Epidemiology of Hepatitis C in Pennsylvania

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Pennsylvania Department of Health

C Change:
A Leadership Summit on HCV Policy in Pennsylvania
May 1st, 2015
“surveillance is the neurologic system of public health that leads the public health in an effective and efficient way”

Donald Henderson (The leader of smallpox eradication in 1970s)
Surveillance of HCV in Pennsylvania

- Hepatitis C is a reportable condition in Pennsylvania

- Most of the hepatitis C reports received in PA NEDSS come through Electronic Laboratory Reporting (ELR) and lack demographic and risk information; therefore these data should be carefully used for programmatic design and evaluation.

- Only reports with acute hepatitis C diagnosis are investigated

- PA NEDSS receives ~ 10,000 new cases of hepatitis C PPI annually, however the distribution of cases has significantly changed.
“There is insufficient understanding about the extent and seriousness of this public-health problem, so inadequate public resources are being allocated to prevention, control, and surveillance programs”
Hepatitis C PPI incidence rate among 15-34 age group vs. all other age groups, Pennsylvania, 2003 – 2010*

*PA-NEDSS data
Hepatitis C PPI reported to Pennsylvania NEDSS by age and sex, 2003*

*PA-NEDSS data
Hepatitis C PPI reported to Pennsylvania NEDSS by age and sex, 2014*
Hepatitis C PPI Incidence by County
Age 15-34, Pennsylvania, 2003 and 2014

*PA-NEDSS data
Matching PA-NEDSS STD cases against HCV cases, 2000-2014

*PA-NEDSS data*
Distribution of HIV With and Without HCV Co-infection Cohorts by Age, Pennsylvania, 2003-2012

- **HIV WITHOUT HCV**
- **HIV WITH HCV**

<table>
<thead>
<tr>
<th>Age at Diagnosis</th>
<th>HIV WITHOUT HCV</th>
<th>HIV WITH HCV</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE 0 TO 12</td>
<td>0.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td>AGE 13 TO 19</td>
<td>3.6%</td>
<td>1.1%</td>
</tr>
<tr>
<td>AGE 20 TO 29</td>
<td>9.3%</td>
<td>20.5%</td>
</tr>
<tr>
<td>AGE 30 TO 39</td>
<td>26.6%</td>
<td>19.5%</td>
</tr>
<tr>
<td>AGE 40 TO 49</td>
<td>30.0%</td>
<td>41.8%</td>
</tr>
<tr>
<td>AGE 50 AND OLDER</td>
<td>18.8%</td>
<td>28.3%</td>
</tr>
</tbody>
</table>
Distribution of HIV With and Without HCV Co-infection Cohorts by Transmission Category, Pennsylvania, 2003 -2012

Percent of Cases

Transmission Category

- MSM
- IDU
- MSM & IDU
- Adult heterosexual contact
- Unknown Risk factor
- Perinatal exposure and others

HIV WITHOUT HCV
HIV WITH HCV
Matching against PA Cancer registry
Age specific incidence of liver cancer among NEDSS population with HCV diagnosis, 2003 to 2010*

PA cancer registry and PA NEDSS*
Ahn: Type C
Alcoholic Cirrhosis With Hepatitis C
Plm: Hepatoma (Hcc) And Cirrhosis
Plm: Hepatoma -. Hepatocellular Carcinoma

HCV related Liver transplants Performed in Pennsylvania 2003-2014*

*Organ Procurement and Transplantation Network
Unadjusted percent of Hospital admissions for cases with primary or secondary hepatitis C diagnosis, Pennsylvania, 2000-2013*

* Pennsylvania Health Care Cost Containment Council (PHC4) data
Hospital visit rate among virally co-infected persons relative to mono-infected persons within the PHC4 hospital billing database, Southeastern Pennsylvania, 1996 - 2010.

L. E. Finn et al., CSTE conference, 2013
Conclusion

- HCV rates are increasing among adolescents and young adults, investigating this new trend is needed to identify risk factors and racial/ethnic groups with higher risk.

- Data from additional sources are needed to help us better understand the epidemic (such as commercial lab data, EMR, etc).

- Access to these data sources may need policy change.

- Most of the discussed consequences of the HCV are readily preventable, if cases are identified and linked to care early in the course of infection.
Hepatitis C Surveillance at the Philadelphia Department of Public Health

Kendra Viner, PhD, MPH

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Formation of the Hepatitis Epidemiology Program (HEP)

- **2005** – First Viral Hepatitis Prevention Coordinator
  - Emphasis on **collaboration** to align local efforts with national Action Plan

- **2012** – The Hepatitis C Allies of Philadelphia (HepCAP) formed
  - Mission: To team up with local HCV specialists and community members to improve the continuum of HCV prevention, diagnosis, care and support in Philadelphia.

- **2013** – Hepatitis surveillance grant awarded
  - HEP investigation forms and protocols created
  - HEP team expanded to include a surveillance coordinator, epidemiologist, and 3 investigators (HEPIs)
  - A Health Alert about HEP sent to all local health care facilities.
  - Case investigation initiated!

- **2015** – HEP now has 2 years of robust surveillance data
Hepatitis surveillance

Communicable Disease Management System

- Workflows created with a line list of patients for each hepatitis investigator

Letter sent to newly reported HCV+ patients and their providers

Patient and provider calls made (4 attempts)

Field visits made, if necessary

Demographic, Clinical, Risk Factor Information obtained

Data entered into CDMS
Newly identified hepatitis-infected individuals reported to PDPH each year

<table>
<thead>
<tr>
<th>Fields</th>
<th>Completeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>gender</td>
<td>98% 99%</td>
</tr>
<tr>
<td>age</td>
<td>99%</td>
</tr>
<tr>
<td>race/ethnicity</td>
<td>8% 99%</td>
</tr>
<tr>
<td>Clinical</td>
<td></td>
</tr>
<tr>
<td>HIV</td>
<td>1% 87%</td>
</tr>
<tr>
<td>diabetes</td>
<td>1% 84%</td>
</tr>
<tr>
<td>Risk Factor</td>
<td></td>
</tr>
<tr>
<td>IDU</td>
<td>8% 87%</td>
</tr>
<tr>
<td>incarceration</td>
<td>8% 87%</td>
</tr>
<tr>
<td>tattoo</td>
<td>7% 87%</td>
</tr>
<tr>
<td>employed med/dent field</td>
<td>0 87%</td>
</tr>
<tr>
<td>health insurance</td>
<td>0 48%</td>
</tr>
</tbody>
</table>
Philadelphia DPH
Hepatitis Surveillance Findings
Investigated HCV cases by race: Philadelphia, 2013-2014

- ~2,500 HCV Ab+ individuals newly reported to Health Dept each year
- ~50% are investigated
Investigated HCV cases by age and gender: Philadelphia, 2013-2014

<table>
<thead>
<tr>
<th>Age group</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1-18</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>19-30</td>
<td>90</td>
<td>89</td>
</tr>
<tr>
<td>31-44</td>
<td>85</td>
<td>177</td>
</tr>
<tr>
<td>45-64</td>
<td>252</td>
<td>545</td>
</tr>
<tr>
<td>&gt;= 65</td>
<td>73</td>
<td>73</td>
</tr>
</tbody>
</table>

Number of Cases
A new population of young HCV cases is emerging in Philadelphia
Investigated HCV cases by age and risk factor: Philadelphia, 2013-2014

- Behavioral risk factors (injection drug use and incarceration) account for most of the hepatitis C cases.

- *Medical includes blood/organ transplants, dialysis, needlesticks, work in medical/dental field*

- <=30 years
  - Medical: 20%
  - IDU: 35%
  - Incarcerated: 21%
  - Sexual: 8%
  - Tattoo: 16%

- 31-44 years
  - Medical: 14%
  - IDU: 32%
  - Incarcerated: 16%
  - Sexual: 11%
  - Tattoo: 27%

- 45-64 years
  - Medical: 10%
  - IDU: 26%
  - Incarcerated: 26%
  - Sexual: 12%
  - Tattoo: 26%

- >=65 years
  - Medical: 4%
  - IDU: 13%
  - Incarcerated: 19%
  - Sexual: 42%
  - Tattoo: 22%
How is the Philadelphia DPH hepatitis surveillance data being used?
To understand patterns of HCV testing and positivity

HCV Positivity

HCV Testing

• HCV screening may not be appropriately targeting all at-risk populations in Philadelphia
To understand current protocols for perinatal HCV testing in Philadelphia

- As HCV rates increase among young IDU, there is increased risk for vertical transmission.
- 5 - 10% of infants born to HCV-positive mothers are unable to clear the infection by 18 months of age.
- CDC recommends screening all pregnant woman with HCV risk factors.
- AASLD and ACOG recommend screening infants born to HCV(+) women for anti-HCV antibody after 18 months
- HCV treatment is approved for children ≥3 years of age.
Most HCV-positive infants are not being screened or linked to care

- 5,288 HCV(+) Women 12-44 yo in Registry

- Assuming a rate of 5.8%, an additional 27 infants would be expected to have developed chronic HCV infection

*Unpublished data – not for distribution*
To assess racial disparities in disease outcomes: Philadelphia, 2003 - 2012

HCV surveillance data (2003-2012) was linked to PA Cancer Registry and PA Death Certificate data on name, address and DOB.

Cancer Registry data was limited to liver cancers (LC).

HCV outcomes were assessed by non-Hispanic black or NH white race/ethnicity.
There are marked disparities in age at event between NH blacks and whites

- Non-Hispanic blacks die from liver cancer at a younger age than whites, while NH whites with HCV die at a younger age than blacks (likely due to drug overdose)

*Unpublished data – not for distribution*
To assess HCV testing practices in Medication Assisted Treatment (MATs) centers

<table>
<thead>
<tr>
<th>Type of Testing Facility</th>
<th># Clients receiving HCV Ab testing, 2011 - 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Test</td>
</tr>
<tr>
<td>MATs</td>
<td>724 (36%)</td>
</tr>
<tr>
<td>Other clinics*</td>
<td>8,557 (74%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9,281</td>
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</tbody>
</table>

*hospitals, health centers, community based organizations

- Duplicate HCV Ab testing is common in Philadelphia’s MAT centers, but few clients are RNA confirmed.
To provide a ‘real-life’ snapshot of how HCV is being managed in a major U.S. urban center (ie. Phila)

- HCV-positive individuals are being lost at all stages of the HCV testing, referral to care, and treatment cascade
In Conclusion

• Our data show that in Philadelphia:
  1. HCV testing may not be appropriately targeted, both geographically and demographically.
  2. HCV testing is not being efficiently regulated (especially in drug treatment centers).
  3. There are profound racial disparities in age at liver cancer and death.
  4. HCV is on the rise among young, white, injection-drug users.

** A very low percentage of HCV seropositive patients are getting the testing, care, and treatment they require. **

• Alex Shirreffs will discuss how these issues are being addressed . . .
Improving the Cascade: Challenges of Moving from Testing to Treatment

Alex Shirreffs, MPH

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Today’s Dialogue: How do we improve the cascade in PA?

Proportion of HCV-Infected Individuals Reaching Successive Stages

- HCV infected (estimate)
- HCV Ab
- HCV RNA
- HCV in medical care
- HCV antiviral treatment

2010 – 2013

Number of Individuals

0 5000 10000 15000 20000 25000 30000

Proportion:
- HCV infected (estimate): 47%
- HCV Ab: 22%
- HCV RNA: 6%
- HCV in medical care: 3%
Hepatitis C Screening

- **Patient Attitudes**
  - I’ve been tested... haven’t I?
  - I don’t need to be tested.

- **Provider Attitudes**
  - My patients aren’t at risk
  - I have enough to do in 20 minutes!

- **Knowledge**
  - Tools to support testing (EMR)
  - New screening guidelines

- **Stigma**
  - Drug use, “bad” behavior
Confirmatory Testing

• **Knowledge**
  - Testing Algorithm

• **It Takes Two!**
  - AB and RNA not always packaged together

• **Resources**
  - Rapid Hep C Test: $20
  - RNA Test: $50-$100+
  - Access to Reflex testing

• **Testing Policies**
  - Rapid testing protocols
  - Institutional settings
    - Jails, Prisons, Drug Treatment
Linkage to Care

Too many steps to get there
  • Challenges of navigating the systems

Knowledge
  • Where to refer people for hep C care
  • What will insurance cover??

Resources
  • Support for Care Coordination

Attitudes
  • Everyone has it, it’s not a big deal
  • My doc told me not to worry
  • I’m just a carrier
Treatment (CURE!)

- We can treat everyone... in theory
  - Cost
  - Restrictions
- Capacity
  - Long process to get tx
  - Do we have enough clinicians to treat everyone with hep C in PA?
- Knowledge
  - AASLD Guidelines
    - How they get translated by different stakeholders
Once we start improving… how do we measure??

Proportion of HCV-Infected Individuals Reaching Successive Stages

- HCV infected (estimate)
- HCV Ab
- HCV RNA
- HCV in medical care
- HCV antiviral treatment

Goes back to the issue of data and surveillance!