Prevention and Control Issues for Viral Hepatitis: Opportunities for Elimination

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United States Viral Hepatitis Action Plan 2014-2016

- Educate providers and communities to reduce health disparities
- Improve testing, care and treatment
- Strengthen surveillance
- Eliminate transmission of vaccine-preventable hepatitis
- Reduce viral hepatitis caused by drug-use behaviors
- Protect patients and workers from healthcare-associated hepatitis
Role of Public Health in Viral Hepatitis Prevention, Control and Elimination

Us Institute of Medicine, 1988
Progress toward Eliminating Hepatitis A Disease in the United States
Rates of Reported Acute Hepatitis A Cases United States, 1966-2012

1971: 59,606 cases, Rate = 28.9

1996: Vaccine recommended
31,032 cases, Rate = 11.7

2011: 1,398 cases, Rate = 0.4

1996-2011: 95.5% decrease in reported cases

Healthy People 2020 target for hepatitis A: 85% 2-dose coverage

Food associated outbreaks-2013

- Multi-state outbreak associated with frozen pomegranate arils imported from Turkey
  - 165 cases
    - 7% aged <18 years
    - 93% aged ≥18 years
  - Complications
    - Overall 44% hospitalized
      - 18% aged <18 years
      - 45% aged ≥18 years
    - 2 cases fulminant hepatitis
    - 1 case liver transplant

- Ongoing berry-associated outbreaks in multiple European countries

Hepatitis E is Rare in the United States

- Few cases of clinical HEV infection reported
- Of 828 specimens referred to CDC found positive on local testing- 2009-2012
  - 28% HEV anti-IgM+; median age ~ 50 yrs.
  - 18/60 HEV RNA+;
  - 8 Gen 1 (travel-related)
  - 10 Gen 3 (in-country)
- Chronic HEV among immunosuppressed patients
HEV outbreak in South Sudan-2013

- Refugee camps ~110,000 population
- 5,080 cases of acute jaundice
- 61% of cases confirmed as Hepatitis E
- Median age 25 yrs.
- 22 deaths among 211 pregnant women
- Causes - Poor Sanitation
- Vaccination - a potential new intervention

MMWR 2013
Progress toward Eliminating Hepatitis B Disease in the United States

*Health care providers, MSM, IDU, hemodialysis patients, household & sexual partners of persons with chronic HBV, persons in certain institutional settings, e.g., inmates of long-term correctional facilities.

Source: National Notifiable Disease Surveillance System (NNDSS)
Status of WPRO HBV Elimination (1% goal)

Legend
- Red: Program Improvements Required (8)
- Green: Ready for Verification (3)
- Yellow: Serosurvey Planned or Ongoing (14)
- Blue: Verified (11)
Evaluation of Hepatitis B Vaccine Birthdose Practices - Laos

- Birth dose given
- Untrained vaccinators
- Vaccine out of stock
- Errors in deferring vaccination
Estimated New Perinatal Chronic HBV Infections
United States, 1990-2010

900 infants each year develop chronic HBV
Testing omissions, failures
100-150 infants at risk of HBV-related mortality
Elimination of the Risk for Perinatal HBV Transmission

- HepB vaccine least effective for newborns born to mothers with high viral loads (15% failure)

- High HBV viral load: HBeAg+; HBV DNA $\geq 10^8$ copies/mL

- Antiviral treatment during pregnancy can suppress viral load and reduce transmission risk
  - NIH/CDC study ongoing in Thailand

- HBeAg or HBV DNA screening of HBsAg+ mothers is cost effective

- Revise policies for HBV screening of pregnant women
Recommendations for Identification and Management of Persons with Chronic HBV Infection- 2008

- HBV testing for populations with > 2% prevalence
  - Foreign born- (e.g. Asia, Africa)
  - MSM, IDU
  - HIV
  - Candidates for immunosuppression therapy

- Management guidance
  - Contact management
  - Referral for care and treatment

- Screening and treatment cost effective ($29,230/QALY ²)

- USPSTF Grade B- 2014

¹ MMWR 2008; 57 (No. RR-8):1-20; ² Eckman, MH, CID  2011:52
Key Contributors to the Discovery of HCV – 1989-2014

Harvey Alter

Daniel Bradley
Goal: Eliminate HCV Morbidity and Mortality in the United States

- Of 2.7 million HCV-infected persons in primary care
  - 1.47 million will develop decompensated cirrhosis (DCC)
  - 350,000 will develop hepatocellular carcinoma (HCC)
  - 897,000 will die from HCV-related complications

Recent Increases in New HCV Infection

- Between 2007 and 2012
  - 30 states reported increases
  - 15 states had > 200% increase
  - 50% of cases < 30 yrs.
CDC and USPSTF Recommendations for HCV Testing

- **HCV Testing – June 2013**
  - One time screening test for persons born 1945-1965
    - Past or present injection drug use
- **Other risks including**
  - Received blood/organs prior to June 1992
  - Ever on chronic hemodialysis
  - Infants born to HCV infected mothers
  - History of incarceration
  - Persons with HIV

<table>
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<th>Location</th>
<th>Persons Tested</th>
<th>% anti-HCV Positive</th>
<th>% RNA Tested</th>
<th>% RNA Positive</th>
<th>% Referred to Care</th>
<th>% Attended First Appt.</th>
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*Community Health Centers, FQHCs, clinics, hospitals, corrections, homeless

**Preliminary Data
HCV Antibody Test Volume Increased after EMR Prompt- Beth Israel Deaconess Hospital

CDC 1945-1965 testing guidelines
Average = 438 tests/4 weeks

EMR prompt
Average = 1192 tests/4 weeks

Average = 303 tests/4 weeks

Beth Israel Deaconess Medical Center, Boston, MA, Quality Outcomes Data, 6/5/14
Emergency Department HCV Screening: University of Alabama, Birmingham

Results

Total tested for HCV - 1529

- 11% of tested
  - 88% of anti-HCV+

- 68% of RNA tested
  - 53% of HCV RNA+ referred*

- 39% of HCV RNA+*  

*Not part of original project design
Cost-effectiveness of immediately treating hepatitis C patients with evidence of liver disease

Assumptions:
- All-oral treatments
- Treatment cost is $100,000; 90% cure
- Evidence of liver disease refers to Metavir stage 2

Approximately, 800,000 patients nationwide who are in care have evidence of liver disease.
IT TOOK US 25 YEARS TO BRING HIM TO HIS KNEES... NOW LET'S FINISH HIM OFF!...
HCV Elimination Model for the United States

- Elimination requires preventing transmission of incident infections, and curing chronic HCV infections
  - *Reach, test, treat, cure and prevent every case*

- Determine feasibility of eliminating HCV in the US by modeling different elimination strategies
- Compare cost-effectiveness of multiple HCV elimination strategies
- Model will serve as a guide to develop a comprehensive strategy for eliminating HCV in the US
Republic of Georgia

- Significant HCV burden suspected (7%?) but poorly described
  - Small country: 4.7 million (2012)
  - Government motivated to provide care/treatment
  - Combination of injection safety risks

- Partners
  - CDC Platform (GDD); Emory, University, CDC Foundation

- Next Steps/Priorities
  - National Strategy including treatment access program
  - Consider as model country for HCV elimination
Summary
Steps Toward the Elimination of Viral Hepatitis

• National comprehensive planning
  – Vaccination
  – Harm reduction, patent safety
  – HBV and HCV testing, care, and treatment

• Data to detect and interrupt transmission

• Capacity for prevention programs

• Data to evaluate programs and improve performance

• Build partnerships and political commitment
Guidance for the Elimination of Viral Hepatitis

The Next Job for VHPB