Obstacles and Opportunities on Our Path Toward Eliminating Viral Hepatitis

Jonathan Mermin, MD, MPH

National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention
Centers for Disease Control and Prevention
November 28, 2017
THE PATH
Millions of Americans Have Viral Hepatitis

- Massive public health burden
- Major cause of morbidity and mortality
- Substantial health inequity
- Disconnect between burden, attention, resources
- Extraordinary opportunities for public health
Increases in Hepatitis A Vaccine Coverage Led to Declines in Infections

Source: National Notifiable Diseases Surveillance System (NNDSS)
Hepatitis A Outbreaks on the Rise

• Multiple Hepatitis A outbreaks among homeless and PWID, 2017
  – California (649 cases) and Utah (87 cases)
  – 467 hospitalizations and 21 deaths total
  – Michigan (526 cases)
  – 436 hospitalizations and 20 deaths

• Multistate outbreak from frozen strawberries from Egypt, 2016
  – 141 cases in 8 states

• Hawaii outbreak linked to raw scallops from Philippines, 2016
  – 292 cases and 2 deaths

CDC, unpublished data
Acute Viral Hepatitis Cases are Increasing

Source: National Notifiable Diseases Surveillance System (NNDSS)
Approximately 1,800 people die every year from Hepatitis B-related liver disease

Age-adjusted rate of HBV-related deaths by Race/Ethnicity

Hepatitis B has no warning signs because there are often no symptoms.

1 in 12 Asian Americans is infected with Hepatitis B and most don’t know it. An early diagnosis of Hepatitis B is the best way to prevent serious liver problems and even liver cancer. Ask your doctor about getting tested for Hepatitis B today.
Annual deaths from Hepatitis C higher than all other notifiable conditions combined

Source: Ly KN et al, *Clinical Infectious Diseases*, 2016
## Mixed Progress in Moving Toward Elimination

### Progress At-A-Glance

<table>
<thead>
<tr>
<th></th>
<th>2020 Goal</th>
<th>2015 Target$^1$</th>
<th>2014 Baseline</th>
<th>2015 Result</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hepatitis A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase the percentage of children aged 19–35 months who receive ≥2 doses of hepatitis A vaccine</td>
<td>85.0%</td>
<td>62.1%</td>
<td>57.5%</td>
<td>59.6%</td>
<td><img src="arrow.png" alt="→" /></td>
</tr>
<tr>
<td>Reduce the rate$^2$ of reported HAV infections</td>
<td>0.30</td>
<td>0.38</td>
<td>0.39</td>
<td>0.43</td>
<td><img src="circle.png" alt="×" /></td>
</tr>
<tr>
<td><strong>Hepatitis B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase the percentage of infants who receive hepatitis B vaccine within 3 days of birth</td>
<td>85.0%</td>
<td>74.5%</td>
<td>72.4%</td>
<td>72.4%</td>
<td><img src="circle.png" alt="×" /></td>
</tr>
<tr>
<td>Reduce the rate$^2$ of reported acute HBV infections among persons aged ≥19 years</td>
<td>0.50</td>
<td>1.05</td>
<td>1.16</td>
<td>1.38</td>
<td><img src="circle.png" alt="×" /></td>
</tr>
<tr>
<td>Reduce the rate$^2$ of HBV-related deaths</td>
<td>0.48</td>
<td>0.50</td>
<td>0.50</td>
<td>0.45</td>
<td><img src="checkmark.png" alt="✓" /></td>
</tr>
<tr>
<td><strong>Hepatitis C</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the rate$^1$ of reported acute HCV infections</td>
<td>0.25</td>
<td>0.66</td>
<td>0.74</td>
<td>0.81</td>
<td><img src="circle.png" alt="×" /></td>
</tr>
<tr>
<td>Reduce the rate$^2$ of HCV-related deaths</td>
<td>4.17</td>
<td>4.87</td>
<td>5.01</td>
<td>4.91</td>
<td><img src="arrow.png" alt="→" /></td>
</tr>
</tbody>
</table>
OBSTACLES & OPPORTUNITIES
Programmatic Gaps in Preventing HBV

- 1 in 12 Asian Americans are living with hepatitis B
  - 2 out of every 3 don’t know it

- More than 25% of all newborns do not receive hepatitis B vaccination within 3 days of birth

- 40% of infants born to HBV-infected mothers will develop chronic infection
  - Without treatment, a quarter will die from liver disease

- Not enough adults at high risk for hepatitis B infection have been vaccinated
Massive Increase in Opioid Deaths

Over 500,000 people have died from opioid overdose since 1999

Natural and semi-synthetic opioids
like oxycodone or hydrocodone

Synthetic opioids
like fentanyl

National Vital Statistics System
Drug Overdoses and Hepatitis C: Interconnected Epidemics

Drug Overdose Death Rates

Reported New HCV Infections

SOURCE: CDC/NCHS Data Visualization Gallery 2015

SOURCE: CDC National Notifiable Disease Surveillance System 2013-14
Viral Hepatitis, Opioid, and HIV Epidemics Ignite in a Rural Indiana Community

- In Scott County, 599 people were found to be HCV positive and 225 were HIV positive
- Over $100 million in lifetime medical costs
- Outbreak stopped, treatment and prevention hurdles remain
Vulnerable Counties and Jurisdictions Experiencing or At-Risk of Outbreaks

County-level vulnerability to rapid dissemination of HIV/HCV infection among persons who inject drugs (September, 2015) and jurisdictions determined to be experiencing or at-risk of significant increases in hepatitis infection or an HIV outbreak due to injection drug use following CDC consultation (November, 2017).

Legend:
- Vulnerable Counties
- Jurisdictions determined to be experiencing or at-risk of outbreaks

Data Sources:
- ESRF: EUROPA CDC Consultations on Determinations of Need Request
- https://www.cdc.gov/akp/aksa/jurisdictions.html
1. How do we make difference in viral hepatitis elimination given limited resources?

2. How do we continue to synergize viral hepatitis elimination efforts with response to the opioid epidemic?

3. How do we remove barriers to treatment access for everyone living with hepatitis C?

4. How can we implement truly routine HCV and HBV screening in hospitals, clinics, and emergency departments?
Addressing Hepatitis B Virus: Vaccination, Testing and Therapy

Benefits of HBV Testing and Therapy

• U.S. cohorts with treatment had 50% reduction in risk for liver cancer

• Generic version of antiviral therapy is available

Source: National Notifiable Disease Surveillance System (NNDSS)
Example of Emerging Success: Community based programs to test and cure HCV

- Three awardees
  - Maryland Department of Health and Mental Hygiene (Baltimore)
  - Seattle-King County Public Health
  - University of Chicago

- Results – over 2.5 year period, more than:
  - 175,000 unique persons tested
    - 12,700 identified with chronic HCV infection; 2,400 prescribed treatment
  - 250 providers trained
Example of Emerging Success: Community based programs to test and cure HCV

• Challenges

• Lessons Learned
  • Include primary care and sub-specialty clinics and hospitals in partnerships
  • Data managers and IT specialists are needed
  • Surveillance data can be used for case management and linkage to care, but intensive provider outreach vital to make this happen
  • HCV testing activities can have the biggest impact in the shortest time
Examples of Progress Toward Elimination

- Department of Veterans Affairs treated $>92,000$ HCV-infected veterans since 2014 and cured more than 90%

- Cherokee Nation screened 52% of adult population and successfully treated one-third of HCV-infected

- Nationwide, $>600,000$ patients treated with antivirals

Comprehensive Community Action

- Identify areas of need, mobilize community including health and law enforcement sectors

- Comprehensive syringe service programs (SSPs)
  - Substance use treatment; naloxone
  - HIV and hepatitis testing, link to treatment
  - Sterile injection equipment

- SSPs prevent HIV and HCV infection and do not increase drug use or crime

- People who used SSP 5 times more likely to enter drug treatment and 3 times more likely to stop injecting

- Cost saving

HCV Treatment Evolution
From Interferon to Oral Direct Antiviral Agents

1986 | IFN 6 mo: 6%
1998 | IFN 12 mo: 16%
2001 | IFN/RBV 6 mo: 34%
2002 | IFN/RBV 12 mo: 42%
2011-13 | PEG-IFN/RBV 12 mo: 54-56%
2017 | PEG-IFN/RBV + PI 6-12 mo: 70-75%

SVR (%)

>95% cure in 8-12 weeks
Decreasing Cost of Hepatitis C Treatment

• New, more effective treatments are costing less

• Price at which HCV treatment become cost-saving is ~$80,000 (IQR: $60,300-$110,000)
Cure Cascade: HCV Testing, Care, and Treatment Work

- 93% reduction in liver-related mortality
- Prevent 321,000 HCV deaths with birth cohort testing
- Therapy cost saving
- Decreased HCV transmission to others

van der Meer JAMA 2012; Morgan Ann Int Med 2012; Rein CID 2015; Martin, CID 2013 Naggie S, AASLD 2016, Rockstroh, J, AASLD, Chhatwal S, Hepatology 201616
Path to Viral Hepatitis Elimination in the United States

- We have tools
  - Vaccines that protect from HBV and HAV infection
  - New treatments cure HCV
  - Prevention programs work

- With elimination of Hepatitis B and C as public health threats by 2030, 90,000 deaths would be averted

- Creates vision; offers targets


CDC Viral Hepatitis Priorities

- Increase testing and treatment for persons with HBV and HCV
- Reduce spread of HBV and HCV associated with drug use and other common routes
- Prevent perinatal transmission of HBV and HCV
- Improve surveillance and monitor test and cure cascade
- Rapidly detect and respond to outbreaks
Big Kahuna Questions

1. How do we make difference in viral hepatitis elimination given limited resources?

2. How do we continue to synergize viral hepatitis elimination efforts with response to the opioid epidemic?

3. How do we remove barriers to treatment access for everyone living with hepatitis C?

4. How can we implement truly routine HCV and HBV screening in hospitals, clinics, and emergency departments?