Linkage of hepatitis and HIV surveillance systems to improve completeness of injection drug use risk data for co-infected Floridians

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Overview

- Viral Hepatitis in Florida
- HIV in Florida
- Overdose in Florida
- Linkage Methodology
- Results
- Next Steps
Viral Hepatitis Surveillance in Florida

- Division of Disease Control and Health Protection
  - Bureau of Communicable Diseases
  - Bureau of Epidemiology
- Merlin – Reportable Disease Surveillance System
- Electronic Lab Reporting (ELR)
  - Require both positive and negative labs to be reported
Chronic Hepatitis in Florida, 2010–2017

Number of Cases

- Chronic Hepatitis B
- Chronic Hepatitis C

2011: 18,363
2012: 18,363
2013: 18,363
2014: 18,363
2015: 20,000
2016: 26,411
2017: 4,928

1Change to F.A.C. 34D-3 Reporting requirements for hepatitis.
Rates of Chronic Hepatitis by County, 2017

Chronic Hepatitis B

- Rate suppressed, <5 cases
- <10.0
- 10.0–15.0
- 15.1–24.0
- >24.0

Chronic Hepatitis C

- 28.0–100.0
- 100.0–130.0
- 131.1–160.0
- 160.1–190.0
- >190.0
Acute Hepatitis in Florida, 2010–2017

Number of Cases

- **Hepatitis A**
- **Acute Hepatitis B**
- **Acute Hepatitis C**

<table>
<thead>
<tr>
<th>Year</th>
<th>Hepatitis A</th>
<th>Acute Hepatitis B</th>
<th>Acute Hepatitis C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>100</td>
<td>235</td>
<td>110</td>
</tr>
<tr>
<td>2012</td>
<td>100</td>
<td>276</td>
<td>110</td>
</tr>
<tr>
<td>2013</td>
<td>100</td>
<td>235</td>
<td>110</td>
</tr>
<tr>
<td>2014</td>
<td>100</td>
<td>745</td>
<td>276</td>
</tr>
<tr>
<td>2015</td>
<td>100</td>
<td>405</td>
<td>276</td>
</tr>
<tr>
<td>2016</td>
<td>100</td>
<td>745</td>
<td>276</td>
</tr>
<tr>
<td>2017</td>
<td>100</td>
<td>745</td>
<td>276</td>
</tr>
</tbody>
</table>

1^Change to F.A.C. 34D-3 Reporting requirements for hepatitis.
Rates of Acute Hepatitis by County, 2017

Acute Hepatitis B

- Rate per 100,000
  - 0.0
  - Rate suppressed, <5 cases
  - 0.1–3.0
  - 3.1–5.0
  - >5.0

Acute Hepatitis C

- Rate per 100,000
  - 0.0
  - Rate suppressed, <5 cases
  - 0.1–3.0
  - 3.1–5.0
  - >5.0
Drug use was the most commonly reported risk factor for acute hepatitis cases in 2017.

- Non-injection drug use
- Injection drug use
- Recent hospitalization
- Incarcerated >24hrs
- Incarcerated >6mo
- Other exposure to someone's blood
- Recent tattoo
- Recent Dental Work
- Recent IV
- Recent hemodialysis
- Accidental needle stick
- Recent body piercing

Drug use was the most commonly reported risk factor for acute hepatitis cases in 2017.
HIV Surveillance in Florida

- Division of Disease Control and Health Protection
  - Bureau of Communicable Diseases
- Enhanced HIV/AIDS Reporting System (eHARS)
  - Document based surveillance system
  - ELR and case report forms
HIV Diagnoses by Year of Diagnosis, 2008–2017, Florida

Year of Diagnosis

Number of Diagnoses

<table>
<thead>
<tr>
<th>Year of Diagnosis</th>
<th>Number of Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>6,058</td>
</tr>
<tr>
<td>2009</td>
<td>5,194</td>
</tr>
<tr>
<td>2010</td>
<td>4,712</td>
</tr>
<tr>
<td>2011</td>
<td>4,667</td>
</tr>
<tr>
<td>2012</td>
<td>4,492</td>
</tr>
<tr>
<td>2013</td>
<td>4,369</td>
</tr>
<tr>
<td>2014</td>
<td>4,599</td>
</tr>
<tr>
<td>2015</td>
<td>4,691</td>
</tr>
<tr>
<td>2016</td>
<td>4,805</td>
</tr>
<tr>
<td>2017</td>
<td>4,949</td>
</tr>
</tbody>
</table>

10 year % change (2008–2017) = 18% decrease
HIV Cases by County of Residence\(^1\) Diagnosed in 2017, Florida

\(^1\)County totals exclude diagnoses from Department of Corrections and Federal Correctional Institutions (N=68).
Definitions of Mode of Exposure Categories

- **MSM**: Men who have sex with men or male-to-male sexual contact. The term MSM indicates a behavior that allows for HIV transmission, it does not indicate how individuals self-identify in terms of sexuality or gender.

- **IDU**: Injection drug use

- **MSM/IDU**: Men who have sex with men or male-to-male sexual contact & injection drug use

- **Heterosexual**: Heterosexual contact with person with HIV or known HIV risk

- **Other Risk**: includes hemophilia, transfusion, perinatal and other pediatric risks and other confirmed risks
Adult (Age 13+) HIV Diagnoses by Mode of Exposure and Year of Diagnosis, 2008–2017, Florida

- 8.1% of those living with HIV have IDU risk
- 5.2% of MSM have IDU risk

![Graph showing Adult (Age 13+) HIV Diagnoses by Mode of Exposure and Year of Diagnosis, 2008–2017, Florida]
Persons Living with HIV (PLWH) in Florida along the HIV Care Continuum in 2016

- **PLWH**: 114,772 (100%)
- **Ever in Care**: 105,895 (92%)
- **In Care**: 84,105 (73%)
- **Retained in Care**: 75,895 (66%)
- **Suppressed Viral Load**: 69,254 (60%)
Overdose in Florida

- Division of Emergency Preparedness and Community Support
  - Bureau of Emergency Medical Oversight
  - Florida Enhanced State Opioid Overdose Surveillance (FL-ESOOS) Program
- National Collaborative for Bio-Preparedness (NCBP) Biospatial tool
- ESSENCE-FL
- Florida Drug-Related Outcomes Surveillance and Tracking System (FROST)
Drug Poisoning Death in Florida\textsuperscript{1}, 2007–2017

\textsuperscript{1}Source: Florida CHARTS
Note: includes ICD-10 Code(s): X40-X44, X60-X64, X85, Y10-Y14
Linkage Between Merlin and eHARS

- Pulled all hepatitis cases between 2010 to 2017
  - Included injection drug use (IDU) and non-injection drug use in the previous 6 months

- Exact match with HIV Data
  - Exact name and date of birth (DOB)
  - Social Security Number and DOB

- Fuzzy match with HIV Data - uses an algorithm that allows “x” mismatches per match component.
  - 2 mismatches in the first name
  - 2 mismatches in the last name
  - 0 mismatches in DOB
Updating IDU risk in eHARS

- Created an ID for the hepatitis cases
  - Profile number
  - Case number
  - Disease code
- Compared event dates between HIV and Hepatitis case
  - Excluded cases where hepatitis occurred after HIV was reported
- Imported all the cases into eHARS
  - Updated IDU risk
Linkage Results

216,995 Hepatitis cases from 2010–2017

10,329 (5%) hepatitis cases matched eHARS

2,899 (28%) cases had hepatitis added in eHARS

206,666 (95%) hepatitis cases did not match to eHARS

7,430 (72%) cases already had hepatitis indicated in eHARS
Updating IDU Risk Through Linkage

93 of matched hepatitis cases had IDU risk in Merlin

31 (33%) Hepatitis cases occurred prior HIV diagnosis

7 (23%) cases had IDU added as a risk in eHARS

62 (66%) Hepatitis cases occurred after HIV diagnosis

24 (77%) already in both systems

369 cases without IDU risk in Merlin had IDU indicated in eHARS
HIV/HBV\(^1\) Co-infected Adult (Age 13+) Diagnoses by Sex and Mode of Exposure, 2017, Florida

<table>
<thead>
<tr>
<th>Mode of Exposure</th>
<th>Male (N=233)</th>
<th>Female (N=46)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSM</td>
<td>64%</td>
<td>0%</td>
</tr>
<tr>
<td>IDU</td>
<td>6%</td>
<td>24%</td>
</tr>
<tr>
<td>MSM/IDU</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>19%</td>
<td>65%</td>
</tr>
<tr>
<td>Other Risk(^2)</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>3%</td>
<td>11%</td>
</tr>
</tbody>
</table>

\(^1\)Source: Hepatitis B (HBV) data, which includes both acute and chronic cases reported in 2017 were generated from MERLIN as of 7/30/2018.

\(^2\)Other Risk includes hemophilia, transfusion, perinatal and other pediatric risks as well as other confirmed risks.
HIV/HCV\(^1\) Co-infected Adult (Age 13+) Diagnoses by Sex and Mode of Exposure, 2017, Florida

<table>
<thead>
<tr>
<th>Mode of Exposure</th>
<th>Male N=373</th>
<th>Female N=96</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSM</td>
<td>57%</td>
<td>0%</td>
</tr>
<tr>
<td>IDU</td>
<td>14%</td>
<td>46%</td>
</tr>
<tr>
<td>MSM/IDU</td>
<td>12%</td>
<td>0%</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>10%</td>
<td>49%</td>
</tr>
<tr>
<td>Other Risk(^2)</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>6%</td>
<td>5%</td>
</tr>
</tbody>
</table>

\(^1\)Source: Hepatitis C (HCV) data, which includes both acute and chronic cases reported in 2017 were generated from MERLIN as of 7/30/2018.

\(^2\) Other Risk includes hemophilia, transfusion, perinatal and other pediatric risks as well as other confirmed risks.
Impacts for Prevention and Next Steps

- Surveillance
  - Continued improvement of Merlin “smart” case definitions
  - Regular linkages between Merlin and eHARS
  - Incorporate hepatitis status in surveillance of molecular HIV clusters
- Linkage to care for individuals identified to be living with HIV and Hepatitis C
- Utilizing overdose data to direct vaccination and outreach
  - NCBP Biospatial and other tools
Questions?

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