Update on the Lowell/Lawrence HIV Outbreak Among People who Inject Drugs

Massachusetts Public Health Council
April 3, 2019

Kevin Cranston, MDiv
Assistant Commissioner
Director, Bureau of Infectious Disease and Laboratory Sciences
Massachusetts Department of Public Health
Where it all started: under the Casey Bridge in Lawrence
Distribution of Confirmed and Probable Hepatitis C Cases by Age: 2007 Versus 2015

Data Source: MDPH, Bureau of Infectious Disease and Laboratory Sciences, data are current as of 8/9/17 and subject to change.
Trends in the Percentage Distribution of Individuals Diagnosed with HIV Infection by Selected Exposure Mode\(^1\) and Year of Diagnosis: Massachusetts, 2007–2016

---

\(^1\) Values less than five are suppressed to protect privacy

N=6,972, 2007–2016; HTSX=heterosexual sex, IDU= injection drug use, MSM=Male-to-male sex, NIR=no identified risk, Pres. HTSX=Presumed Heterosexual Sex, Data Source: MDPH Bureau of Infectious Disease and Laboratory Sciences; Data as of 1/1/18.
Diagnoses of HIV among PWID had been decreasing in MA through 2014
These diagnoses have been increasing since 2015
Outbreak in Lawrence and Lowell accounted for an increasing proportion of HIV infections among PWID in Massachusetts 2015-2017
Fatal opioid overdoses increased over time in Massachusetts through 2016
Higher rates of increase seen in Lowell/Lawrence
Fentanyl detection increased among fatal opioid overdoses Massachusetts 2014-2017

Percent of opioid-related deaths with specific drugs detected on post-mortem toxicology testing – MA, 2014-2017

- Fentanyl
- Likely heroin
- Prescription opioid
- Benzodiazepine
- Cocaine
“If I don’t have a needle, they did but it was already used and they’d be like “do you care?” and I was like no. And I only said no only being like dope sick or just wanting the next fix.”

“We were all taught it’s gonna die after, like, 3 or 5 seconds after hitting the air. So we would pull out the plunger and just like wait and then put it back in and use it.”

“I shoot up and then next thing I know I’m feeling really sick, and I start talking… to my girlfriend, like “was there like coke in this dope? stay away from me, I’m mad at you.” I was pissed at her… And then she’s like “I just narcan’ed you twice.””

Principle risk: OVERDOSE
“We were all taught it’s gonna die after, like, 3 or 5 seconds after hitting the air. So we would pull out the plunger and just like wait and then put it back in and use it.”

“Misconceptions of risk

“If I don’t have a needle, they did but it was already used and they’d be like “do you care?” and I was like no. And I only said no only being like dope sick or just wanting the next fix.”

“I shoot up and then next thing I know I’m feeling really sick, and I start talking… to my girlfriend, like “was there like coke in this dope? stay away from me, I’m mad at you.” I was pissed at her… And then she’s like “I just narcan’ed you twice.””
“We were all taught it’s gonna die after, like, 3 or 5 seconds after hitting the air. So we would pull out the plunger and just like wait and then put it back in and use it.”

“I shoot up and then next thing I know I’m feeling really sick, and I start talking... to my girlfriend, like “was there like coke in this dope? stay away from me, I’m mad at you.” I was pissed at her... And then she’s like “I just narcan’ed you twice.””

“If I don’t have a needle, they did but it was already used and they’d be like “do you care?” and I was like no. And I only said no only being like dope sick or just wanting the next fix.”

“Low threshold for risk taking

“We were all taught it’s gonna die after, like, 3 or 5 seconds after hitting the air. So we would pull out the plunger and just like wait and then put it back in and use it.”
The Case Definition

HIV infection diagnosed January 2015 to June 2018

Epidemiological Criteria

In a person who injects drugs who...

In Lawrence or Lowell

Molecular Criteria

≤1.5%
Case Demographics

Age at diagnosis
- ≤19 – n=1 (1%)
- 20-29 – n = 50 (39%)
- 30-39 – n = 44 (34%)
- 40-49 – n = 23 (18%)
- ≥50 – n = 11 (9%)

Sex at birth
- F – n = 55 (43%)
- M – n = 74 (57%)

Race / ethnicity
- Hispanic / Latino – n = 38 (29%)
- White N/H – n = 87 (67%)
- Black N/H – n = 4 (3%)
- White – N/H – n = 87 (67%)
- Hispanic / Latino – n = 38 (29%)
- Other – n = 1 (1%)

Sex at birth
- M – n = 74 (57%)
- F – n = 55 (43%)

Race / ethnicity
- White – n = 87 (67%)
- Hispanic / Latino – n = 38 (29%)
- Black N/H – n = 4 (3%)
- Other – n = 1 (1%)

Sex at birth
- M – n = 74 (57%)
- F – n = 55 (43%)

Race / ethnicity
- White – n = 87 (67%)
- Hispanic / Latino – n = 38 (29%)
- Black N/H – n = 4 (3%)
- Other – n = 1 (1%)

Sex at birth
- M – n = 74 (57%)
- F – n = 55 (43%)

Race / ethnicity
- White – n = 87 (67%)
- Hispanic / Latino – n = 38 (29%)
- Black N/H – n = 4 (3%)
- Other – n = 1 (1%)
Most cases had evidence of current or past hepatitis C infection.

Data as of 7-11-2018
Molecular analysis linked many new cases to the investigation.

- Molecular links only - 29 (22%)
- Molecular & Epi links - 73 (57%)
- Epi links only - 27 (21%)

129 Cases
Molecular surveillance is used to determine transmission networks

- HIV polymerase gene sequenced in routine care
- Similar sequences grouped
- Transmission NETWORKS
- **NOT** Directionality of infection

Secure HIV-TRACE
Molecular surveillance is used to determine transmission networks and link cases to an outbreak.

Initial outbreak line-list

Transmission networks identified through molecular analysis

Add cases in same network as others with known epi link
Molecular analysis linked many new cases to this investigation.

- Initial outbreak line-list
- Transmission networks identified through molecular analysis
- Add cases in same network as others with known epi link

86 cases on initial line list

129 cases epidemiologically or molecularly linked
HIV positive case
HIV positive non-case
HIV negative
HIV status unknown
Injection partner
Sex partner
Other contact
NS – No sequence available
NML – Not molecularly linked to ≥1 other case

Molecular Clusters
A, B, C, D, E, F, G, H, I

- Red: HIV positive case
- Red star: HIV positive non-case
- Blue: HIV negative
- Grey: HIV status unknown
- Line with diagonal slash: Injection partner
- Red line: Sex partner
- Dashed line: Other contact

NS – No sequence available
NML – Not molecularly linked to ≥1 other case
Lowell/Lawrence HIV Cluster Epi Curve

- **Outbreak cases**
- **Cumulative Number of Cases**

Date of diagnosis

- Jan-15
- Mar-15
- May-15
- Jul-15
- Sep-15
- Nov-15
- Jan-16
- Mar-16
- May-16
- Jul-16
- Sep-16
- Nov-16
- Jan-17
- Mar-17
- May-17
- Jul-17
- Sep-17
- Nov-17
- Jan-18
- Mar-18
- May-18

Cumulative Number of Cases

- 0
- 20
- 40
- 60
- 80
- 100
- 120
- 140
Viral Suppression among Lowell/Lawrence Cluster Cases

- **Unknown Status**
- **Not Virally Suppressed ≥200cp/mL**
- **Virally Suppressed <200 cp/mL**
- **Cumulative Number of Cases**
Conclusions

HIV has emerged despite availability of services

Fentanyl has increased opportunity for HIV transmission through more frequent injection

Molecular surveillance helped characterize the outbreak

Partnerships with community stakeholders vital
Public Health Response:

- **Clinical alerts (and attendant media)**
  - Statewide alert about increasing HIV diagnoses in PWID (November 2017)
  - Joint alert with City of Boston about new HIV cluster in PWID (January 2019)
  - Following identification of Worcester PWID cluster, statewide outbreak declaration (February 2019)

- **Stakeholder engagement**
  - Local health, first responders, clinicians, HIV services providers, homeless services providers

- **Epi Aid support from CDC (started May 2018)**
  - Boston Public Health Commission lent their assigned EIS Officer, Dr. Charles Alpren

- **Molecular HIV surveillance initiated**
  - Increased case count linked to Lowell/Lawrence by 50%

- **Stakeholder and user interviews**
  - Source of considerable contextual information

- **Doubled state field epidemiology capacity**
  - Follow-up on all newly diagnosed and out-of-care HIV cases

- **$1.7M contractual investment in region**
  - Expanded testing and linkage services, new/expanded SSPs, user-level harm reduction materials, shelter support, first responder training on MAT access, additional ethnographic investigation
Locally approved Syringe Services Programs in Massachusetts (as of March 2019, n=33)
Thank you

kevin.cranston@state.ma.us