Infectious Diseases and the Opioid Epidemic

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Death Rates* for Two Selected Causes of Injury
North Carolina, 1968-2016

1989 – Pain added as 5th Vital Sign

*Per 100,000, age-adjusted to the 2000 U.S. Standard Population
α - Transition from ICD-8 to ICD-9
β - Transition from ICD-9 to ICD-10

Source: Death files, 1968-2016, CDC WONDER
Analysis by Injury Epidemiology and Surveillance Unit
In 2016, nearly 5 North Carolinians died each day from unintentional medication or drug overdose.

In 2016, for every 1 opioid overdose death, there were just under 2 hospitalizations and nearly 3 ED visits due to opioid overdose.
INFECTIOUS COMPLICATIONS
Infectious Complications

• HCV, HBV and HIV

• Bacterial infections
  – Endocarditis
  – Sepsis
  – Bone/joint infections
  – Invasive group A strep
  – Wound infections

• Hepatitis A

• Etc.
Syndemics

• A set of linked health problems involving two or more afflictions, interacting synergistically, and contributing to excess burden of disease in a population.

• Occur when health-related problems cluster by person, place, or time.
Syndemics

Viral Hepatitis, HIV Infections

Addressing the Syndemic
- Expand access to treatment (substance use, infections, mental health)
- Expand access to syringe service programs, harm reduction services
- Identify and address stigma/disparities

Substance Use Disorders

Endocarditis/Bacterial Infections
Acute HCV Rates in North Carolina and United States, 2000–2017

*HCV case definition changed in 2016.

Acute HCV County Rates in North Carolina 2017

Rate per 100,000 population
- 0.0
- 0.1 - 2
- 2.1 - 5
- 5.1 - 10
- >10

Data Source: North Carolina Electronic Disease Surveillance System (NC EDSS) (data as of June 3, 2018).
Chronic HCV County Rates in North Carolina 2017

Rate per 100,000 population

- 0.0 - 100
- 100.1 - 200
- 200.1 - 300
- 300.1 - 500
- >500

Data Source: North Carolina Electronic Disease Surveillance System (NC EDSS) (data as of June 3, 2018).
Acute HBV Rates in North Carolina and United States, 2000–2017

Acute HBV County Rates in North Carolina 2017

Data Source: North Carolina Electronic Disease Surveillance System (NC EDSS) (data as of June 3, 2018).
North Carolina HIV Infection Rates by Year of Diagnosis, 2000–2017

*Based on most recent address in eHARS as of December 31 of the given year.

**New cases are only among adults and adolescents (13 years and older).


*Unknown risk has been redistributed. This includes people classified as MSM/IDU.

Data Source: enhanced HIV/AIDS Reporting System (eHARS) (data as of June 27, 2017).
Scott County, Indiana
Hepatitis A Outbreaks, 2016–19

• Large, prolonged, expensive

• Common risk factors:
  – Drug use (not only injection)
  – Homelessness
  – (MSM)

• Many sub-crises within the outbreaks
  – Restaurant exposures
  – Facility outbreaks (e.g. correctional)
Hepatitis A Outbreaks, 2016–19

Michigan (Aug 2016):
• 889 cases
• 722 hospitalizations (80%)
• 28 deaths
Hepatitis A Outbreaks, 2016–19

California (Nov 2016):
• 704 cases
• 461 hospitalizations (65%)
• 21 deaths
Hepatitis A Outbreaks, 2016–19

Utah (Jan 2017):
- 280 cases
- 152 hospitalizations (54%)
- 2 deaths (?)
Hepatitis A Outbreaks, 2016–19

Kentucky (Aug 2017):
• 2,410 cases
• 1,267 hospitalizations (53%)
• 16 deaths
Missouri (Sept 2017):
• 213 cases
• 93 hospitalizations (44%)
• 0 deaths
Hepatitis A Outbreaks, 2016–19

Indiana (Nov 2017):
- 603 cases
- 273 hospitalizations (45%)
- 2 deaths
Hepatitis A Outbreaks, 2016–19

Tennessee (Dec 2017):
• 394 cases
• 238 hospitalizations (60%)
• 1 death
Hepatitis A Outbreaks, 2016–19

Ohio (Jan 2018):
• 813 cases
• 513 hospitalizations (63%)
• 1 death
Arkansas (Feb 2018):
• 182 cases
West Virginia (Mar 2018):
- 1,275 cases
- 892 hospitalizations (52%)
- 5 deaths
Massachusetts (Apr 2018):
- 132 cases
- 111 hospitalizations (82%)
- 2 deaths (?)
North Carolina (Jan 2018):
• 57 cases
• 43 hospitalizations (75%)
• 1 death
Hepatitis A Outbreak in North Carolina

As of January 14, 2019:
- 57 cases
- 43 hospitalized (75%)
- 1 death
Risk Factors among Outbreak-Associated Cases

- Homelessness: 17
- MSM: 10
- Drug Use: 16
- No Known Risk Factors: 9
Hepatitis A Response

- Increase vaccine coverage in high-risk groups
- Identify and work with partners
  - Substance treatment facilities
  - Jails and prisons
  - Health care facilities (STD clinics, CBOs, etc.)
  - Syringe service programs
  - Others?
Did you know **HEPATITIS A** liver infections are on the rise in North Carolina? If you are experiencing homelessness, use drugs or are a man who has sex with men, you are most at risk.

Hepatitis A is spread when small, undetectable amounts of feces (poop) get into your mouth. You can get hepatitis A:

- By swallowing food or drink contaminated with the virus.
- Through oral or anal sex.
- By touching surfaces or objects contaminated with the virus, then putting your hands in your mouth.

Hepatitis A can also be spread by sharing drug injection equipment.

Ask your doctor or local health department about the hepatitis A vaccine.
Drug-Associated Endocarditis Hospitalizations, 2007-2018

Number of Hospital Discharges

>10-fold increase since 2013
## Endocarditis: Patient Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age at hospital admission (yrs)</strong></td>
<td></td>
</tr>
<tr>
<td>18–25</td>
<td>82 (16)</td>
</tr>
<tr>
<td>26–40</td>
<td>245 (49)</td>
</tr>
<tr>
<td>41–60</td>
<td>131 (26)</td>
</tr>
<tr>
<td>&gt;60</td>
<td>47 (9)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>240 (48)</td>
</tr>
<tr>
<td>Female</td>
<td>265 (52)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>465 (92)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7 (1)</td>
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<tr>
<td>Unknown</td>
<td>33 (7)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>41 (8)</td>
</tr>
<tr>
<td>White</td>
<td>440 (87)</td>
</tr>
<tr>
<td>Other</td>
<td>24 (5)</td>
</tr>
<tr>
<td><strong>Geographic classification</strong>*</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>302 (60)</td>
</tr>
<tr>
<td>Urban</td>
<td>75 (15)</td>
</tr>
<tr>
<td>Regional City</td>
<td>128 (25)</td>
</tr>
<tr>
<td><strong>Other infections</strong></td>
<td></td>
</tr>
<tr>
<td>Hepatitis C virus (HCV)</td>
<td>181 (36)</td>
</tr>
<tr>
<td>Human immunodeficiency virus (HIV)</td>
<td>7 (1.4)</td>
</tr>
</tbody>
</table>
23 year-old with history of IV heroin and methamphetamine use disorders admitted with MRSA endocarditis

August 2012
- Admitted to area hospital with endocarditis
  - Discharge to skilled nursing with IV antibiotics
  - Reports last drug use 2 months prior

September 2012 (25 d LOS)
- Transferred to OHSU with abscess surrounding aortic root and lungs
  - Heart surgery to repair aortic and mitral valves
  - SW consult
    - Limited engagement
    - Encouraged to seek SUD treatment
  - Discharged with #120 tabs of hydromorphone

October- Nov 2012 (5d LOS)
- Readmitted with chest wall pain
  - Pain control with plan to taper
  - SW re-consulted; had not engaged in SUD treatment, grieving boyfriend death

Feb 2013
- Septic shock to ICU
  - Blood pressure 90s → 50s
  - Heart failure with infection around aortic valve
  - PEA arrest x2
  - Died with family at bedside

Despite extensive physical health care and hospital staff best effort, no SUD expertise in the hospital

http://www.nationalacademies.org/hmd/~media/Files/Activity%20Files/PublicHealth/Opioid-Workshop/England-Honora.pdf
Drug User Health

ARE YOU AWARE THAT:

80% of PWID have experienced discrimination in health care settings

Source: AIVL online discrimination survey results, Oct 2012
Drug User Health

- Race
- Education
- Sexuality
- Ability
- Age
- Gender
- Ethnicity
- Language
- Culture
- Class
Drug User Health

Myths:

✓ People who use drugs don’t care about their health
✓ People who use drugs can’t manage medication routines
✓ People who use drugs are only interested in getting narcotics / opiates
✓ People who use drugs “brought their health condition upon themselves” and thus don’t deserve quality care
Roles for Public Health

• Remove barriers to access
  – Identify and address stigma, disparities
  – Support/engage bridge counselors
  – Use non stigmatizing language
  – Address integrative health care, rather than one risk

• Promote prevention
  – Provide/support harm reduction services and education
  – Hep A and B vaccines
  – HBV, HCV, HIV, STD testing
Roles for Public Health

- Surveillance and response
  - Better tracking of infections, sharing of data
  - Improve identification and investigation of transmission/outbreaks in drug use networks
  - Identify at-risk groups, link to services

- Be the convener for community partners