Viral Hepatitis in the U.S.:
Focus on Hepatitis B Prevention and Control

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Hepatitis B United Summit

Carolyn Wester, MD, MPH
Director, Division of Viral Hepatitis, NCHHSTP / Centers for Disease Control and Prevention
Outline

- Update on CDC’s Division of Viral Hepatitis
- Burden of Viral Hepatitis
- Focus on Hepatitis B Prevention and Control
  - Vaccination
  - Testing and linkage to care and treatment
  - Education
CDC’s Division of Viral Hepatitis
Viral Hepatitis Funding Flat

Appropriated Funding for CDC’s Viral Hepatitis Program

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<th>FY</th>
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<td>2013</td>
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Burden of Viral Hepatitis
Millions of Americans Have Viral Hepatitis

- Massive public health burden
  - 862,000 infected with Hepatitis B
    - 66% unaware
  - 2.4 million infected with Hepatitis C
    - 44% unaware

- New infections on the rise
- Major cause of morbidity and mortality
- Substantial health inequity
- Disconnect between burden & resources

Viral Hepatitis Incidence Increasing

Source: National Notifiable Diseases Surveillance System (NNDSS)

Doubling of number of pregnant women with HCV
CDC Continues to Work with States to Control Hepatitis A Outbreaks

Since 2016:

- > 22,000 cases
- > 13,000 hospitalizations
- > 220 deaths
- Primarily affecting people who use drugs and people experiencing homelessness

Source: CDC, National Notifiable Diseases Surveillance System.
Geographic Correlation of Opioid Prescriptions, Drug Overdose Deaths, and HCV Infections

Opioid prescribing rates, by county, 2016
Rate per 100 persons

Drug overdose death rates, by county, 2016
Rate per 100,000 persons

Rate of reported new HCV infections, by county, 2016
Rate per 100,000

Source: CDC Surveillance Data
The Syndemic of Acute HCV and Opioid Abuse (≤ 30 year olds in KY, TN, VA, WV)

Source: MMWR, May 2015
Rates of HCV Infection Among Women with Live Births, United States and Kentucky

Source: MMWR, July 2016

Number of babies born exposed to HCV on the rise
Hepatitis B Spikes in Areas Hit Hard by Opioid Crisis

FIGURE 1. Incidence of acute hepatitis B virus infection, by year—United States and Kentucky, Tennessee, and West Virginia, 2006–2013

Source: MMWR, January 2016
Estimated Total Cases of Acute Viral Hepatitis in the U.S. (Reported and Estimated not Reported), 2010 – 2017

Source: CDC, National Notifiable Diseases Surveillance System

*The reported number of cases were adjusted for under-ascertainment and under-reporting to show estimated cases not reported.
Lack of Awareness of Infection Among People Living with Hepatitis B and Hepatitis C in the U.S.*

*Awareness of infection among individuals > 6 years old; Source: NHANES 2013-2016.
Viral Hepatitis Death Rates*, United States 2013 - 2017

Rates* among disproportionally affected populations

- **Hepatitis C (total = 0.5)**
  - AI/AN = 11.3
  - Blk = 7.1
  - Hisp = 5.3

- **Hepatitis B (total = 0.5)**
  - As/PI = 2.5
  - Blk = 0.8
  - AI/AN = 0.7

Source: CDC 2017 Viral Hepatitis Surveillance Report (provisional); *Death rate per 100,000 population. 

AI/AN = American Indian / Alaskan Native; Blk = Black, non-Hispanic; Hisp = Hispanic; As/PI = Asian / Pacific Islander.
Hepatitis B: Vaccination
Acute Hepatitis B Infections Decline then Stabilize

Source: CDC, National Notifiable Diseases Surveillance System
Incidence of Acute Hepatitis B by Age Group, United States

Source: CDC, National Notifiable Diseases Surveillance System
Hepatitis B Vaccine Recommendations

- **Childhood vaccination**
  - All infants, 1991
    - Birth dose, 2005
  - All children and adolescents < 19 years of age who have not been vaccinated

Source: https://www.cdc.gov/vaccines/vpd/hepb/index.html
Estimated Hepatitis B Vaccination Coverage

Source: National Immunization Survey, CDC

Healthy People
2020 Target = 90%
Hepatitis B Vaccine Recommendations

- Screening of all pregnant women
  - All infants born to HBsAg+ women
    - Accelerated birth dose + HBIG
      - HBIG alone is ~71% effective
      - Hepatitis B vaccine alone is ~75% effective
      - HBIG and hepatitis B vaccine combined is ~94% effective

Source: https://www.cdc.gov/vaccines/vpd/hepb/index.html
U.S. Perinatal Hepatitis B Prevention Program (PHBPP)

- In 1990, CDC funded the PHBPP
  - Funded in CDC immunization cooperative agreements (Section 317 funding)

- Programs in 64 jurisdictions
  - 50 states, 6 cities, 5 territories, 3 island nations

- PHBPPs aim to:
  - Identify all hepatitis B-infected pregnant women
  - Ensure timely receipt of infant post-exposure prophylaxis
  - Ensure infant post-vaccination serologic testing
  - Ensure revaccination of infants with non-response to hepatitis B vaccine
National Trends in PHBPP Indicators, 2008-2016

(Provisional)
Identified Births to HBsAg-positive Women Compared to Total Expected Births to HBsAg-positive Women, 2008-2014

CDC, Perinatal Hepatitis B Prevention Program
Incidence of Acute Hepatitis B by Age Group, United States

Source: CDC, National Notifiable Diseases Surveillance System
Hepatitis B Vaccine Recommendations

- Groups at increased risk of HBV infection, including:
  - People at risk for infection by sexual exposure
  - People who share needles, syringes, or other drug preparation equipment
  - People with chronic liver disease
  - People with HIV infection
  - People who are in jail or prison
  - International travelers to countries where hepatitis B is common

Source: https://www.cdc.gov/vaccines/vpd/hepb/index.html
Of people reporting risk factors:

- **37.1% IDU**
- **27.3% multiple sex partners**
- **6.3% sexual contact**

Source: CDC, National Notifiable Diseases Surveillance System
Hepatitis B: Testing & Linkage to Care
U.S. HBV Continuum of Care, 2011

Cohen, PLoS 2011
Supplemental Perinatal Prevention Projects

2013-2015: Supplemental project (CDC-RFA-PS13-1307)
- $1.2M total for 3 years ($200K / year / site)
- 2 sites (MI, NYC)

- Program Elements
  - Proportion of HBsAg+ pregnant women who received evaluation for and access to HBV treatment during pregnancy
  - Infant outcomes
  - Facility-based reporting of hepatitis B “birth dose” vaccine coverage

- $2,000,000 ($80,000 / year / site)
- 5 sites (GA, PA, MI, NY, WI)

- Program Elements
  - Increase identification of Hepatitis B-infected pregnant women
  - Improve proportion infants receiving post-vaccination serologic testing
  - Ascertain factors associated with perinatal hepatitis B transmission and vaccine response
Community Based HBV Testing & Linkage to Care Programs

2012–2014: 9 Sites Project
   – 9 locations: NYC, Sacramento, San Francisco, Chicago, Jacksonville, San Diego, OR, MN, OH
   – Sites partnered with healthcare centers and community-based organizations

   ▪ Program Elements
     – Focus on HBsAg testing among foreign-born persons
     – Referral to care if HBsAg+

2014–2017: 3 Cities Project
   – NYC, Chicago, Sacramento

   ▪ Program Elements
     – Improve capacity of healthcare providers to serve populations of persons born in countries with high HBV prevalence
       • Increase testing of non-US-born persons for HBV
       • Increase vaccination of susceptible persons
       • Increase linkage to ongoing, high quality HBV-directed care for persons identified with HBV
**Demonstration Project Deliverables**

**U.S. Hepatitis B Continuum of Care, 2011**

- Number of chronic HBV infections: 100%
- Number aware of their infection: 33%
- Number entering into care: 15%
- Number of annual HBV prescriptions: 3%

**3 Cities Hepatitis B Continuum of Care, 2014-2017**

- HBsAg Positive: 100%
- Linked to Care*: 85%
- Engaged in Care†: 78%
- Retained in Care**: 57%
- Prescribed Antiviral‡: 18%

Cohen, PLoS 2011

Harris, MMWR 2018
Partnership to Combat Transmission of HBV (OMH, HHS, CDC)

  - $3.0M for up to 3 years
  - 7 awards

- **Program Elements:**
  - Encourage collaboration:
    - Academic partners, community-based minority-serving organizations, local service organizations
  - Develop model comprehensive hepatitis B programs that:
    - End transmission of HBV (perinatal, children, and adults), and
    - Reduce morbidity and mortality attributable to ongoing HBV infection
Hepatitis B: Education
Know Hepatitis B Campaign

Multilingual campaign developed by CDC & Hep B United
• Launched in 2013 with new phases ~ each year

- **Goal**: Increase testing for chronic Hepatitis B
- **Audience**: Asian Americans
- **Languages**: Chinese, Korean, Vietnamese
- **Channels**: TV, radio, print, digital ads
- **Patient Education Materials**: videos, posters, infographics, flyers, fact sheets, cards, etc
- **Implementation**: Two prong approach

[www.cdc.gov/KnowHepatitisB](http://www.cdc.gov/KnowHepatitisB)
NATIONAL CAMPAIGN RESULTS

- To date...

461 Million Impressions

~$3.7 Million in Media Value
New “Liver” Video in Chinese, Vietnamese & Korean

HEPATITIS B
New “Doctor” Video for Vietnamese Audiences
Viral Hepatitis Prevention Key Issues

- Test and link to care (HBV) & cure (HCV)
- Reduce spread associated with drug use
- Prevent perinatal transmission
- Implement HBV and HAV vaccination
- Rapidly detect and respond to outbreaks
- Improve surveillance
Thank You!

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