

Viral Hepatitis: The Path to Elimination*

* CEUs Available

Christine Simon, MPH
Senior Project Manager
PHMC NNCC

Presentation provided by: Kelsa Lowe





Partners

Agenda

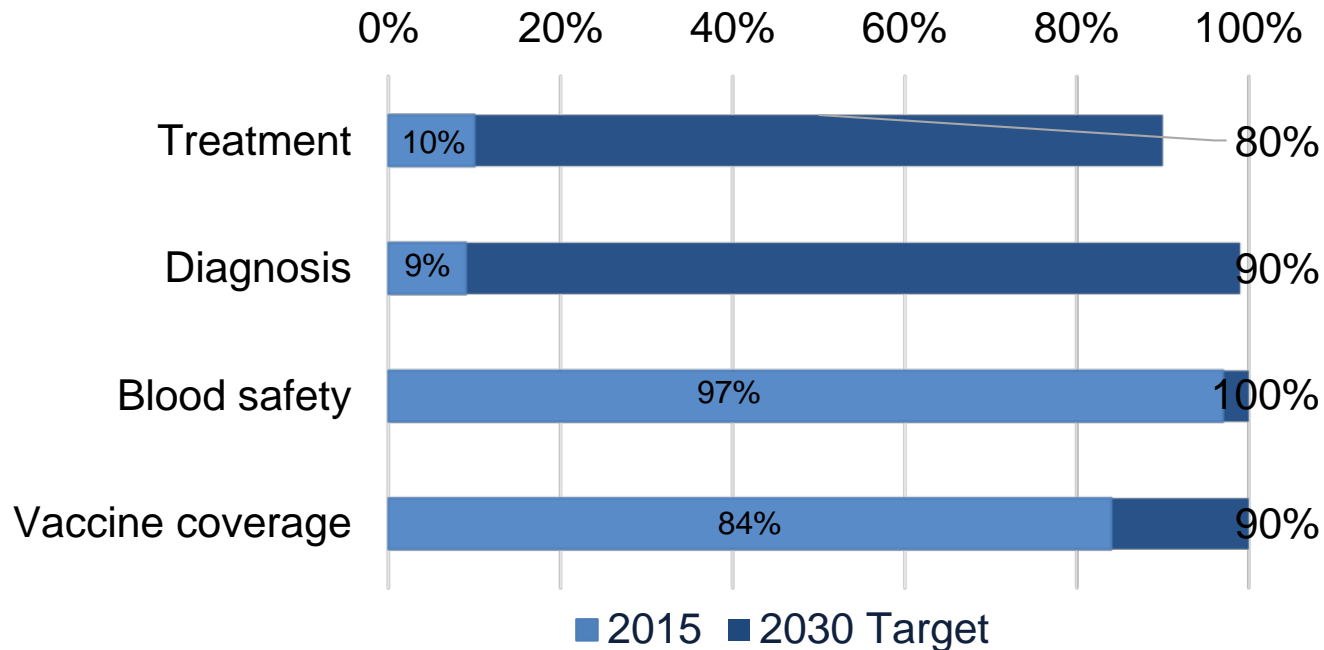
- Hep Basics
- Clinical Overview
- Risk Factors
- Philadelphia Epidemiology
 - Toolkit!

6 Degrees of Separation



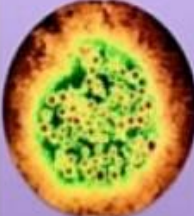

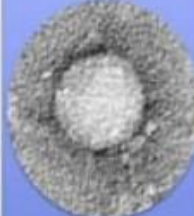
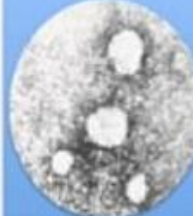

Global and U.S. Goals for Elimination of HBV as Public Health Threat by 2030

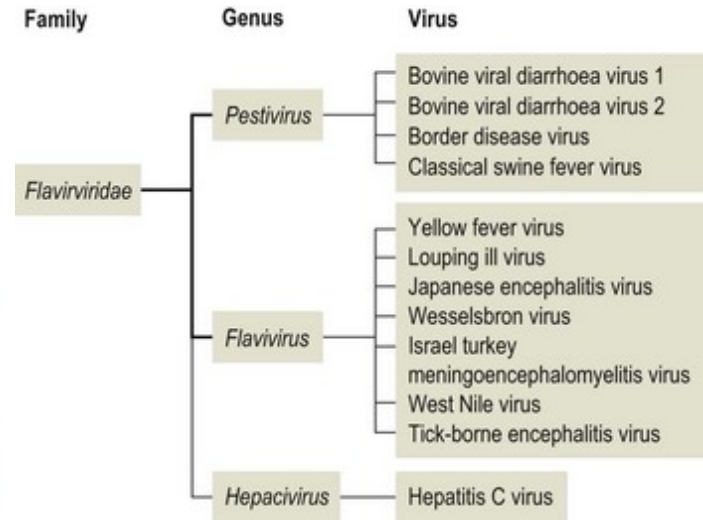
By 2030, 90% reduction in new infections and 65% reduction in deaths



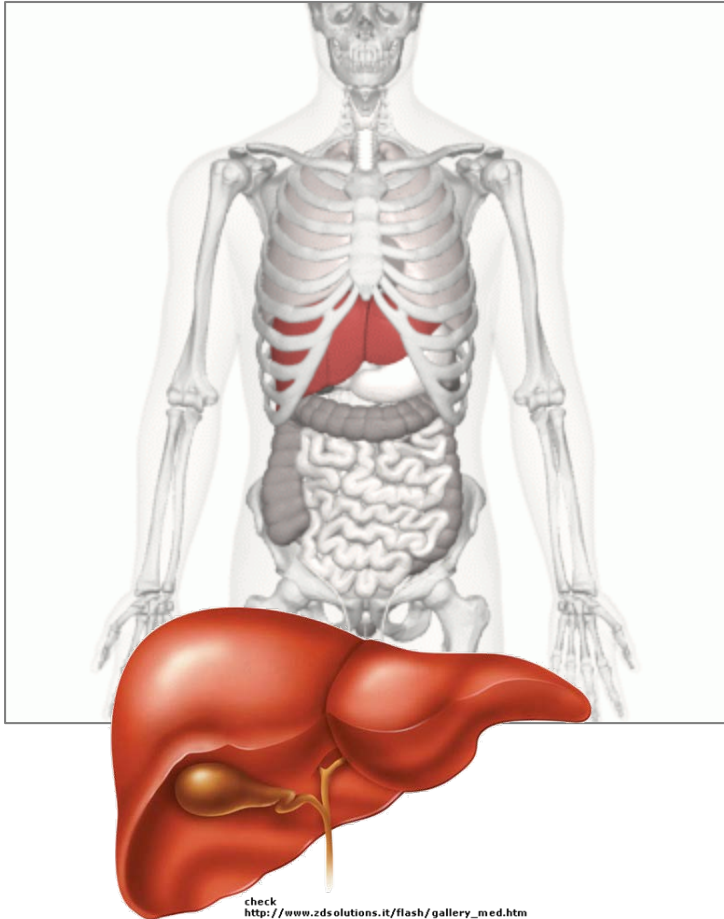
Source: <https://www.who.int/hepatitis/publications/hepatitis-service-coverage-targets/en/>.

Poor nomenclature?

Hep A	Hep B	Hep C	Hep D	Hep E
				
<ul style="list-style-type: none"> • SS-RNA • Picornavirus • Non-enveloped • Feco-oral • Acute 	<ul style="list-style-type: none"> • SS-DNA • Hepadnavirus • Enveloped • Blood – body fluid- vertical • Acute & chronic • HCC 	<ul style="list-style-type: none"> • SS-RNA • Flavivirus • Enveloped • Blood – body fluid- vertical- IVDU • Acute & chronic • HCC rare 	<ul style="list-style-type: none"> • SS-RNA • Deltavirus • Enveloped • Co-infection with Hep B • Acute & chronic • HCC 	<ul style="list-style-type: none"> • SS-RNA • Herpesvirus • Non-enveloped • Feco-oral • Acute



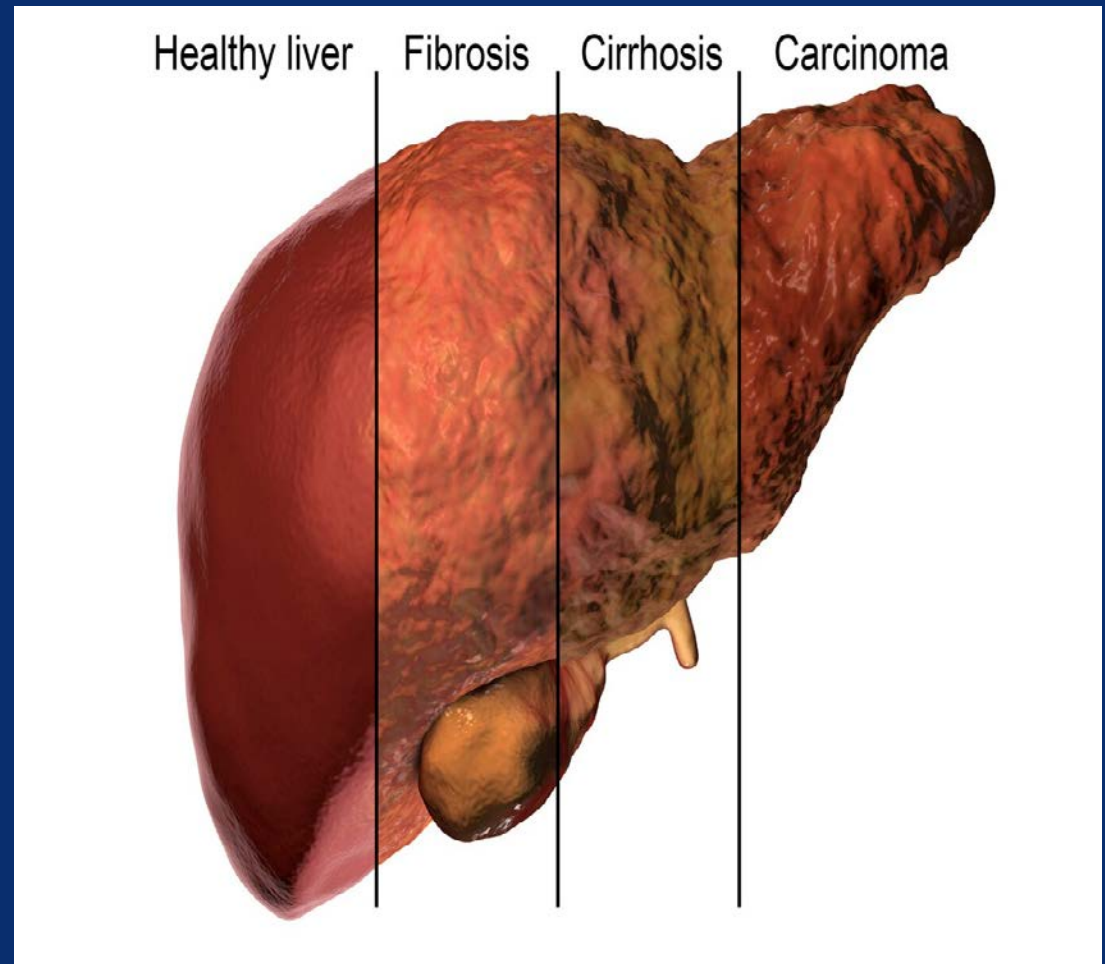
Hepatitis B Basics



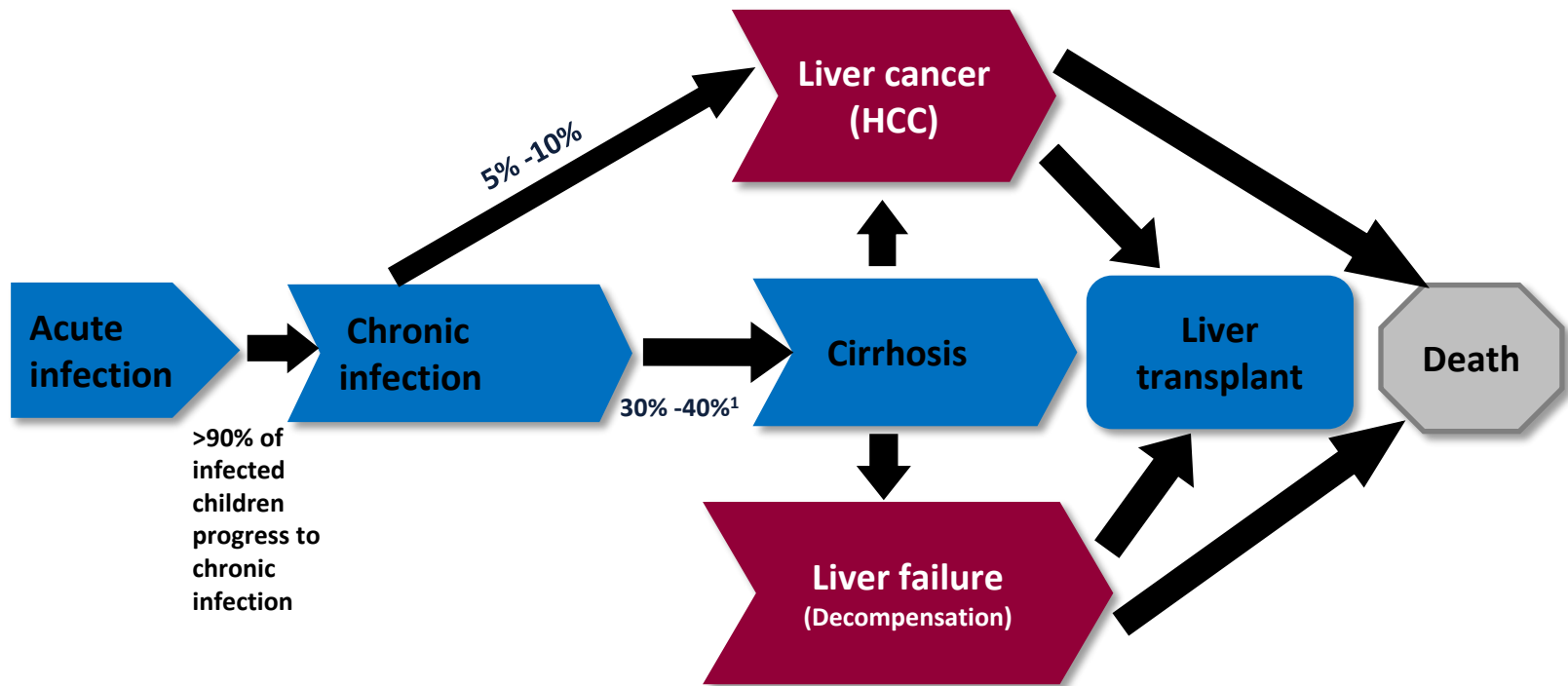
- Hepatitis means inflammation of the liver
- Hepatitis B (Hep B) is caused by a virus
 - Blood-borne and sexually transmitted
 - Majority of people with chronic infection were exposed at birth in areas of the world where hepatitis B is common
- Infection can be **acute and temporary**, or become **chronic life long** infection
- Currently no cure, but treatment can help prevent serious health problems
- Vaccine preventable!

What does hepatitis B do to the liver?

- Scars it!
- Over time hepatitis B can harm your liver
- If left untreated, hepatitis B can cause liver damage or even liver cancer



Hepatitis B Disease Progression



6th leading cause of liver transplantation in the United States ²

Source: 1. Moyer LA, Mast EE. Am J Prev Med. 1994;10(suppl):45-55. 2. Perrillo RP, et al. Hepatology. 2001;33:424-432.

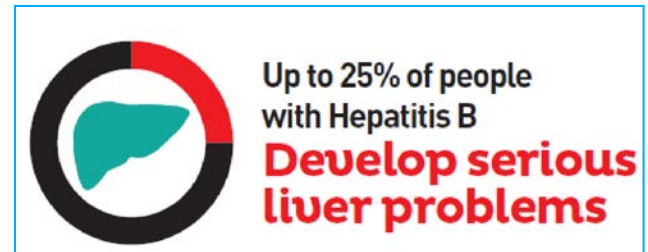
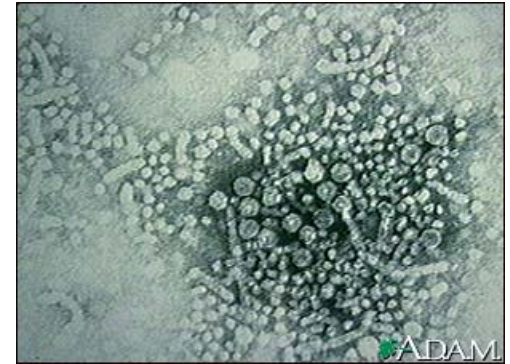
Chronic HBV Infection

- All chronically infected individuals need ongoing medical management as per AASLD guidelines
 - Includes routine screening for HCC
- Some chronically infected individuals need treatment
 - FDA approved antivirals can slow down viral replication and many reverse liver damage/prevent HCC with long-term treatment

Outcomes of Chronic HBV Infection

Left untreated, 1 in 4 will develop liver disease or liver cancer

- HBV causes 887,000 deaths each year worldwide due to cirrhosis, primary liver cancer (HCC), and liver failure
- HBV is #1 cause of liver cancer globally – the 2nd deadliest cancer in the world (after tobacco)
- **In the U.S., primary liver cancer is the only cancer rising in incidence and mortality rates**
- **The relative 5-year survival rate is 16.6%**



Hepatitis B Basics

Symptoms



The most common symptom is often **NO** symptoms!

Viral Hepatitis

Hepatitis A	Hepatitis B	Hepatitis C
	Up to 2.2 million people living with hepatitis B	Estimated 2.4 million people living with hepatitis C
About 4,000 new infections each year	About 21,000 new infections each year	About 41,000 new infections each year
Effective vaccine available	Effective vaccine available – about 75% of people do not know they are infected	About 50% of people do not know they are infected
Outbreaks still occur in the U.S.	About 50% of people with hepatitis B are in the Asian and Pacific Islander population	3 in 4 people with hepatitis C were born from 1945-1965
	Leading cause of liver cancer worldwide	Leading cause of liver transplants and liver cancer in U.S.

Transmission

Hepatitis A	Hepatitis B	Hepatitis C
Fecal – Oral route	<p>Spread through blood, semen or other bodily fluids from one infected person to another</p> <ul style="list-style-type: none">- From an infected mother to baby during childbirth- Sex with an infected person- Sharing contaminated equipment that has been contaminated with blood- Sharing personal items like toothbrushes	<p>Spread through blood, semen or other bodily fluids from one infected person to another</p> <ul style="list-style-type: none">- Sharing contaminated equipment – needles and infected syringes- Blood transfusion or organ transplant before 1992- Birth to an infected mother

Pregnancy and hepatitis B



Women can transmit HBV to their newborns during pregnancy or childbirth.

90% of babies born to infected mothers become chronically infected at birth

Newborns protected when given hepatitis B vaccine and one dose of hepatitis B immunoglobulin (HBIG) within first 12 hours of birth

Figure 1

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education		Stress	
Support	Walkability				
	Zip code / geography				

Health Outcomes

Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

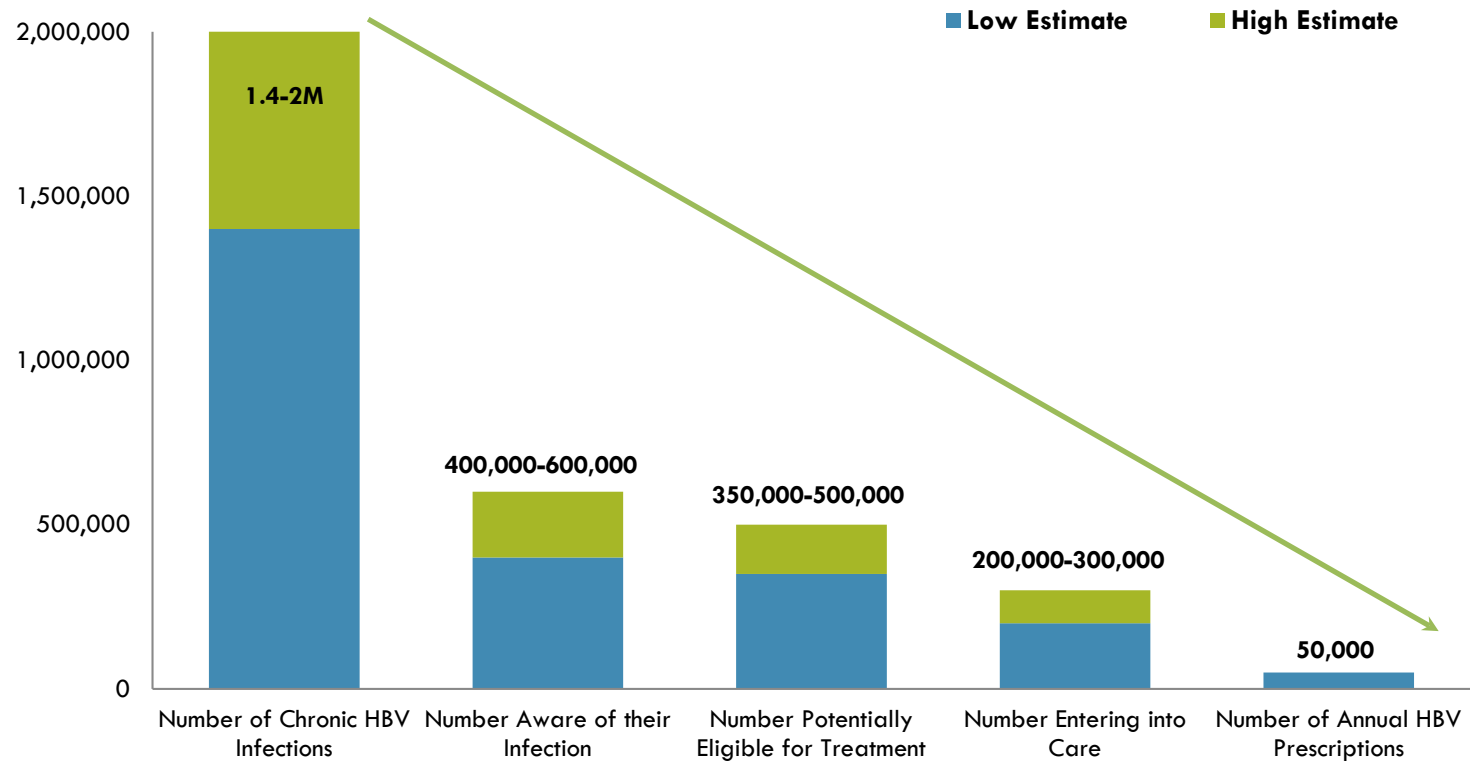
<https://www.kff.org/disparities-policy/issue-brief/disparities-in-health-and-health-care-five-key-questions-and-answers/>

Barriers to Patients

- Lack of understanding (screening, mother to child transmission)
- Cultural beliefs/shame
- Privacy
- Address culture barriers to screening
- Value of testing/treatment
- Asymptomatic
- Financial
- Language

HBV Care Cascade

Only 30-35% of infected Americans are diagnosed
Less than 10% of all infected Americans are treated



Models for Overcoming Barriers

- Make HBV risk assessment and appropriate screening routine parts of care – EHR prompts, add risk assessment to standard intake forms, use flow chart
- Understand HBV screening guidelines to identify at-risk persons
- Identify effective ways to engage patients in HBV screening
- Identify opportunities for prevention through HBV vaccination
- Understand when/how to refer patients to specialists for HBV care
- Identify social service resources for patients (insurance, immigration, care access) and refer when appropriate

Hepatitis B Infection among immigrant populations

- Migration accounts for 95% of new cases in US
- 90% of foreign-born persons with HBV migrated from regions of intermediate (2%-7%) to high ($\geq 8\%$) endemicity

Top countries of origin of foreign-born persons with HBV in the US (2009):

- China
- Vietnam
- Philippines
- Dominican Republic
- Mexico

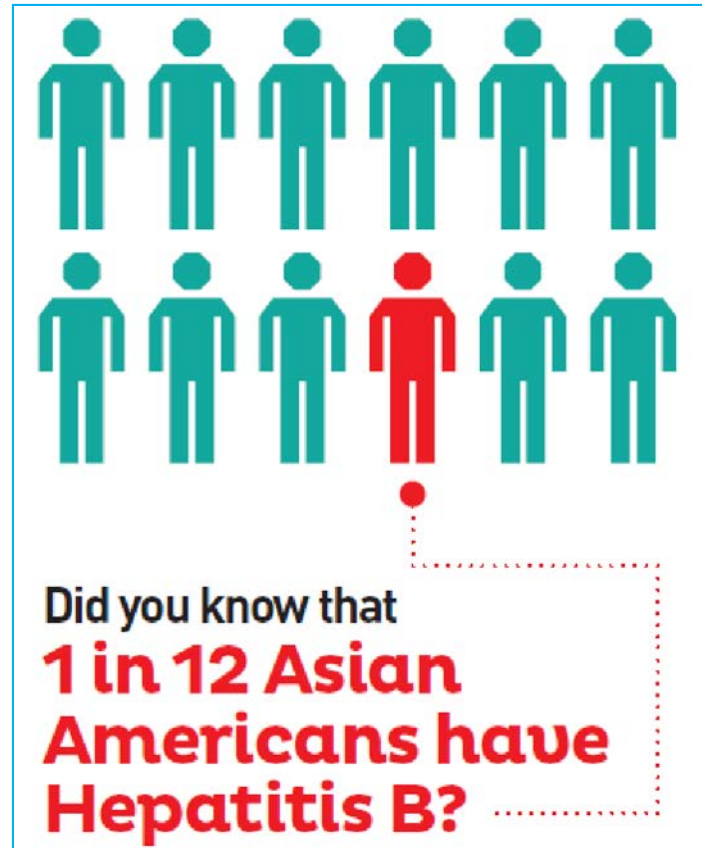
HBV prevalence rate among foreign-born persons by region (2012):

- Africa (10.3%)
- Asia (7.27%)
- Oceania (4.78%)
- Caribbean (4.52%)
- All (3.45%)

Source: Kowdley KV, et al. Hepatology. 2012;56:422-433.
Mitchell T, et al. PLoS ONE. 2011;6(12):e27717.

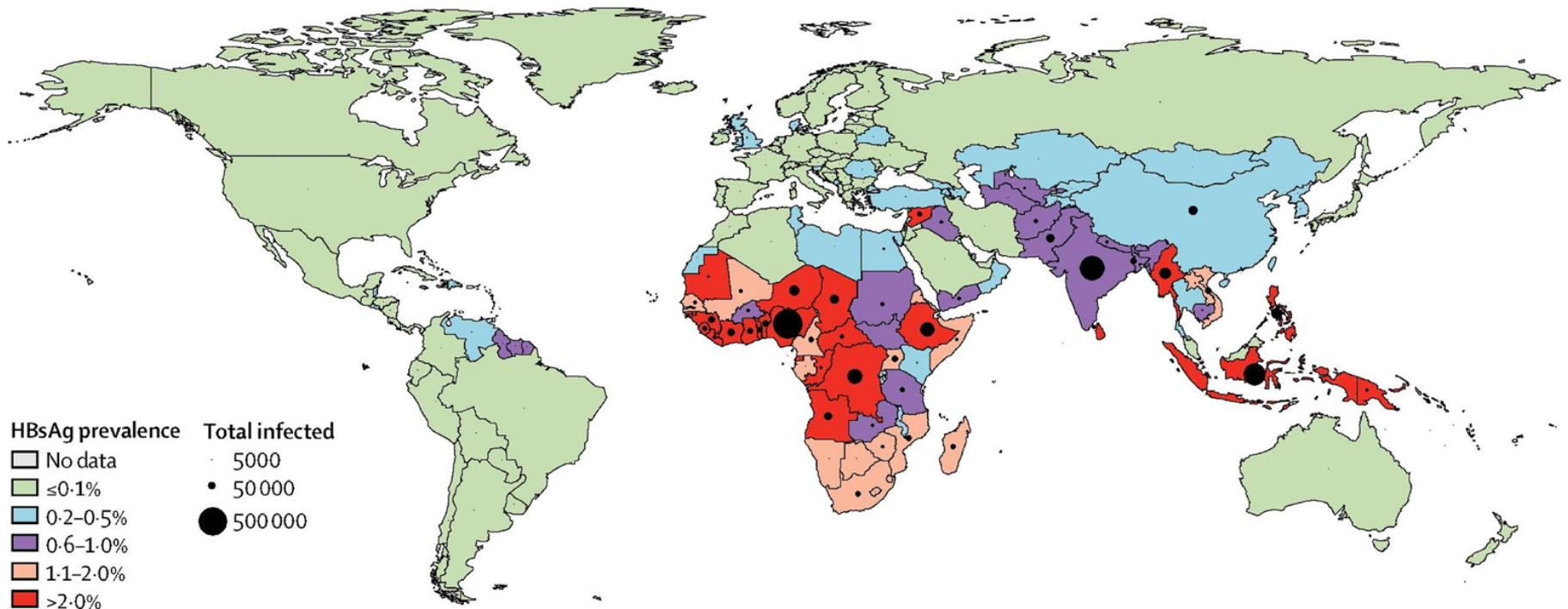
HBV-Related Health Disparities

- Asian Americans & Pacific Islanders carry 50% of chronic HBV burden
- 5% - 15% infection rates have been found in African-born community-based studies in the U.S.
- Double the rate of liver cancer
- Six times the rate of HBV-related mortality



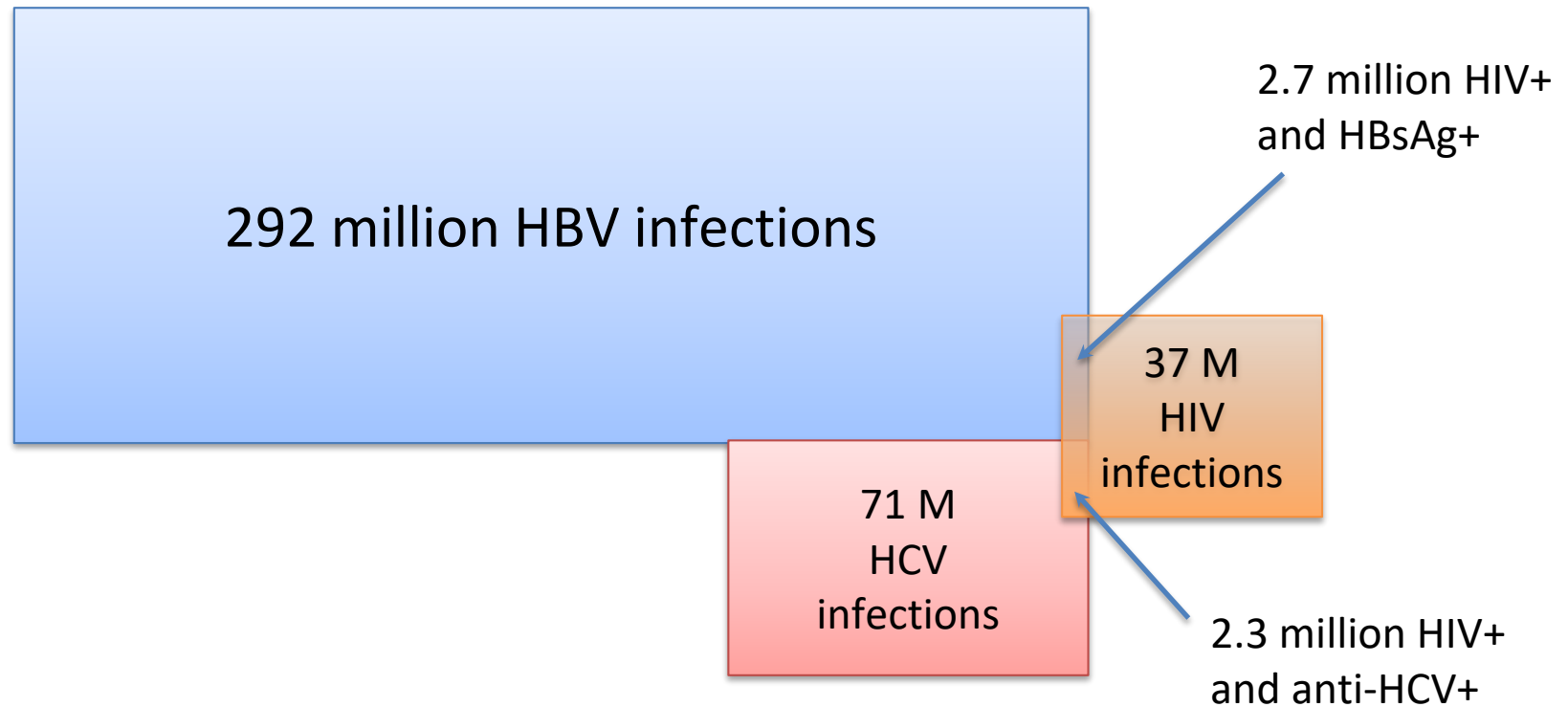
Who is at risk for hepatitis B?

E



The Lancet Gastroenterology & Hepatology 2018 3, 383-403 DOI: (10.1016/S2468-1253(18)30056-6)

Worldwide Hepatitis / HIV-Co-Infections



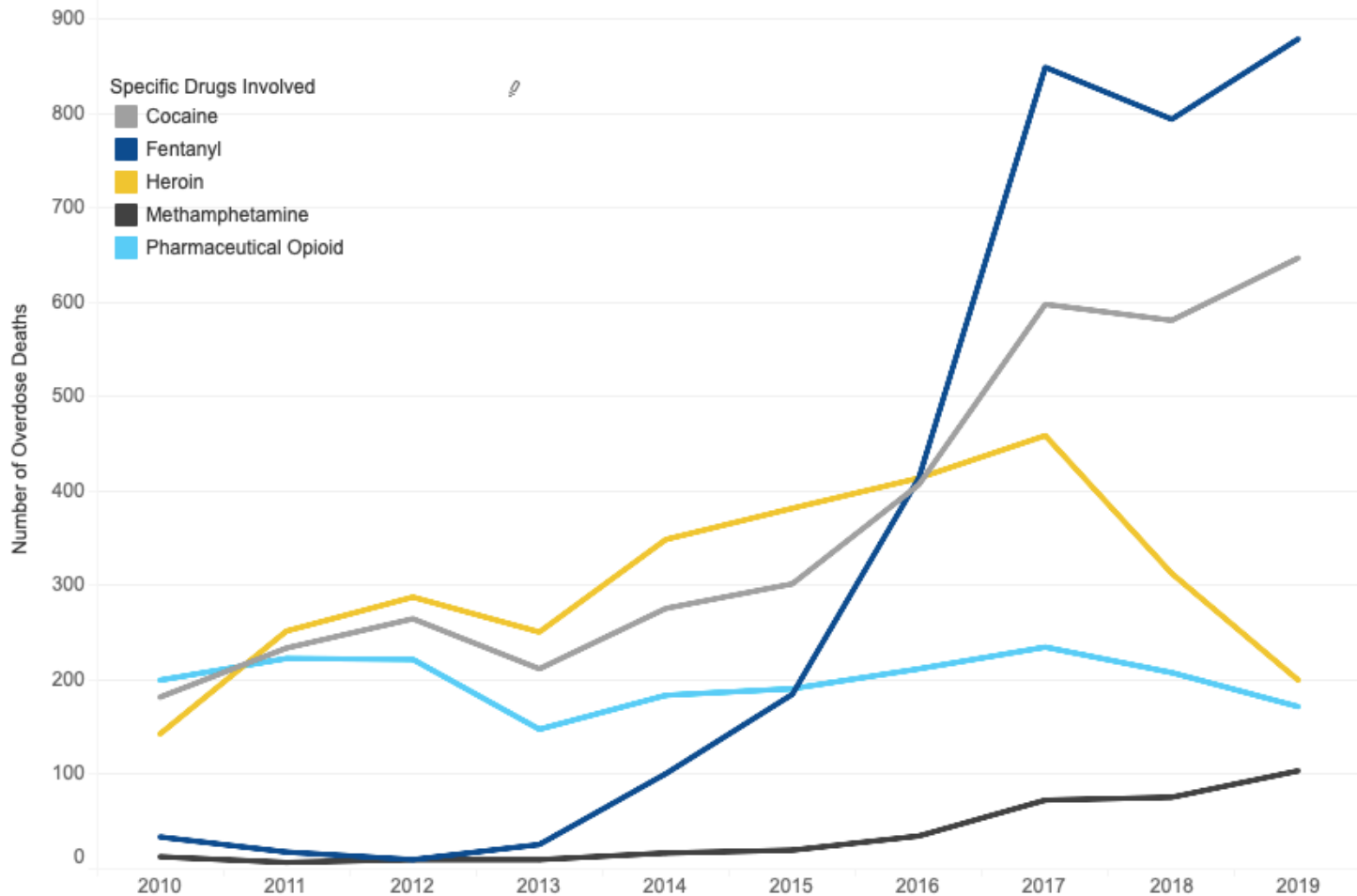
- Up to 10% of HIV infected individuals are co-infected with HBV in the U.S.
- About 1.5% of those with HCV are co-infected with HBV in the U.S.

Protecting families from the Impact of the Opioid Crisis

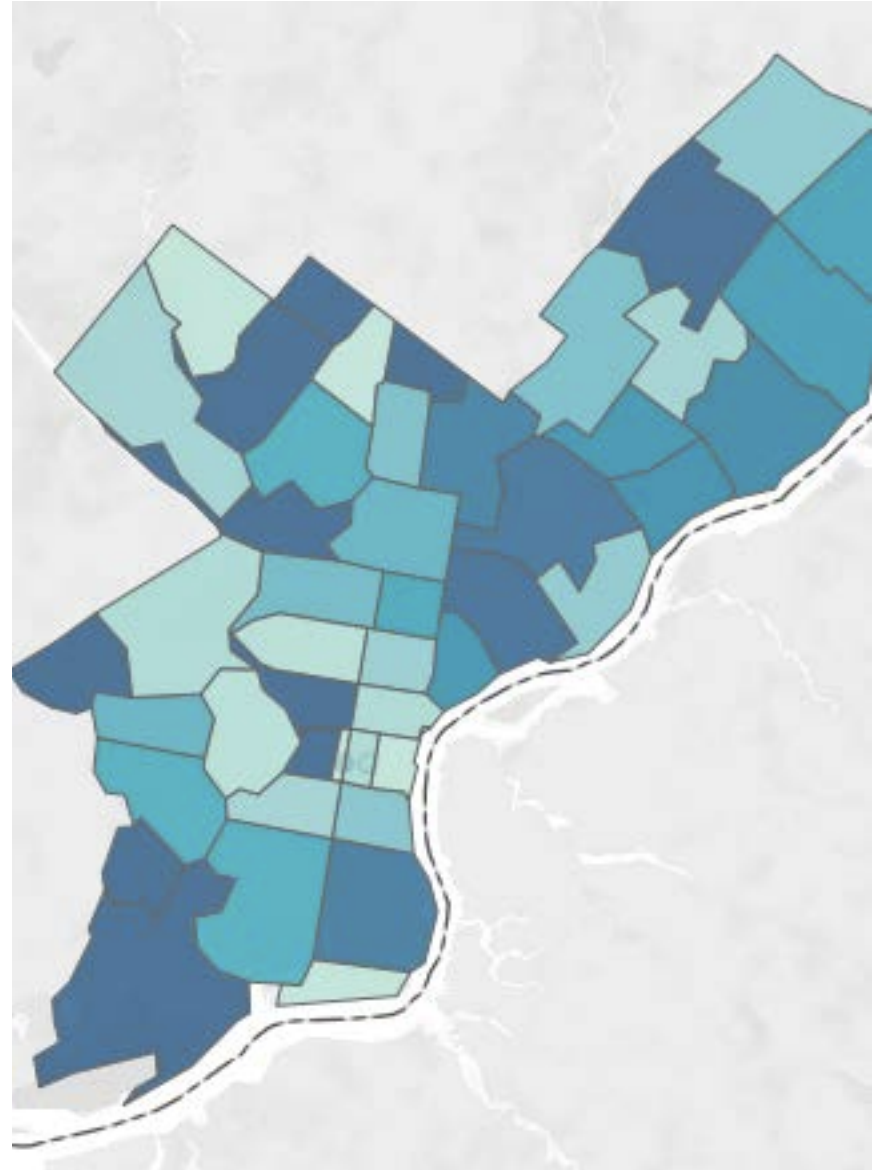
- State of Maine saw 489% increase in acute HBV infections from 2015-2016
45% of cases also had HCV co-infection
 - Updated statistics from Maine show an over 700% increase *
- North Carolina and Southeastern Massachusetts saw 78% increase of acute HBV cases in 2017
- KY, TN, and West Virginia saw an increase of 114% among non-Hispanic whites aged 30-49 years from 2006-2013
- <https://www.substanceusephilly.com>

Opioid crisis → increase during pandemic → increase exposure to pathogens via improper disposal of syringes

Overdose Deaths



Acute HCV Infection by Zip Code





SALES & PRESCRIBING

Trends for prescription opioid and stimulant sales to pharmacies or other retail distributors in Philadelphia.



LAW ENFORCEMENT

Provides critical data and analysis for law enforcement activity in drug seizures and arrests.



NALOXONE

Distribution and administration trends for Naloxone, a lifesaving prescription medicine that reverses opioid overdoses.



EMERGENCY DEPT.

Analysis of emergency department (ED) visits for overdoses from opioids or unspecified substances.



HOSPITAL STAYS

Analysis of hospitalization data for people admitted to the hospital following a non-fatal opioid overdose.



PERINATAL OUTCOMES

Trends around Neonatal Abstinence Syndrome (NAS), a group of conditions that may occur as a result of a baby's exposure to drugs and substances while in the womb.



ADDICTION TREATMENT

Addiction treatment statistics for Medicaid patients with a primary diagnosis of opioid use disorder (OUD).



INFECTIOUS DISEASE

Zip code maps and critical analysis of Hepatitis C virus (HCV) infection by age, sex and race.



OVERDOSE DEATHS

Analysis of unintentional overdose deaths by drug involved, age category, sex, and zip code.

If you want more information...

- Opioid Overdose Notification Network is a network of government, healthcare and community partners involved in combating the opioid epidemic.
- To begin receiving messages in the case of an opioid overdose outbreak:
- <https://hip.phila.gov/EmergentHealthTopics/Opioids/OpioidNotificationNetwork>

Personal Information

First Name:

Last Name:

Medical Specialty / Area of Expertise:

Company Information

Company Name:

Your Title/Position:

Work Phone:

Notification Group

Please identify which of the following groups you are affiliated with:

- Agencies (e.g., PDPH, OEM)
- Hospitals
- Community Members
- Media/Press

Contact Information

Email Address:

Mobile Phone:

Hepatitis B Prevention

- Safe and effective 3-dose hepatitis B vaccine
- Hep B vaccination is recommended for:
 - ALL infants and children ≤ 18 yrs,
 - health care professionals,
 - sexually active individuals with more than 1 partner,
 - MSM,
 - individuals using illegal drugs,
 - sexual partners or close household contacts with a person living with HBV, individuals born, or have parents born in countries where HBV is prevalent,
 - people living with HCV, HIV, diabetes, or undergoing kidney dialysis,
 - residents and staff of long-term care facilities
 - families adopting from countries where HBV is common.
- The hepatitis B vaccine is the first “anti-cancer” vaccine
- Start with a birth dose for a lifetime free of hepatitis B!



Vaccination Schedule

- **1st Shot** - At any given time, but newborns should receive this dose in the delivery room
- **2nd Shot** - At least one month (or 28 days) after the 1st shot
- **3rd Shot** - At least 4 months (16 weeks) after the 1st shot (or at least 2 months after the 2nd shot). Infants should be a minimum of 24 weeks old at the time of the 3rd shot.



Types of Vaccinations

Single-antigen hepatitis B vaccines:

- ENGERIX-B[®], RECOMBIVAX HB[®], HEPLISAV-B[™] (Heplisav-B approved for adults only)

Combination vaccines

- PEDIARIX[®]: Combined hepatitis B, diphtheria, tetanus, acellular pertussis (DTaP), and inactivated poliovirus (IPV) vaccine. Cannot be administered before age 6 weeks or after age 7 years.
- TWINRIX[®]: Combined Hepatitis A and hepatitis B vaccine. Recommended for persons aged ≥ 18 years who are at increased risk for both Hepatitis A virus and HBV infections.

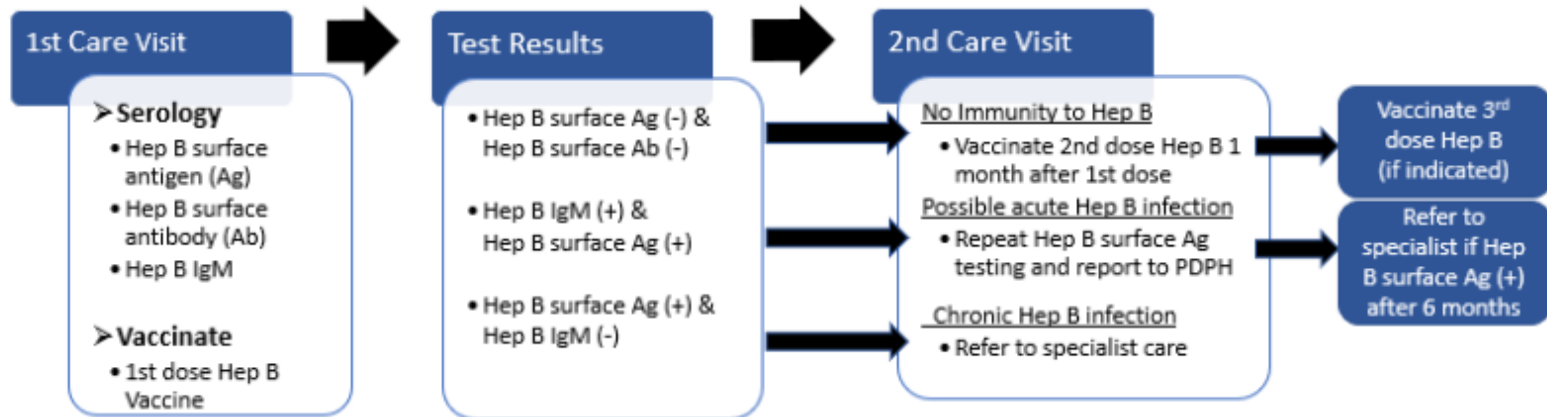
2 POKES.

A lifetime of protection.



HEPLISAV-B
CAN BE COMPLETED WITH
2 SHOTS IN 1 MONTH

Hepatitis B Clinical Care Algorithm among people with increased risk of newly acquired infection

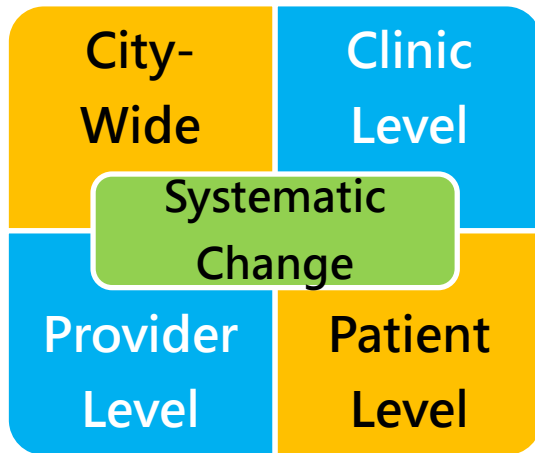


Prevention and Control

1. Vaccinate high risk persons
2. Consider acute HBV infection among patients with compatible symptoms
3. Counsel patients on safe sexual health practices

**All confirmed and suspected acute hepatitis B cases should be promptly reported to PDPH at 215-685-4509

Hepatitis B Virus Infection Prevention, Vaccination, Navigation, Testing, and Treatment Elimination Program (HBV PreVNTT)



- **Priority Communities:**
 - Asian/Pacific Islander and African Immigrants
 - People who Use Drugs
- **Cultural Competency & Harm Reduction Integration**
 1. Improve patient and provider HBV knowledge
 2. Improve HBV screening and treatment services
 3. Improve HBV vaccination coverage of the city

Who should be screened for hepatitis B?

Region†	Countries‡
Africa	All
Asia§	All
Australia and South Pacific	All except Australia and New Zealand

Population	Recommendation	Grade (What's This?)
Persons at High Risk for Infection	The USPSTF recommends screening for hepatitis B virus (HBV) infection in persons at high risk for infection.	B

Mexico and Central America	Guatemala and Honduras
South America	Ecuador; Guyana; Suriname; Venezuela; and Amazonian areas of Bolivia, Brazil, Colombia, and Peru
Caribbean	Antigua and Barbuda, Dominica, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, and Turks and Caicos Islands

Population	Recommendation	
	Testing	Vaccination/Follow-up
Injection-drug users	Test for HBsAg, as well as for anti-HBc or anti-HBs to identify susceptible persons.	First vaccine dose should be given at the same visit as testing. Susceptible persons should complete a 3-dose hepatitis B vaccine series to prevent infection from ongoing exposure.
Men who have sex with men	Test for HBsAg, as well as for anti-HBc or anti-HBs to identify susceptible persons.	First vaccine dose should be given at the same visit as testing. Susceptible persons should complete a 3-dose hepatitis B vaccine series to prevent infection from ongoing exposure.
Persons needing immunosuppressive therapy, including chemotherapy, immunosuppression related to organ transplantation, and immunosuppression for rheumatologic or gastroenterologic disorders	Test for all markers of HBV infection (HBsAg, anti-HBc, and anti-HBs).	Treat persons who are HBsAg-positive. Monitor closely persons who are anti-HBc positive for signs of liver disease.

Screening Continued...

Hemodialysis patients	Test for all markers of HBV infection (HBsAg, anti-HBc, and anti-HBs). Test vaccine nonresponders monthly for HBsAg. HBsAg-positive hemodialysis patients should be cohorted.	Vaccinate against hepatitis B to prevent transmission and revaccinate when serum anti-HBs titer falls below 10mIU/mL.
All pregnant women	Test for HBsAg during each pregnancy, preferably in the first trimester. Test at the time of admission for delivery if prenatal HBsAg test result is not available or if mother was at risk for infection during pregnancy.	If HBsAg-positive, refer for medical management. To prevent perinatal transmission, infants of HBsAg-positive mothers and unknown HBsAg status mothers should receive vaccination and postexposure immunoprophylaxis in accordance with recommendations and within 12 hours of delivery.
Infants born to HBsAg-positive mothers	Test for HBsAg and anti-HBs 1–2 mos after completion of at least 3 doses of a licensed hepatitis B vaccine series (i.e., at age 9–18 months, generally at the next well-child visit to assess effectiveness of postexposure immunoprophylaxis). Testing should not be performed before age 9 months or within 1 month of the most recent vaccine dose.	Vaccinate in accordance with recommendations.
Household, needle-sharing, or sex contacts of persons known to be HBsAg positive	Test for HBsAg, as well as anti-HBc or anti-HBs to identify susceptible persons.	First vaccine dose should be given at the same visit as testing. Susceptible persons should complete a 3-dose hepatitis B vaccine series to prevent transmission from ongoing exposure.
Persons who are the sources of blood or body fluids resulting in an exposure (e.g., needlestick, sexual assault) that might require postexposure prophylaxis	Test source for HBsAg.	Vaccinate healthcare and public safety workers with reasonably anticipated occupational exposures to blood or infectious body fluids. Provide postexposure prophylaxis to exposed person if needed.
HIV-positive persons	Test for HBsAg, as well as for anti-HBc or anti-HBs to identify susceptible persons.	Vaccinate susceptible persons against hepatitis B to prevent transmission.

Screening Continued

...

Treatment for hepatitis B

- **Antiviral Drugs (most common)** – Not everyone needs treatment. These are drugs that stop or slow down the hepatitis B virus from reproducing, which reduces the inflammation and damage of your liver.
- Oral medications, Taken daily, long term
 - Tenofovir disoproxil (Viread)
 - Tenofovir alafenamide (Vemlidy)
 - Entecavir (Baraclude)
 - Telbivudine (Tyzeka or Sebivo)
 - Adefovir Dipivoxil (Hepsera)
 - Lamivudine (Epivir-HBV, Zeffix, or Heptodin)

KNOW THE **ABC'S** OF VIRAL HEPATITIS

More than 4 million people in the US are living with viral hepatitis. Most don't know it!

Hepatitis A can be prevented with a safe, effective vaccine.

A

Many people got infected with hepatitis B before the vaccine was widely available.

B

Treatments are available that can cure hepatitis C.

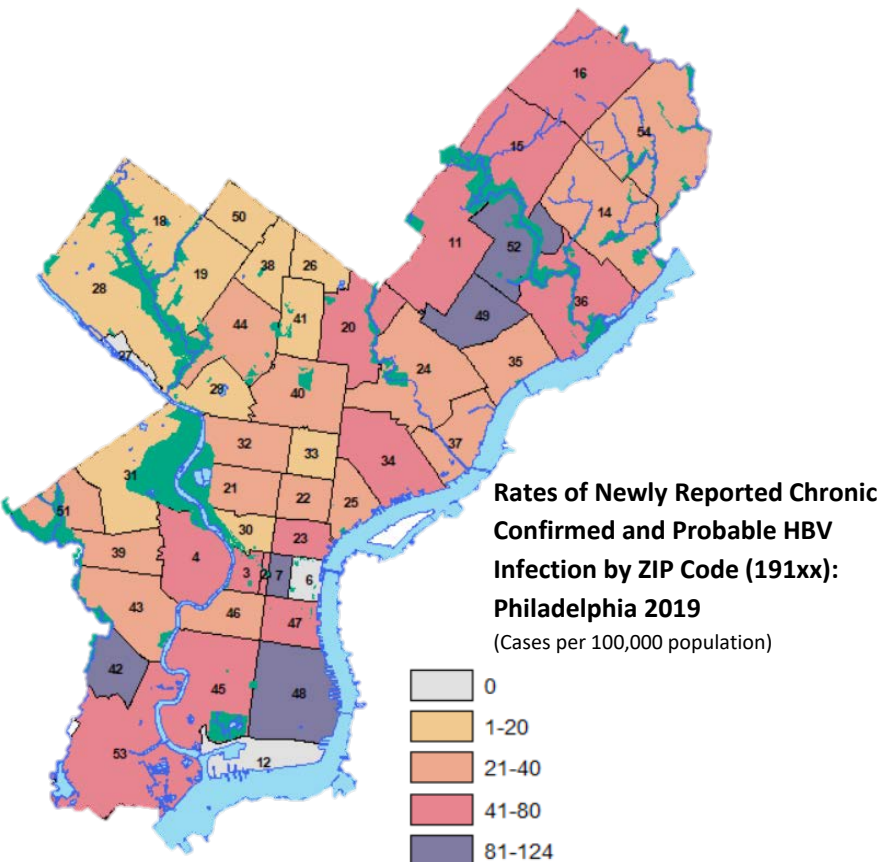
C



Take the CDC Online Risk Assessment to see if you should be vaccinated or tested for viral hepatitis:

www.cdc.gov/hepatitis/riskassessment

Chronic HBV in Philadelphia



- >25,000 individuals living with Hepatitis B infection (HBV)
- **66%** of persons living with HBV are currently out of care.
- Areas of the city with populations of persons who have immigrated from **Africa, Asia, and Eastern Europe** have the highest burden.

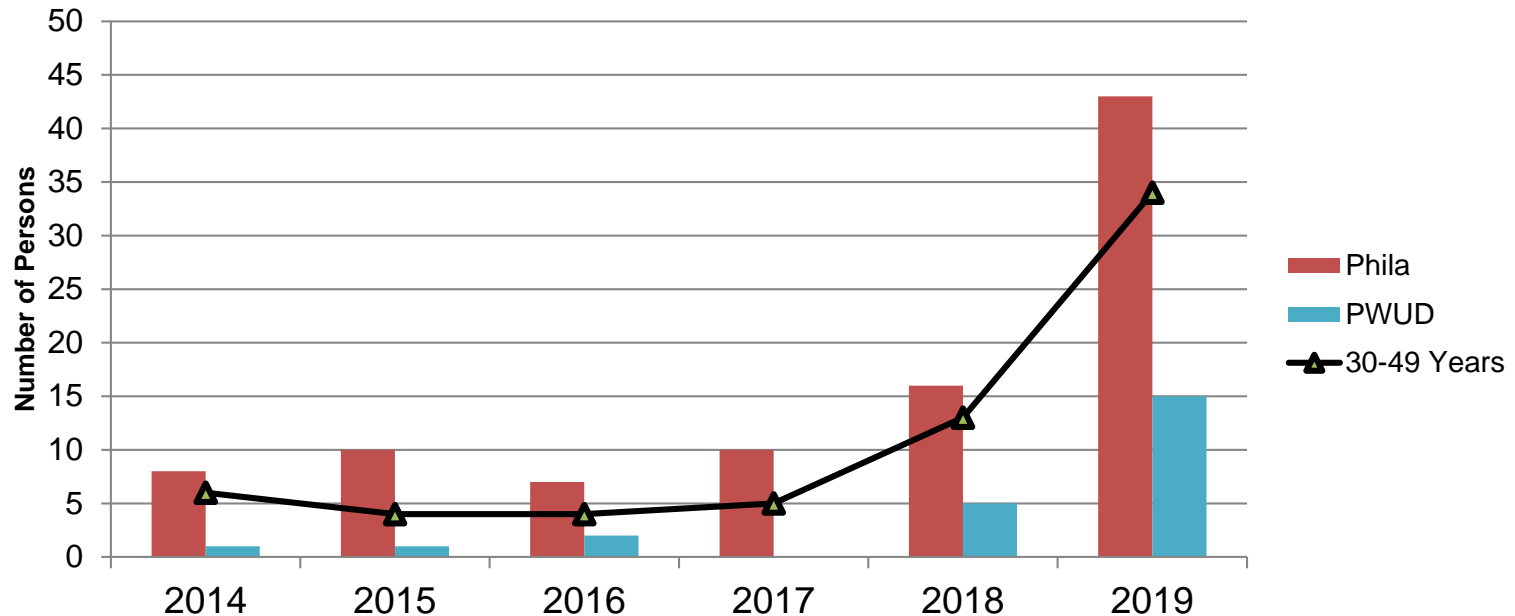
Hepatitis B in Philadelphia

Surveillance-based HBV Data, Philadelphia

	2014	2015	2016	2017	2018	2019	
Acute Cases	8	8	7	10	12	43	
PHBPP mother-infant pairs	164	155	174	141	144	140**	
New Chronic Cases							
Total	884	789	809	730	782	698	
Sex	Male	480	471	470	432	459	412
	Female	401	317	336	295	316	281

- PA has the 4th highest newly reported chronic HBV cases in the nation*
 - Philadelphia accounts for 74% (n=865) of Pennsylvania 1,164 cases.
- PDPH is aware of 25,132 (1.6%) residents of Philadelphia living with HBV

Reported Acute Hepatitis B: Philadelphia 2014-2019



- Current increases in acute HBV rates are being driven by people who use drugs (PWUD) and persons 30 to 39 years of age.
 - **Challenges to identifying cases**→ symptoms often not present
 - o use drugs (PWUD) and persons 30 to 39 years of age.

The Path to Elimination

- **Screening**
 - High-risk individuals need to know their status!!
- **Referral**
 - Chronically infected need appropriate, ongoing management
 - Prevention and early detection of cirrhosis and liver cancer
 - Treatment when necessary
 - Vulnerable need vaccine
 - More accessible vaccine programs for high-risk, LEP, uninsured adults
- **Education and awareness**
 - For high-risk and highly affected community
 - Among health care providers

Goals

Awareness

- Raise the profile of hepatitis B and liver cancer as an urgent public health priority.

Prevention

- Increase hepatitis B testing and vaccination, particularly among AAPIs and other communities at higher risk.

Intervention

- Improve access to care and treatment for individuals living with hepatitis B to prevent end-stage liver disease and liver cancer.

Goals of the #justB campaign

- Increase awareness
- Decrease stigma and discrimination
- Promote testing, vaccination, and linkage to care
- Advocate for people affected by hepatitis B
- Provide ongoing support, training, resources, and speaking opportunities for our storytellers



NFP Resources for Families



RESOURCE GUIDE: VIRAL HEPATITIS

PUBLIC HEALTH MANAGEMENT CORPORATION
NATIONAL NURSE-LED CARE CONSORTIUM