Universal Screening and Vaccination to Achieve Viral Hepatitis Elimination

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Overview

1. HCV epidemiology
2. HCV screening guidelines update
3. HCV treatment overview
4. HBV epidemiology
5. HBV vaccination guidelines
6. Screening for HBV
7. Hepatitis Delta
8. Case Study: Mount Sinai Health System
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Epidemiology: Acute HCV in United States 2005-2020

Figure 3.4 – Part 1 of 2
Rates* of reported cases† of acute hepatitis C virus infection, by age group
United States, 2005–2020

Rates per 100,000 population.
Reported confirmed cases. For the case definition, see https://ndc-services.cdc.gov/conditions/hepatitis-c-acute/.

Source: CDC, National Notifiable Diseases Surveillance System.
Changing Age Distribution of Chronic HCV in NYC

Chronic Hepatitis C: Age Distribution

In 2011, the age distribution of hepatitis C cases in NYC showed that cases were concentrated in baby boomers (people born between 1945 and 1965) with another peak starting to form for younger people. Ten years later, there was a distinct second peak showing a concentration of hepatitis C cases in younger people, who are likely to have been infected from recent drug use.

Figure 3.8

Number of newly reported* chronic hepatitis C virus infection cases† by sex and age

United States, 2020

Figure 18. Age distribution of people reported with chronic hepatitis C in NYC, 2011 and 2021


Relevance: High Rates of Newly Reported HCV in NYC in 2021

Chronic Hepatitis C: Geographic Distribution

Figure 16. Rate of people newly reported with chronic hepatitis C in NYC by NTA, 2021

Neighborhoods with the highest rates of people newly reported with chronic hepatitis C (per 100,000 people):
1. Rikers Island, Bronx (275.7)
2. Brownsville, Brooklyn (87.7)
3. Brighton Beach, Brooklyn (86.7)
4. Fordham South, Bronx (82.1)
5. East Tremont, Bronx (81.1)
6. Stapleton-Rosebank, Staten Island (75.9)
7. Queensbridge-Ravenswood-Long Island City, Queens (75.2)
8. Hunts Point, Bronx (74.1)
9. Morrisania-Melrose, Bronx (71.6)
10. Ocean Hill, Brooklyn (69.0)

NYC rate: 35.7

Hepatitis C in NYC (2021): Demographics

As of 2019, the Health Department estimates that 86,000 people (1% of NYC residents) are living with chronic hepatitis C.18

Number of people newly reported with chronic hepatitis C in NYC in 2021: 2,832

Rate of newly reported chronic hepatitis C per 100,000 people in NYC in 2021: 35.7

Goal 1: Reduce new HCV infections among people in NYC by 90% by 2030

Goal 2: Reduce premature deaths among people with chronic HBV and HCV in NYC by 65% by 2030; Improve the health of people with HBV and HCV in NYC

Goal 3: Reduce health inequities related to viral hepatitis infection among people in NYC
# Progress Towards DOHMH 2030 Viral Elimination Goals

The NYC Department of Health and Mental Hygiene is working towards eliminating viral hepatitis as a major public health threat in New York City by 2030. This table outlines key progress indicators and compares baseline data to the 2030 goal.

<table>
<thead>
<tr>
<th>Progress Indicators</th>
<th>Baseline</th>
<th>2030 (Goal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% of participants in the NYC Health Department Viral Hepatitis Program contracted programs will be screened for hepatitis C</td>
<td>42% (2018)</td>
<td>90%</td>
</tr>
<tr>
<td>Data source: organizations that contract with the NYC Health Department and report screening data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80% of adults newly diagnosed with hepatitis C will be RNA negative within one year of diagnosis</td>
<td>29% (2018)</td>
<td>80%</td>
</tr>
<tr>
<td>Data source: NYC surveillance data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80% of people in NYC reported with hepatitis C since 2014 will be RNA negative</td>
<td>62% (2019)</td>
<td>80%</td>
</tr>
<tr>
<td>Data source: NYC surveillance data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **42%** Percentage of hepatitis C contracted program participants screened in 2018
- The NYC Viral Hepatitis Elimination Plan proposes a hepatitis C screening goal of 90% by 2030.
- **26%** Percentage of people reported with a viral diagnostic test in 2021 who initiated treatment
- The NYC Viral Hepatitis Elimination Plan proposes a goal of 80% of people cured within one year of diagnosis by 2030.
- **66%** Percentage of people with a positive viral diagnostic test who have been cured or cleared of the virus
- More people in NYC are being cured of hepatitis C.

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HCV Epidemiology

• Cases increasing for all adult age groups, especially for 30-50 year-olds
• Even when diagnosed, only 26% initiate treatment within a year of diagnosis
• NYC DOH 2030 Viral Hepatitis Elimination goals aims to increase screening and treatment of HCV
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**HCV Screening Guidelines Update**

**CDC 2020 Guidelines**

**CDC Recommendations for Hepatitis C Screening Among Adults in the United States**

- **Universal hepatitis C screening:**
  - Hepatitis C screening at least once in a lifetime for all adults aged 18 years and older, except in settings where the prevalence of HCV infection (HCV RNA-positivity) is less than 0.1%.
  - Hepatitis C screening for all pregnant women during each pregnancy, except in settings where the prevalence of HCV infection (HCV RNA-positivity) is less than 0.1%.

**USPSTF 2020 Guidelines**

**Recommendation Summary**

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults aged 18 to 79 years</td>
<td>The USPSTF recommends screening for hepatitis C virus (HCV) infection in adults aged 18 to 79 years.</td>
<td>B</td>
</tr>
</tbody>
</table>

**AASLD Guidelines**

**Recommendations for One-Time Hepatitis C Testing**

<table>
<thead>
<tr>
<th>RECOMMENDED</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-time, routine.opt out HCV testing is recommended for all individuals aged 18 years or older.</td>
<td>I, B</td>
</tr>
<tr>
<td>One-time HCV testing should be performed for all persons less than 18 years old with activities, exposures, or conditions or circumstances associated with an increased risk of HCV infection (see below).</td>
<td>I, B</td>
</tr>
<tr>
<td>Prenatal HCV testing as part of routine prenatal care is recommended with each pregnancy.</td>
<td>I, B</td>
</tr>
<tr>
<td>Periodic repeat HCV testing should be offered to all persons with activities, exposures, or conditions or circumstances associated with an increased risk of HCV exposure (see below).</td>
<td>IIa, C</td>
</tr>
<tr>
<td>Annual HCV testing is recommended for all persons who inject drugs, for HIV-infected men who have unprotected sex with men, and men who have sex with men taking pre-exposure prophylaxis (PrEP).</td>
<td>IIa, C</td>
</tr>
</tbody>
</table>

**ACOG Guidelines**

The American College of Obstetricians and Gynecologists is updating its hepatitis C screening guidance to recommend screening for all pregnant individuals during each pregnancy.
Hepatitis C Screening

Figure 25. Reason for hepatitis C screening among people ages 18 to 34 years newly reported with chronic hepatitis C in 2020 in NYC, interviewed through enhanced surveillance (n=290)²⁹

- Hepatitis C risk factors: 32.6%
- Routine hepatitis C screening: 28.1%
- Drug or alcohol treatment: 24.4%
- Elevated liver enzymes: 9.5%
- Jaundice: 7.2%
- Previously tested for hepatitis C: 4.1%
- Symptoms or signs: 3.2%
- Incarceration: 2.3%
- Dialysis: 1.8%
Effectiveness of Routine HCV Screening 2021

Figure 22. Reason for hepatitis C screening among people ages 18 to 34 years newly reported with chronic hepatitis C in NYC in 2021 interviewed through enhanced surveillance (n=200)²⁵

- Routine screening: 58.0%
- Drug or alcohol treatment: 48.5%
- Risk factors: 31.5%
- Other: 8.5%
- Incarceration: 7.0%
- Elevated liver enzymes: 4.5%
- Symptoms or signs: 3.0%
- Previously tested for hepatitis C: 1.5%
- Jaundice: 0.5%
How to Screen for Hepatitis C

HCV Ab with reflex to RNA

**Interpretation:**

- If negative Ab: screening is complete
- If positive Ab, negative RNA: not infected
  - Cleared spontaneously
  - Previously treated
  - False positive
- If positive Ab and RNA: treat HCV
  - Refer to hepatology
  - Treat in clinic

*Source: CDC. Testing for HCV infection: An update of guidance for clinicians and laboratorians. MMWR 2013;62(18).*
Interval for Screening

• Unless risk factors for infection, one time screening is adequate

• If risk factors: recommend annual screening
  – Persons with injection drug use
  – Healthcare workers
  – Chronic dialysis
  – Anyone requesting testing

• If known exposure:
  – HCV RNA positive 1-2 weeks
  – HCV Ab positive 8-11 weeks
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Pan-genotypic direct acting antivirals are highly efficacious with minimal side effects

- Velpatasvir/Sofosbuvir (Epclusa), also panfibrotic
- Glecaprevir/Pibrentasvir (Mavyret)
- Treatment after failing the above DAA is available, recommend referral to hepatology

Insurance barriers minimized in NY State, easily accessible with specialty pharmacy
Ongoing IV Drug Use

• Not a contraindication if will not interfere with adherence
  – Treatment can prevent spread

• Does not prevent against re-infection
  – Future screening with HCV RNA
  – HCV Ab will remain positive after cure and is not a screening test for re-infection
Evaluation Prior to Treatment

- Screen for HBV
  - Treatment has been associated with HBV reactivation
- Medication review for drug-drug interactions
  - PPIs
  - Statins
- Cirrhosis evaluation
  - Affects duration of treatment
  - Ribavirin
  - Cannot use protease inhibitors (Mavyret) in decompensated cirrhosis
- Renal failure
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HBV Prevalence in the U.S.

- NHANES:
  - U.S. prevalence of HBsAg+ ~ 0.30%
  - ~1.59 million persons.

- This is underestimate:
  - Institutionalized & homeless excluded
  - Immigrant populations under-sampled
Chronic Hepatitis B

As of 2019, the Health Department estimates that 243,000 people (2.9% of NYC residents) are living with chronic hepatitis B in NYC.\(^\text{13}\)

- **Number of people newly reported with chronic hepatitis B in NYC in 2021**: 5,346
- **Rate of newly reported chronic hepatitis B per 100,000 people in NYC in 2021**: 64.8

Hepatitis B can be treated to reduce the risk of liver disease, liver cancer and premature death, yet almost half of NYC residents with hepatitis B remain undiagnosed.

- **46%** Almost half of NYC residents with hepatitis B are estimated to be undiagnosed.\(^\text{3}\)

<table>
<thead>
<tr>
<th>Percentage of people who died prematurely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B infection</td>
</tr>
<tr>
<td>Citywide (including hepatitis B)</td>
</tr>
</tbody>
</table>

The percentage of people with hepatitis B who die prematurely is 1.5 times higher than all premature deaths in NYC.

Figure 2.4 – Part 1 of 2
Rates* of reported cases† of acute hepatitis B virus infection, by age group
United States, 2005–2020

* Rates per 100,000 population.
† Reported confirmed cases. For the case definition, see https://ndc.services.cdc.gov/conditions/hepatitis-b-acute/.

Source: CDC, National Notifiable Diseases Surveillance System.
• Prevalence of HBV in NYC is ~2.9%
• 46% of people with chronic HBV are undiagnosed
• Rates of HBV are increasing in >40yo
  • All rates dropped in 2020 as fewer people accessed healthcare/routine screening
  • Stable or decreasing in 0-39yo
• Universal newborn vaccination instituted 1991
# Hepatitis B in NYC: Progress Towards DOHMH 2030 Viral Elimination Goals

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<tr>
<th>Progress Indicators</th>
<th>Baseline</th>
<th>2030 (goal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% of participants in the NYC Health Department Viral Hepatitis Program-contracted programs at risk for hepatitis B infection will be screened</td>
<td>57% (2018)</td>
<td>90%</td>
</tr>
<tr>
<td>Data source: organizations that contract with the NYC Health Department and report screening data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80% of people in NYC reported with hepatitis B since 2018 who meet American Association for the Study of Liver Diseases (AASLD) treatment criteria will be virally suppressed</td>
<td>Being assessed in 2021</td>
<td>80%</td>
</tr>
<tr>
<td>Data source: NYC surveillance data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**57%** Percentage of Check Hep B program participants1 at risk for hepatitis B infection who were screened in 2018. The NYC Viral Hepatitis Elimination Plan proposes a hepatitis B screening goal of 90% by 2030.

**73%** Percentage of Health Department tele-navigation program participants linked to hepatitis B medical care who were virally suppressed2 in 2021. The NYC Viral Hepatitis Elimination Plan proposes a hepatitis B viral suppression goal of 90% by 2030 for people eligible for treatment.


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In 2021, the Advisory Committee on Immunization Practices (ACIP) for the CDC recommended universal HBV vaccination for all adults <60 years

- "Risk-based [recommendation] is a failed policy. The evidence is overwhelming." — Former ACIP chair Carol Baker, MD
- Nationally only 25% of adults are vaccinated
  - Only 39% of those with chronic liver diseases

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**Hepatitis B vaccination**

- **Routine vaccination**
  - Age 19 through 59 years: complete a 2- or 3-, or 4-dose series
    - 2-dose series only applies when 2 doses of Heplisav-B are used at least 4 weeks apart
    - 3-dose series Engerix-B or Recombivax HB at 0, 1, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 8 weeks / dose 1 to dose 3: 16 weeks)
    - 3-dose series Heplisav-B (Twinrix) at 0, 1, 6 months (minimum intervals: dose 1 to dose 2: 4 weeks / dose 2 to dose 3: 5 months)
    - 4-dose series Heplisav-B (Twinrix) accelerated schedule of 3 doses at 0, 7, and 21–30 days, followed by a booster dose at 12 months
    - 4-dose series Engerix-B at 0, 1, 2, and 6 months for persons on adult hemodialysis (note: each dosage is double that of normal adult dose, i.e., 2 mL instead of 1 mL)

*Note: Heplisav-B not recommended in pregnancy due to lack of safety data in pregnant women

- **Special situations**
  - Age 60 years or older* and at risk for hepatitis B virus infection: 2-dose (Heplisav-B) or 3-dose (Engerix-B, Recombivax HB) series or 3-dose series Heplisav-B (Twinrix) as above

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https://www.medpagetoday.com/meetingcoverage/acip/95427
https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html#note-hepb
**HBV Vaccination Series**

**Recommended**
- **Heplisav**: two doses one month apart
  - 90-95% seroprotection rate
- **Twinrix**: three doses at 0, 1, and 6 months
  - Immunizes against HAV and HBV

**Other**
- **Engerix-B**: three doses at 0, 1, and 6 months
  - 71-90% seroprotection rate
- **Recombivax HB**: three doses at 0, 1, and 6 months
  - 88-92% seroprotection rate
- **PreHevbrio**: three doses at 0, 1, and 6 months
  - 89-91% seroprotection rate
HBV Vaccine Non-Responders

Risk Factors
• Older age (40+)
• Male
• Smoker
• Diabetes
• Chronic illness
• ESRD
• Obesity
• HBV infection

Adequate response after 1 additional dose in 15-25% of non-responders

If no response and not infected, recommend re-initiating vaccine series
• Heplisav
• PreHevbrío
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Risk Factor Based Screening: A Failed Policy

### Table 1. Risk Factors, Prevalence of HBV Infection, and Need for Screening

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Prevalence of HBV Infection</th>
<th>Screening Need</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Born in region with intermediate-to-high serum HBV surface antigen levels</td>
<td>✅</td>
<td>✓</td>
<td>2, 5</td>
</tr>
<tr>
<td>Men who have sex with men</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Aged &lt;30 y</td>
<td>✅</td>
<td>✓</td>
<td>7</td>
</tr>
<tr>
<td>Co-infected with HIV</td>
<td>✅</td>
<td>✓</td>
<td>7, 37-40</td>
</tr>
<tr>
<td>U.S.-born persons not vaccinated as infants whose parents</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>were born in regions with high prevalence of HBV surface antigen levels</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Injection drug users</td>
<td>✅</td>
<td>✓</td>
<td>41</td>
</tr>
<tr>
<td>Co-infected with HIV</td>
<td>✅</td>
<td>✓</td>
<td>7</td>
</tr>
<tr>
<td>HIV-positive persons</td>
<td>✅</td>
<td>✓</td>
<td>7</td>
</tr>
<tr>
<td>Household contacts or sexual partners with known HBV infection</td>
<td>✅</td>
<td>✓</td>
<td>7</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>✅</td>
<td>✓</td>
<td>42</td>
</tr>
<tr>
<td>Persons requiring immunosuppression</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Persons with end-stage renal disease and those receiving hemodialysis</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Elevated alanine aminotransferase levels</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Alanine aminotransferase levels</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Infants born to HBsAg-positive mothers</td>
<td>✅</td>
<td>✓</td>
<td>1.1 (-)</td>
</tr>
<tr>
<td>Donors of blood, plasma, organs, tissue, or semen</td>
<td>✅</td>
<td>✓</td>
<td>1.1 (-)</td>
</tr>
<tr>
<td>Persons who are sources of blood or body fluids for exposures</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>that might require postexposure prophylaxis†</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Inmates of correctional facilities</td>
<td>✅</td>
<td>✓</td>
<td>1.0-3.7</td>
</tr>
<tr>
<td>Persons with HIV infection</td>
<td>✅</td>
<td>✓</td>
<td>1.4 (1.3-1.5)</td>
</tr>
<tr>
<td>Persons with multiple sexual partners or a history of sexually transmitted infections</td>
<td>✅</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Acute Hepatitis B by Risk Factor

- The risk factor was unknown for the majority of cases
- Sexual transmission was the most common reported risk factor
2021 Benefit Analysis of One-Time Universal HBsAg Screening

Improves patient outcomes
• 7.4 cases of compensated cirrhosis
• 3.3 cases of decompensated cirrhosis
• 5.5 cases of HCC
• 1.9 liver transplants
• 10.3 HBV-related deaths

Cost Effective
• Savings of $263,000 per 100,000 people aged 18–69 years screened
  – HBV treatment< $894/year, and test, $10.33

Potentially higher improvement in NYC due to higher prevalence compared to the U.S.

Mehlika Toy, David Hutton, Aaron M Harris, Noele Nelson, Joshua A Salomon, Samuel So, Cost-Effectiveness of 1-Time Universal Screening for Chronic Hepatitis B Infection in Adults in the United States, Clinical Infectious Diseases, 2021;, ciab405, https://doi.org/10.1093/cid/ciab405
## Benefits Far Outweigh Harms

| Benefits | Decreases in risk for continuous transmission of HBV infection, HBV-associated morbidity and mortality, and health care costs  
|          | Increases in number of persons aware of their status, receiving hepatitis B-directed care, and receiving treatment and increases in care and treatment of HBV-infected mothers in order to reduce risk for perinatal transmission |

| Harms | Vaccination: Rare but can include mild fever, soreness at the injection site, anaphylaxis (1 case per 1.1 million doses), and adverse effects of treatment  
|       | Screening: Potential emotional trauma from a rare false-positive test result; feelings of shame and depression in some HBV-infected persons  
|       | Linkage to care: None |
NYC Prevalence Supports Universal Screening

Current CDC guidelines for screening recommend screening for:

- **Persons born in regions of high and intermediate HBV endemicity (HBsAg prevalence 2%)**
CDC Changing Recommendations

Peer Review Plan for Recommendations for Hepatitis B Screening and Testing

Subject of planned report: The document will summarize proposed updated recommendations for hepatitis B screening in the United States, specifically:

- Universal, one-time hepatitis B screening for adults aged ≥18 years,
- Use of three serological tests (hepatitis B surface antigen, antibody to hepatitis B core antigen, and antibody to hepatitis B surface antigen) to screen for hepatitis B.
- Periodic testing for all susceptible persons with ongoing risk for exposure(s) will continue per current recommendations; expansion of the list of persons recommended to receive risk-based hepatitis B screening to include persons with current or history of sexually transmitted infection, currently or formerly incarcerated persons, and persons with HCV infection.
- Availability of hepatitis B testing for anyone who requests is, regardless of disclosure of risk, because many may be reluctant to disclose stigmatizing risks.

Purpose of planned report: Provide US health care providers with updated recommendations for screening and testing for hepatitis B. The report will serve as a resource for health care professionals, public health officials, and organizations involved in the development, implementation, delivery, and evaluation of clinical preventive services.

Type of dissemination: Influential Scientific Information (ISI)
Hepatitis B Screening

- HBV Surface Ag and Ab
- HBV Core Ab

Interpretation:
- If all negative: needs vaccine
- If Surface Ag positive: has chronic HBV. Refer to hepatology
- If Surface Ab and Core Ab positive: previously exposed and cleared
- If Surface Ab positive, Core Ab negative: previously vaccinated
- Indeterminate Surface Ab:
  - If Core Ab negative: check again in 3 months. May need to re-initiate vaccine series
  - If Core Ab positive: check DNA and check Surface Ab in 3 months
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Hepatitis Delta Virus (HDV) requires HBV Surface Ag for viral entry

**HDV is the most severe form of viral hepatitis**
- Progresses to cirrhosis in 5 years, HCC in 10 years
- Coinfection with HDV has higher rates of:
  - liver failure
  - nonalcoholic cirrhosis
  - portal hypertension
  - Ascites
  - thrombocytopenia

EASL recommends anti-HDV antibody testing in all HBsAg regardless of other risk factors.
- Prevalence rates estimated 4.5-13% of HBV Surface Ag positive patients

<table>
<thead>
<tr>
<th></th>
<th>Progression to Cirrhosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV</td>
<td>10 – 20% within 20 Years</td>
</tr>
<tr>
<td>HBV</td>
<td>20% within 5 Years</td>
</tr>
<tr>
<td>HDV</td>
<td>70% within 5 – 10 Years</td>
</tr>
</tbody>
</table>

HDV Geographic Footprint Is Growing

U.S. major metro hotspots identified

Increased Screening Leads to Increased HBV and HDV Diagnosis

- Identifying HDV patients is key as multiple treatments are coming to market


U.S. HDV Prevalence in 2018: ~110,000
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Mount Sinai Health System (MSHS)

- Large, urban, multicenter health system
- 47% of hospital discharges in NYC
- Serves diverse population of metropolitan NYC area
- Hospitals with EDs and PCP practices:
  - 4 in Manhattan
  - 1 in Queens
  - 1 in Brooklyn
  - 1 in Nassau County
- Large ambulatory care network across NYC, Long Island, and Westchester
Screening initiatives and patient navigation have been supported in part by funding from Gilead Sciences, Inc. (FOCUS)
HCV Program Implementation

Screening
- Screening events in at-risk communities since 2011 (HONE)
- Since 2015 for baby boomers and pregnant women
- Since 2020 for all adults 18+
- EMR alert prompting PCPs to screen
- Automatic RNA reflex testing for Ab+
- Outreach to PCPs and patients

Treatment
- Patient navigation and care coordination
Updated EMR Alert Prompting PCPs to Screen All Adults

Hepatitis C Screening is Due

The CDC recommends Hepatitis C screening for all adults (>=18yo) at least once. To satisfy this alert please open the Hepatitis C SmartSet below. If the patient has already satisfied screening, you may override this alert. Alternatively, you may postpone this alert.

Last HCVAB, collected/resulted: DD/MM/YYYY = Result value
Hepatitis C Screening last satisfied: DD/MM/YYYY

- Open Order Set | Do Not Open
- Override | Do Not Override
- Postpone | Do Not Postpone

HEPATITIS C SCREENING ORDER SMARTSET Preview

- Address Hepatitis C Screening HM Topic
- HM Activity (Add patient reported, Postpone, Override)
- Add relevant diagnosis to History

Accept | Dismiss
Dear Dr. Vega,

As part of a system-wide effort to eliminate Hepatitis C at Mount Sinai, I am sharing a list of your patients eligible for Hepatitis C screening who are scheduled to see you in the coming week.

Based on new guidelines from the CDC and USPSTF, providers are now advised to screen all adults for Hepatitis C at least once, regardless of risk factors.

<table>
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<tr>
<th>Date</th>
<th>APPT_TIME</th>
<th>MRN</th>
<th>Patient</th>
<th>Enc_Provider</th>
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<td>VEGA, AIDA C [136946]</td>
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</table>

If any of your patients test positive for Hepatitis C, my team would be happy to offer assistance linking them to liver care. We can provide assistance with scheduling, transportation, pharmacy/insurance coordination, health education, and other referrals.

If you have any questions or feedback, feel free to contact me, our program manager, Anna Mageras (copied here), or our medical director, Dr. Douglas Dieterich.

Thank you,
Preventive Care

Preventive medicine plays an important part in your health and overall well-being. The following procedures are recommended for people of your age, sex, and medical history.

Overdue

Hepatitis C Screening

Not due

Hepatitis C Screening
Completed on October 9, 2017
Previously done: 10/9/2017
Dear [PATIENT NAME],

I am working with your primary care provider on a health initiative to promote testing for hepatitis C virus (HCV). The U.S. Centers for Disease Control and Prevention (CDC) now recommend that all adults get tested at least once in their lifetime. Many patients with an HCV infection have no symptoms for many years, but the virus may still be causing serious liver damage.

Our records indicate that you have not had an HCV test at Mount Sinai. We encourage you to ask your provider about HCV testing at your upcoming visit.

The great news is that HCV is curable, usually in 8-12 weeks with minimal side effects. Nearly all insurance plans cover HCV treatment and financial assistance plans may be available to cover gaps. If you have any questions or need help scheduling HCV care after testing, please contact me directly by MyChart, phone, or email.

For more information about HCV, please visit https://www.cdc.gov/hepatitis/hcv/cfaq.htm.

Sincerely,

[PATIENT NAVIGATOR SIGNATURE]
Say YES to the Test!

Everyone ages 18+ should be screened at least once for hepatitis C.

Ask your doctor about getting tested today.

Questions or follow-up regarding results?
Contact the Patient Navigation Team!
Call or Text: (516) 595 9315
Email: hepc@mssm.edu

DID YOU KNOW?

Hepatitis C can cause liver damage for many years without noticeable symptoms.

Hepatitis C can be cured in most patients, usually in 8-12 weeks, with oral medication and few or no side effects.

Most insurances now cover hepatitis C treatment, and there is financial assistance available for patients who need it.
Waiting Room Posters

Source: https://www.cdc.gov/knowmorehepatitis/materials.htm#anchor_Posters
Flyer for PCP Staff Rooms

HAVE A PATIENT WITH HEP C?

Contact the Patient Navigation Team!
Email: HepC@mssm.edu or # HepC
Call or text: (929) 344-1525
www.mountsinai.org/hepatitisc

We can help with:
• Linkage to liver care
• Insurance & pharmacy coordination
• Rx adherence support
• Health education
• Peer support
• Referrals to:
  • Other medical care
  • Social services
HCV Ab Screening Rate in Primary Care (Baby Boomers)

- Baseline: 59%
- Post Intervention: 83%
HCV PCR Screening Rate for Ab+ in Primary Care

Baseline: 68%
Post Intervention: 100%
18+ HCV Screening Rate (newly screened/eligible to screen): Primary Care Clinic

New BPA Alert 11/2021, provider education 12/2021, weekly lists of eligible patients 1/22
Resident Survey Results (n = 34)

What Tools Would Help You Screen More Patients for HCV?

- BPA Alert: 35%
- Health maintenance topics: 18%
- Weekly email or eligible patients: 12%
- Patient request: 9%
- Dot phrase/template: 26%

Resident Leads: Einat Kadar, MD, and Carolina Villarroel, MD; attending mentor, Desiree Chow, MD
ED Screening Program

- Universal, non-targeted HCV screening for 18+
- Initial nurse offer
- Health educators follow up
- Linkage to care
- Under direction of Dr. Yvette Calderon and Dr. Ethan Cowan
- “Birth cohort-targeted screening would have identified 48% of the patients with Ab+ tests and 47% of those who were VL+.”

LEAP: Liver Education & Action Program
Supporting Patients through the HCV Care Continuum

Navigation to HCV Care

Care Coordination through SVR

www.mountsinai.org/hepatitisc
Step 1: Finding RNA+ Patients

LEAP Patient Navigators

Weekly EMR Reports
All HCV RNA+ Systemwide

ED Health Educators

Other Referrals
Step 2: Navigating RNA+ Patients to HCV Care

1. Identify RNA+ patients
2. Reach out to those in need of HCV care
3. Health education & appointment scheduling
4. Appointment reminders & Referrals to
   - PCPs
   - Insurance
   - Transportation
   - Etc.
Step 3: Care Coordination for HCV Patients Through SVR

- Psychosocial assessment (PREP-C)
- Appointments & reminders
- Follow-up & check-ins
- Accompaniment to appointments
- Health system navigation
- Health education
- Referrals:
  - Mental health; alcohol and substance use
  - Primary care
  - Social services, financial assistance, and other benefits
- Insurance and pharmacy coordination
- Medication adherence support
- Monitoring and case conferencing
- Case closure and referrals
HCV Linkage to Care Rate from Primary Care

- Baseline: 52%
- Post Intervention: 80%
Care Coordination Works!

All RNA+ patients in NYC (Source: 2020 DOHMH Viral Hepatitis Annual Report)²

Patients enrolled in LEAP care coordination at Sinai through June 30, 2020
Current Project

Implementing Universal One-time HBV Screening for Adults in Primary Care
Making the Case for Universal HBV Screening

- Updated vaccination guidelines
- High NYC prevalence
- Complexity of risk-based screening

→ Approval from Ambulatory Leadership
Implementation of Universal HBV Screening and Vaccination at Sinai

- EMR alert prompting PCPs to screen
- Outreach to PCPs and patients
- Patient navigation and care coordination
Implementing HBV Screening:
EMR Prompt
EMR Alert Flow Chart

18-79 and doesn’t have HBV results (HBsAg, HBsAb, HBcAb) in EMR

EMR Alert: Screen Patient

- All 3 Labs Negative ➔ Vaccinate Patient
- HBsAg Positive ➔ Refer to Liver
- HBcAb Positive ➔ PCP to Counsel Patient
Tip Sheet for Hepatitis B Screening Health Maintenance and BPA

Rationale: CDC advises Hepatitis B virus (HBV) screening for patients whose prevalence is 2.1%. NYC prevalence is 2.9%

Provider Actions:
- Screen all patients ages 10-79 once per lifetime for HbsAg, HbsAb, and HbcAb.
- Report problems with the site by clicking EBP Name: Hepatitis B Screening, then click "Help".

Health Maintenance Topic/Care Gap

To fill in the IMT Topic, order
- Hepatitis B Surface Ag and Ab [100000]
- Hepatitis B Core Total [02726]
If patient has already completed Hepatitis B screening, click "Add Explanation".
If patient declines screening, click Postpone, NOT Discontinue and offer again following year.

Screening BPA

Follow-up Actions
- If all three labs are negative, vaccinate patient with 2-dose Hepatitis vaccine.
- If results = HbsAg+, HbsAb+, HbcAb+, counsel patient that they had a past HBV infection and if they were ever to get immunosuppressive therapy (e.g., chemo, radiation, high-dose steroids, or the new MAbs), they first should use Liver to get IFN prophylaxis because it could recur.
- If patient tests HbsAg+, refer to Liver for evaluation and loop in LEAP Patient Navigation team (Leap@msn.com) or if HepB to assist with scheduling, education, and barriers to care.
Tip Sheet for Hepatitis B Screening Health Maintenance and BPA

Rationale: CDC advises Hepatitis B virus (HBV) screening for patients where prevalence ≥ 2%. NYC prevalence is 2.9%.

Provider Actions:

- Screen all patients ages 18-79 once per lifetime for HBsAg, HBsAb, and HBcAb.
- Report problems with the Hep B HM topic/BPA to [redacted]@mountsinai.org with the relevant MRN(s).
To fulfill the HM Topic, order both:

**Hepatitis B Surface AG and AB [100008]**

**Hepatitis B Core AB Total [86704]**

If the patient has already completed Hepatitis B screening, click “Add Completion.”

If patient declines screening, click Postpone, NOT Discontinue and offer again following year.
Provider Tip Sheet: Part 3

Screening BPA

Hepatitis B Screening is Due because NYC is a high prevalence area.

To satisfy this alert please open the Hepatitis B SmartSet below. If the patient has already satisfied screening, you may override this alert. Alternatively, you may postpone this alert. CLICK Clinical Guideline

- “Open Smartset” will auto-select all necessary labs and diagnostic code. Sign order.
- If patient reports screening elsewhere, click “Override” and add prior screening manually to satisfy the BPA and HM topic.
- If patient declines screening, please click Postpone, NOT “Override” and offer again following year.
- When done, “Accept All.”
Follow-up Actions

- If all three labs are negative, vaccinate patient with 2-dose Heplisav vaccine.

- If results = HBsAg-, HBsAb-, HBcAb+, counsel patient that they had a past HBV infection and if they were ever to get immunosuppressive therapy (e.g., chemo, radiation, high-dose steroids, or the new MABs), they first should see Liver to get HBV prophylaxis because it could recur.

- If patient tests HBsAg+, refer to Liver for evaluation and loop in LEAP Patient Navigation team (HepB@mssm.edu or # HepB) to assist with scheduling, education, and barriers to care.
HBV Patient Navigation

- Identifying HBsAg+ not in care
- Outreach & navigation to first Liver appointment

- September–December found ~170 HBsAg+ patients,
  > 40% not in care

- Methodology partially inspired by NYC DOHMH Check Hep B program
Future Direction: HBV Care Coordination

• Mirrors HCV model
• Follow patients for 1 year (2 visits)
• Re-engage as needed
One study found only 40% of HBsAG+ patients tested with manual order for HDV Ab, compared to 99% with reflex testing.

## Implementation Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many stakeholders</td>
<td>Iterative process; Involve PCP, EMR IT, QI leadership</td>
</tr>
<tr>
<td>Complex logic</td>
<td>Working closely with IT</td>
</tr>
<tr>
<td>Provider complaints and concerns</td>
<td>Set up feedback mailbox; Test alert in pilot clinic</td>
</tr>
<tr>
<td>Patients alarmed by notification</td>
<td>Turn off patient-facing alerts for now</td>
</tr>
<tr>
<td>PCPs want age limit</td>
<td>18-79 limit for now</td>
</tr>
<tr>
<td>Confusion over which tests to order</td>
<td>Auto-select tests &amp; relevant diagnosis; Provider education; New panel with all 3</td>
</tr>
</tbody>
</table>
Ideas for Smaller Settings

- Find a way to automate screening and involve whole team
- E.g., designate nurse to chart review daily panel and flag charts
- Include in appointment reminders
- MA offers screening during vitals check & nurse pends order
- Provider tip sheets and peer outreach
- Waiting room posters (CDC and NYC DOHMH) and cards
- Referral pathway to GI/Liver/ID or LEAP
Planning New Screening Policy in Your Health System

- Buy-In & Implementation
- Stakeholders
- Local Epidemiology
- Official Guidelines
- Existing Practices
Have a Patient with Hep C or Hep B?

Contact the LEAP Patient Navigation and Care Coordination Team:

LEAP@mssm.edu
212-824-9727
www.mountsinai.org/hepatitisc

English and Spanish
Summary

HCV
• Screen all adults at least once
• Link positive patients to care or treat yourself

HBV
• Vaccinate all adults under 60
• Case for universal screening in NYC
• Link HBsAg positive patients to hepatology

Case Study
• Avenues to increase screening and care rates in your practice or hospital system
Thank You/Any Questions?