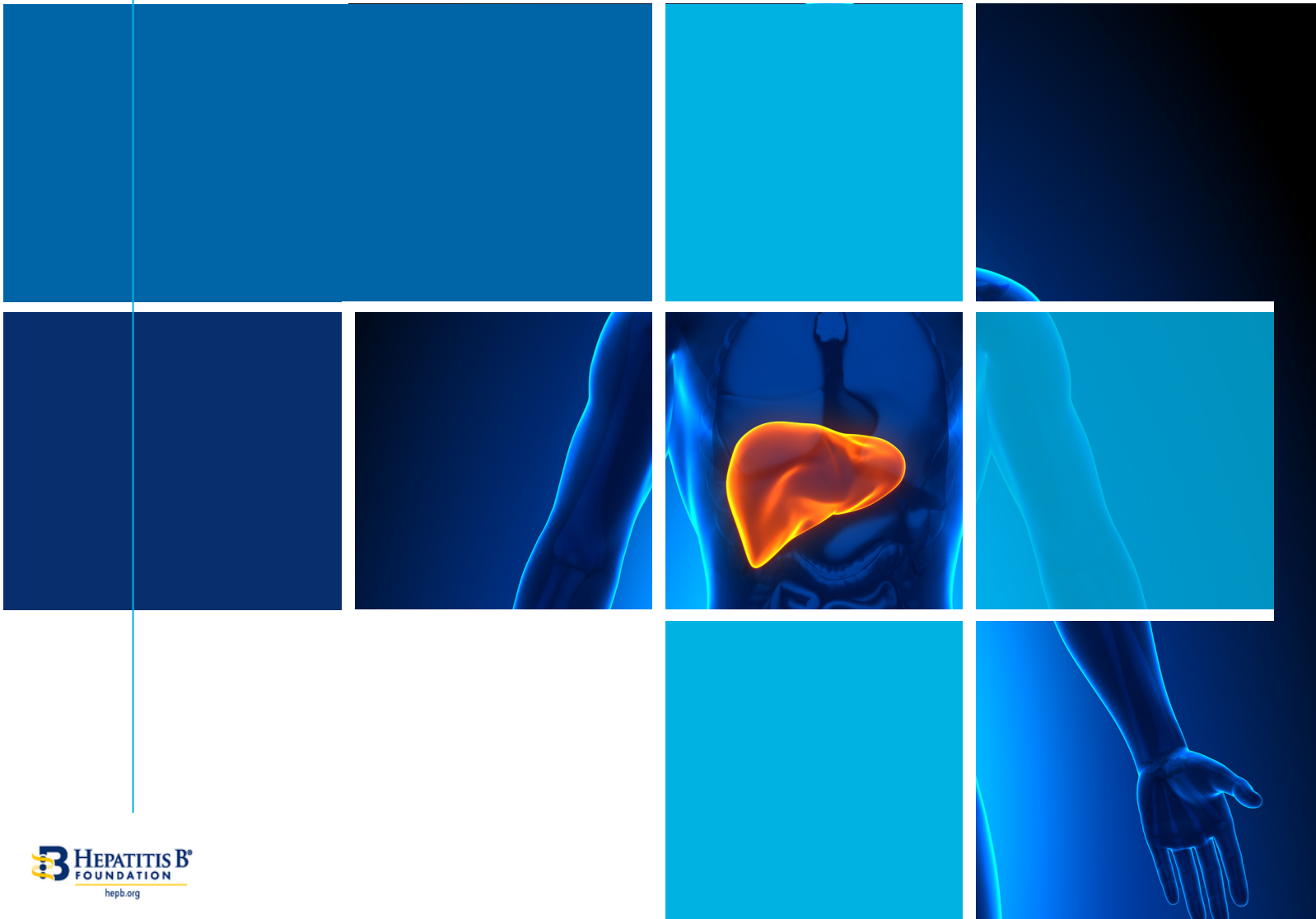


# Guidance on the Clinical Implementation of Adult Universal Hepatitis B Vaccination and Screening Recommendations



This resource was created by the Hepatitis B Foundation and the Hepatitis B Screening and Vaccine Advisory Council.

For more information, visit [www.hepb.org](http://www.hepb.org).



# Table of Contents

01 Introduction

02 New Adult Hepatitis B Recommendations

03 The Link Between Hepatitis B and Liver Cancer

04 Printable: Implementing Universal Hepatitis B Screening and Vaccination for Adults

06 Printable: Hepatitis B (HBV) Vaccination Information for Adults

09 Presenters for Provider Education

11 Customizable Hepatitis B Presentation for Providers

11 Clinician Focused Resources

12 Patient-Focused Resources

# Introduction

In 2022 and 2023, the Centers for Disease Control and Prevention (CDC) released universal adult hepatitis B vaccination and screening recommendations.

This document is intended to aid clinicians in implementing the new adult hepatitis B recommendations. It contains information on the new hepatitis B recommendations, downloadable resources, and connections to helpful patient and clinical resources.

---

## Why now?

Hepatitis B remains a persistent problem in the United States, with as many as 2.4 million individuals living with chronic hepatitis B infection. Despite having successful recommendations for infants and children, little progress has been made in addressing the hepatitis B virus (HBV) in adults.

The previous, risk-based guidelines for both screening and vaccination failed to capture all who were at risk for or living with HBV. Additionally, the opioid epidemic has contributed to an increase in acute HBV cases across the nation. HBV continues to be an underreported disease, which has made it difficult to show the full scope of the issue. Research shows that universal HBV vaccination and screening for adults are cost-effective and successful in preventing and identifying HBV infections.

---

## Working towards elimination

The World Health Organization, the United States Department of Health and Human Services (HHS), and the CDC have committed to eliminating viral hepatitis by 2030.

Learn more:

- [National Viral Hepatitis Strategic Plan: A Roadmap to Elimination in the United States \(2021-2025\) - HHS](#)
- [Division of Viral Hepatitis 2025 Strategic Plan - CDC](#)

**Anyone can be infected with hepatitis B in their lifetime, underscoring the importance of universal vaccination and screening**

# New Adult Hepatitis B Recommendations

## Updated Hepatitis B Vaccine Recommendations

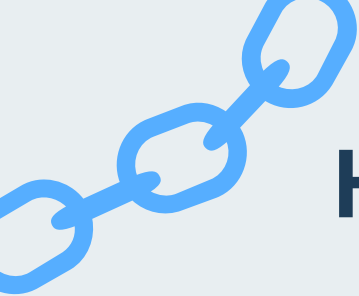
- All infants
- Persons aged <19 years
- Adults aged 19–59 years
- Adults aged ≥60 years with risk factors for hepatitis B
- Anyone who wants the vaccine

**CDC's MMWR on Universal  
Hepatitis B Vaccination**

## Updated Hepatitis B Screening Recommendations

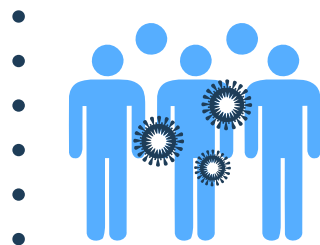
- Screen all adults aged 18 years and older at least once in their lifetime using a triple panel test (HBsAg, HBsAb, HBcAb)
- Screen pregnant people for hepatitis B surface antigen (HBsAg) during each pregnancy regardless of vaccination status and history of testing
- Expand periodic risk-based testing to include people incarcerated, people with a history of sexually transmitted infections or multiple sex partners, and people with hepatitis C virus infection
- Test anyone who requests HBV testing regardless of disclosure of risk

**CDC's MMWR on Universal  
Hepatitis B Screening**



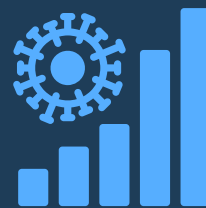
# The Link Between Hepatitis B and Liver Cancer

Over **20,700 acute hepatitis B infections** occur in the United States each year. **2.4 million** people are living with **chronic hepatitis B**.



Liver cancer is the second most common cancer in the world. Nearly **60%** of cases are caused by hepatitis B **ALONE**

In the United States, liver cancer incidence and death rates have **increased substantially** in recent years



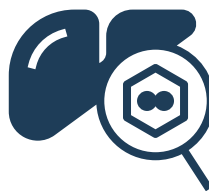
Asian and Black Americans living with chronic hepatitis B are

**11-17**

times more at risk for liver cancer than others

**15% to 25%**

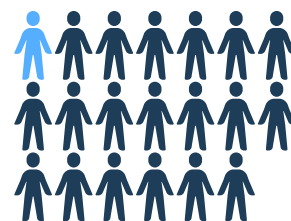
risk of **premature death** from liver cancer or cirrhosis without monitoring or antiviral treatment



Hospitalizations due to hepatitis B-related causes account for more than

**\$1,000,000,000/yr**

in healthcare costs (not including indirect costs)



Treating hepatitis B will prevent **1 in 20** liver cancer deaths globally



More than **two-thirds** of people living with hepatitis B in the U.S. are **unaware** of their status

**70%**

of adults in the United States are **NOT fully vaccinated** against hepatitis B



# Implementing Universal Hepatitis B Screening and Vaccination for Adults

## What is hepatitis B?

Hepatitis B is an infection caused by the hepatitis B virus that affects the liver. It is vaccine-preventable and can be managed through highly effective treatments.



People living with chronic hepatitis B have a **15% to 25% risk of premature death from cirrhosis or liver cancer** without monitoring and antiviral treatment as indicated



Up to  
**2.4 Million**  
**Americans**

Are living with chronic hepatitis B



**67%**

Of people living with hepatitis B are unaware of their infection



**70%**

Of adults 19 and older have **NOT** completed the hepatitis B vaccine series

## How Can Providers Prevent Hepatitis B and Liver Cancer ?

The best way to prevent hepatitis B and liver cancer is with screening and vaccination.

### Updated Adult Hepatitis B Screening Recommendation

- **Hepatitis B screening at least once in a lifetime for adults aged ≥18 years**
  - During screening, test for hepatitis B surface antigen (HBsAg), antibody to hepatitis B surface antigen (anti-HBs), and total antibody to hepatitis B core antigen (anti-HBc)

#### **Screening pregnant persons**

- Hepatitis B screening for all pregnant persons during each pregnancy, preferably in the first trimester, regardless of vaccination status or history of testing
- Pregnant persons with a history of appropriately timed triple panel screening and without subsequent risk for exposure to HBV (*i.e., no new HBV exposures since triple panel screening*) only need HBsAg screening

### Updated Adult Hepatitis B Vaccination Recommendation

- Adults aged 19–59 years
- Adults aged ≥60 years with risk factors for hepatitis B
- Adults aged ≥60 years without known risk factors for hepatitis B may also receive the vaccine

**Vaccination is not dependent on screening.**

*If you can do either screening or vaccination, provide the service you are able, and refer for the other service.*



For more information,

- Read the Hepatitis B Foundation's Call-to-Action: <https://www.hepb.org/assets/Uploads/FINALv3-Call-to-Action-Universal-HBV-Screening-and-Vaccination-03.13.2023.pdf>
- Read the full recommendation and clinical guidance: [https://www.cdc.gov/mmwr/volumes/71/wr/mm7113a1.htm?s\\_cid=mm7113a1\\_w](https://www.cdc.gov/mmwr/volumes/71/wr/mm7113a1.htm?s_cid=mm7113a1_w)



The below implementation strategies were developed by the Hepatitis B Screening and Vaccine Advisory Council to optimize the implementation of the universal screening and vaccination recommendations.



## Educate stakeholders about disease burden and new recommendations

- Focus education on cancer prevention benefit of hepatitis B vaccination and screening
- Engage trusted community members to develop culturally and linguistically appropriate messages
- Enlist national partners to provide education and debunk myths
- Partner with professional societies to provide education at annual meetings
- Collaborate with clinical training programs, provide hospital grand rounds, and develop interprofessional continuing education
- Leverage CDC partnerships and create cooperative agreements to create common education resources for all healthcare providers



## Explore multi-stakeholder collaborations and technology innovations

### *Stakeholder Collaborations:*

- Seek insights from experienced centers
- Involve disease intervention specialists at sexual health clinics
- Establish pharmacy-provider collaborative communication agreements
- Engage and collaborate with state/local health departments, leveraging state/local clinics for vaccine delivery

### *Technology Innovations:*

- Consider using a mobile-accessible vaccine card
- Leverage capacity built with COVID-19 vaccination implementation
- Update EHR systems to include screening and vaccination prompts
- Develop national standards for integrating data into EHR systems in settings serving corrections and substance use settings



## Address Vaccine Hesitancy

- Emphasize the cancer prevention benefit of hepatitis B vaccination and screening
- Create FAQ documents to help HCPs prepare for questions around vaccine safety and efficacy
- Engage trusted providers and faith leaders to deliver the messaging
- Engage with patients on an individual level to understand their concerns, assess vaccine status, and discuss vaccine recommendations



Anyone can have an unrecognized risk of hepatitis B infection, and the risk varies over the lifespan. Screening and vaccination eliminate that risk, regardless of how the risks change.

## Who should be vaccinated?



Adults < 60



Adults 60 years and older with risk factors\* for HBV



Anyone who wants the vaccine

**Universal adult HepB vaccination through age 59 years removes the need for risk factor screening and disclosure.**

\*See risk factors at the bottom of the page

## Which Vaccine?

- All HBV vaccines are approved for use in the general adult population. There is no official preference for one vaccine over another.
  - Heplisav-B and PreHevbrio are NOT recommended in pregnancy due to a lack of safety data
- Heplisav-B and PreHevbrio have quicker and higher rates of protection including higher rates of protection associated with obesity, smoking, diabetes, and well-managed chronic illnesses over older 3 dose HBV vaccines

## Screening Information

- All adults 18 years and older should be screened once in their life for HBV using the triple panel test (HBsAg, HBsAb, HBcAb).
- Recommend patients talk to their doctor about screening if you cannot screen during the visit.

Scan to learn more about the updated HBV screening guidelines



## FAQ

**Q: What should be done if the HBV vaccine series was not completed?**

A: If the HBV vaccine series is interrupted, the next dose should be given as soon as possible. The first dose(s) does not need to be repeated.

**Q: Is it harmful to have an extra dose of the HBV vaccine or to repeat the entire HBV vaccine series?**

A: No, getting extra doses of the HBV vaccine is not harmful.

**Q: Who should NOT receive the HBV vaccine?**

A: Anyone who has had a serious allergic reaction to a prior dose of the HBV vaccine, any part of the vaccine, or yeast should NOT get the vaccine. However, PreHevbrio is the **only** HBV vaccine that does not contain yeast, and is safe for yeast allergic individuals.

**Q: Can the HBV vaccine be given at the same time as other vaccines?**

A: Yes. Getting two different vaccines at the same time is not harmful.

**Q: Are there symptoms associated with HBV vaccines?**

A: Yes. Mild symptoms such as soreness, redness, or swelling in the arm where the shot was given, headache, and/or fever may occur and last 1-2 days.

**Q: What if someone is a non-responder?**

A: For "susceptible" persons considered at high risk for HBV who previously received a complete vaccine series without follow-up testing, you can 1) give a booster vaccine dose followed by serologic testing 1 to 2 months later, with completion of a full vaccine series if the post-booster HBsAb test remains negative OR 2) give full vaccine series followed by post-vaccination serologic testing 1 to 2 months after the last vaccine dose.

## Billing and Insurance

The HBV vaccine should be covered with no cost-shares for all insured adults with commercial insurance, Medicare, and states with expanded Medicaid.

ICD-10: Z23 - Encounter for immunization

CPT Administrative Code: 90471

CPT Product Codes (adult schedule):

- PreHevbrio (3-dose) - 90759
- Engerix-B (3-dose) - 90746
- Twinrix (Hepatitis A& B - 3 dose) - 90636
- Recombivax HB (3-dose) - 90746
- Heplisav-B (2-dose) - 90739

**NOTE:** The above codes are for a standard adult patient, and the CPT code may differ based on the dosage/schedule needed for your patient. Please refer to current payer publications for the most up-to-date coding information, as codes may have changed.

## HBV Risk Factors

Only use to assess when a patient is 60+ years old AND does not request the vaccine.

- Infants born to mothers with HBV
- People born in certain countries where HBV is common
- People born in the U.S. not vaccinated as infants whose parents were born in countries with high rates for HBV
- People living with hepatitis C
- People who have been incarcerated
- People who inject drugs or share needles, syringes, and other types of drug equipment
- Sex partners of people with HBV
- People who have sexually transmitted infections
- People with HIV infection
- Men who have sex with men
- People who live with someone who has HBV
- Health care and public safety workers exposed to blood on the job
- People on dialysis
- People who have elevated levels of certain liver enzymes



Scan to view worldwide prevalence of HBV infection



## ◆ Incomplete Vaccination Series

- **When feasible, the same manufacturer's vaccines should be used to complete the series.**
  - However, vaccination *should not* be deterred when the manufacturer of the previously administered vaccine is unknown or when the vaccine from the same manufacturer is unavailable.
- **The 2-dose HBV vaccine series (Heplisav-B) only applies when both doses in the series consist of this vaccine.**
  - Series consisting of a combination of 1 dose of Heplisav-B and a vaccine from a **different** manufacturer should consist of **3** total vaccine doses and should adhere to the 3-dose schedule.
- **Doses administered at less than the minimum interval\* should be repeated and do not count toward series completion.**
  - However, a series containing 2 doses of Heplisav-B administered at least 4 weeks apart is valid, even if the patient received a single earlier dose from another manufacturer.

\*See below for schedule regarding the different vaccines.

## ◆ Hepatitis B Adult Vaccine Schedules

NOTE: Heplisav-B and PreHevbrio are NOT recommended in pregnancy due to a lack of safety data.

Vaccine	Doses	Age Group	Volume	Schedule of Doses
Heplisav-B	2	Adults > 18	0.5 mL	Dose 1- Now Dose 2- 1 month after dose 1
Engerix-B, PreHevbrio, Recombivax, Twinrix (Hepatitis A & B)	3	Adults > 18	1.0 mL	Dose 1- Now Dose 2- 1 month after dose 1 Dose 3- 6 months after dose 1
Engerix-B (Accelerated)	4	Children > 1 and Adults	0.5 mL	Dose 1- Now Dose 2- 1 month after dose 1 Dose 3- 2 months after dose 1 Dose 4- 1 year after dose 1
Twinrix (Accelerated)	4	Adults > 18	1.0 mL	Dose 1- Now Dose 2- 1 week after dose 1 Dose 3- 1 month after dose 1 Dose 4- 1 year after dose 1

## References:

Vaccine schedules. Hepatitis B Foundation | Baruch S. Blumberg Institute. (2022, September). Retrieved March 3, 2023, from <https://www.hepb.org/prevention-and-diagnosis/vaccination/guidelines-2/>  
Vaccine for HBV. Hepatitis B Foundation | Baruch S. Blumberg Institute. (n.d.). Retrieved March 3, 2023, from <https://www.hepb.org/prevention-and-diagnosis/vaccination/>  
Ask the experts: Hepatitis B Vaccines. Immunize.org (2023, August). Retrieved September 29, 2023, from [https://www.immunize.org/askexperts/experts\\_hepb.asp](https://www.immunize.org/askexperts/experts_hepb.asp).

# PRESENTERS FOR PROVIDER EDUCATION



If you are interested in hosting provider education, or learning more about hepatitis B in the mentioned areas, please see below for a list of qualified speakers.

NAME AND EMAIL	TITLE AND AFFILIATION	AREAS OF HEPATITIS B EXPERTISE
Richard Andrews, MD, MPH, BC richard.andrews@hepatitidoc.com	President, Houston Viral Hepatitis Task Force; National Advisory Committee, Hep B United	<b>Specialty: Family Medicine, Addiction Medicine, Preventative Medicine, International Health, Public Health</b> Harm reduction, cross-cultural medicine, addictions as a risk-factor for hepatitis B, testing, vaccination
Chari Cohen, DrPH, MPH chari.cohen@hepb.org	President, Hepatitis B Foundation	<b>Specialty: Public Health</b> Global epidemiology, higher risk populations, screening, vaccination, public health research
Jose Debes, MD, Ph.D. Debes003@umn.edu	Associate Professor, School of Medicine and School of Public Health, University of Minnesota	<b>Specialty: Hepatology</b> Global epidemiology, Hepatitis B-related hepatocellular carcinoma, hepatitis D epidemiology
Catherine Freeland, Ph.D., MPH catherine.freeland@hepb.org	Associate Director of Public Health Research, Hepatitis B Foundation	<b>Specialty: Public Health</b> Higher risk populations, testing, vaccination, discrimination, harm reduction, implementation science, qualitative research
Robert Gish, MDMD, FAASLD, AGAF, FAST rgish@robertgish.com	Adjunct Professor of Medicine, University of Nevada; Medical Director, Hepatitis B Foundation	<b>Specialty: Hepatology and Transplant Medicine</b> Global epidemiology, higher risk populations, point-of-care RDT testing, vaccination, public health research, hepatitis D, liver cancer biomarkers, new hepatitis B tests

# PRESENTERS FOR PROVIDER EDUCATION



NAME	TITLE AND AFFILIATION	AREAS OF HEPATITIS B EXPERTISE
Camilla Graham, MD, MPH cgraham@bidmc.harvard.edu	Assistant Professor in Medicine, Part time, and Physician, Division of Infectious Disease Beth Israel Deaconess Hospital	<b>Specialty: Infectious Diseases</b> Large health systems settings, Electronic Health Record support for screening and vaccination, treatment, management
Michaela Jackson, MPH, MS michaela.jackson@hepb.org	Program Director, Prevention Policy Hepatitis B Foundation	<b>Specialty: Public Health</b> Screening, vaccination, public health, community-based efforts, federal immunization policy
Tatyana Kushner, MD tatyana.kushner@mssm.edu	Associate Professor, Division of Liver Diseases, Icahn School of Medicine at Mount Sinai	<b>Specialty: Hepatology</b> U.S. epidemiology, perinatal hepatitis B, hepatitis B and hepatitis D coinfection
Anthony Martinez, MD, AAHIVS, FAASLD adm35@buffalo.edu	Medical Director, Hepatology, University of Buffalo	<b>Specialty: Hepatology, Addiction Medicine</b> Screening, vaccination, treatment, management
Mark Sulkowski, MD, FIDSA, FAASLD msulkowski@jhmi.edu	Medical Director, Viral Hepatitis Center Divisions of Infectious Diseases and Gastroenterology/ Hepatology, Johns Hopkins University & Medicine	<b>Specialty: Infectious Diseases</b> Management, prevention of infection and reactivation, clinical trials of novel hepatitis B therapies

# PRESENTERS FOR PROVIDER EDUCATION



NAME AND EMAIL	TITLE AND AFFILIATION	AREAS OF HEPATITIS B EXPERTISE
Amy Tang, MD amy.tang@nems.org	Director of Immigrant Health, North East Medical Services	<b>Specialty: Internal Medicine</b> Screening, vaccination, management in primary care settings, immigrant populations
Jessie Torgersen, MD, MHS, MSCE jessie.torgersen@ pennmedicine.upenn.edu	Assistant Professor of Medicine, University of Pennsylvania Perelman School of Medicine	<b>Specialty: Infectious Diseases</b> Management of HBV with and without HIV co-infection, epidemiology of HIV/HBV co-infection
Su Wang, MD, MPH, FACP Su.Wang@rwjbh.org	Medical Director, Center for Asian Health & Viral Hepatitis Programs, Cooperman Barnabas Medical Center	<b>Specialty: Internist, Public Health</b> Screening, vaccination, prevention of mother-to-child transmission, management in primary care settings, immigrant populations

# Customizable Hepatitis B Presentation for Providers

This PowerPoint was designed to broadly educate all providers on topics for hepatitis B prevention and diagnosis in relation to CDC's updated hepatitis recommendations. The presentation is downloadable and is meant to be tailored for the intended audience.

 **[Download the customizable presentation here.](#)**

---

## Presentation Objectives

- Describe socio-cultural and systemic challenges to preventing hepatitis B amongst the general public and populations at higher risk for infection
- Describe hepatitis B diagnostics
- Identify best practices to increase rates of hepatitis B screening and vaccination
- Identify multiple resources for hepatitis B education, testing, and linkage to care

## This presentation contains information on:

- Lived Experience of Hepatitis B
- About Hepatitis B
  - Transmission
  - Epidemiology
- Hepatitis B in the United States
- Hepatitis B Health Disparities
- Universal Hepatitis B Screening and Vaccination
  - New recommendations
  - Challenges to implementation
  - Strategies to overcome identified challenges
- Patient Resources
- Clinician Resources



---

# Hepatitis B Resources for Clinicians

---

## Primary Care Resources:

- [Hepatitis B Online](#)
  - HBV diagnosis, prevention, management, and treatment (CME available)
- [Hep B United Philadelphia and National Nurse-Led Care Consortium's Hepatitis B ECHO](#)
  - Monthly HBV training for primary care providers that include one case discussion and a 15-minute didactic (CME available)
- [Driving Hepatitis B Management: Universal Screening and Vaccination in Primary Care](#)
  - The goal of this activity is for learners to be better able to incorporate expert contextualization on the integration of updated CDC guidelines for HBV screening, testing, and vaccination into clinical management (CME/ ABIM MOC / CE available)

## HBV Vaccine Resources:

- [Adult Immunization Schedule](#)
  - Contains guidance on routine immunizations and special situations
- [Hepatitis B Vaccination: Information for Healthcare Providers](#)
- [Immunize.org](#)
  - [Implementing Hepatitis B Universal Adult Screening and Vaccination: Clinical Answers for Healthcare Professionals](#)

- [Understanding the Updated Hepatitis B Vaccination Recommendations and Guidance](#)

## HBV Screening Resources:

- [CDC's Interpretation of Hepatitis B Serologic Test Results](#)
- [Viral Hepatitis Serology Training](#)
- [Routine Testing and Follow-up for Higher-Risk Populations](#)
- [Screening and Referral Algorithm for HBV Among Pregnant Persons](#)

## HBV Management Resources:

- [Hepatitis B Reactivation Guide \(for acute infections\)](#)
- [Chronic Hepatitis B Practice Guidelines](#)



# Hepatitis B Resources for Patients

Need HBV fact sheets in a different language? Find them at CDC's Patient Education Hub or at [www.hepb.org/factsheets](http://www.hepb.org/factsheets).

## Information for Vaccination and Screening

- [Hepatitis B Vaccine Fact Sheet](#)
- [The Importance of Hepatitis B Screening Infographic](#)
- [Hepatitis B Screening and Vaccination of Adults](#)
- [Understanding Your Hepatitis B Test Results](#)
- [CDC's HBV Patient Education Hub](#)
- [Hepatitis B and Pregnancy](#)

## Information for Newly Diagnosed

- [Hepatitis B FAQ](#)
- [Hepatitis B Information Guide](#)
- [Hepatitis B and Your Liver Fact Sheet](#)
- [Living with Chronic Hepatitis B Fact Sheet](#)
- [Hepatitis B Treatment Information](#)
- [Hepatitis B Online Support Groups](#)
- [Pregnancy and Hepatitis B](#)
- [B Heppy Podcast](#)
- [www.hepbstories.org](http://www.hepbstories.org)

## #JustB

### *Real stories from real people living with hepatitis B*

Hepatitis B takes a physical, financial, and mental toll on the people and the families who are impacted by this disease. The #JustB storytelling campaign highlights the powerful experiences of those affected by hepatitis B as a way to raise awareness and encourage people to get tested and vaccinated. Visit [www.hepbstories.org](http://www.hepbstories.org) for the full collection of national and international voices.

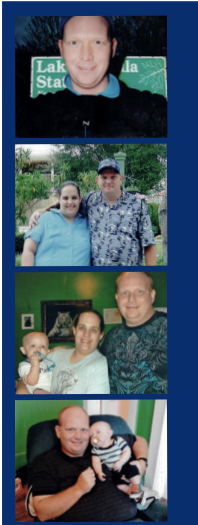
**DeWayne's Story**

I was 7 years old, at the clinic for a follow up visit. It was 1985, and I'd been in an accident a few months before, where I had a blood transfusion.

The blood supply wasn't being tested for hepatitis B until 1992. I overheard the doctor tell my guardian, "He probably won't live past 30."

**#justB**

**HEPATITIS B FOUNDATION**




## The Importance of HBV Vaccination

- [Alan's Story](#)
- [Alice's Story](#)
- [Dewayne's Story](#)
- [Joe's Story](#)
- [John's Story](#)
- [Sura's Story](#)

## The Importance of HBV Screening and Testing

- [Adama's Story](#)
- [Heng's Story](#)
- [Jacki's Story](#)
- [Jason's Story](#)
- [Randy's Story](#)
- [Roger's Story](#)

## References

1. Wong RJ, Brosgart CL, Welch S, et al. An updated assessment of chronic hepatitis B prevalence among foreign-born persons living in the United States. *Hepatology* 2021;74:607–26. PMID:33655536 <https://doi.org/10.1002/hep.31782>.
2. Centers for Disease Control and Prevention. Viral Hepatitis Surveillance Report – United States, 2021. <https://www.cdc.gov/hepatitis/statistics/2021surveillance/index.htm>. Published August, 2023. Accessed September 2023.
3. Weng MK, Doshani M, Khan MA, Frey A, Ault K, Moore KL, Hall EW, Morgan RL, Campos-Outcalt D, Wester C, Nelson NP. Universal Hepatitis B Vaccination in Adults Aged 19–59 Years: Updated Recommendations of the Advisory Committee on Immunization Practices —United States, 2022. *MMWR* 2022;71(13):477–483.
4. Conners EE, Panagiotakopoulos L, Hofmeister MG, et al. Screening and Testing for Hepatitis B Virus Infection: CDC Recommendations — United States, 2023. *MMWR Recomm Rep* 2023;72(No. RR-1):1–25. DOI: <http://dx.doi.org/10.15585/mmwr.rr7201a1>.
5. Hall EW, Weng MK, Harris AM, Schillie S, Nelson NP, Ortega-Sanchez IR, Rosenthal E, Sullivan PS, Lopman B, Jones J, Bradley H, Rosenberg ES. Assessing the cost-utility of universal hepatitis B vaccination among adults. *J Infect Dis.* 2022 Mar 9;jiac088. doi: 10.1093/infdis/jiac088. Epub ahead of print. PMID: 35260904.
6. Toy M, Hutton D, Harris AM, Nelson N, Salomon JA, So S. Cost-Effectiveness of 1-Time Universal Screening for Chronic Hepatitis B Infection in Adults in the United States. *Clin Infect Dis.* 2022 Jan 29;74(2):210–217. doi: 10.1093/cid/ciab405. PMID: 33956937.
7. Lu P, Hung M, Srivastav A, et al. Surveillance of Vaccination Coverage Among Adult Populations — United States, 2018. *MMWR Surveill Summ* 2021;70(No. SS-3):1–26. Available at: <http://dx.doi.org/10.15585/mmwr.ss7003a1>. Accessed December 02, 2022.
8. US Department of Health & Human Services. Hepatitis B Basic Information. Available at: <https://www.hhs.gov/hepatitis/learn-about-viral-hepatitis/hepatitis-b-basics/index.html> . Accessed December 04, 2022.
9. Roberts H, Ly KN, Yin S, Hughes E, Teshale E, Jiles R. Prevalence of HBV infection, vaccine-induced immunity, and susceptibility among at-risk populations: US households, 2013–2018. *Hepatology* 2021;74:2353–65.
10. Conners EE, Panagiotakopoulos L, Hofmeister MG, et al. Screening and Testing for Hepatitis B Virus Infection: CDC Recommendations — United States, 2023. *MMWR Recomm Rep* 2023;72(No. RR-1):1–25. DOI: <http://dx.doi.org/10.15585/mmwr.rr7201a1>.
11. Centers for Disease Control and Prevention (CDC). Division of Viral Hepatitis 2025 Strategic Plan, CDC; 2020. Available at: <https://www.cdc.gov/hepatitis/pdfs/DVH-StrategicPlan2020-2025.pdf>. Accessed March 01, 2023.
12. World Health Organization. Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022–2030. Available at: [https://cdn.who.int/media/docs/default-source/hq-hiv-hepatitis-and-stis-library/full-final-who-ghss-hiv-vh-sti\\_1-june2022.pdf?sfvrsn=7c074b36\\_13](https://cdn.who.int/media/docs/default-source/hq-hiv-hepatitis-and-stis-library/full-final-who-ghss-hiv-vh-sti_1-june2022.pdf?sfvrsn=7c074b36_13). Accessed December 05, 2022.
13. Immunize.org. Ask the experts: Hepatitis B Vaccines.; 2023. Available at: [https://www.immunize.org/askexperts/experts\\_hepb.asp](https://www.immunize.org/askexperts/experts_hepb.asp). Accessed September 29, 2023.
14. Daley MF, Hennessey KA, Weinbaum CM, et al. Physician practices regarding adult hepatitis B vaccination: a national survey. *Am J Prev Med* 2009;36:491–6. PMID:19362798 <https://doi.org/10.1016/j.amepre.2009.01.037>
15. Schillie S, Vellozzi C, Reingold A, et al. Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. *MMWR Recomm Rep* 2018;67(No. RR-1):1–31. DOI: <http://dx.doi.org/10.15585/mmwr.rr6701a1>
16. Greene K, Duffus W, Xing J, King H. Social determinants of health associated with HBV testing and access to care among foreign-born persons residing in the United States: 2009 – 2012. *J Health Dispar Res Pract.* 2017;10(2):1–20.

