Overview

- Welcome and Introduction – Dr. Noele Nelson
- Presentation – Dr. Erin Conners
  - Hepatitis B in the United States
  - Methods of guideline development
  - Proposed recommendation language
  - Process for providing feedback
- Question and Answer period – Drs. Laura Cooley and Noele Nelson
- Closing remarks – Dr. Carolyn Wester
Introduction

- The purpose of this webinar is to:
  - present the draft of the updated hepatitis B screening recommendations
  - describe how to provide feedback via the Federal Register notice (FRN)

- These slides will be posted on:
Introduction

▪ All participants will be muted for the duration of the webinar.

▪ Please add any questions about the FRN process or clarification about the guidelines in the Q&A box
  – All public comments must be submitted through the FRN; CDC highly encourages review and feedback
  – Questions regarding the FRN process or clarification of presentation content will be answered at the end of the presentation
Overview of Draft CDC Recommendations for Hepatitis B Screening and Testing

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Disclaimer

This presentation is distributed solely for the purpose of predissemination review. These materials have not been formally disseminated by the Centers for Disease Control and Prevention. Draft materials shared for review do not represent and should not be construed to represent any agency determination or policy.
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Guideline workgroup and steering committee
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- Guidelines and Recommendations Activity
- Strategic Business Initiatives Unit
- MMWR Serials Team

Prevention Policy Modeling Lab
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People with chronic hepatitis B virus infection are at increased risk for liver cancer and cirrhosis and are 70%–85% more likely to die prematurely than the general population.

There are 880,000 people living with hepatitis B in the U.S.

34% are aware of their infection

Hepatitis B in the U.S. — a tale of two epidemiologies

- People born outside the U.S.
  - Chronic infection since childhood
Hepatitis B in the U.S. — a tale of two epidemiologies

- **People born outside the U.S.**
  - Chronic infection since childhood

- **Unvaccinated people with behavioral risk factors**
  - Injection drug use, unprotected sex
  - Acute infections as adults, higher clearance rate
New hepatitis B virus infections are in adults 19 years and up.

From surveillance data - new hepatitis B virus infections are in adults 19 years of age and up.

- Rates have increased among adults over the age of 40
- Since 2011, the rate of acute infection among kids and adolescents 0-19 has been ~0/100,000
Current CDC recommendations are risk-based.

- These may be difficult to implement in practice
- High proportion of people remain unaware of their infection
- Risk-based testing can often be stigmatizing and singles out groups that are already often marginalized.
Limitations of a risk-based approach

- Risk identified: 1,055 (33.1%)
- Risk data missing: 1,183 (37.1%)
- No risk identified: 954 (29.9%)

2/3 of reported acute HBV cases were either missing risk data or reported no identified risk

HepB Vaccination Coverage by Age in Adults with ≥1 Risk Factor

- Self-reported National Health Interview Survey data
Objective was to assess adding the following recommendations

- **Universal hepatitis B screening**
- **Risk-based testing of people with a history of:**
  - Incarceration
  - Hepatitis C virus infection
  - STIs or multiple sex partners
- **Screening with a three-test panel**
Methods
Activities of the CDC Guidelines Work Group

- Developed research questions
- Conducted systematic reviews for:
  1) expanding screening to all adults
  2) periodic testing for HBV infection among persons with:
     • HCV infection or
     • a history of incarceration.
- Assessed the quality of the evidence
- Considered existing guidelines, systematic reviews, cost-effectiveness analyses, epidemiology data, ease of implementation, and potential harms.
Universal Screening Systematic Review

- How would adult universal screening for hepatitis B affect the number (and composition) of persons who screen positive for HBV infection?
  - Q1a. What is the prevalence of chronic HBV infection in the United States? In the general population, by age groups?
  - Q1b. What is the yield (number of new diagnoses per tests performed) and sensitivity of alternative HBV screening strategies (e.g., universal versus targeted screening or screening strategies based on alternative risk factors)? [not assessed]

- The yield and sensitivity of different screening strategies was recently assessed by the US Preventive Services Taskforce
External Review

- **Peer reviewers:**
  - Nominated by the American Association for the Study of Liver Diseases, Infectious Disease Society of America, and American College of Physicians

- **Federal Register Notice:**
Cost-effectiveness analysis
The analysis compared current practice to current practice plus a one-time adult screening test.

- **Current practice**
  - 33% of people with HBV infection diagnosed
    - 36% linked to care
    - 18% receive treatment

- **Assumptions**
  - Prevalence undiagnosed chronic HBV infection: 0.24%
  - HBsAg testing as part of healthcare visits
  - Generic treatment

Compared with current practice, universal screening of adults aged 18-79 years would avert:

- 7 cases of compensated cirrhosis
- 3 cases of decompensated cirrhosis
- 5 cases of hepatocellular carcinoma
- 2 liver transplants
- 10 HBV related deaths

at a savings of $200,334 per 100,000 adults screened.

- The published paper by Dr. Toy and colleagues looked at screening adults aged 18-69.
- Here are results utilizing that same model, but increasing the upper bound of the age to 79.
Sensitivity analysis

- 3-test panel (HBsAg, anti-HBc, anti-HBs)
- Medicare reimbursement of $28.27
- Incremental cost-effectiveness ratio (ICER) per quality adjusted life year (QALY) = $11,207
- Cost-effective
Universal Screening Systematic Review
Q1a. What is the prevalence of chronic HBV infection in the United States? In the general population, by age groups?

- **Restricted articles to the “general” population (N=17)**
  - Screening among people not suspected or known to be at increased risk of infection

- **Included studies among:**
  - First-time blood donors, organ donors, pregnant people, NHANES enrollees, and patients seeking care for a condition other than HBV infection

CDC, Unpublished
The median prevalence of chronic HBV infection in the general population was 0.4%.
The median prevalence of history of HBV infection (anti-HBc+) in the general population was 6.2%.
Justification for Screening

✓ HBV infection has significant morbidity and mortality

✓ Chronic infection can be detected before the onset of symptoms of liver disease using reliable and inexpensive screening tests

✓ Treatment for chronic HBV infection can reduce morbidity and mortality

✓ Screening can identify people who are at risk of HBV reactivation or who would benefit from vaccination

✓ Universal screening of adults is cost-effective
Proposed recommendation language
Screening Recommendations for Hepatitis B

- **Universal hepatitis B screening:**
  - Hepatitis B screening at least once in a lifetime for adults >18 years. [New recommendation]

- **Screening pregnant persons**
  - Hepatitis B screening for all pregnant people during each pregnancy, preferably in the first trimester, regardless of vaccination status or history of testing (Schillie et al. 2018).
  - Pregnant adults aged >18 years should be screened with the 3-test panel unless they have received screening with the 3-test panel in the past [New recommendation].
  - Adults with a history of 3-test panel screening and without subsequent risk can be tested for only HBsAg during pregnancy.

- **Risk-based testing**
  - Testing for all individuals with a history of increased risk for HBV infection, regardless of age, if they were susceptible during the period of increased risk.
  - Periodic testing for susceptible persons, regardless of age, with ongoing risk for exposure(s), while risk for exposures(s) persist. Offer testing if the risk for exposure occurred after previous HBV tests and while the person was susceptible.
The following persons have an increased risk for HBV infection:

- People currently or formerly incarcerated in a jail, prison, or other detention setting [New recommendation]
- People with a history of sexually transmitted infections or multiple sex partners [New recommendation]
- People with current or past hepatitis C virus infection [New recommendation]
- Anyone who requests hepatitis B testing [New recommendation]
- People born in regions with HBV prevalence >2%
- U.S.-born people not vaccinated as infants whose parents were born in regions with HBV prevalence >8%
- People with HIV infection
- People with current or past injection drug use
- Men who have sex with men
- Infants born to HBsAg positive persons
- Household, needle-sharing, or sexual contacts of people with known HBV infection
- Patients receiving predialysis, hemodialysis, peritoneal dialysis, or home dialysis
- People with elevated alanine aminotransferase or aspartate aminotransferase levels of unknown origin
Screening Recommendations for Hepatitis B

▪ Universal hepatitis B screening:
  – Hepatitis B screening at least once in a lifetime for adults ≥18 years. [New recommendation]

▪ Screening pregnant persons
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▪ Risk-based testing
  – Testing for all individuals with a history of increased risk for HBV infection, regardless of age, if they were susceptible during the period of increased risk.
  – Periodic testing for susceptible persons, regardless of age, with ongoing risk for exposure(s), while risk for exposures(s) persist. Offer testing if the risk for exposure occurred after previous HBV tests and while the person was susceptible.

▪ During screening, test for hepatitis B surface antigen (HBsAg), antibody to hepatitis B surface antigen (anti-HBs), and total [IgG and IgM] antibody to hepatitis B core antigen (total anti-HBc) [New recommendation]
<table>
<thead>
<tr>
<th>Clinical State</th>
<th>HBsAg</th>
<th>Anti-HBs</th>
<th>Total Anti-HBc</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute infection</td>
<td>Positive</td>
<td>Negative</td>
<td>Positive (IgM positive)</td>
<td>Link to hepatitis B care</td>
</tr>
<tr>
<td>Chronic infection</td>
<td>Positive</td>
<td>Negative</td>
<td>Positive (IgM negative)</td>
<td>Link to hepatitis B care</td>
</tr>
<tr>
<td>Resolved infection</td>
<td>Negative</td>
<td>Positive</td>
<td>Positive</td>
<td>Counsel</td>
</tr>
<tr>
<td>Immune from vaccination</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
<td>Reassure if history of HepB vaccine series completion</td>
</tr>
<tr>
<td>Susceptible, never infected</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
<td>Offer HepB vaccine if no history of HepB vaccine series completion</td>
</tr>
<tr>
<td>Isolated core antibody positive</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
<td>Consult with specialist</td>
</tr>
</tbody>
</table>
Clinical Considerations

- Clinical benefits of screening for individual patients who are ≥80 years of age
- Frequency of periodic testing should be a shared decision between the patient and provider based on individual risk factors and immune status.
- Having multiple sex partners can increase the risk for exposure to HBV and other STIs, but there is currently insufficient evidence to specify the number of sex partners and the time frame for screening to identify cases of chronic infection. Consider the number of partners, type of sex, and timing of last test when recommending testing for people with multiple sex partners.
Adults aged >18 years without a known history of HBV infection

1. Completed hepatitis B vaccine series?
   - Yes
   - No/Unknown

2. Previously tested* for HBV infection?
   - Yes
   - No/Unknown

3. Has/had an activity, exposure, or condition associated with increased risk?†
   - Yes
   - No

4. Offer testing if the risk of exposure occurred after previous HBV test(s); Offer vaccine§
   - Yes
   - No

5. Offer screening

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*With HBsAg, anti-HBc, and anti-HBs
†See list of activities, exposures, or conditions associated with an increased risk for infection
§Offer vaccine and complete HepB series per ACIP recommendations
Adults aged >18 years without a known history of HBV infection

1. Completed hepatitis B vaccine series?
   - Yes
   - No/Unknown

2. Previously tested* for HBV infection?
   - Yes
   - No/Unknown

   - Has/had an activity, exposure, or condition associated with increased risk?†
     - Yes
     - No

   - Had an activity, exposure, or condition associated with increased risk?†
     - Yes
     - No

3. Previously tested* for HBV infection?
   - Yes
   - No/Unknown

   - Offer testing if the risk of exposure occurred after previous HBV test(s); Offer vaccine§

   - Offer testing if the risk of exposure occurred before vaccination (while susceptible) and after the previous HBV test(s)

   - Offer screening

4. Offer vaccine if completed HepB series per ACIP recommendations

* With HBsAg, anti-HBc, and anti-HBs
† See list of activities, exposures, or conditions associated with an increased risk for infection
§ Offer vaccine and complete HepB series per ACIP recommendations
Children and adolescents aged 1–17 years without a known history of HBV infection

Vaccinated as an infant with a vaccine licensed in the U.S.?  
- No/Unknown
  - No: Offer vaccine
  - Yes: No action

Has/had an activity, exposure, or condition associated with increased risk?  
- No
  - No: Offer vaccine
  - Yes: Offer testing if the risk of exposure occurred while susceptible; Offer vaccine
- Yes: No action

* See list of activities, exposures, or conditions associated with an increased risk for infection
New ACIP Recommendations

- The following groups *should* receive hepatitis B vaccines:
  - Adults aged 19 - 59 years
  - Adults aged ≥ 60 years with risk factors for hepatitis B

- The following groups *may* receive hepatitis B vaccines:
  - Adults aged ≥ 60 years without known risk factors for hepatitis B
Federal Register Notice

▪ Visit https://www.regulations.gov/docket/CDC-2022-0044/ to view the full document draft and to submit a comment
  – Comment period is open through June 3, 2022

▪ All comments will be considered and responded to by the CDC workgroup
CDC Recommendations for Hepatitis B Screening and Testing – United States, 2022; Request for Comment

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NOTICE
CDC Recommendations for Hepatitis B Screening and Testing—United States, 2022
Agency Centers for Disease Control and Prevention | Posted April 4, 2022 | DO CDC-2022-0044-0001
Comments Due Jan 3, 2022

SUPPORTING & RELATED MATERIAL
HIV Screening Guidelines
Agency Centers for Disease Control and Prevention | Posted April 4, 2022 | DO CDC-2022-0044-0005

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Next Steps

▪ Spring 2022: Review and respond to peer review and FRN comments

▪ Summer 2022: Submit the revised guidelines to CDC clearance

▪ By end of 2022: MMWR publication
Questions and Answers

- Please add any questions about the FRN process or clarification about the guidelines in the Q&A box, below.

- Visit https://www.regulations.gov/docket/CDC-2022-0044/ to view the full document draft and to submit a comment
  - Comment period is open through June 3, 2022
The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.