

Hepatitis B: A Preventable Cause of Liver Cancer

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June 17, 2016



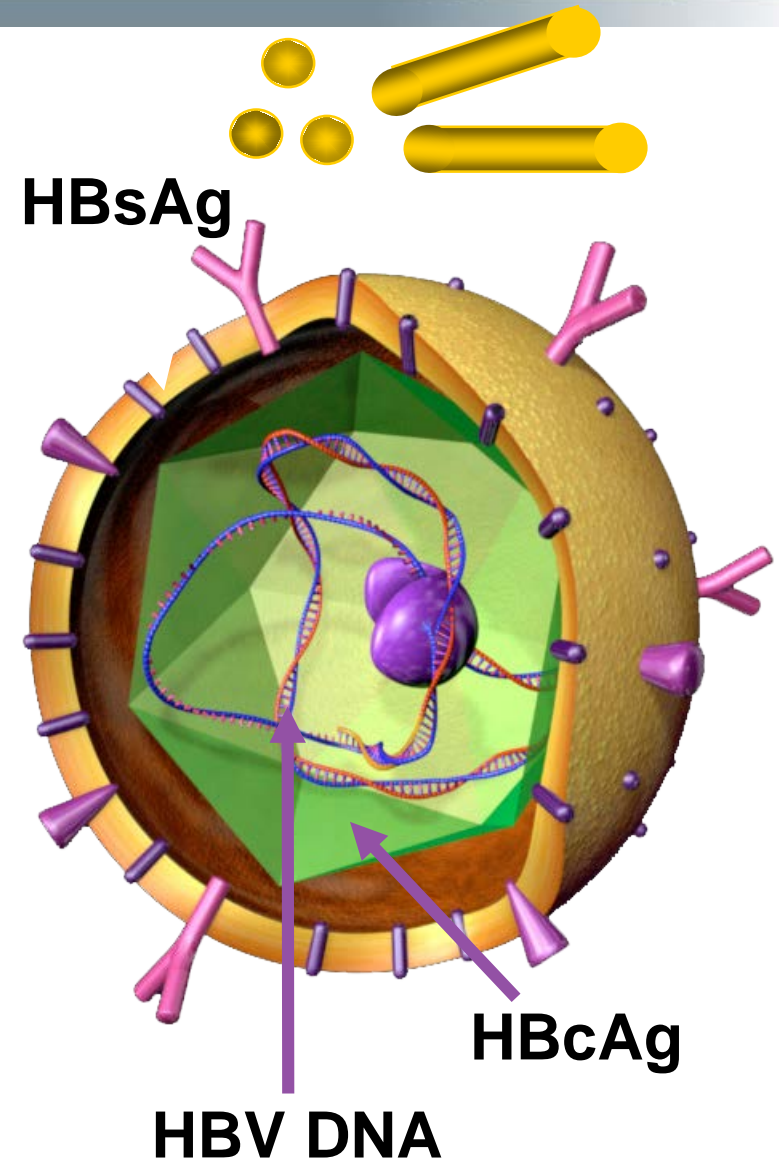
Baylor St. Luke's Medical Center

Overview

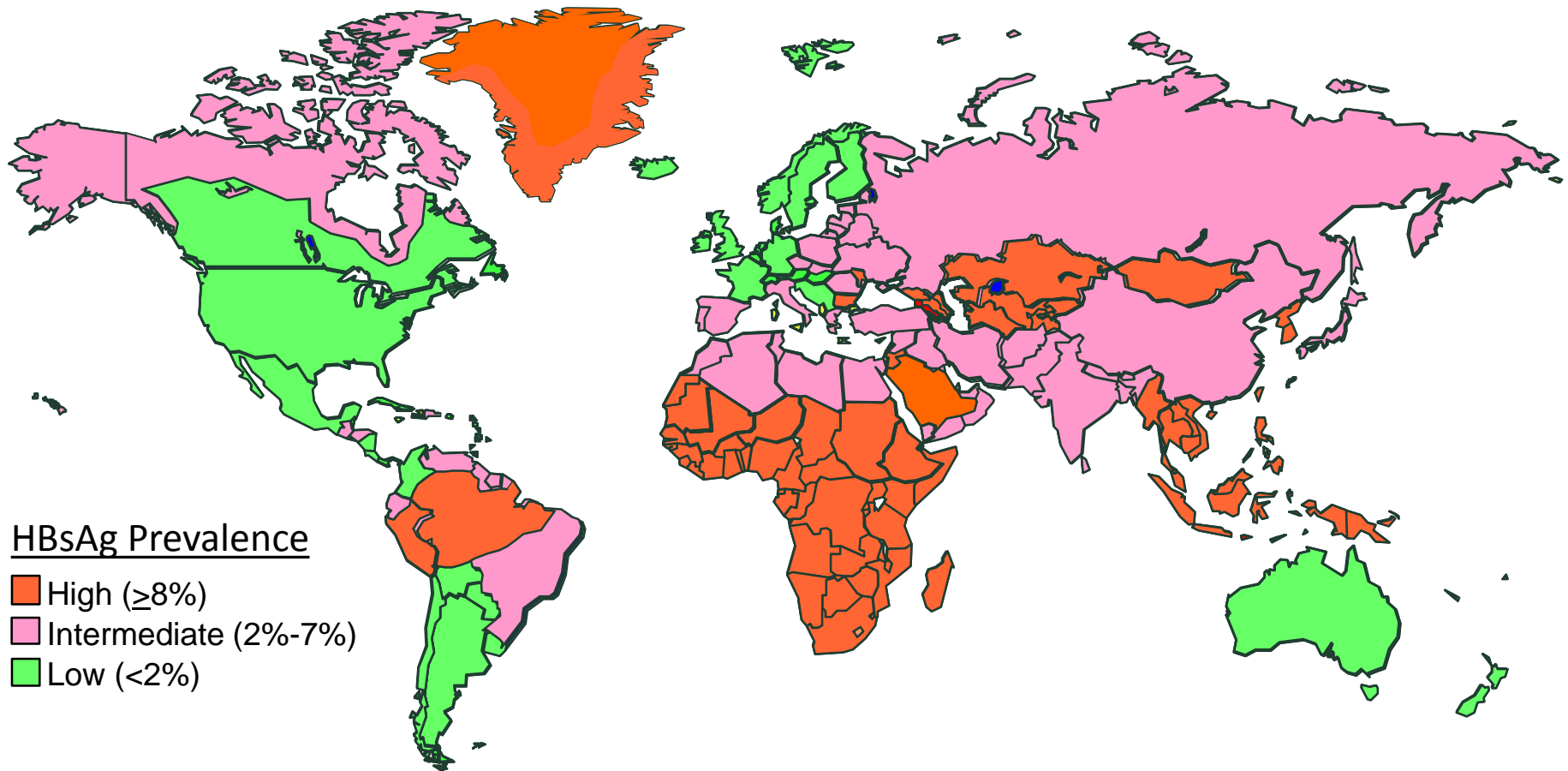
- Epidemiology
- HBV and cancer
- Screening, Diagnosis and Treatment
- Prevention

Hepatitis B

- Double-stranded DNA virus that attacks the liver
- Can cause both acute and chronic disease
- More than 780,000 deaths from HBV related cirrhosis and liver cancer
- Most patients are asymptomatic
- 50 to 100 times more infectious than HIV



Prevalence of HBV: Global Estimates



HBV Infection in the United States

- Current estimates
 - 1.2 to 2.2 million are living with chronic HBV infection
 - Underlying cause of an estimated 2000 to 4000 deaths each year
- The number of foreign-born persons living in the United States has increased from 20 million in 1990 to 41 million in 2009
 - This represents
 - 4.7% to 13.6% of the total US population
 - An estimated 2 million HBsAg positive*
 - Average chronic HBV prevalence rate among foreign-born persons living in the United States is 2.0% to 5.4%

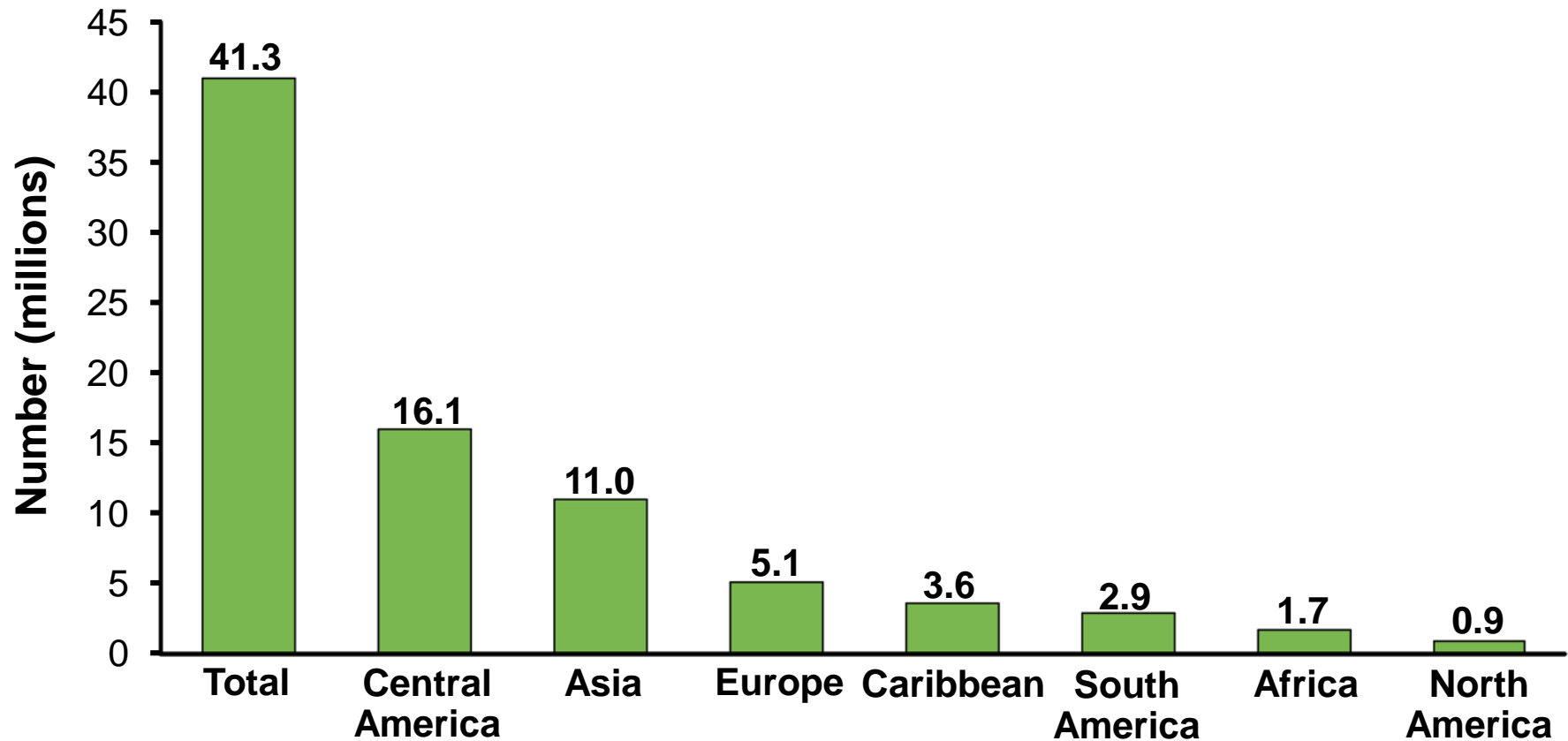
Weinbaum CM, et al. *MMWR Recomm Rep*. 2008;57(RR-8):1-20.

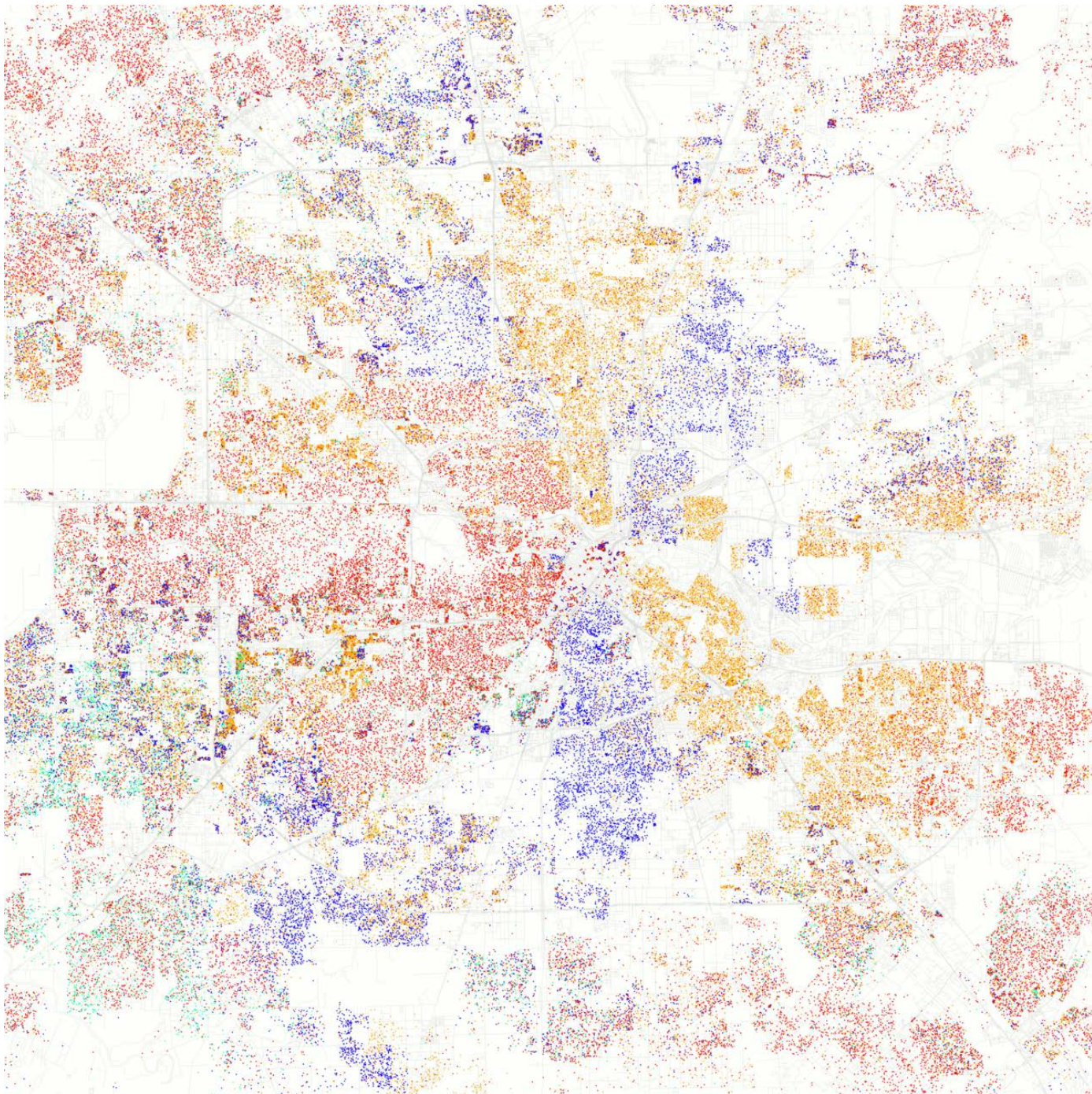
Kowdley KV, et al. *Hepatology*. 2012;56:422-433.

*Gish RG, et al. *Hepatology*. 2015;62:1339-1341.

Foreign-Born Persons in the US: Overall and By Place of Birth (2009)

Number of Foreign Born Persons in the United States





Hepatitis B in Houston

- The fourth largest Asian population of any US metropolitan area
- Third largest Vietnamese population in the US
- 1 in 10 Asian-Americans has hepatitis B

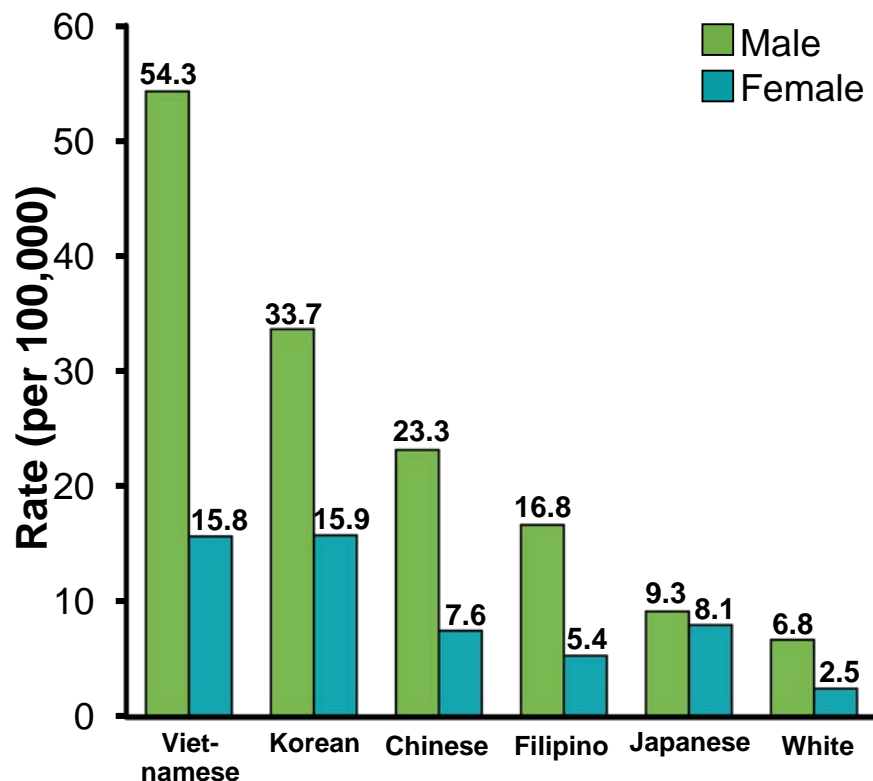


HBV and Cancer

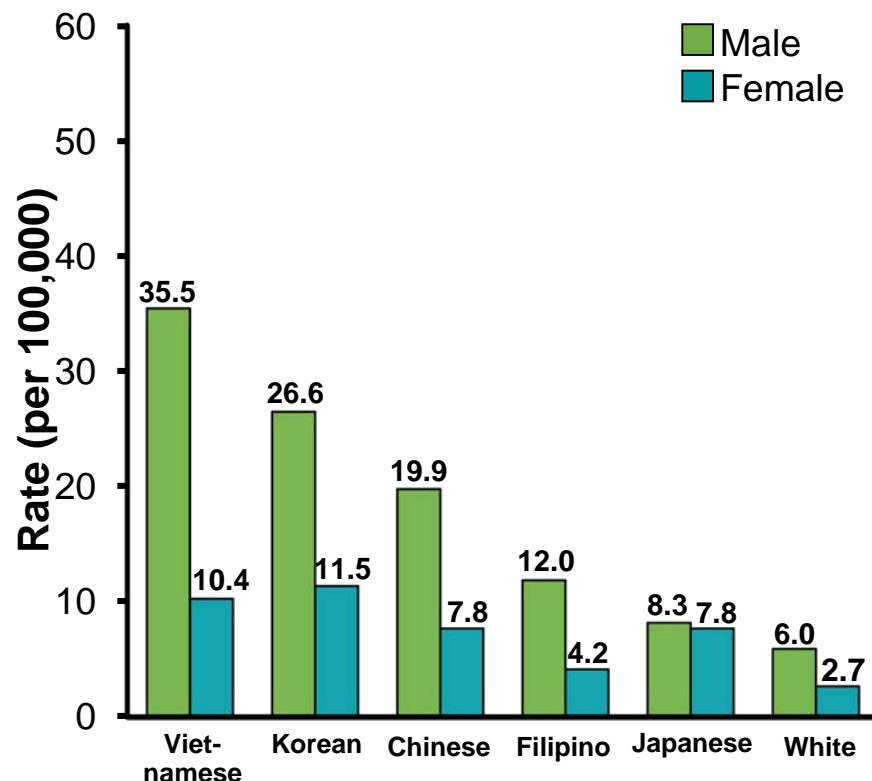
- Dominant cause of hepatocellular carcinoma (HCC) worldwide
- Second cause of cancer death worldwide
- Most common carcinogen after tobacco
- Lifetime risk of developing HCC is 10 to 25-fold greater for chronic HBV patients
- 1 in 4 adults with chronic HBV will die from liver cancer or liver cirrhosis
- 2nd most common cause of cancer death in Asian men

Asian-American Age-Adjusted Liver Cancer Rates (California, 2000-2002)

Incidence



Mortality



Approximately 3.7 million Asians in California. Cancer data from California Cancer Registry.

McCracken M, et al. *CA Cancer J Clin.* 2007;57:190-205.

How is HBV transmitted?

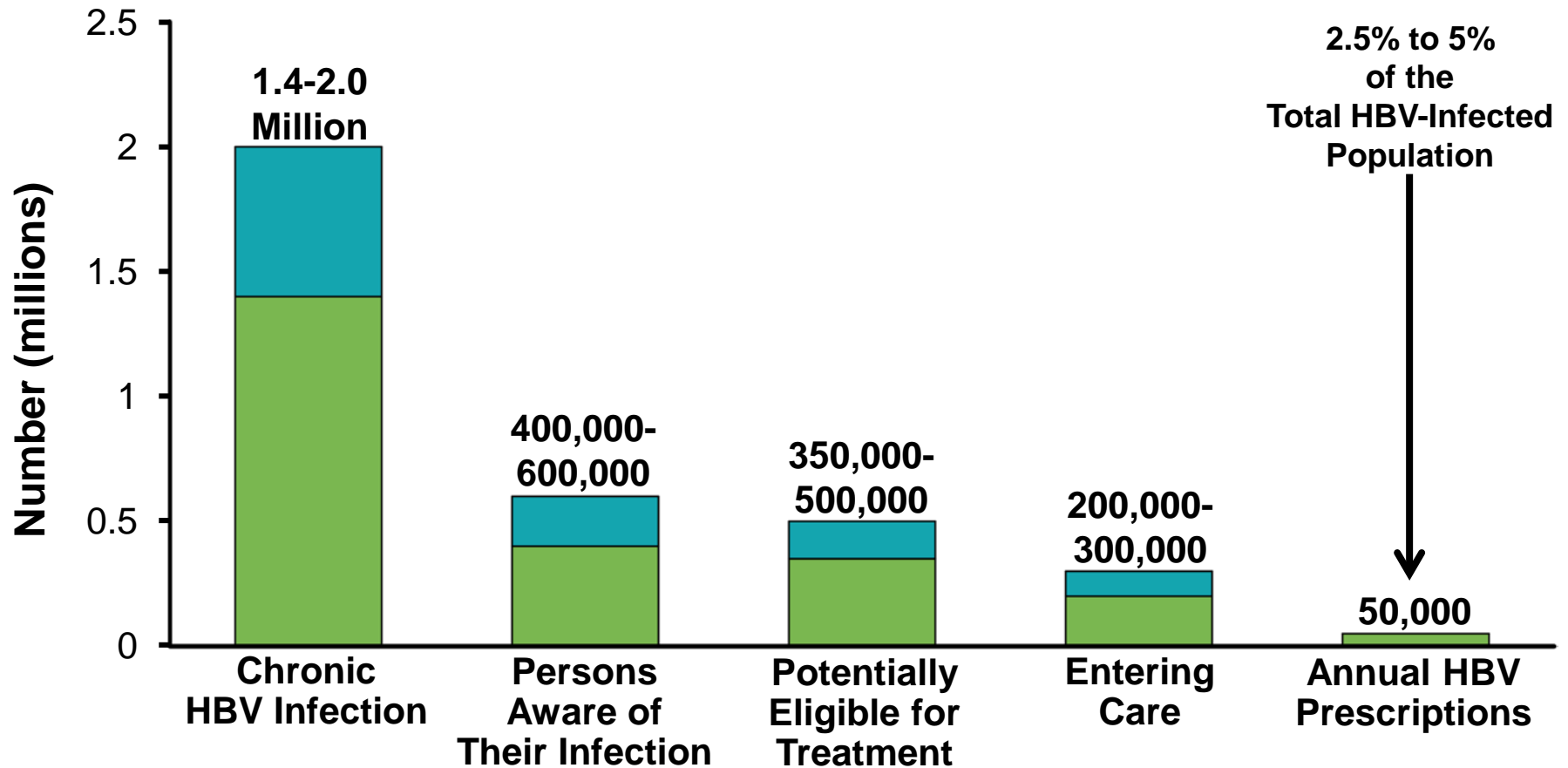
- Sex with an infected partner
- Injection drug use
- Birth to an infected mother
- Contact with blood or open sores of an infected person
- Needle sticks or sharp instrument exposures
- Sharing items such as razors or toothbrushes with an infected person

HBV is NOT spread through food or water, breastfeeding, hugging, hand holding, kissing, sneezing, coughing

Candidates for Screening for HBV

- Persons born in high and intermediate endemic areas ($\geq 2\%$ prevalence)
- US born children of immigrants from high-risk areas
- Household and sexual contacts of HBsAg-positive persons
- Persons who have ever injected drugs
- Persons with multiple sexual partner, or history of STDs
- Men who have sex with men
- Inmates of correctional facilities
- Individuals with chronically elevated ALT/AST
- Individuals infected with HIV or HCV
- Patients undergoing dialysis
- All pregnant women

HBV Infection, Diagnosis, and Care in the United States



HBV Diagnosis

Serologic Marker Results

HBsAg	Total Anti-HBc	IgM Anti-HBc	Anti-HBs	Interpretation
-	-	-	-	Never infected and no evidence of immunization, needs vaccination
+	+	+	-	Acute infection
+	+	-	-	Chronic infection
-	+	-	-	Exposure with occult HBV, false positive (rare) or chronic infection
-	+	-	+	Exposure and clearance of HBV infection from the blood, with occult HBV

Candidates for HBV Treatment

HBV

(IU/ml)

HE

HE

ALT:

Normal

When

key

Biop

- Not all patients with hepatitis B need treatment
- Decision to treat is based on
 - Viral load
 - Liver enzymes
 - Fibrosis in the liver

Terrau

Martin P, et al. *Clin Gastroenterol Hepatol*. 2015;13:2071-2087.

EASL. *J Hepatol*. 2012;57:167-185.

Liaw Y-F, et al. *Hepatol Int*. 2012;6:531-561.

HBV Treatment

- Antiviral options include entecavir and tenofovir
 - Achieve sustained suppression of HBV replication and remission of hepatic disease
 - Prevent the development of cirrhosis, hepatic failure, and hepatocellular carcinoma
 - HBV probably is never cured*, but rather controlled by limiting viral replication

*HBV ccc DNA persists, making HBV incurable with current treatments.

Terrault NA, et al. *Hepatology*. 2016;63:261-283.

Martin P, et al. *Clin Gastroenterol Hepatol*. 2015;13:2071-2087.

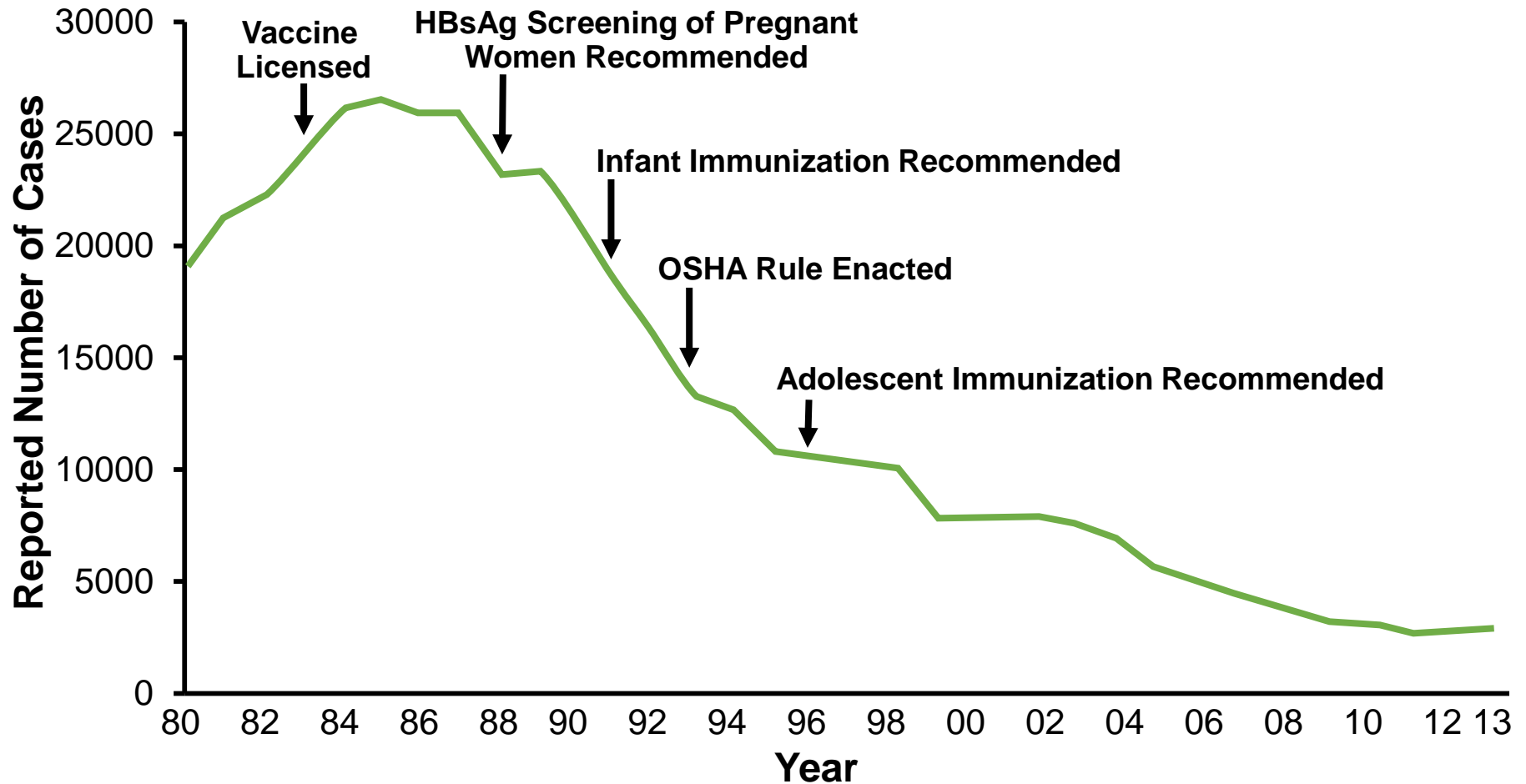
HBV Vaccination

- WHO named the hepatitis B vaccine the first “anti-cancer” vaccine
- Series of three intramuscular injections
 - 0, 3, and 6 months
- Single-antigen: ENGERIX-B[®], RECOMBIVAX HB[®]
- Combination: PEDIARIX[®], TWINRIX[®], COMVAX[®]
- Protection remains intact for at least twenty years
- Infants receive first dose within 24 hours of birth

Eliminating Transmission of HBV in the United States and Globally

- Universal vaccination of infants beginning at birth (dose <24 hours from birth)
- Prevention of perinatal HBV infection through
 - Routine screening of all pregnant women for HBsAg
 - Immunoprophylaxis with combined vaccine and HBIG of infants born to HBsAg-positive women or women with unknown HBsAg status
- Routine vaccination of previously unvaccinated children
- Vaccination of previously unvaccinated adults at risk for HBV infection

New HBV Infections by Year: United States (1980-2013)



Current HBV Patient Barriers

- Culture
 - Chronic HBV persons are discriminated against in most Asian countries
- Education message gap
 - Patients understand link of chronic HBV and liver complications, but many fail to recognize link to cancer

Current HBV Provider Barriers

- Many providers are not aware that HBV disproportionately affects the Asian/Pacific Islander community
- Educate providers
 - Appropriately identify chronic HBV
 - Understand HBV blood test results
 - Understanding who should be treated
 - Understand treatment options

Extension for Community Healthcare Outcomes



Project ECHO

Extension for Community Healthcare Outcomes



People need access to specialty care for their complex health conditions.



There aren't enough specialists to treat everyone who needs care, especially in rural and underserved communities.



ECHO trains primary care clinicians to provide specialty care services. This means more people can get the care they need.



Patients get the right care, in the right place, at the right time. This improves outcomes and reduces costs.

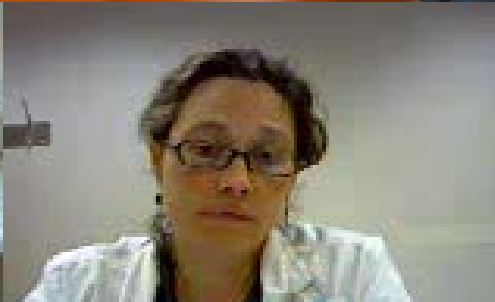
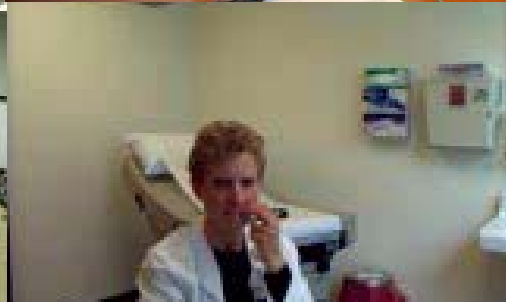
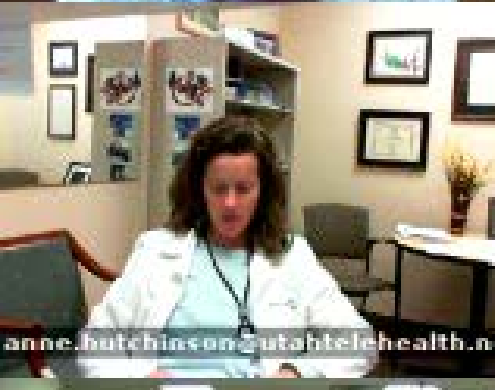
ECHO Clinics

- Current Clinics

- Hepatitis C
- Hepatitis B
- Advanced Liver Disease
- Infectious Diseases
- Cardiology
- Oncology

- Upcoming Clinics

- LVAD/Heart MRB
- Rheumatology
- Behavioral Health
- Pulmonary
- Nephrology



Summary

- HBV is a highly infectious virus that leads to more than 780,000 deaths from HBV related cirrhosis and liver cancer
- Up to 2.2 million people are living with chronic HBV infection in the US
- Dominant cause of hepatocellular carcinoma (HCC) worldwide
- Hepatitis B surface antigen is the screening test for HBV
- Antivirals are an effective way to suppression HBV replication
- Hepatitis B vaccination is a series of three intramuscular injections
- Vaccination is an effective form of protection which remains intact for at least twenty years