

Highlights from the NDEWS New Hampshire HotSpot Study

Summary

The Phase 1 HotSpot study of available data, including a 3 day site visit with experts and practitioners in New Hampshire, was conducted in June 2016. Remaining questions prompted expanded Phase 2 substudies of persons who died from fentanyl-related overdoses and of users and responders.

What Was Learned

- Many types of fentanyl mixtures of varying potency are available in the local drug market.
- Most fatal overdose victims were White, male, aged 20–39, and alone when they took their fatal dose.
- Toxicology tests showed decedents tested positive for multiple drugs.
- Some users:
 - actively sought fentanyl or products known to cause overdose;
 - believed that obtaining treatment was difficult; and,
 - reported a lack of knowledge about naloxone and a fear of physical side effects.
- Fatal overdose victims who were age 40 or older, living alone, opiate naïve, or living in non-urban townships were less likely to have access to emergency services care, naloxone administration, or transport to hospital
- First responders and users reported the need for additional resources such as needle exchange, medication assisted treatment/detox, and other treatment services.

Implications for Public Health

- 1) Based on interviews and medical examiner case reviews, fentanyl appears to be the primary cause of increased overdose in New Hampshire, possibly as a result of fentanyl's potency and inconsistency in fentanyl/heroin mixes.
- 2) Providers and responders must eliminate barriers to naloxone use and increase availability of treatment.
- 3) Although users expressed a fear of physical side effects from naloxone, neither users nor responders had observed any common side effects from naloxone administration other than precipitated withdrawal.
- 4) Providers must diagnose and treat multiple drug use disorders in fentanyl users and provide comprehensive treatment.

Overview

An NDEWS HotSpot study (Phase 1) was launched in 2016 in response to the sharp increase in illicit fentanyl-related overdose deaths in New Hampshire. These deaths climbed from 145 in 2014 to 362 in 2016 and constituted a public health emergency.

NDEWS researchers reviewed available data and met with local scientists and practitioners in New Hampshire during a 3 day site visit. This HotSpot study underscored the scope and severity of the fentanyl problem but raised several questions about the outbreak.

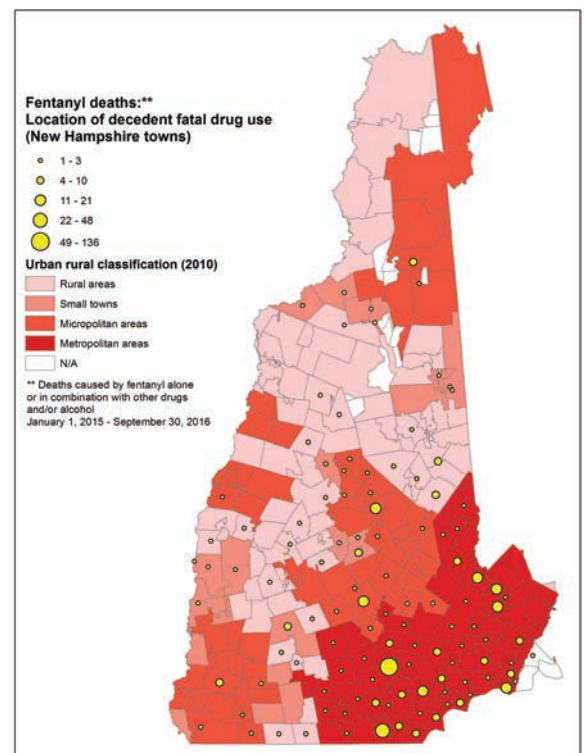
To address these questions and with additional support from NIDA, NDEWS launched an expanded

Phase 2 HotSpot study. Two local scientists conducted rapid substudies into why and how people use fentanyl and the nature of local responses to address the outbreak. One substudy examined medical records and medical examiner investigations for persons who died from fentanyl-related overdoses. The second substudy conducted systematic interviews of first responders, emergency department personnel, active fentanyl users, and individuals new to treatment.

These HotSpot studies were intended to provide information useful to New Hampshire and to other states dealing with similar outbreaks.

This report presents highlights from the standard HotSpot study and the two substudies.

Figure 1: Most Fentanyl-related Overdoses Occurred in Metro Areas



Phase 1: Existing Data and Site Visit

An analysis of existing data and a brief site visit to New Hampshire

Data Sources

HotSpot Planning Committee of 10 experts; a review of available public health and law enforcement data including fentanyl-related deaths, opioid-related treatment admissions and Emergency Department visits, 911 suspected opioid overdose cases, law enforcement seizures, and items seized by law enforcement testing positive for fentanyl; and a 3-day site visit in June 2016 including discussions with more than 40 local experts (Figure 2).

Selected Highlights

- Fentanyl-related deaths increased approximately 150% from 2014 to 2016 (145 to 362) and accounted for more than three quarters of all drug deaths in 2016. (p. 3)
- The percentage of fentanyl reports from law enforcement items seized increased from less than 1% of all items seized in 2011–2013 to nearly 13% in 2015 and 18% in 2016. (p. 6)
- During the site visit, local experts described many different types of fentanyl mixtures varying in potency available in New Hampshire. They reported a shift from heroin with fentanyl to fentanyl with heroin to fentanyl with a variety of drugs. (p. 28)
- Most experts agreed that the typical fentanyl user is White, male, and a young adult. Users also tend to be poly drug users. (p. 28)

Phase 2: Fentanyl-related Deaths

A study of fentanyl-related deaths, 2015–2016

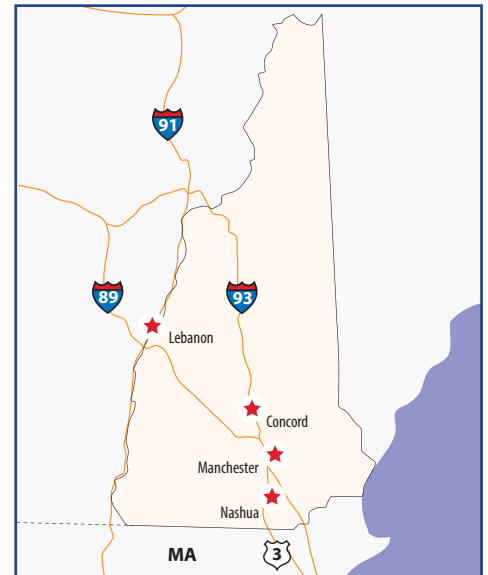
Data Sources

A review of medical and toxicology records for 505 persons who died in New Hampshire (regardless of residence) from a fentanyl-induced overdose from January 1, 2015 to September 30, 2016; additional NDEWS laboratory analyses of urine specimens from 136 decedents; and, geospatial analyses of 540 fentanyl-related deaths by NDEWS collaborators.

Selected Highlights

- The mean age of decedents was 36.2, 78% were males, 78% had a high school degree/GED or less education and 95% were White. (p. 19)
- Majority of decedents were alone when they took their fatal dose (63%) and/or when they died (58%). (p. 22)
- Death investigator reports indicate that at least 63% had a history of opioid abuse, largely through injection (57%) and heroin use (82%), 9.5% had a history of chronic pain, and 13% had a prior overdose. (pp. 19–20)
- 911 was called in 93% of the cases, and EMS responded in 62%. Naloxone was administered in 12% of cases, mainly by EMS personnel. (p. 23)
- Females were more likely to have had a prescription for an opioid in the last 12 months and to have had an EMS response. (p. 25)
- Geospatial analyses conducted by NDEWS indicated that most deaths occurred in metropolitan areas of the state with greater populations and nearer to highways; Manchester had the largest population in Hillsborough County and had 47% of the overdoses (Figure 1). (p. 18)
- Blood and urine toxicology results showed that 90% had more than one drug present, 20% had 10 or more drugs and one specimen had 19 substances; the average number of parent drugs identified in each decedent's blood was 6.2; the NDEWS urinalysis study of 136 urines found an average of 2.9 key drug categories per specimen. (p. 21, Table 8)
- Most commonly detected drugs in decedents were fentanyl (98%), heroin/morphine (21%), non-fentanyl opioids (34.5%), cocaine (31%), benzodiazepines (28%), and alcohol (33%). (Table 7)

Figure 2: New Hampshire Sites Visited by NDEWS HotSpot Planning Committee Members



Source: Adapted by NDEWS from the National Atlas of the United States (US Geological Survey)

Phase 2: Experiences and Perspectives of Users, First Responders, and ED Personnel

Interviews with users, first responders, and ED staff

Data Sources*

Users: Semi structured interviews with a sample of 20 active fentanyl users or persons new to treatment for opioid use disorders from Hillsborough County (10) and 2 each from the counties of Cheshire, Grafton, Rockingham, Strafford, and Sullivan.

Most of the 20 users were White males with a high school/GED education or less. 90% or more reported ever using alcohol, marijuana, cocaine, prescription opioids, heroin, or fentanyl. First use of marijuana, cocaine, or prescription opioids typically occurred before the onset of heroin or fentanyl use. More than 90% had prior treatment for opioid use disorder.

First Responders/ED Personnel

(R/ED): A sample of 12 persons—3 emergency department personnel, 3 emergency medical services (EMS) personnel, 3 fire personnel, and 3 police.

Semi structured interviews with primarily White males, average age of 47.8 years, employed for an average of 18.5 years. The median number of overdoses responded to was 219 (range of 30–1,000), and they had administered naloxone an average of 89 times.

(The full study sample involved 76 persons from the above categories but this NDEWS report focuses only on the interviews with the 20 users and the 12 responders described earlier.)

*The people interviewed were part of small convenience samples and are not necessarily representative of all groups studied.

Selected Highlights

- Fentanyl appears to be the primary cause of increased overdose, possibly as a result of fentanyl's potency and inconsistency in illicit drug products. (p. 42)
- The three main trajectories to opioid use were: 1) early recreational use of drugs, 2) opioid prescriptions for pain management, and 3) intergenerational use of opioids. (p. 27)
- Some users reported actively seeking fentanyl and that there were many ways they could distinguish heroin from fentanyl including sight, taste, effect, and cost. (pp. 32, 34)
- There was general agreement that the drugs causing overdoses came from China and Mexico and that demand is driven by fentanyl's lower cost, higher potency, and availability. (p. 40)
- Users reported significant barriers to accessing and using naloxone, including high costs, fear of police, and stigmatization, lack of knowledge, and fear of side effects. (p. 58)
- R/ED personnel agreed that side effects of naloxone, beyond anger associated with withdrawal, have not been observed. (p. 61)
- There was unanimous support among users and R/ED personnel for needle exchange programs as a harm reduction strategy and users were in favor of greater availability of Suboxone®. (pp. 63, 70)

USER COMMENTS

Intergenerational Use:

“...I have cousins that have died of heroin overdoses; my aunts and uncles are alcoholics and drug addicts. It was in my family.”

Seeking Fentanyl:

“Some people want a consistent high, other people look for the rush. Me, I kind of like both... so fentanyl seems to be what I seek now.”

Naloxone:

“...you don't want someone Narcanning you when you don't think that you need it because it feels really horrible.”

“...Pretty much every time I've overdosed, and everybody that I know has overdosed, has said, 'I wasn't overdosing. I was just really high, and you ruined it.' But then the paramedic's there saying, 'No, no, you were dead.'”

Need for Treatment:

“...the hardest part is getting treatment right when you need it, when you're ready and then help paying for the treatment.”

“Although there are a lot of different treatment facilities out there ... the problem is that they're nearly impossible to get into. I had to call and call, and call. I tried to get in treatment centers for six months and either they were full or they didn't take my insurance, or I hadn't used long enough, or I wasn't using the right drug, or I didn't live in the right town. I didn't make enough money or just whatever... It took me forever. It seemed like no matter what I tried or where I turned, I could not get help.”

Selected Highlights continued:

- Responders and users acknowledged that persons unable to stop using benefitted from help but noted a lack of available services in New Hampshire and waiting lists at treatment programs. (p. 66)
- Few responders offered treatment referrals at the scene of an overdose because of staffing shortages, limited knowledge of treatment options, and a dearth of treatment slots. (p. 66)
- Both users and R/EDs wanted more treatment options, including medically assisted treatment, counseling and treatment for co-occurring mental health problems. (p. 68)
- Both users and R/EDs expressed uncertainty and doubts about New Hampshire's Good Samaritan Law. (pp.59,79)

FIRST RESPONDER COMMENTS

“We’re seeing a lot more [overdoses] than we ever did. It was always kind of scattered, small numbers every year, and tended to be people who we would consider to be chronic drug users, but that doesn’t seem to be the case...now.”

“Overdoses in days gone by would have taken place in people’s homes or apartments, and now we’re seeing them in public parking lots, cars.”

All NDEWS HotSpot reports are available online at:
<http://ter.ps/NDEWSHotSpot>

Study Leaders

Phase 1: Existing Data and Site Visit

NDEWS Coordinating Center staff led Study 1 and provided analytical support for studies 2 and 3. Erin Artigiani analyzed existing data and conducted the site visit for Study 1. Researchers from Dartmouth and the University of Maine provided analytical and organizational support. Dr. Eric Wish, NDEWS PI, conducted urinalyses for Study 2. Dr. Kathleen Stewart, Director of the University of Maryland Center for Geospatial Information Science, conducted geospatial analyses for Phase 2 fentanyl-related deaths analyses.

Phase 2

Fentanyl-related Deaths

Dr. Marci Sorg is a research professor at the Margaret Chase Smith Policy Center at the University of Maine and is a medical and forensic anthropologist specializing in health policy, particularly as it concerns public health, public safety, and the investigation of death and injury. She directs the Center’s Rural Drug and Alcohol Research Program, which monitors epidemiological indicators of substance abuse, particularly drug related deaths. Dr. Sorg is a board-certified forensic anthropologist, serving the state offices of chief medical examiner in Maine, New Hampshire, Delaware, and Rhode Island in the recovery and examination of human remains.

Interviews with Users, First Responders, and ED Personnel

Dr. Lisa Marsch is the director of the Dartmouth Center for Technology and Behavioral Health, a designated “Center of Excellence” supported by the National Institute on Drug Abuse at the National Institutes of Health. She is also the director of the Northeast Node of the National Drug Abuse Clinical Trials Network based out of Dartmouth and the Andrew G. Wallace Professor within the Department of Psychiatry at the Geisel School of Medicine at Dartmouth College.

The National Drug Early Warning System (NDEWS) is a National Institute on Drug Abuse (NIDA)-supported public health surveillance system designed to enable health experts, researchers, and concerned citizens across the country to respond quickly to potential outbreaks. When NDEWS identifies a locality experiencing a rise in drug-related overdose deaths, hospital admissions or other public health emergency, staff may launch a rapid HotSpot study. NDEWS is supported by Cooperative Agreement U01DA038360, awarded to the Center for Substance Abuse Research (CESAR) at the University of Maryland, College Park. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Study Reports

Phase 1

NDEWS Coordinating Center. October 2016. *NDEWS New Hampshire HotSpot Report: The Increase in Fentanyl Overdoses.*

Phase 2

Marcella Sorg, PhD; Jamie Wren, MPH; Kathleen Stewart, PhD, and Yanjia Cao, MS. July 2017. *Unintentional Fentanyl*

Overdoses in New Hampshire: An NDEWS HotSpot Analysis.

NDEWS Coordinating Center. February 2017. *NDEWS New Hampshire HotSpot Studies: Overview and Initial Results.*

Andrea Meier, MS, LADC, LCMHC; Sarah K. Moore, PhD; Elizabeth C. Saunders, MS; Stephen A. Metcalf, MPhil; Bethany McLeman, BA; Samantha Auty, BS; and Lisa A. Marsch, PhD. June 2017. *NDEWS HotSpot Report: Understanding Opioid Overdoses in New Hampshire.*