Cirrhosis

slow progression over 30 – 40 years
in HBeAg + 3% per year

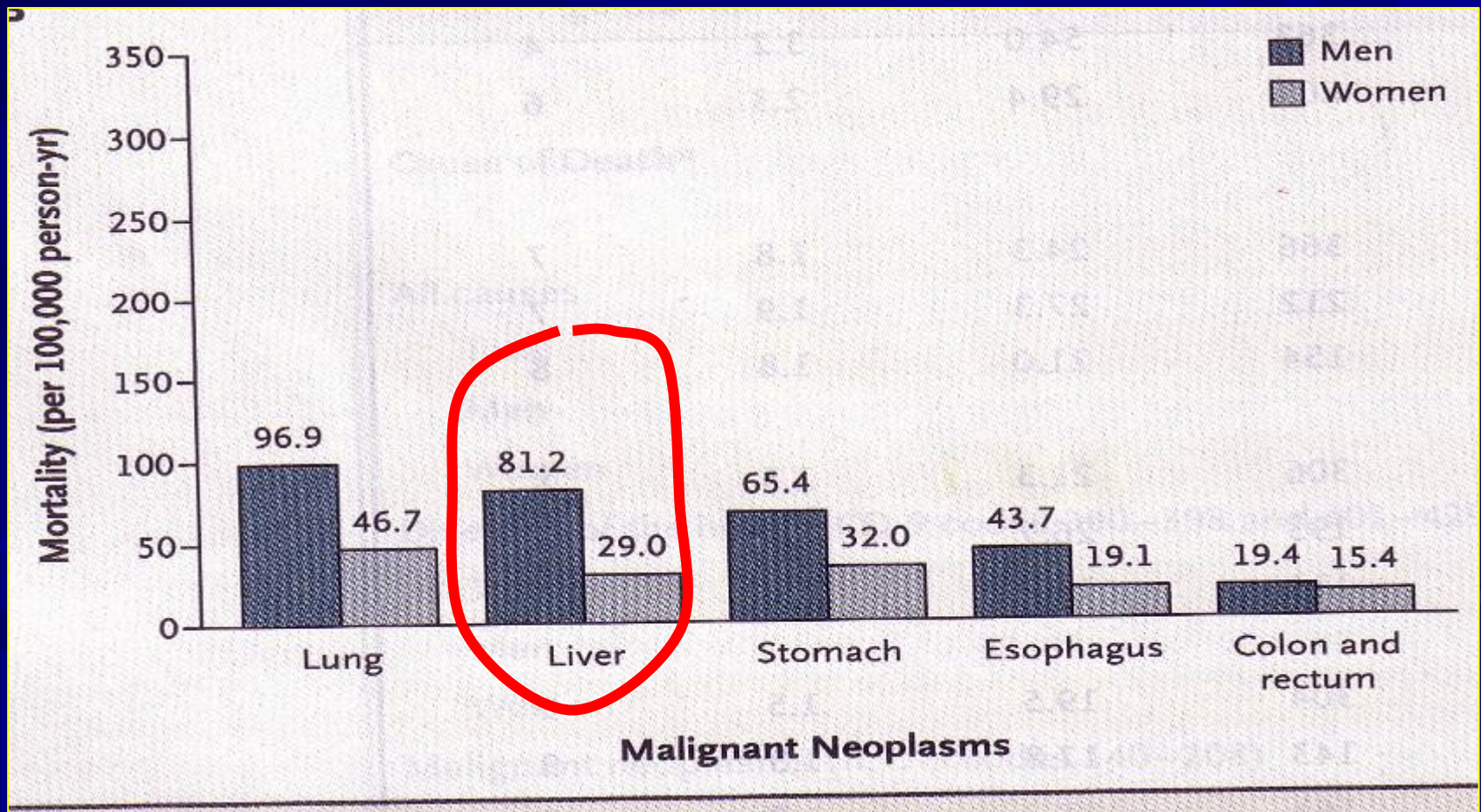
HCC (hepatocellular carcinoma)

a major cause of death in Asia
risk of 2 % per year
increased risk in VHB if high viremia

N Engl J Med September 15, 2005

Major Causes of Death among Men and Women in China

Jiang He, M.D., Ph.D., Dongfeng Gu, M.D., Xigui Wu, et al



Take home messages

- hepatitis B is a world wide public health issue
- major country differences in prevalence exist
- transmission: sexual, perinatal and parenteral
- it is a vaccine preventable disease
- cirrhosis and liver cancer will represent a major challenge in terms of health care costs
- breakthroughs in therapy but very high cost