Hepatitis C and Liver Cancer

STACEY B. TROOSKIN MD PHD
DIRECTOR OF VIRAL HEPATITIS PROGRAMS
PHILADELPHIA FIGHT COMMUNITY HEALTH CENTERS
PHILADELPHIA, PA
Natural History of HCV Infection

Acute HCV

75-85%

15-25%

Chronic HCV

Hepatic Inflammation

Hepatic Fibrosis

20% in 20 yrs

Cirrhosis

2 – 4% per yr

2 – 5% per yr

Hepatocellular Carcinoma

Hepatic Decompensation

Alcohol, HIV, and hepatitis B may accelerate fibrosis

15-25%

Spontaneous Resolution

www.CDC.gov
Progression of liver disease

Cases of liver cancer are on the rise

Hepatocellular Carcinoma (HCC) is the major histologic type of primary liver cancer
- HCC accounts for greater than 70% of all liver cancers in the US

Liver cancer is the 5th and 8th leading cause of cancer death in men and women, respectively
- 41,000 cancer cases and 29,000 deaths in the United States in 2017

Liver cancer death rates are increasing at a faster pace than any other cancer.

Chronic HCV infection accounts for 21% of liver cancers

Siegel RL. CA Cancer J Clin. 2017
Makarova-Rusher OV. Cancer. 2016
Ryerson AB. Cancer. 2016
Jemal A. J Natl Cancer Inst. 2017
Disparities in liver cancer occurrence in the US by race/ethnicity and state
Epidemiology of HCV in the US

Most common blood-borne infection in the US

- 3.2 million to 5.2 million persons chronically infected
- Birth cohort 1945-1965: 3.27% antibody positive
  - Non-Hispanic blacks: 6.31%
  - Non-Hispanic whites: 2.92%
  - Mexican American/ other: 2.78%

50% to 75% of individuals chronically infected with HCV are unaware of their infection
Sources of Infection for Persons with Newly Diagnosed HCV

- IDU 60%
- Transfusion prior to 1992 10%
- Sexual 15%
- Other 5%
- Unknown 10%

CDC, National Hepatitis C prevention strategy 2001.
Treatment cascade for people with chronic HCV infection

- Chronic HCV-Infected*: 100%
- Diagnosed and Aware‡: 50%
- Access to Outpatient Care‡: 43%
- HCV RNA Confirmed$: 27%
- Underwent Liver Biopsy‖: 17%
- Prescribed HCV Treatment‖: 16%
- Achieved SVR**: 9%

Birth Cohort with high rates of HCV


CDC. MMWR. August 17, 2012, Vol. 61 , No. 4
A new population of young HCV cases is emerging in Philadelphia 2007-2013

Data provided by Dr. Kendra Viner PhD from the Philadelphia Department of Public Health
### Heroin Use Has INCREASED Among Most Demographic Groups

<table>
<thead>
<tr>
<th>SEX</th>
<th>2002-2004*</th>
<th>2011-2013*</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2.4</td>
<td>3.6</td>
<td>50%</td>
</tr>
<tr>
<td>Female</td>
<td>0.8</td>
<td>1.6</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AGE YEARS</th>
<th>2002-2004*</th>
<th>2011-2013*</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-17</td>
<td>1.8</td>
<td>1.6</td>
<td>--</td>
</tr>
<tr>
<td>18-25</td>
<td>3.5</td>
<td>7.3</td>
<td>109%</td>
</tr>
<tr>
<td>26 or older</td>
<td>1.2</td>
<td>1.9</td>
<td>58%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RACE/ETHNICITY</th>
<th>2002-2004*</th>
<th>2011-2013*</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic white</td>
<td>1.4</td>
<td>3</td>
<td>114%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1.7</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANNUAL HOUSEHOLD INCOME</th>
<th>2002-2004*</th>
<th>2011-2013*</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $20,000</td>
<td>3.4</td>
<td>5.5</td>
<td>62%</td>
</tr>
<tr>
<td>$20,000-$49,999</td>
<td>1.3</td>
<td>2.3</td>
<td>77%</td>
</tr>
<tr>
<td>$50,000 or more</td>
<td>1</td>
<td>1.6</td>
<td>60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEALTH INSURANCE COVERAGE</th>
<th>2002-2004*</th>
<th>2011-2013*</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>4.2</td>
<td>6.7</td>
<td>60%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>4.3</td>
<td>4.7</td>
<td>--</td>
</tr>
<tr>
<td>Private or other</td>
<td>0.8</td>
<td>1.3</td>
<td>63%</td>
</tr>
</tbody>
</table>

---

**Heroin Addiction and Overdose Deaths are Climbing**

**Heroin-Related Overdose Deaths**
(per 100,000 people)

**Heroin Addiction**
(per 1,000 people)

The Chronic Hepatitis Cohort Study (CHeCS)  
Doubling of mortality rate, 2007-2013

Death rate per 100 py observation

- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
Evolving HCV Treatment

Adapted from Strader DB. Clin Liver Disease 2012, 1:1; 6-11.
SVR (Cure) Associated with Decreased All-Cause Mortality

530 patients with advanced fibrosis, treated with interferon-based therapy, and followed for 8.4 (IQR 6.4-1.4) years
We can prevent liver cancer!

Birth Cohort based screening

◦ All individuals born between 1945 and 1965 should be tested at least once for HCV
◦ All individuals outside of this cohort with a HCV risk factor should be screened
◦ Cost-effective
◦ 1-time cohort screening would identify about 86% of undiagnosed cases, compared with 21% with risk-based screening

US Preventive Services Task Force: Grade B recommendation

Linkage to care and treatment