

# **NDEWS New Hampshire HotSpot Report**

**The Increase in Fentanyl Overdoses**

NDEWS Coordinating Center  
October 14, 2016

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## *Acknowledgements*

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This report was produced by the NDEWS Coordinating Center staff and includes two special reports prepared by staff at the University of Maine and Dartmouth College. We are grateful to the substance abuse experts and practitioners who assisted us with this project by helping to plan the site visit, participating in site visit meetings, and sharing data and other information. Without their support and assistance, this report could not have been completed as part of a rapid 10-week study. We would like to thank the specific staff listed here who served as members of the NDEWS HotSpot Planning Committee and/or provided access to data and information for this report:

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## Abstract

The National Drug Early Warning System (NDEWS) is a NIDA-supported public health surveillance system designed to monitor emerging drug use trends to enable health experts, researchers, and concerned citizens across the country to respond quickly to potential outbreaks. NDEWS has implemented a variety of ways for detecting emerging drugs or drug use patterns, including scanning published news reports, monitoring Web-based discussions and tweets, establishing 12 sentinel community sites with local epidemiologists, operating the NDEWS Network of more than 1200 participants, and monitoring poison center listservs. Although these methods all contribute to the NDEWS Coordinating Center's ability to detect drug outbreaks from afar, there is no substitute for being able to study onsite the nature of a drug outbreak. HotSpot studies enable NDEWS staff to launch rapid, limited onsite investigations of an important drug outbreak in a specific locality. Each HotSpot study includes a 3–5-day site visit by NDEWS scientists to gather additional data and descriptive information that can be used to help interpret the information collected and analyzed by NDEWS staff prior to the site visit. An integral component of the HotSpot approach is that NDEWS convenes a Planning Committee composed of NDEWS staff and local experts who help to plan the site visit and arrange meetings with persons who can provide the most useful information. The study team is multidisciplinary and may be composed of scientists, public health practitioners, and law enforcement personnel, as the situation requires.

After discussions with NIDA staff, this first NDEWS HotSpot Study was undertaken in May 2016 to investigate the reported increases in fentanyl use and fentanyl-related deaths in New Hampshire (NH) and to improve characterization of the impact of recent trends. This investigation involved developing an understanding of a range of available administrative data, commissioning special assessments of opioid-related overdose deaths and drug treatment admissions, and conducting a site visit.

### Methods

To initiate this study, we built a New Hampshire contact list to identify 31 NDEWS connections and potential information sources in public health and law enforcement. From this list, we convened a HotSpot Planning Committee with 10 members representing NDEWS, University of Maine Margaret Chase Smith Policy Center, Northeast Node of the National Drug Abuse Treatment Clinical Trials at the Dartmouth Center for Technology and Behavioral Health, New England High Intensity Drug Trafficking Area, the New Hampshire Medical Examiner's Office, and the State Opioid Treatment Authority. During a video conference in May 2016, the committee discussed sources for available data, set the goals and objectives of the HotSpot study, designed a strategy for planning and conducting the site visit, and agreed to topic assignments for moving forward. Available public health and law enforcement data were reviewed by NDEWS staff, two reports were commissioned from researchers at Dartmouth College and at the University of Maine, a news media scan was completed, and a 3-day site visit was planned and conducted. Results from each of these activities are summarized in the following sections.

### Results

***Overdose Deaths.*** Fentanyl-related deaths nearly doubled from 2014 to 2015 (145 to 283) and accounted for nearly two thirds of all New Hampshire drug deaths. The commissioned report prepared by Dr. Marcella Sorg and Mr. Jamie Wren, University of Maine, further highlights the increase in drug deaths citing an increase of 1629% in deaths caused by fentanyl and fentanyl analogs from 2010 to 2015, 41% of which occurred in Hillsborough County.

***Emergency Department Visits.*** Data on fentanyl-related emergency department (ED) visits are not currently available. Nevertheless, the number of opioid-related ED visits more than doubled from February to July 2016 (from 317 to 666) and then decreased 20% in August (535). Hillsborough County in Southern New Hampshire is

disproportionately impacted by fatal and nonfatal overdoses, and the majority of ED cases involved young adult males.

**Treatment Admissions.** Ms. Andrea Meier, Ms. Bethany McLeman, and Dr. Lisa Marsch, Dartmouth College, highlight increases in drug treatment admissions in their commissioned report for heroin (including fentanyl), which now exceed prescription opioid admissions at a rate of 155.5 admissions per month to 32 per month in May and April 2016.

**Law Enforcement Seizures.** The number of law enforcement seizures of fentanyl and drug items testing positive for fentanyl also increased. In 2015, the first year fentanyl was seized by NE HIDTA initiatives, 27 kilograms of fentanyl were seized, more than twice the amount of heroin seized. In addition, the percentage of fentanyl reports of all analyzed drug reports increased from less than 1% in 2011–2013 to nearly 13% in 2015.

**News Media Scan.** Even though the available data underscored the increases in overdoses and seizures, the NDEWS News Media Scan provided an important picture of how fentanyl was being portrayed in the local news media. We found a rise in the number of fentanyl-related stories and that in 2015 and 2016, the number of articles mentioning the diversion of legal fentanyl decreased, while the number mentioning illicit fentanyl and fatal overdoses increased. We also noted that the timing of these increases was correlated with politicians' comments about the opioid epidemic during the presidential primary season in New Hampshire and with comments about state and national legislation.

**Site Visit.** Discussions held with local experts during the site visit revealed that many different types of fentanyl mixtures are available in New Hampshire. Most experts we consulted agreed that the typical fentanyl user is White, male, and young adult. Users also tend to be poly drug users. The awareness of users of fentanyl in a drug product and appreciation of the inherent risk of using the drug varied by site.

#### **Gaps in Knowledge and Potential Next Steps**

Important gaps remain in our knowledge about the understanding of the impact of fentanyl in NH, the use of fentanyl by NH residents, and the resources needed to support and educate fentanyl users. Although basic counts of available statistics on overdoses and seizures are regularly reported and discussed by local experts, information about the types of fentanyl currently available and about users and decedents is very limited. Some of the necessary data to address these issues are already available, but time and resources of local agencies have been too restricted to proceed. With additional resources, NDEWS could work with NIDA and local experts to explore potential studies to fill these gaps by conducting in-depth analyses of fentanyl and heroin decedents; systematic interviews with active users, users new to recovery, first responders, and ED personnel; and geospatial analyses of fentanyl deaths in New Hampshire and neighboring states.

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## *Introduction*

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The National Drug Early Warning System (NDEWS) is a NIDA-supported public health surveillance system designed to monitor emerging drug use trends to enable health experts, researchers, and concerned citizens across the country to respond quickly to potential outbreaks. NDEWS has implemented a variety of ways for detecting emerging drugs or drug use patterns, including scanning published news reports, monitoring Web-based discussions and tweets, establishing 12 sentinel community sites with local epidemiologists, operating the NDEWS Network of more than 1200 participants, and monitoring poison center listservs. Although these methods all contribute to the NDEWS Coordinating Center's ability to detect drug outbreaks from afar, there is no substitute for being able to study onsite the nature of a drug outbreak. Fortunately, the NDEWS project has an ability to fulfill this need through the launching of one or more local HotSpot studies each year.

HotSpot studies enable NDEWS staff to launch rapid, limited investigations of an important drug outbreak in a specific locality. Each HotSpot study includes a 3–5-day site visit by NDEWS scientists to gather additional data and descriptive information that can be used to help interpret the information collected and analyzed by NDEWS staff prior to the site visit. An integral component of the HotSpot approach is that NDEWS convenes a Planning Committee composed of NDEWS staff and local experts who help to plan the site visit and arrange meetings with persons who can provide the most useful information. The study team is multidisciplinary and may be composed of scientists, public health practitioners, and law enforcement personnel, as the situation requires.

After discussions with NIDA staff, this first NDEWS HotSpot Study was undertaken in May 2016 to investigate the reported increases in fentanyl use and fentanyl-related deaths in New Hampshire (NH) and to identify possible gaps in knowledge that might be addressed in future research. This study involved three tasks: review available administrative data, commission special reports on trends in overdose deaths and treatment admissions, and conduct a site visit to meet with local experts. This report provides the results of each of these tasks.

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### *I. NDEWS HotSpot Planning Committee*

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To initiate this study, we built a New Hampshire contact list to identify NDEWS connections and potential information sources in public health and law enforcement. NDEWS connections in New Hampshire and northern New England were identified by reviewing the NDEWS Network member list and the NDEWS webinar participant lists and by posting a query to the Network requesting New Hampshire contacts. A total of 12 contacts were identified. In addition, NDEWS Coordinating Center staff spoke with the Maine NDEWS SCE and with staff at the Northeast Node of the Clinical Trials Network (CTN) at Dartmouth College and at the New England High Intensity Drug Trafficking Area (NE HIDTA). As a result of these efforts, 19 additional contacts were identified and members of the HotSpot Planning Committee were recruited. A complete list of these contacts is provided in Appendix B

The Planning Committee was convened to solicit input from local substance abuse experts knowledgeable about fentanyl overdoses in New Hampshire. The Committee included 10 members representing NDEWS, University of Maine Margaret Chase Smith Policy Center, Northeast Node of the CTN, New England High Intensity Drug

Trafficking Area, the New Hampshire Medical Examiner’s Office, and the State Opioid Treatment Authority. A complete list of members is provided in Table 1.

During a video conference on May 27, 2016, the committee discussed sources for available data, set the goals and objectives of the HotSpot study, designed a strategy for planning and conducting the site visit, and agreed to topic assignments for moving forward. The goal was to conduct a rapid, short-term study focused on investigating the reported increases in fentanyl use and fentanyl-related deaths in New Hampshire (NH) and on characterizing the impact of recent trends. This investigation involved exploring a range of available data and commissioning special assessments of opioid-related overdose deaths and drug treatment admissions. The information collected is in this report for use by local substance abuse experts to inform future efforts to address the use of fentanyl in NH. Initial existing reports reviewed included the monthly Drug Monitoring Initiative (DMI) reports from January 2016 (when they were first produced by the NE HIDTA) through June 2016. Additional reports and information were identified and collected during the site visit.

**Table 1: New Hampshire HotSpot Planning Committee Members May 27, 2016**

| <b>Name/Title</b>  | <b>Affiliation</b>   |
|--|--|
| <b>Eric D. Wish, Ph.D., NDEWS PI</b>                         | NDEWS Coordinating Center, CESAR, UMCP   |
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| <b>Lisa Marsch, Ph.D., Director</b>                          | Northeast Node of the National Drug Abuse Treatment Clinical Trials Network Center for Technology and Behavioral Health, Dartmouth College |
| <b>Andrea Meier, MS, LADC, LCMHC, Director of Operations</b> | Northeast Node of the National Drug Abuse Treatment Clinical Trials Network Center for Technology and Behavioral Health, Dartmouth College |
| <b>Kimberly Fortier, Public Health Analyst New Hampshire</b> | New England HIDTA Information and Analysis Center  |
| <b>Ken Bradley, Drug Intelligence Officer</b>                | New England HIDTA Information and Analysis Center  |
| <b>Michael Rogers, Assistant Administrator</b>               | State Opioid Treatment Authority Designee Bureau of Drug and Alcohol Services Division of Community Based Care Services                    |
| <b>Thomas Andrew, MD, Chief Medical Examiner</b>             | NH Medical Examiner’s Office   |
| <b>Kim Fallon, NH Chief Investigator</b>                     | NH Medical Examiner’s Office   |

In addition to working with the Planning Committee, NDEWS Coordinating Center staff also spoke with NDEWS Scientific Advisory Group (SAG) members and partner agencies to initiate information gathering. Thomas Carr, SAG member from Washington/Baltimore HIDTA, provided data on opioid seizures in New Hampshire. Liqun Wong, SAG member from the U.S. Drug Enforcement Administration (DEA), provided the data from the National Forensic Laboratory Information System (NFLIS). Both the HIDTA and the NFLIS data are analyzed later in this report. Furthermore, Laurie Warnock, from the Northern New England Poison Center (NNEPC) and Partnership for Drug Free New Hampshire, provided information on the fentanyl situation from her public health perspective. The NNEPC is part of the American Association of Poison Control Centers, which is a NDEWS partner agency.

## II. Available Public Health and Law Enforcement Data

### Overview:

#### Increases Found in Both Public Health and Law Enforcement Data

There are documented increases in both public health indicators (fatal and nonfatal overdoses, emergency department cases) and law enforcement indicators (seizures, items testing positive) in New Hampshire related to fentanyl and other opioids.

Fentanyl-related deaths surpassed heroin deaths in both 2014 and 2015. Fentanyl-related overdose deaths nearly doubled from 145 in 2014 to 283 in 2015 and accounted for almost two thirds of all drug deaths in NH. Prior to 2014, there were fewer than 20 fentanyl-related deaths each year from 2010 to 2013. Opioid-related emergency department visits increased 70% from February through June 2016. The two most populous cities in New Hampshire have seen increases in both fatal and nonfatal opioid overdoses from the first six months of 2015 to the first six months of 2016. In Manchester, nonfatal opioid overdoses increased 27% and fatal opioid overdoses increased 4%. In Nashua, the increases have been even steeper. Nonfatal opioid overdoses more than doubled from the first six months of 2015 to the first six months of 2016 and fatal opioid overdoses increased 70%.

From 2010 to 2014, no fentanyl was seized by NE HIDTA law enforcement initiatives in New Hampshire. Nevertheless, in 2015, more than 27 kilograms was seized, more than twice the amount of heroin seized. Another source, DEA NFLIS, shows that the percentage of fentanyl reports of all analyzed drug reports increased from less than 1% in 2011–2013 to 12.7% in 2015. Also in 2015, items testing positive for acetyl fentanyl appeared for the first time (199 or 2.9%). In comparison, the number of items testing positive for heroin and oxycodone decreased.

The New Hampshire HotSpot study involved two main components: reviewing available public health and law enforcement data and conducting a site visit to meet with local experts. Available data were reviewed first to assess current fentanyl trends and to identify questions that could be explored with local experts during the site visit. To ensure that the most recent data available were used in this report, additional data and reports were collected during and after the site visit. The following sections highlight findings from available public health and law enforcement data that were reviewed before, during, and after the site visit.

### [Public Health Data on Fatal and Nonfatal Opioid Overdoses](#)

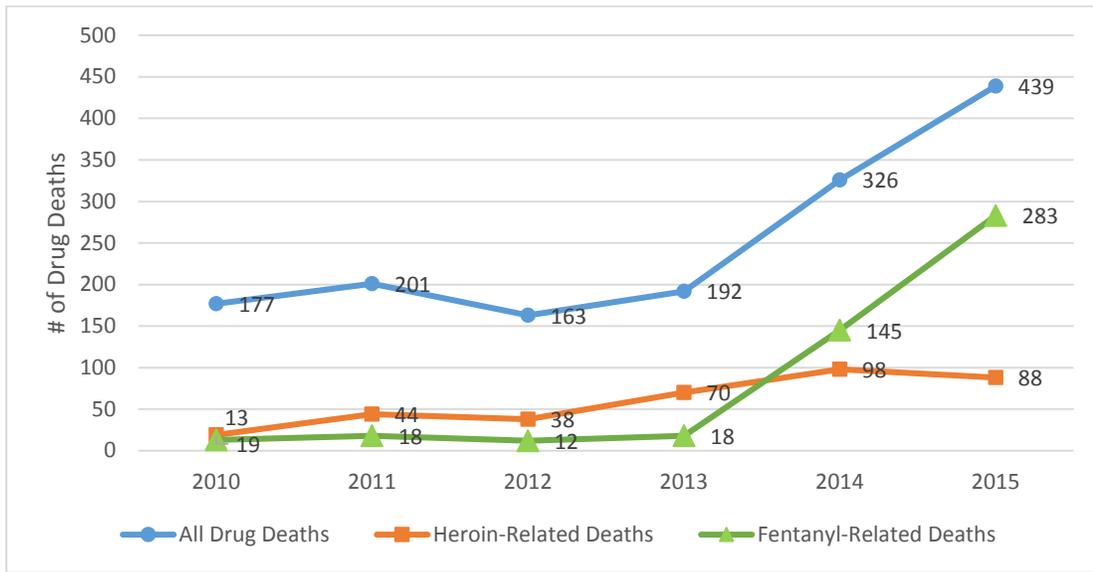
The primary sources for information on overdoses and suspected overdoses are the Office of the Chief Medical Examiner (OCME), emergency room cases, and 911 cases that are reported in monthly reports prepared by the Drug Monitoring Initiative (DMI) and American Medical Response, Inc. (AMR). The only source at this time that can separate cases involving fentanyl from other cases is OCME.

### *Overdose Deaths (source: DMI Monthly Reports)*

The New Hampshire DMI has been tracking overdose deaths in monthly reports since January 2016. The June 2016 report provides final counts for 2015 and initial counts for 2016. As shown in Figure 1, drug overdose deaths doubled from 2012 to 2014 and continued to increase in 2015. Fentanyl-related deaths show an even more dramatic increase from 12 (7% of all) in 2012 to 283 (65% of all) in 2015 and nearly doubled in one year from 2014 to 2015. Nearly two thirds (65%) of drug deaths in 2015 involved fentanyl. The April 2016 monthly report indicates that nearly half (177, 41%) of the 436 drug deaths in 2015 that were documented at that time occurred in Hillsborough County and that 20% occurred in neighboring Rockingham County. Both of these counties are located in the southeastern part of New Hampshire and border Massachusetts. A map showing 2015 deaths by town shows that the towns with the highest numbers of drug deaths were Manchester and Nashua, the two most populous cities in New Hampshire, which are located in Hillsborough County. A similar map depicting 2016 drug overdose deaths reported on September 7, 2016, again shows Manchester with the highest number (>50) of drug overdose deaths. As of September 6, 2016, 241 drug overdose deaths had been recorded, 164 (68%) of which involved fentanyl. A separate analysis of the demographics of 236

drug overdose deaths in 2016 run on September 7 indicates that 70% were male, 29% were 30 years of age or younger, and 32% were 31–40 years of age.

**Figure 1: New Hampshire Overdose Deaths, by Drug and Year, 2010–2015**



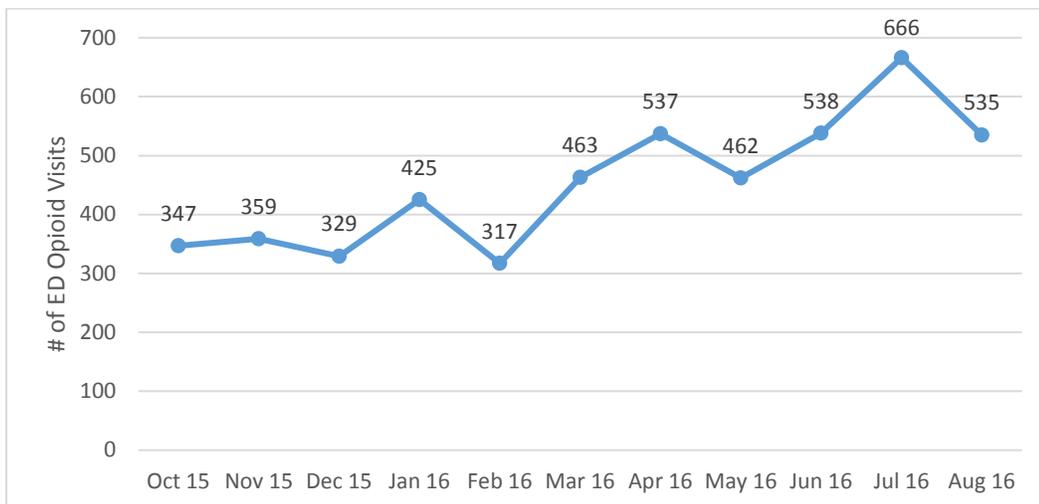
**Source:** Reproduced by NDEWS from DMI May 2016 Report, p. 2; Data provided by NH Medical Examiner’s Office; accessed online July 20, 2016 at <http://www.dhhs.nh.gov/dcbcs/bdas/documents/dmi-may-16.pdf>

**Notes:** Heroin and fentanyl-related deaths are not mutually exclusive. Several deaths involved both drugs.

*Emergency Department Cases (source: DMI monthly reports)*

The DMI monthly reports include data on opioid-related emergency department visits from October 2015 through August 2016. Figure 2 shows the trend in the total number of cases during this time. The highest number/percentage of cases occurred in Hillsborough County each month from November 2015 through August 2016. 40% or more of cases occurred in Hillsborough County in January, March, April, June, July, and August 2016. Approximately two thirds of the cases were 20 to 39 years of age in November and December 2015. In January through August 2016, 70% or more were 20–39. More than 40% were 20–29 each month from January 2016 through August 2016 except for May 2016. More than half of cases were male each month from November 2015 through August 2016 except for February 2016 when there was an equal percentage of males and females.

**Figure 2: New Hampshire Emergency Department Opioid Use Visits, by Month, October 2015–July 2016**



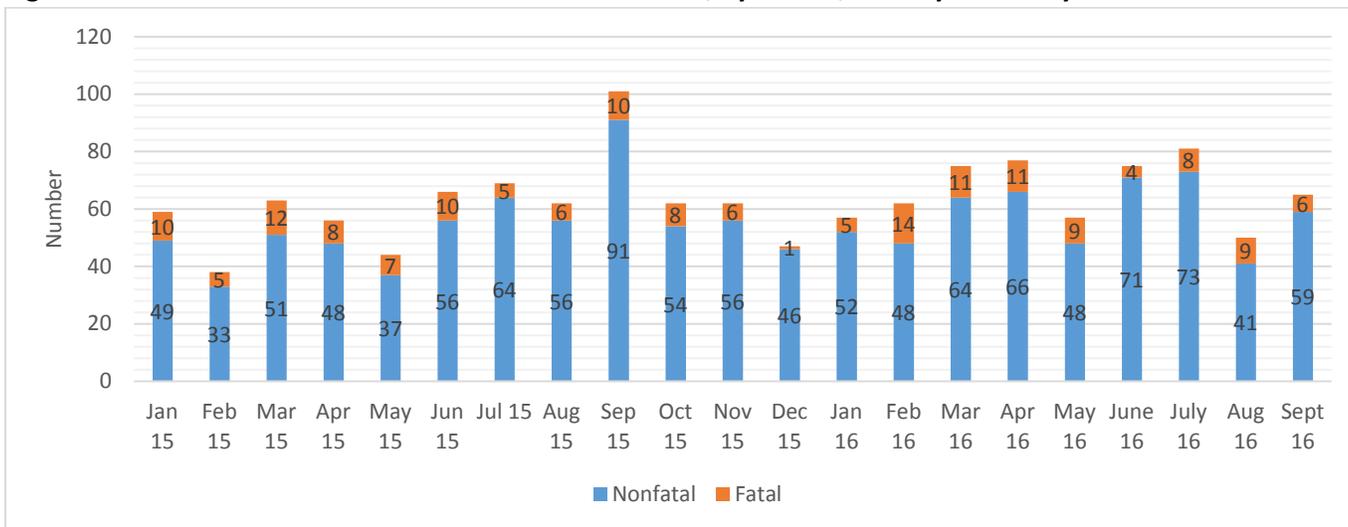
**Source:** Reproduced by NDEWS from DMI June 2016 Report, p. 3; Data provided by NH Division of Public Health Services; accessed online July 27, 2016 at <http://www.dhhs.nh.gov/dcbcs/bdas/document/s/dmi-august-16.pdf>

*911 Suspected Opioid Overdose Cases (source: AMR monthly reports)*

The American Medical Response of MA, Inc., prepares monthly 911 suspected opioid overdose reports for both Manchester and Nashua in Hillsborough County. Data are available for January 2015 through July 2016.

**Manchester.** In Manchester, there were 1,340 cases of nonfatal and fatal opioid overdoses from January 2015 through October 4, 2016; 168 cases (12.5%) were fatal (Figure 3). The peak month was September 2015 when there were 91 nonfatal and 10 fatal suspected overdoses followed by March, April, June, and July 2016. Two thirds of the cases involved males, and nearly three quarters (73%) occurred in a residence. Approximately 34% of the cases occurred on Wednesday or Friday. The number of cases increased over the course of the day with the highest number occurring at 9:00 pm.

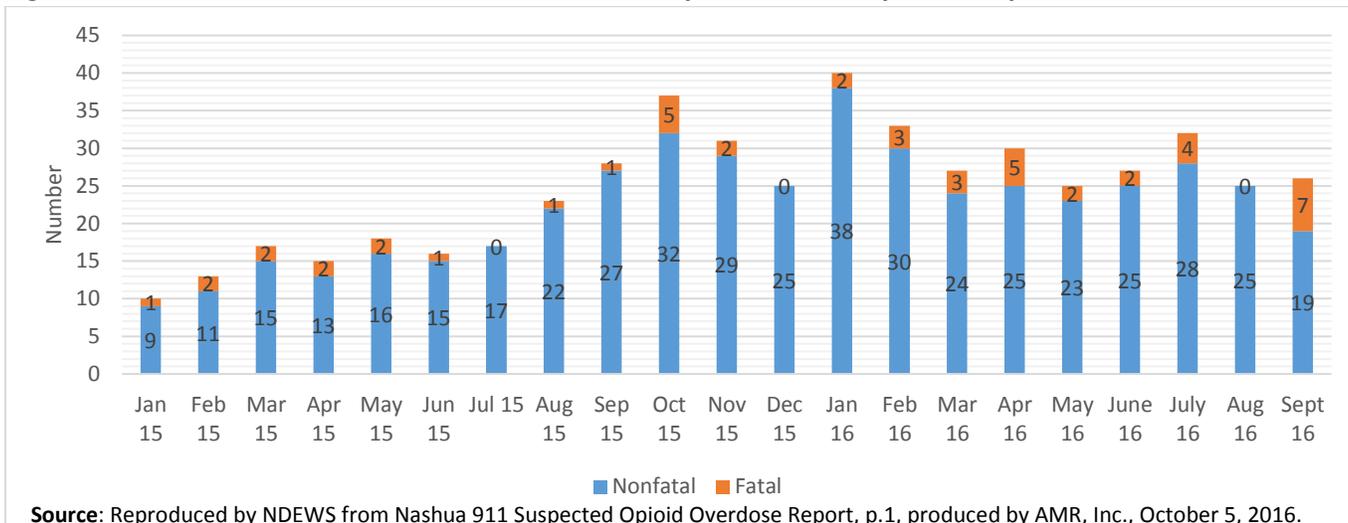
**Figure 3: Manchester Nonfatal and Fatal Overdose Counts, by Month, January 2015–July 2016**



Source: Reproduced by NDEWS from Manchester 911 Suspected Opioid Overdose Report, p. 1, produced by AMR, Inc., October 5, 2016.

**Nashua.** In Nashua, there were 521 cases of nonfatal and fatal opioid overdoses from January 2015 through October 4, 2016; 40 cases (9.6%) were fatal (Figure 4). The peak months were October 2015 when there were 32 nonfatal and 5 fatal suspected overdoses and January 2016 when there were 38 nonfatal and 2 fatal suspected overdoses. More than half (60%) of the cases involved males and three quarters (78%) occurred in a residence. Nearly one in ten occurred in a public area. Almost a quarter (20%) of the cases occurred on Saturday and 16% on Friday. The number of cases varied over the course of the day, but most occurred between 7:00 and 10:00 pm.

**Figure 4: Nashua Nonfatal and Fatal Overdose Counts, by Month, January 2015–July 2016**



Source: Reproduced by NDEWS from Nashua 911 Suspected Opioid Overdose Report, p.1, produced by AMR, Inc., October 5, 2016.

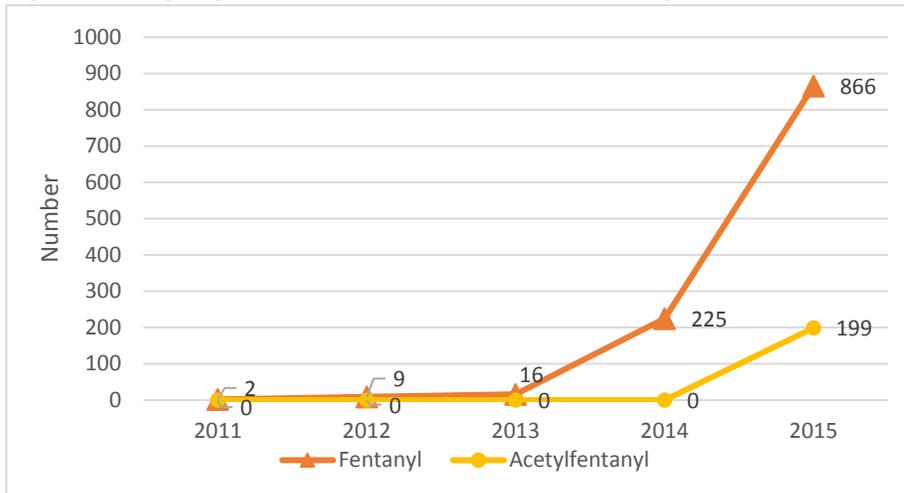
## Law Enforcement Seizures, Arrests, and Other Information

The primary sources for law enforcement information are The Drug Enforcement Administration’s National Forensic Laboratory Information System (DEA NFLIS), The High Intensity Drug Trafficking Area Performance Management Program (HIDTA PMP), annual reports produced by the New England HIDTA (NE HIDTA), and the NE HIDTA New Hampshire Joint Fentanyl Project Report. Key findings from each source are discussed in turn.

### *New Hampshire Drug Item Toxicology (source: DEA NFLIS)*

The number of fentanyl drug reports from items submitted to and analyzed by federal, state, or local forensic labs and included in the NFLIS database increased sharply from 2011 through 2015 and nearly quadrupled from 225 in 2014 to 866 in 2015 (Figure 5). The percentage of fentanyl reports of all analyzed drug reports increased from less than a percent in 2011–2013 to 12.7% in 2015. Also, in 2015, acetyl fentanyl reports appeared for the first time (199 or 2.9%). In comparison, the number of heroin reports decreased approximately 24% from 1,338 in 2014 to 1,017 in 2015, and the number of oxycodone reports decreased 63% from 675 in 2012 to 253 in 2015.

**Figure 5: Drug Reports\* identified from Items Seized by Law Enforcement in New Hampshire, by Year, 2011–2015**



\***Drug Reports:** Drug that is identified in law enforcement items, submitted to and analyzed by federal, state, or local forensic labs, and included in the NFLIS database.

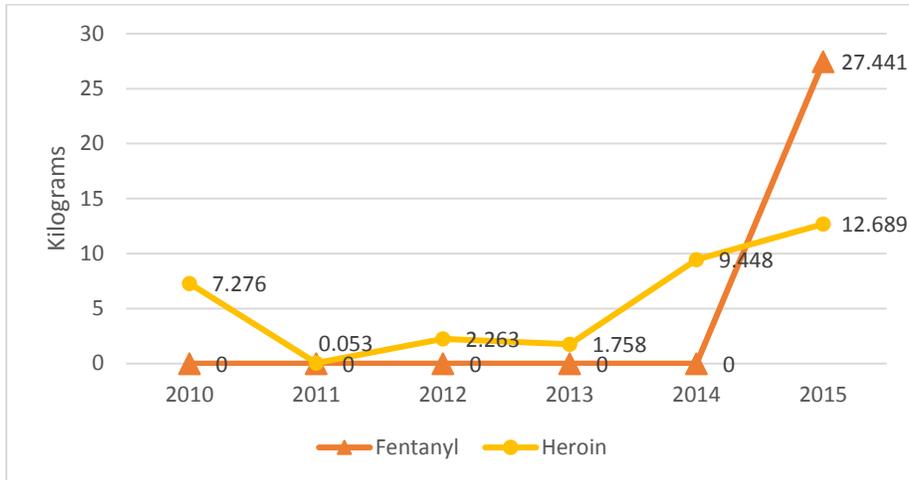
**Source:** Adapted by the NDEWS Coordinating Center from data provided by the U.S. Drug Enforcement Administration (DEA), Diversion Control Division, Drug and Chemical Evaluation Section, Data Analysis Unit. Data were retrieved from the NFLIS Data Query System (DQS). Retrieved from NFLIS DQS May 18, 2016.

### *Drug Seizures by NE HIDTA Initiatives (source: HIDTA Performance Management Program)*

The New England High Intensity Drug Trafficking Area (NE HIDTA) is one of 32 areas designated by the Whitehouse Office of Drug Control Policy that are considered to be significant centers of illegal drug production, manufacturing, importation, or distribution with committed resources to address these problems. The HIDTAs are designed to enhance intelligence sharing and to facilitate cooperation among federal, state, local, and tribal agencies.

The NE HIDTA includes Hillsborough County in southern New Hampshire. Hillsborough County is the location of two major cities—Manchester and Nashua. Figure 6 shows the kilograms of fentanyl and heroin seized from 2010 through 2015 by HIDTA initiatives in Hillsborough County. From 2010 to 2014, no fentanyl seizures were reported. In 2015, the amount of fentanyl seized surpassed the amount of heroin seized. The amount of fentanyl seized in 2015 (27.441 Kg) was more than double the amount of heroin seized in the same year (12.689 Kg).

**Figure 6: Drug Seizures Reported by NE HIDTA (New England High Intensity Drug Trafficking Area) Initiatives, by Year and Drug, 2010–2015**



**Source:** Special data run from the HIDTA PMP (Performance Management Program). Retrieved June 2016 by the Washington/Baltimore HIDTA.

***NE HIDTA Fentanyl Trafficking Information (source: NE HIDTA)***

The New England HIDTA Intelligence Support Center states that fentanyl and heroin constitute a high threat to the region as a result of “widespread availability, high incidence of addiction, association to other criminal activities, and negative economic impact.” Fentanyl is also considered to be a major causal agent in overdose deaths throughout New England. In a survey of federal, state, and local law enforcement agencies in the region, 86% of respondents ranked heroin and fentanyl as the greatest drug threats to New England.<sup>1</sup> The high threat level and increase in overdose in New England and other HIDTA areas led the Whitehouse Office of National Drug Control Policy to fund the Heroin Response Strategy. As part of this strategy, the NE HIDTA and seven other HIDTAs participated in the Heroin Response Strategy Symposium in Spring 2016 and prepared “Joint Fentanyl Project Reports” for their states.

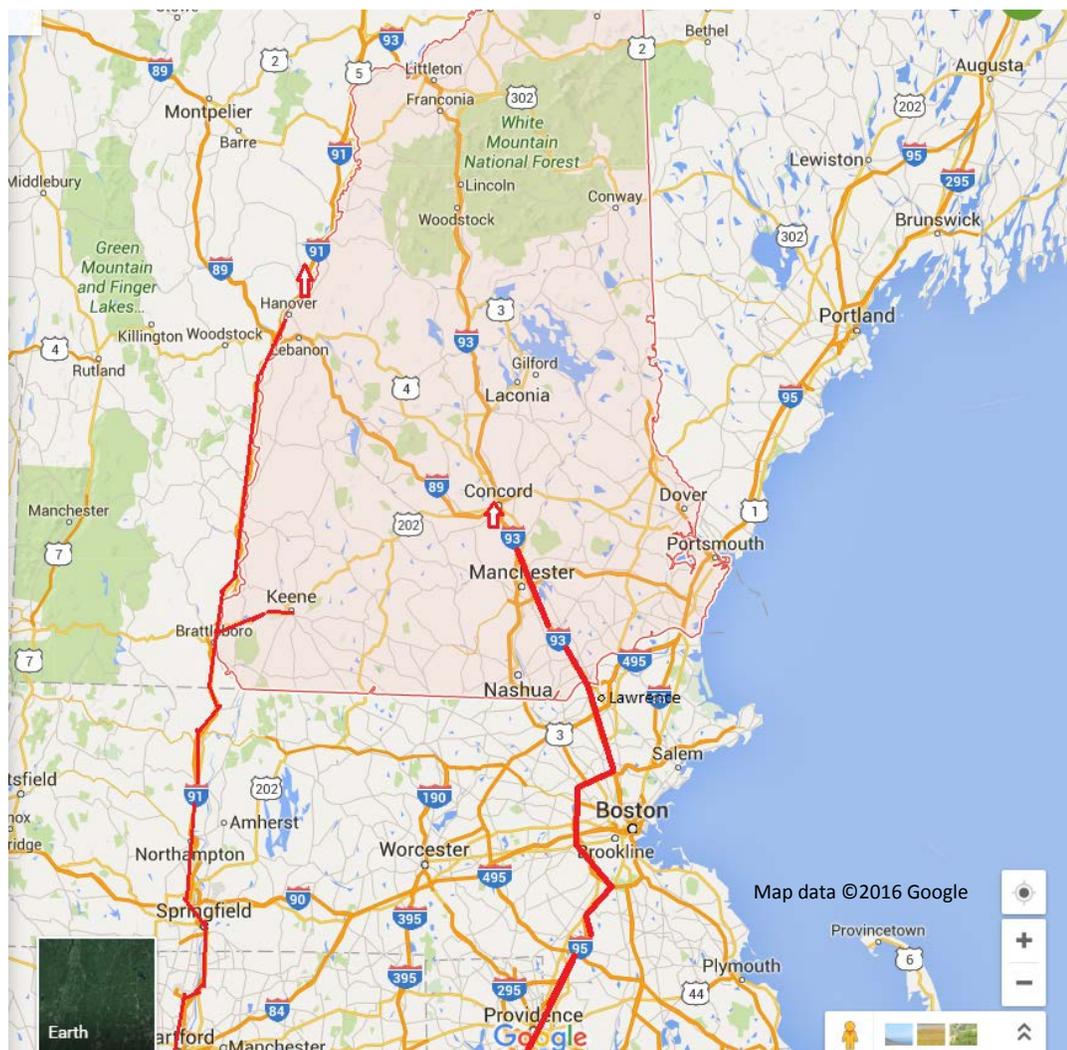
To collect the information included in the New Hampshire report, NE HIDTA staff conducted open-ended interviews with representatives at 12 law enforcement agencies, 18 public health agencies, the Governor’s Opioid Task Force, and Upper Valley recovery coaches. The interviews addressed seven topics including fentanyl trafficking, fentanyl detection and surveillance, and fentanyl products.

**Fentanyl Trafficking.** As displayed in Figure 7, the major trafficking routes are along the interstate highways running from New Haven, CT, to Hartford, CT, to Springfield, MA, and up into western NH (Keene, Lebanon, etc.) and from Boston, MA, to Lawrence, MA, to Nashua, NH, and Manchester, NH, in the southeastern part. Participants in the NE HIDTA interviews indicated that Lawrence, MA, is a major source of supply for central and eastern NH and that Springfield, MA, is a major source of supply for western NH. This is because, Lawrence, for example, is located around many highways and fast-food restaurants, which makes buying and selling convenient and fairly anonymous. The primary groups involved in the dealing of heroin and fentanyl, according to the NE HIDTA, are Dominican-based drug trafficking organizations operating in Massachusetts and Manchester, NH. In addition, the NE HIDTA reports that in areas away from the large metropolitan areas, users are becoming dealers. They travel from small cities and towns to major source areas such as Lawrence or Springfield, MA, or Hartford, CT, and purchase or are “fronted” large quantities of heroin or fentanyl for sale in their home areas. (Note: Staff at two opioid treatment programs in western New Hampshire whom NDEWS staff met with as part of the site visit

<sup>1</sup> 2016 New England HIDTA Drug Threat Assessment, p. 4.

distinguished between trafficking routes for heroin and fentanyl. They stated that fentanyl came from Lowell/Lawrence, MA, and that heroin came from New Jersey and Hartford, CT.)

**Figure 7: Drug Trafficking Routes into New Hampshire July 2016**



**Source:** Adapted by NDEWS from Google Maps and Information from the NE HIDTA New Hampshire Joint Fentanyl Project Report July 2016.

**Fentanyl Products.** The fentanyl available in New Hampshire is primarily in the form of powder ranging in color from white to beige to brown. The most common route of ingestion of the powder is injection. Although pills containing fentanyl have been seized in Massachusetts, there are not yet reports or seizures in New Hampshire.

**Limitations.** The data presented in this section used the dates, classifications, and terminology provided in the original sources. As a result of inherent differences in methodology used across these sources, the data are not necessarily comparable. Despite these differences, a consistent pattern in the reviewed measures was identified.

### III. NDEWS News Media Scan: Fentanyl

Overview: Content of News Stories Shifted from Focus on Diversion and Misuse of Legal Fentanyl in 2012 and 2013 to Focus on Illegal Fentanyl and Related Fatalities in 2014

**“The good news is that the stigma is fading. The bad news is, it’s fading because so many kids are dying.” (Dale, 2015)**

The NDEWS Coordinating Center staff have developed the capability to conduct scans of newspapers for articles about emerging drugs. These scans enable NDEWS to describe the types of attention that specific drug outbreaks are receiving from the local media. A scan of news stories about fentanyl use in New Hampshire yielded 406 articles published between May 2012 and September 2016. A count of articles each month showed a consistent increase in stories that began in September 2015 and peaked at 31 articles published in November 2015. A manual review and coding of the content of the 406 articles showed that in 2012 and 2013, most reports focused on the diversion and misuse of legal fentanyl; only 4 articles mentioned fentanyl-related fatal overdoses. The content changed dramatically in 2014 when an increase began to appear in the percentage of stories about illegal fentanyl and related fatalities. An estimated 56% of 109 articles published in calendar year 2015 mentioned fatal overdoses from fentanyl. The New Hampshire presidential primary was held in February 2016, and the local opioid epidemic was often the subject of discussion by politicians.

#### NDEWS Media Scan Methods

NDEWS Coordinating Center staff ran a search of the newspaper database in LexisNexis™ Academic to pull articles containing both “New Hampshire” and “fentanyl” from May 1, 2012 to June 20, 2016. This search was updated on August 1, 2016 and again on October 7, 2016, to include all articles through September 30, 2016. The three scans yielded a total of 406 articles. Each article was manually coded regarding the general content addressed and the type of fentanyl mentioned (see box). An article was coded as mentioning legally made pure fentanyl if it included pharmaceutical fentanyl from a hospital or prescribed by a doctor. Illegally made fentanyl was coded if it mentioned one or more of the four categories: illegally made pure fentanyl, illegally made fentanyl pills/tablets, illegally made fentanyl mixed with heroin, or illegally made fentanyl mixed with a drug other than heroin.

#### NH Fentanyl Articles Categories Coded

##### **General Content**

1. New Hampshire legislation
2. National legislation
3. Presidential campaign
4. Fatal overdoses
5. Nonfatal overdoses
6. Law enforcement seizure
7. Law enforcement arrest
8. Law enforcement indictment
9. Diversion of drugs

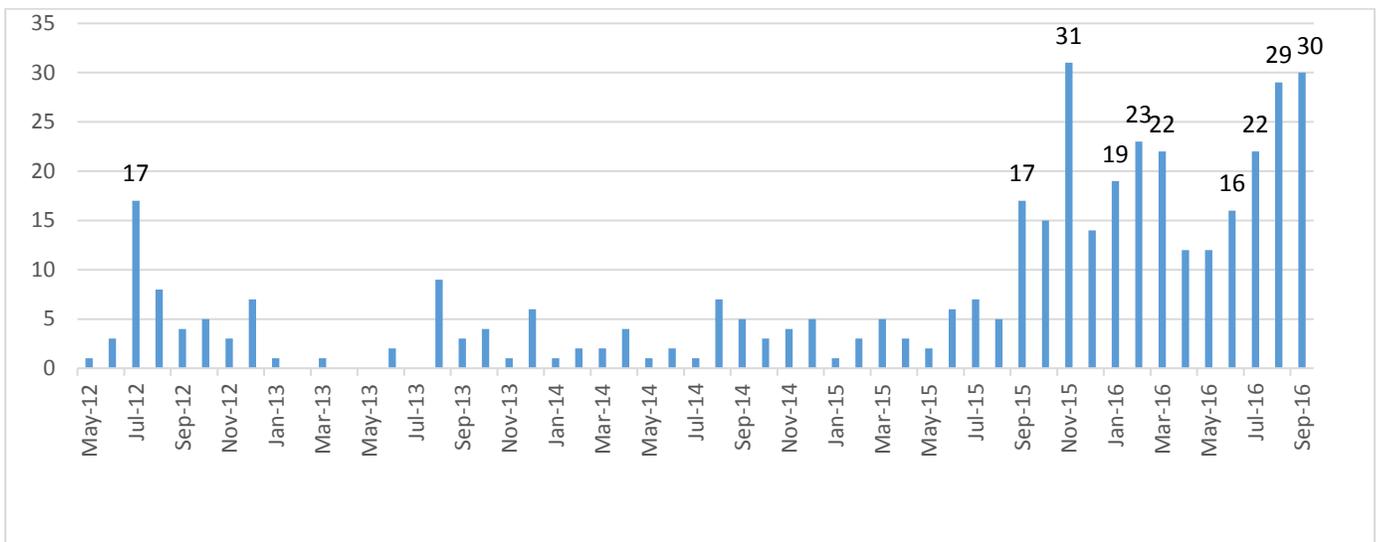
##### **Type of Fentanyl**

1. Legally made pure fentanyl
2. Illegally made pure fentanyl
3. Illegally made fentanyl pills/tablets
4. Illegally made fentanyl mixed with heroin
5. Illegally made fentanyl mixed with drug other than heroin
6. Not specified

### Monthly Trend in Number of Articles

Figure 8 shows the monthly counts of articles found from May 2012 through September 2016. It is clear that before September 2015, articles about fentanyl use in New Hampshire were rare. The number of articles per month was less than 10 each month except for a peak of 17 articles reached in July 2012. This peak was a result of a single case involving a traveling medic who worked at Exeter Hospital in New Hampshire and injected fentanyl meant for patients into himself and replaced the patients’ medication in the syringes with saline (Levinson & Broadhurst, 2014). In fact, most articles in 2012 and 2013 can be attributed to this case involving the traveling medic. Beginning in September 2015, there were 12 or more articles published each month. The peak of 31 articles reached in November 2015 can be attributed to a story involving the overdose death of a teenager who was given illicit fentanyl by her mother and her mother’s boyfriend. About one third of the 31 articles mentioned this case. The number of articles rose again from 16 in June 2016 to 30 in September 2016. Many recent articles have addressed state and national legislation such as the Synthetics Trafficking and Overdose Prevention (STOP) Act.

**Figure 8: Number of Articles Mentioning New Hampshire and Fentanyl, by Month, May 1, 2012–September 30, 2016\* (N = 406 articles)**



\*Note: 2012 includes articles published from May 1 through December 31 only; 2016 includes articles published from January 1 through September 30 only.

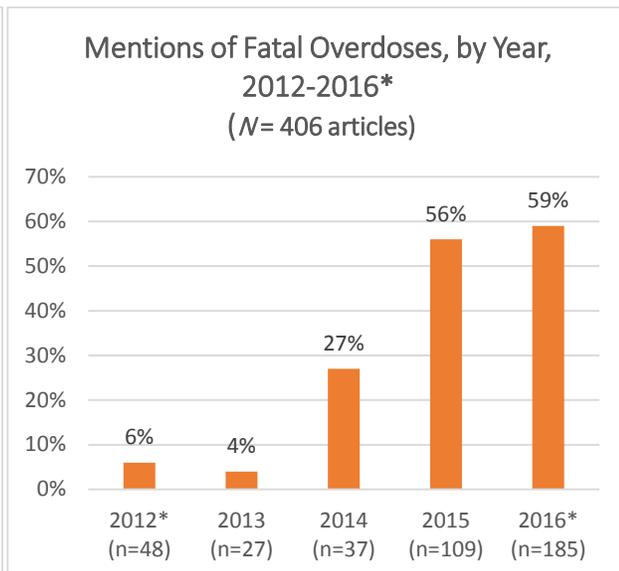
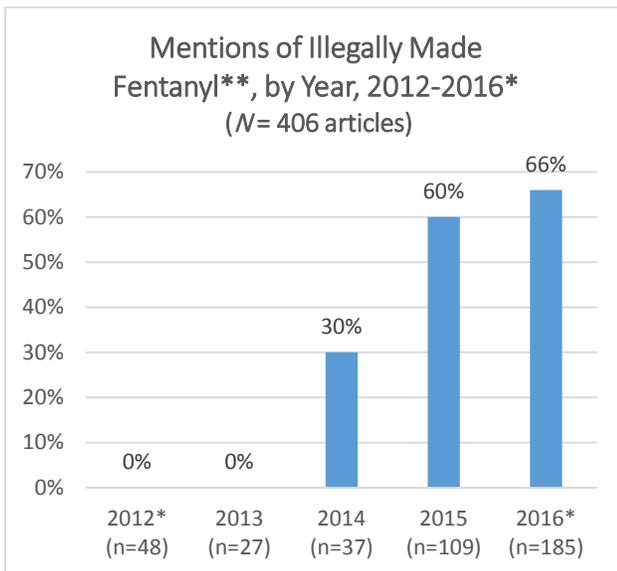
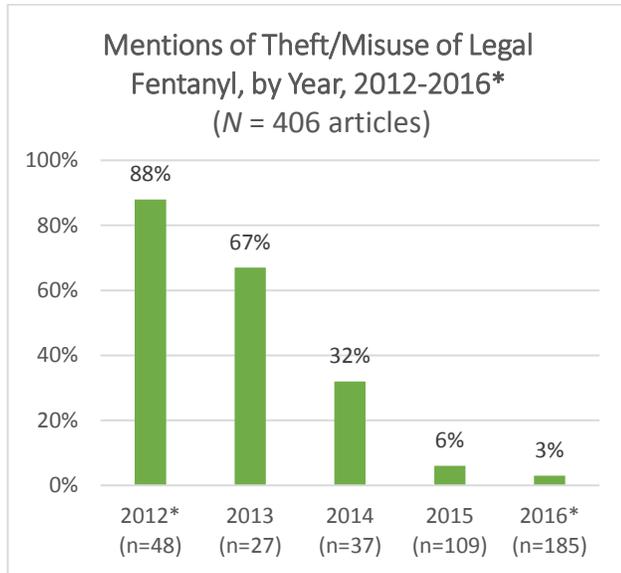
### Trends in Articles about Legal or Illegal Fentanyl and Related Fatalities

Figure 9 shows a marked decrease over the period studied in the percentage of articles about legal fentanyl. In comparison, articles about illegal fentanyl and fentanyl overdose fatalities showed a marked increase since 2014.

#### Articles in the Context of the New Hampshire Presidential Primary

During the time leading up to the presidential primary in New Hampshire in February 2016, articles about the campaigns became prevalent and the opioid epidemic in New Hampshire proved to be a topic worthy of discussion. In February 2016, prior to the New Hampshire primary, Jeb Bush, Ted Cruz, and Carly Fiorina all shared stories about family members who struggled with drug abuse. Hillary Clinton said that the “hidden ... quiet epidemic” in New Hampshire is “tearing families apart” and is “striking in small towns and rural areas as much as any big city” (Zezima, 2015).

**Figure 9: As Media Mentions of the Diversion of Legal Fentanyl Declined, Mentions of Illegal Fentanyl Increased, Along with Mentions of Overdose Deaths**



\*2012 includes articles published from May 1 through December 31 only; 2016 includes articles published from January 1 through September 30 only.

\*\*Illegally made fentanyl category includes illegally made pure fentanyl, illegally made fentanyl pills/tablets, illegally made fentanyl mixed with heroin, and illegally made fentanyl mixed with drug other than heroin.

**NDEWS News Media Scan: Fentanyl in New Hampshire References**

Dale, D. (2015, October 3). When heroin came to middle-class America. *The Toronto Star*.

Levinson, D. R., & Broadhurst, E. T. (2014, March 13). Why aren't doctors drug tested? *The New York Times*.

Zezenia, K. (2015, June 4). In N.H., Drug abuse an early bipartisan issue for candidates. *The Washington Post*.

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## IV. Reports Commissioned by NDEWS from Local Experts

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### Experts Report Striking Increases in Fentanyl-Related Deaths and Opioid-Related Treatment Admissions; Hillsborough County Is Disproportionately Impacted

**Overdose Deaths.** “New Hampshire is a small, largely rural state with a substantial concentration of population clustered in the southerly hub of Manchester/Nashua, in Hillsborough County. The state has experienced a 152% increase in overall drug-caused deaths between 2010 and 2015. This includes a 168% increase in heroin deaths and a 1629% increase in deaths due to fentanyl and fentanyl analogs. Hillsborough County, with 30% of the state population, has experienced a disproportional percent of the drug deaths overall (37%), and of the state’s heroin and fentanyl deaths in particular (41%)” (Sorg & Wren, report included on following pages).

**Treatment Admissions.** “New Hampshire has witnessed an alarming increase in the number of treatment admissions and Narcan administrations for heroin use/overdose in recent years, surpassing other opiates, including prescription narcotics. Data specific to treatment admissions for fentanyl use in the state are widely unavailable. Data may be missing due to it being reported as heroin, urine drug screens not testing for fentanyl, or because the user may not have been aware they were ingesting it. Because fentanyl admissions are not being tracked specifically and uniformly throughout the state, it proves difficult to decipher what proportion of heroin treatment admissions and Narcan administrations are specific to the escalating fentanyl crisis. Although Hillsborough County has received increasing attention as the hot spot in the state for the opioid/heroin epidemic, Strafford County has the highest concentration of Narcan administrations and a significantly lower treatment availability rate compared to Hillsborough County” (Meier, McLerman, & Marsch, report included on following pages).

As a part of this HotSpot study, the NDEWS Coordinating Center commissioned special reports from two New Hampshire experts. These reports focused on an in-depth analysis of two key public health indicators: overdose deaths and drug treatment admissions. Marcella Sorg, NDEWS Maine SCE and Director of the University of Maine Margaret Chase Smith Policy Center, worked with Jamie Wren to prepare a report on recent increases in drug overdose deaths related to fentanyl and fentanyl analogs. Dr. Sorg and Mr. Wren have a long-standing collaboration with the New Hampshire Office of the Chief Medical Examiner (OCME) and have ready access to the OCME data and staff.

Lisa Marsch, Director of the Dartmouth College Center for Technology and Behavioral Health, worked with Andrea Meier and Bethany McLerman to prepare a report on recent increases in admissions to drug treatment programs related to heroin and other opioids. Dr. Marsch and Ms. Meier are NIDA-funded researchers who manage the Northeast Node of the National Drug Abuse Treatment Clinical Trials Network. As such, they have direct access to New Hampshire drug treatment program staff and data.

Both reports are included as they were submitted with limited editing. They highlight what is currently known and the limitations of the currently available data.

# Preliminary “HotSpot” Analysis of Fentanyl & Heroin Mortality in New Hampshire, 2010-2015

By

Marcella H. Sorg, Ph.D.

Jamie A. Wren, MPH

Margaret Chase Smith Policy Center

University of Maine

## *Introduction*

New Hampshire, like the other northern New England states of Maine and Vermont, has had a resurgence of heroin deaths, newly associated with a startling emergence of deaths due to illicitly produced fentanyl and fentanyl analogs. This brief report provides highlights of recent heroin and fentanyl mortality trends based on medical examiner data,<sup>2</sup> and it offers some recommendations for enhanced investigation of the deaths to inform and improve public health and safety.

## *Population Distribution*

New Hampshire, with a population of 1.3 million, much of which is rural, has a largely White (94%) racial composition. It has one U.S. Census–defined Metropolitan Statistical Area (MSA): the Manchester–Nashua MSA with a population of 400,721, located in Hillsborough County. Note that New England counties, including those in New Hampshire, are much larger than in other states. Concord, the capitol, is part of a Micropolitan Statistical Area (μSA) with a population of 146,445, located in Merrimack County. There are five other, smaller micropolitan statistical areas, with populations ranging from 33,000 to 89,000.

Hillsborough County shares its northern border with Merrimack County and its southern border with Massachusetts (Figure C1.1). It is more accessible to the urban centers Boston and Lowell, and potentially more vulnerable to drug trafficking via auto and bus. Interstate 89 and 93 connect Boston to Manchester and from there extend north to Concord. Manchester is served by the Manchester-Boston Regional Airport that includes several major carriers.

## *Medical Examiner System and Investigation of Overdoses*

New Hampshire has a centralized state medical examiner system. The Office of Chief Medical Examiner (OCME) is part of the state Department of Justice rather than the Department of Health. The OCME is headquartered in Concord, staffed with two pathologists who do autopsies at the state morgue. The full-time staff includes one investigator, one evidence technician, and an administrative assistant.

The OCME has a cadre of trained, local death investigators, mostly licensed nurses or EMTs, who are on call to conduct scene visits and perform physical examinations of decedents, including obtaining toxicology specimens. They are paid on a per case basis. These non-physician death investigators, termed “Assistant Deputy Medical Examiners” (ADMEs), often respond to a death scene, document the event, gather data about the decedent’s social circumstances and medical history, undress and thoroughly examines the body, and obtain the toxicology specimen, which is nearly always blood or vitreous fluid. Urine specimens are not collected in these cases. Examinations may be done at the scene or at the funeral home.

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<sup>2</sup> Note that medical examiners investigate “occurrent deaths,” i.e., deaths that take place in their jurisdiction. This total may include non-residents. The total of “resident deaths” is calculated later at the federal level, drawing on death certificates from all states to make this determination. Public health statistics, including crude death rate, age-adjusted death rate, etc., utilize “resident deaths” as a rule. “Occurrent death ratios” describe the number of occurrent deaths compared to the total resident/census population in a jurisdiction. This ratio is more appropriate terminology when reporting totals using medical examiner data.

By statute all suspected fatal overdoses are investigated by the OCME to determine cause and manner of death. Only a minority of decedents in recent years receive an autopsy (approximately 25% in 2015), compared with the early 2000s, when approximately 90% received an autopsy. Autopsies are ordered for cases in which an overdose cause may be uncertain, where other causes of death must be ruled out (frequently those under 40 years of age), in much younger decedents (e.g., teenaged), or in cases that are potentially prosecutable. As in many other states, the New Hampshire Office of Chief Medical Examiner has had to reduce the proportion of overdose cases it brings in for autopsy due to the large increase in the number of these cases, the cost of transportation, and the limitation of having only two pathologists. The New Hampshire Office of Chief Medical Examiner is accredited by the National Association of Medical Examiners. Accreditation is a challenging process that involves adhering to an extensive set of guidelines, which includes an annual limit on the number of autopsies a pathologist may perform. The reason for this limit has to do with the risk of error when rates go higher. Despite the lower autopsy rate, the drug overdose epidemic has substantially increased the cost of death investigation due to the increase in local death investigator caseloads and an increase in the number of toxicology tests.

Currently, OCME overdose data do not discriminate pharmaceutical from non-pharmaceutical products, such as pharmaceutical fentanyl or morphine. A prescription drug monitoring system (PDMP) was only very recently implemented in New Hampshire, becoming operational December 2014. The Medical Examiner has access to this data system only on a case-by-case basis, and must submit a request; they do not have blanket access. Thus, the OCME is not currently able to make routine use of the PDMP, although their future access remains under discussion with legal counsel. Death investigators routinely document prescriptions found at the scene or known by next of kin, and they provide a medical history as a function of speaking with family and sometimes calling a medical provider. Medical records may be requested from providers for cases brought in for autopsy but otherwise are not requested.

It has been the usual practice by the forensic pathologists in New Hampshire to document all potential co-intoxicants on the death certificate. Nearly all overdoses are ruled accidental or suicidal manner of death, with “undetermined” manner used only when intent is unclear.

### *Toxicology Testing*

All suspected drug overdose cases receive a toxicology test, most frequently using peripheral blood specimens.<sup>3</sup> National Medical Services Labs in Willow Grove, PA (nmslabs.com), does the toxicology testing for all cases brought in for autopsy and for an increasing number of local death investigator (ADME) cases. The state laboratory still does some of the testing for ADME cases; however, that lab’s primary focus is illicit drugs of abuse rather than misuse of pharmaceuticals/therapeutics. The more limited range of tests means that its service is less expensive than is NMS Labs testing. Testing at either lab includes screening (presence/absence) followed by quantification (amount of drug present). These processes involve the use of gas chromatography mass spectrometry (GC/MS), liquid chromatography-tandem mass spectrometry (LC/MS/MS), or liquid chromatography time-of-flight mass spectrometry (LC TOF/MS) screening. NMS labs tests for a wide range of drugs commonly used and abused. Most frequently, the New Hampshire OCME uses the “enhanced” panel, which is the middle level, rather than the “basic” or the “expert”; however, the level of testing is selected on a case-by-case basis.

Urine samples and blood samples (if supply is sufficient) are usually taken during autopsy and frozen for future use if needed, as are samples of brain, bile, vitreous fluid, and gastric contents, if available. Blood samples are the preferred forensic toxicology testing material. Urine samples are not generally available for non-autopsied cases, although blood and vitreous fluid samples may be. The OCME routinely requests that any residual blood from samples sent for toxicology testing be sent back to the OCME for storage.

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<sup>3</sup> The condition of the body sometimes dictates that central blood samples (e.g., heart), urine, vitreous fluid, or organ samples must be used.

It has not been possible to keep up with new drug analogs being trafficked, particularly in drugs such as fentanyl analogs that require special screens or probes. Even when special tests are available at the NMS Labs, for example, the additional costs tend to be high for such tests, and the costs are difficult to budget for, due to the variability of need and the inelastic nature of public agency budgets. New Hampshire is routinely testing for acetyl fentanyl but not for other fentanyl analogs. Although not requested formally by the OCME, the NMS labs will tend to identify the presence of illicit synthetics; it has had recent cases where furanyl fentanyl and U-47700 have been identified. The state lab has reported cases of acetyl fentanyl and actively tests for analogues in confiscated contraband, but a complete list of the drugs it is testing for in biological specimens was not available for this report.

### *Trends in Fentanyl and Heroin Overdose Mortality*

Occurrent heroin<sup>4</sup>-induced fatal overdoses in New Hampshire decreased during the years just prior to 2010, then began a steady increase in 2011, rising from 37 in 2010, nearly doubling to 61 in 2011, increasing to 112 in 2014; it decreased slightly to 99 in 2015 as fentanyl took its place (Figure C1.2; Table C1.1). Fentanyl<sup>5</sup> deaths, by contrast, began to increase nearly two years later than heroin. This category plateaued at 11–18 deaths per year through 2013, then suddenly climbed over 700% in 2014 to 145, and nearly doubled again to total 284 in 2015. During 2014, the number of deaths due to fentanyl or fentanyl analogs overtook the number caused by heroin. The earliest fentanyl analog to be implicated as a cause of death (acetyl fentanyl) was identified in 2013 (Figure C1.3). The apparent timing of fentanyl analog presence in New Hampshire is, however, dependent on what was ordered and tested for toxicology.

Heroin and fentanyl (including acetyl fentanyl) deaths are often related. Figure C1.4 shows the number of deaths in which heroin and fentanyl are both identified as a cause of death versus the number in which heroin (but not fentanyl) or fentanyl (but not heroin) were identified. These drugs are found combined starting in 2013, and they constituted 21% of fentanyl deaths in 2015.

Decedents' whose cause of death includes fentanyl are more likely to be male than are those whose cause of death includes heroin in both 2014 (76% vs 70%) and 2015 (78% vs 69%) (z-test,  $p=.0275$ ,  $p<.05$ ). Both heroin deaths and fentanyl deaths have similar age distributions, with the 20–29 and 30–39 age groups about the same in both categories, and about 30% in each decile (Table C1.1). Thus, approximately 60% of all deaths caused by either fentanyl or heroin were in the 20–39 age group. By comparison, in the 2010 U.S. Census for New Hampshire, only 24% of the population was within the 20–39 age category. Less than 2% of heroin or fentanyl deaths were teenaged, and less than 3% age 60 or more.<sup>6</sup>

The proportionality of heroin and/or fentanyl deaths across counties can be compared with the proportion of the state population in each county (see Figure C1.5). Hillsborough County has the largest proportion of all counties, at 30% of the state population, compared with 37% of all drug deaths statewide by 2015. It also has the largest proportion of heroin and/or fentanyl deaths, 41%. All other counties except Stafford have a percentage of drug deaths slightly lower than their proportion of the state population; Stafford has very slightly more, 11% compared with 9% of the state population, which may not be statistically significant.

The increase in heroin and fentanyl deaths from 2010 to 2015 can be compared across northern New England states (Table C1.2). Both Maine and New Hampshire have population sizes approximately the same, 1.3 million, whereas Vermont has about 0.6 million. During this time period, all three states have experienced substantial increases in the total number of drug-caused deaths, as well as in the total number of heroin and fentanyl deaths.

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<sup>4</sup> "Heroin" deaths include any death in which "heroin" or "heroin/morphine" was listed as a cause of death on the death certificate, either alone or in combination with other drugs.

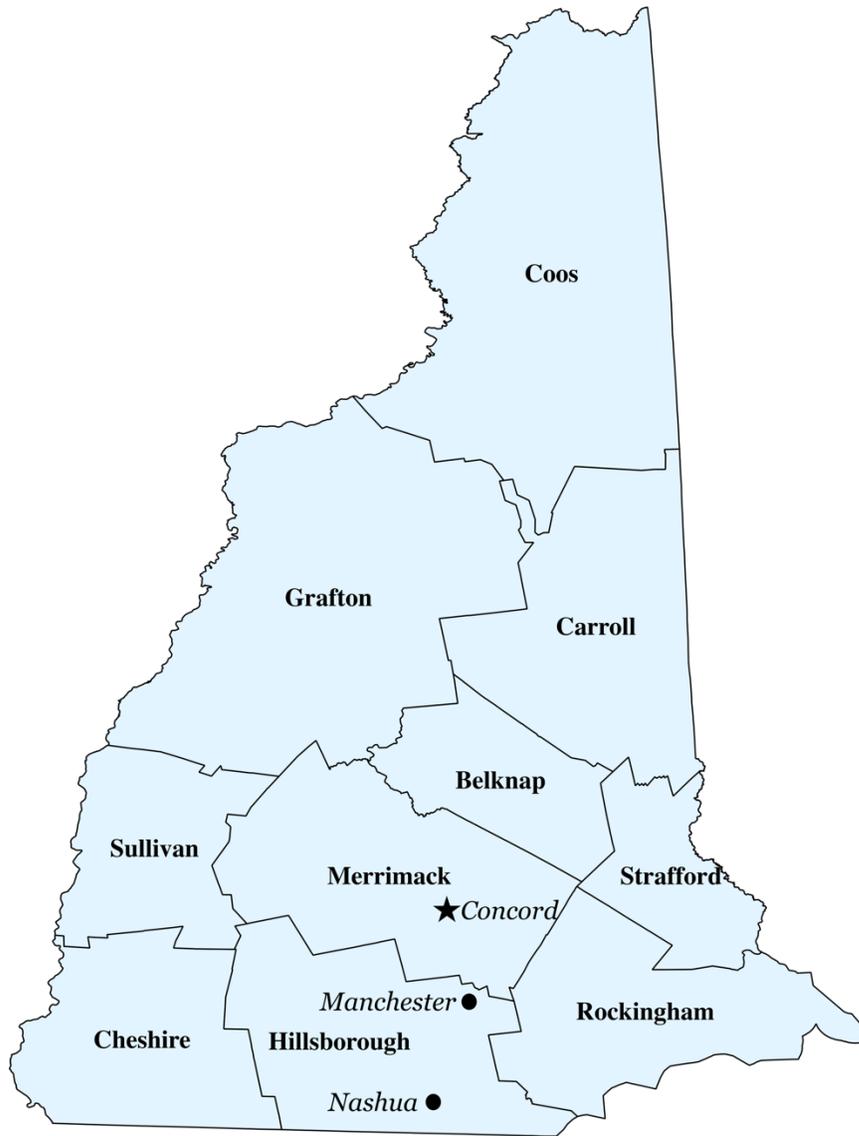
<sup>5</sup> "Fentanyl" deaths include any death in which pharmaceutical fentanyl, illicitly produced fentanyl, or fentanyl analogs listed as a cause of death, either alone or in combination with other drugs.

<sup>6</sup> The dataset used for this report contains only the frequency distribution by decile age groups, not absolute age, so mean age cannot be calculated at this time.

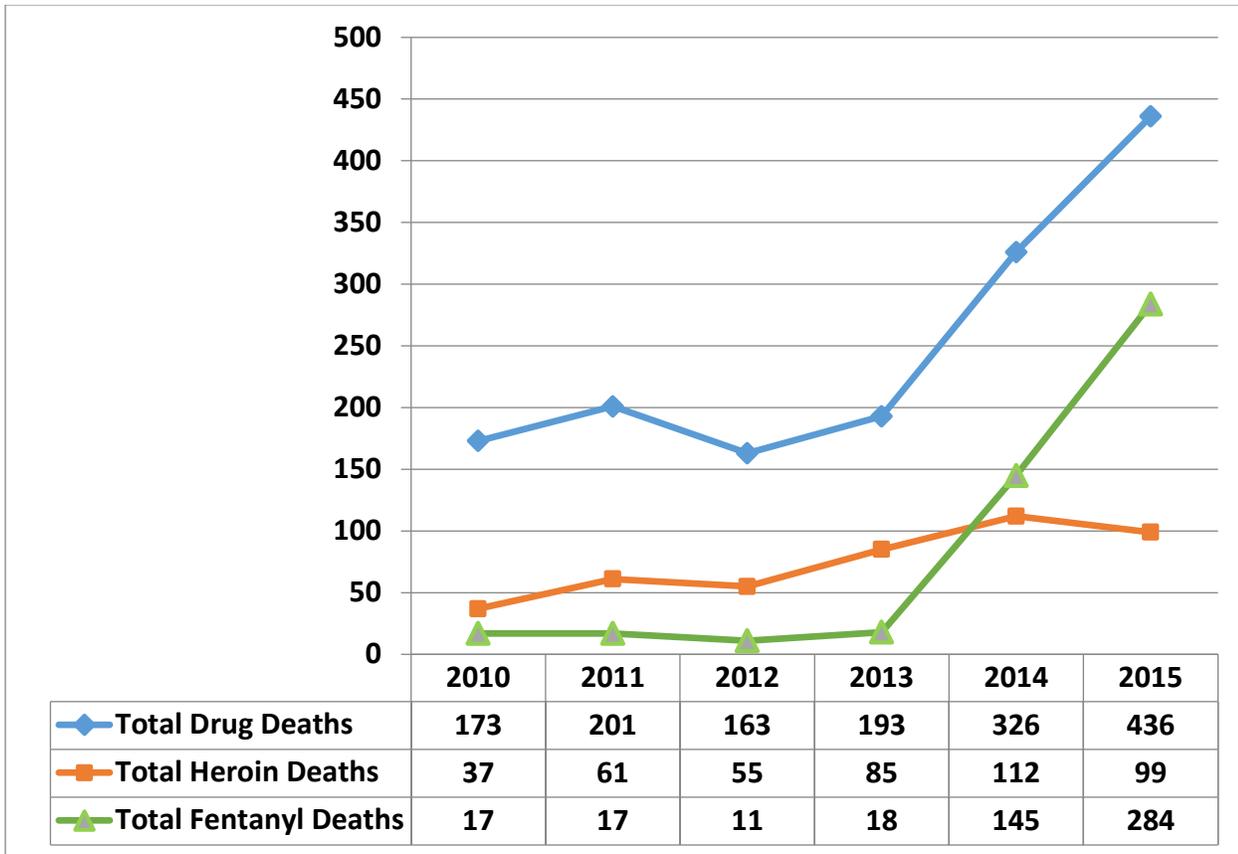
New Hampshire has the highest number of deaths compared with its population, an increase of 152% (173 to 436) since 2010, compared to a 63% increase in Maine (167 to 272) and a 41% increase in Vermont (75 to 106). Maine experienced the largest percentage increases since 2010 in both heroin and fentanyl deaths, 1,429% for heroin and 2,767% for fentanyl. In New Hampshire, heroin increased 168% and fentanyl 1,629%; in Vermont, the heroin increase was 617% and the fentanyl increase was 500%.

### *Summary*

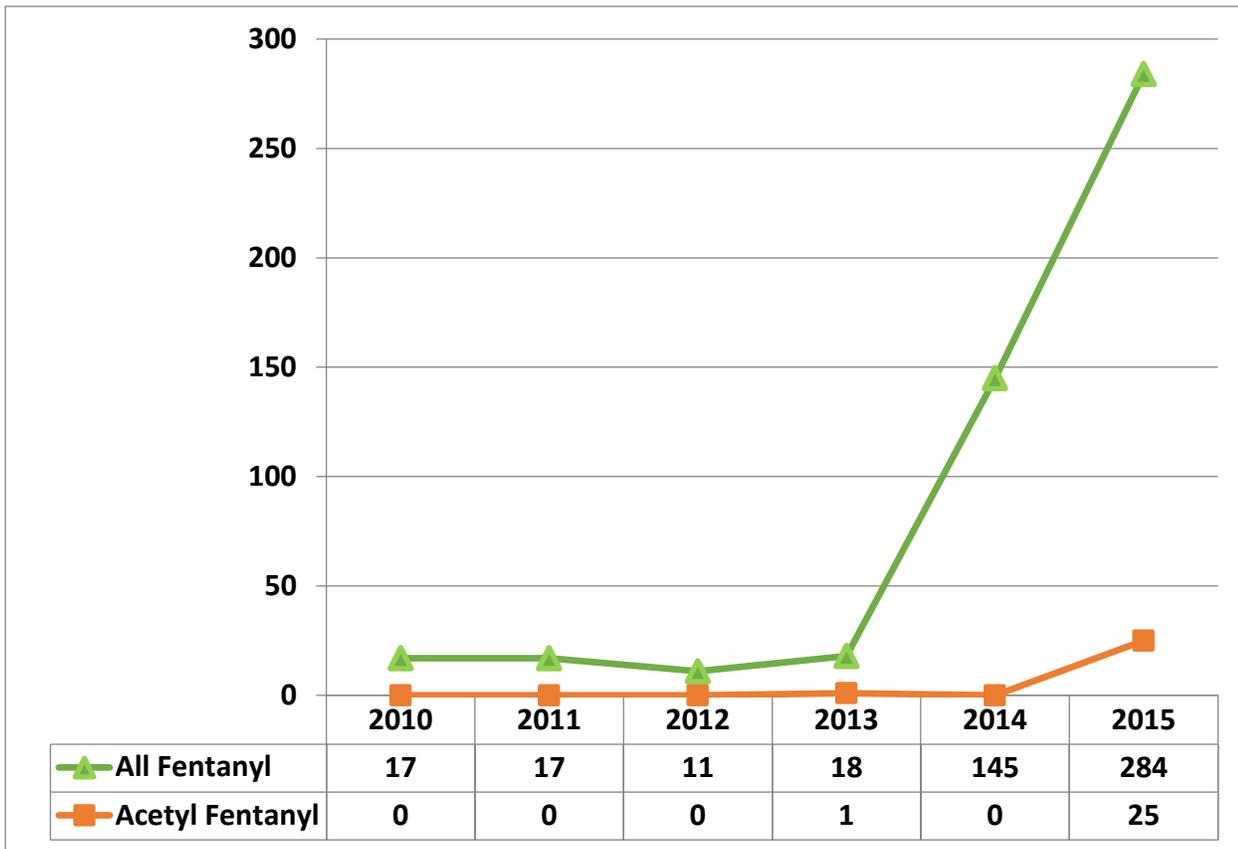
New Hampshire is a small, largely rural state with a substantial concentration of population clustered in the southerly hub of Manchester/Nashua, in Hillsborough County. The state has experienced a 152% increase in overall drug-caused deaths between 2010 and 2015. This includes a 168% increase in heroin deaths and a 1,629% increase in deaths due to fentanyl and fentanyl analogs. Hillsborough County, with 30% of the state population, has experienced a disproportional percentage of the drug deaths overall (37%), and of the state's heroin and fentanyl deaths, in particular (41%). The state medical examiner system has struggled to address this dramatic increase in its case load without sacrificing the quality of toxicological analysis and overall death investigation. They have reduced the proportion of cases that are transported to Concord for autopsy, while increasing the number that receive a more comprehensive toxicology that includes pharmaceutical drugs (instead of just illicit drugs). In addition, in many cases, they have not been able to afford the highest, most comprehensive level of testing that is available. This may result in an undercounting of the emergent synthetic drugs present in toxicology, with a concomitant reduction in number of cases for which these drugs are quantified, and a potential reduction in the categories of drugs that should have been included as a cause of death. While this bias is not likely large, it lessens the ability to track emerging substances. A further consequence of the pressure created by the large case load increase is the lack of time for in-depth examination of medical records. While this may not be needed to determine cause and manner of death, it constitutes a missed opportunity to document the bio-social circumstances surrounding these cases, which might be useful in designing public health and safety interventions.



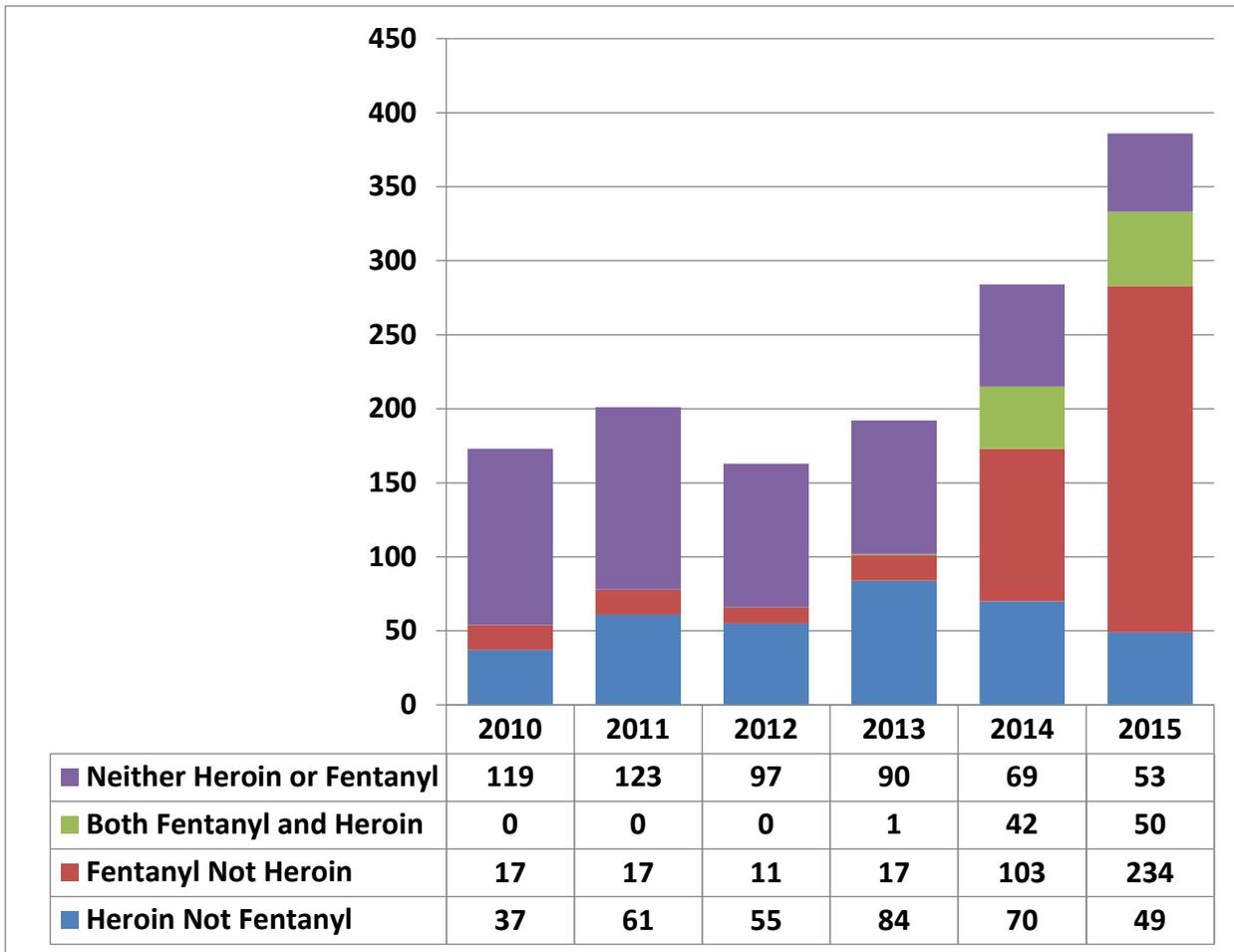
*Figure C1.1. Map showing New Hampshire counties and the close geographic relationship of Hillsborough County and Merrimack County where the two largest city centers of Manchester/Nashua and Concord are located.*



*Figure C1.2. Number of drug-induced deaths 2010–2015, comparing deaths due to any drugs with deaths due to heroin or to fentanyl, alone or in combination. “Fentanyl” in this figure includes pharmaceutical fentanyl, as well as illicitly produced fentanyl and acetyl fentanyl. “Heroin” includes those in which the literal cause was “heroin” as well as those where the cause was listed as “heroin/morphine.” “Heroin” and “fentanyl” in this graph may be alone or in combination with each other or other drugs. Thus, the categories are not mutually exclusive.*



*Figure C1.3 Number of deaths 2010–2015 due to acetyl fentanyl, as a subset of all fentanyl and fentanyl analog deaths. Occasionally, two fentanyl forms may be found within the same decedent.*



*Figure C1.4. Number of deaths due to heroin, fentanyl, a heroin/fentanyl combination, or deaths without heroin or fentanyl. “Fentanyl” in this figure includes pharmaceutical fentanyl as well as illicitly produced fentanyl and acetyl fentanyl. “Heroin” includes those in which the literal cause of death was “heroin” as well as those where the cause was listed as “heroin/morphine.” “Heroin” and “fentanyl” in this graph may be alone or in combination with each other or other drugs listed as a cause of death.*

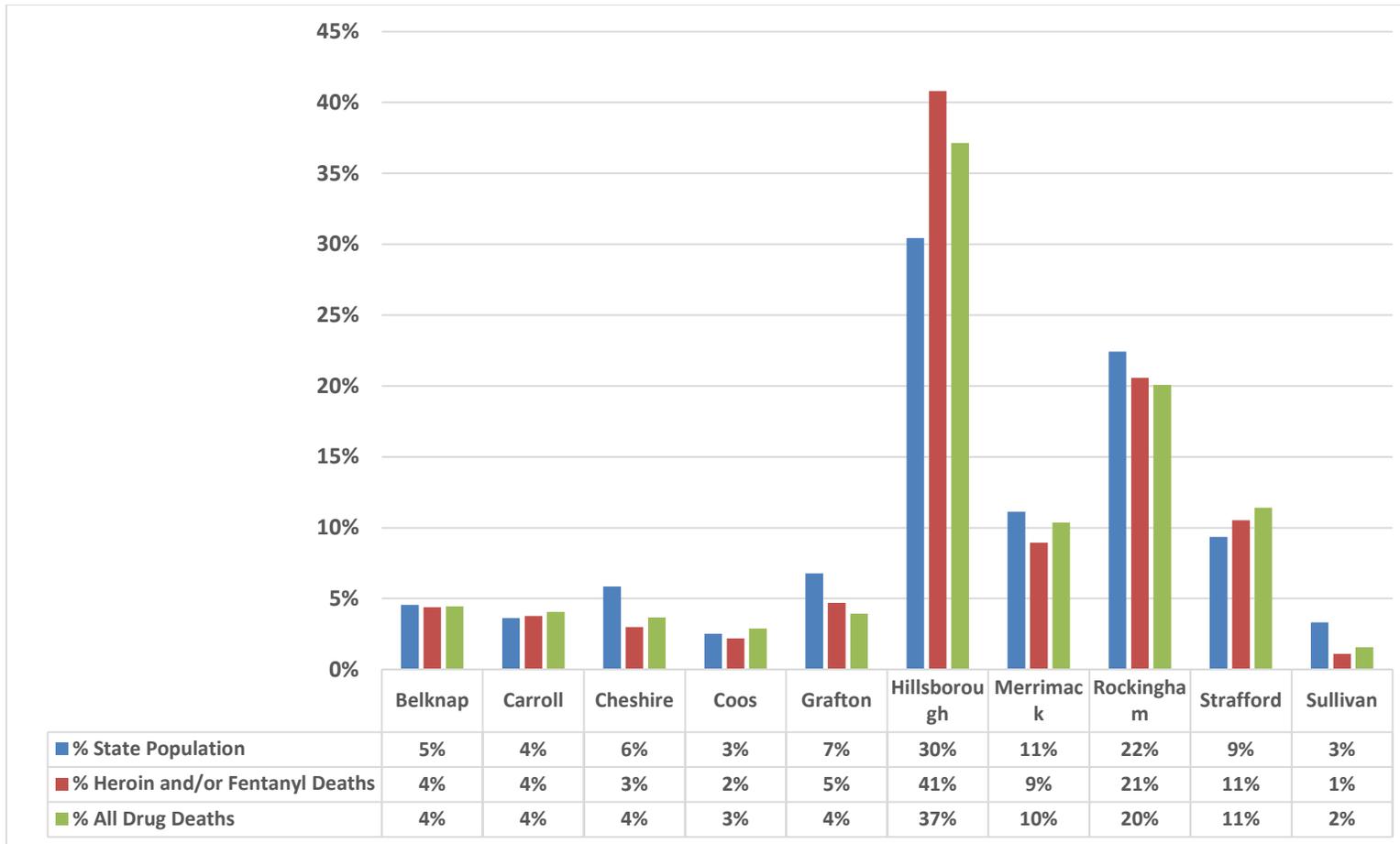
**Table C1.1. Proportion of heroin versus fentanyl deaths by age category for 2014–2015, with years combined**

| Age Category                    | 2014-2015<br>Heroin Deaths | 2014-2015<br>Fentanyl* Deaths |
|---------------------------------|----------------------------|-------------------------------|
| 0-19                            | 1%                         | 2%                            |
| 20-29                           | 28%                        | 32%                           |
| 30-39                           | 31%                        | 30%                           |
| 40-49                           | 20%                        | 18%                           |
| 50-59                           | 18%                        | 16%                           |
| 60-69                           | 2%                         | 2%                            |
| 70-79                           | 0%                         | 0%                            |
| 80-89                           | 0%                         | 0%                            |
| 90-99                           | 0%                         | 0%                            |
| *Includes all forms of fentanyl |                            |                               |

**Table C1.2. Percentage increase 2010–2015 in the number of drug deaths, the presumed heroin\*\* deaths, and the fentanyl/acetyl fentanyl deaths in New Hampshire, Maine, and Vermont**

| STATE         | DRUG DEATH TYPE          | 2010 | 2015 | % Increase |
|---------------|--------------------------|------|------|------------|
| Maine         | All drug deaths          | 167  | 272  | 63%        |
|               | Presumed heroin          | 7    | 107  | 1,429%     |
|               | Fentanyl/Acetyl fentanyl | 3    | 86   | 2,767%     |
| New Hampshire | All drug deaths          | 173  | 436  | 152%       |
|               | Presumed heroin          | 37   | 99   | 168%       |
|               | Fentanyl/Acetyl fentanyl | 17   | 294  | 1,629%     |
| Vermont       | All drug deaths          | 75   | 106  | 41%        |
|               | Presumed heroin          | 6    | 43   | 617%       |
|               | Fentanyl/Acetyl fentanyl | 5    | 30   | 500%       |

\*\*A "heroin/morphine" mention on the death certificate is categorized as presumed heroin.



*Figure C1.5. Proportion of 2010 U.S. Census population in New Hampshire by county, compared with the per-county proportion of heroin and/or fentanyl-fentanyl analog deaths in 2014–2015 (years combined), as well as the per-county proportion of all drug-induced deaths during 2014–2015.*

# Preliminary “HotSpot” Analysis of Opioids-Related Admissions to Drug Treatment Programs in New Hampshire, 2002-2014

By

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## *New Hampshire Substance Abuse Treatment Programs*

The rate of overdose deaths in the state of New Hampshire due to heroin and opioid use has increased alarmingly since 2014. In contrast, treatment capacity and utilization for opioid use disorders in the state have not increased to sufficiently meet the need.

The Bureau of Drug and Alcohol Services (BDAS) within the New Hampshire Department of Health and Human Services (DHHS) funds evidence-based programs and strategies across the spectrum of prevention, intervention, treatment, and recovery. The BDAS funding strategy relies largely on private non-profit organizations to deliver programming across the continuum of care, including local coalitions, social service agencies, mental health agencies, treatment facilities, and community-based organizations. Substance abuse treatment programs can be found throughout the state, with the heaviest concentration in the southern region (Figure C2.1).

Treatment programs include 62 youth-focused, 55 outpatient and intensive outpatient (21 BDAS-funded), and 21 residential settings (17 BDAS-funded). Specific to Medication-Assisted Treatment (MAT) programs, there are eight Opioid Treatment Programs (OTPs)/Methadone Maintenance Treatment clinics, 49 offices prescribing buprenorphine (Suboxone), and 15 naltrexone (Vivitrol) locations. While these programs provide needed treatment, New Hampshire has the lowest number of buprenorphine prescribers in New England (Figure C2.2). The State also ranks lowest in New England in number of substance abuse treatment programs per capita (SAMHSA, 2016).

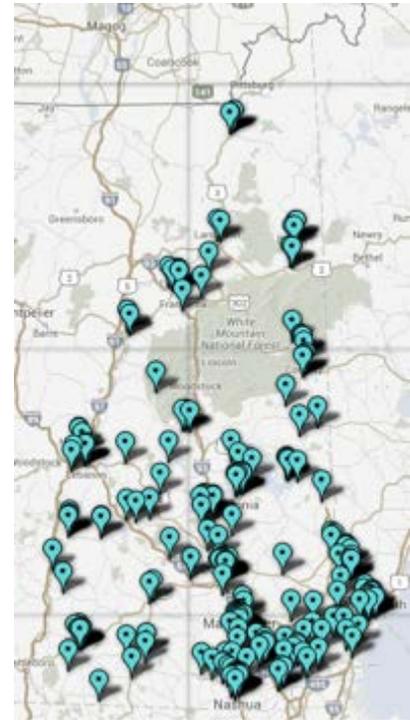


Figure C2.1. New Hampshire addiction treatment locations (NHCE, 2016).

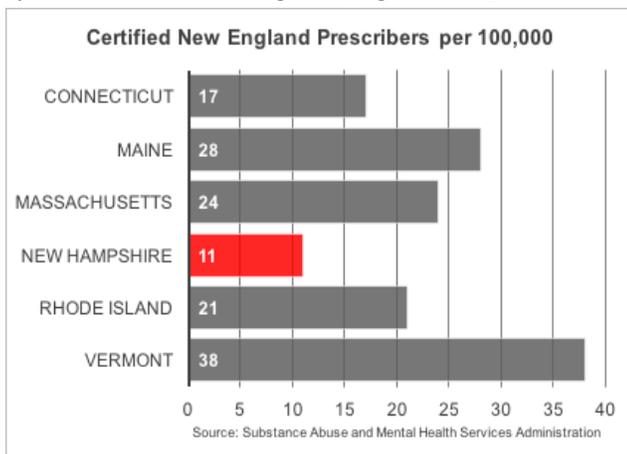


Figure C2.2. Certified New England Buprenorphine Prescribers per 100,000 (NHIAC, 2016).

Overdose reversal using Narcan (naloxone) in New Hampshire is available in the State with approximately one-third of administrations given by medics, a third by emergency/armed forces medical technicians, and a third not being recorded (NH Bureau of EMS, 2016).

## **Treatment Admissions**

In 2010, opiates (including prescription drugs) were the most commonly cited drugs among primary drug treatment admissions in New Hampshire, followed by heroin and marijuana. Heroin abuse in the state has

continued to increase since 2010, with an alarming increase in overdose deaths in 2014 (Figure C2.3). Heroin (including fentanyl) treatment admissions now exceed prescription opioid admissions in the state’s substance use treatment programs. There were 1,866 admissions for heroin from May 2015 to April 2016 (nearly tripling since 2010), with an average monthly rate of 155.5 admissions. In comparison, prescription opiate treatment admissions have averaged 32 per month. Individuals 26 years of age or older exhibited the highest number of

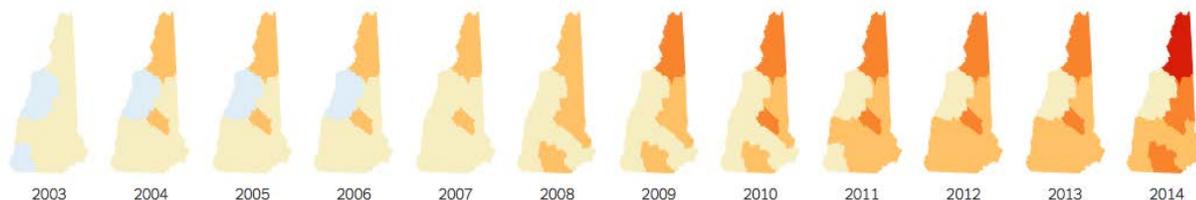


Figure C2.3. State overdose deaths by county from 2003 through 2014. Color depth indicates an increase in overdose deaths through the years (Park & Bloch, 2016; Rossen et al., 2016).

treatment admissions, while gender was evenly split. However, there was a 22% increase in the number of females and individuals over 26 admitted from March to April 2016 (NHIAC, 2016).

Narcan administration by EMS personnel tripled from 2012 to 2015 with a steady increase beginning in 2014 (NH Bureau of EMS, 2016). In 2015, Narcan was administered 2,724 times and 2016 has already documented 225 administrations each month. Current trends show males and females 21–40 years of age being administered Narcan most frequently (NH Bureau of EMS, 2016).

### Treatment Capacity

From 2002/03 to 2013/14, New Hampshire showed a reduction from 3.01% to 2.39% of individuals needing but not receiving treatment for illicit drug use in the past year, with higher rates for individuals 18–25 years old (10.57% to 7.23%, respectively; SAMHSA CBHSQ, 2016). However, an NH Public Radio analysis in May 2016 estimated there are 10,000 opioid addicted individuals in New Hampshire who might benefit from MAT but have no way to legally obtain it (Wallstin, 2016).

In addition to the lowest number of buprenorphine providers in New England, the state has only eight Opioid Treatment Programs (OTPs) to address the high demand for treatment, with no clinics north of Lebanon and Concord (in the eastern/central regions). Patients report driving nearly two hours one way to receive daily dispensed methadone or buprenorphine. These programs are at capacity, currently treating 3,313 people and

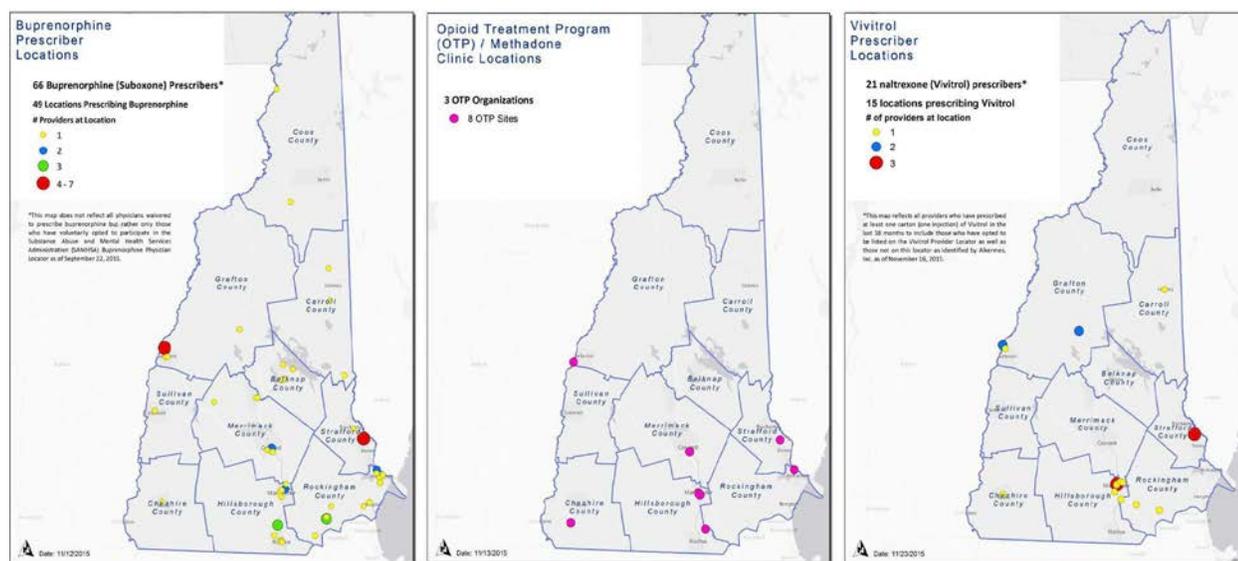


Figure C2.4. Buprenorphine, OTP, and Vivitrol providers in the state. Colored dots on each image represent the number of facilities per location (Letendre et al., 2016).

wait lists that range from 0 to 16 weeks depending on location. There are more than 330 people still waiting to get into treatment at these OTPs on any given day. These OTP clinics were all opened on or before the early 2000s, with the most recent clinic having opened in 2006. No new OTP clinics or Methadone Maintenance Treatment programs have opened in the state in the past 10 years.

Vivitrol is available in even fewer locations throughout the state, concentrated mostly in the lower counties. See Figure 4 for a breakdown of buprenorphine, OTP/methadone, and Vivitrol providers in the state.

### Regional Characteristics

Hillsborough County in southern New Hampshire has the largest number of residents admitted to treatment programs for heroin and prescription opiates (Figure C2.5). Treatment admissions increased 84% from March to April 2016. Carroll, Cheshire, Coos, and Sullivan counties have the lowest number of admissions per month (approximately 0–7 a month; NHIAC, 2016). Hillsborough County has approximately a third of the State’s treatment programs (18 outpatient/intensive outpatient; three OTP/methadone; 18 buprenorphine; and seven residential programs), whereas residents in the northern part of the State (particularly Coos, Carroll, and northern Grafton Counties) have limited services. The closest OTP program for a resident from northern Coos County is a 139-mile, one-way commute.

Narcan administration is also higher in Hillsborough and Strafford counties. The town of Hillsborough has the highest per capita rate (918 per 100,000), followed by Farmington (604) and Manchester (602; NH Bureau of EMS, 2016). Four of the top 10 towns with the highest rates of Narcan administration in the last year are concentrated around the OTP in Strafford County, which has the longest wait list: 16 weeks; this is double the second highest wait list of 8 weeks in Merrimack County (Figure C2.6).

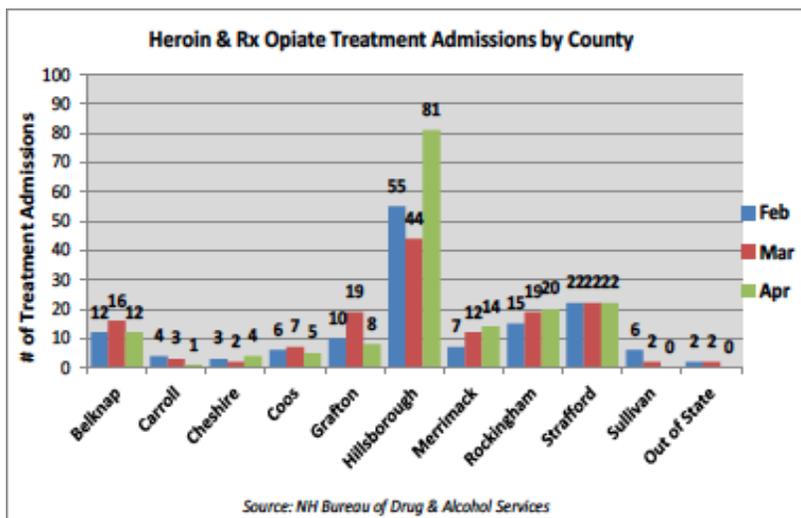


Figure C2.5. Heroin and rx opioid treatment admissions by county (NHIAC, 2016).

### Conclusions

New Hampshire has witnessed an alarming increase in the number of treatment admissions and Narcan administrations for heroin use/overdose in recent years, surpassing other opiates, including prescription narcotics. Data specific to treatment admissions for fentanyl use in the state are widely unavailable. Data may be missing due to it being reported as heroin, urine drug screens not testing for fentanyl, or the user may not have been aware he or she was ingesting it. Because fentanyl admissions are not being tracked specifically and uniformly throughout the state, it proves difficult to decipher what proportion of heroin treatment admissions and Narcan administrations are specific to the escalating fentanyl crisis.

Although Hillsborough County has received increasing attention as the hot spot in the state for the opioid/heroin epidemic, Strafford County has the highest concentration of Narcan administrations and a significantly lower treatment availability rate compared with Hillsborough County. While Strafford County has more buprenorphine and naltrexone offices, its OTP has a substantially longer wait list compared with the state’s seven other OTPs.

In 2015, to address this lack of capacity, BDAS assembled a panel of practitioners from health care, behavioral health, substance use disorder specialty treatment services, and the New Hampshire Medical Society to review existing practices in New Hampshire and other states and identified key components and best practice recommendations from the American Society for Addiction Medicine (ASAM) and other nationally recognized resources, which was released in January 2016.

The panel developed three core objectives to expand MAT in the state:

1. Increase the number of waived buprenorphine prescribers.
2. Increase awareness of and access to extended-release injectable (depot) naltrexone and other medications by prescriptions.
3. Increase office-based access to MAT programs through multiple settings, including primary care offices and clinics, specialty office-based (“standalone”) MAT programs, and traditional addiction treatment programs offering medication assistance (Letendre et al., 2016).

Given the shift from prescription opiates to heroin and fentanyl, it appears that increasing the capacity of the OTPs is critical to addressing the spike in heroin/fentanyl use/overdose deaths in the state.

## References

Letendre, K., Mason, P., Rossignol, M., Savage, S., Harding, J., Keller, L., Powers, J., Mure, L., & Sreedhara, R. (2016). *Guidance Document on Best Practices: Key Components for Delivering Community-Based Medication Assisted Treatment Services for Opioid Use Disorders in New Hampshire*. New Hampshire Department of Health and Human Services. Retrieved from <http://www.dhhs.nh.gov/dcbcs/bdas/documents/matguidancedoc.pdf>

New Hampshire Bureau of EMS. (2016, March 31). *Monthly Narcan Use Data Report*. Retrieved from <https://www.nh.gov/safety/divisions/fstems/ems>

New Hampshire Center for Excellence (NHCE). (2016). *NH Alcohol and Drug Treatment Locator*. Retrieved from <http://nhtreatment.org/>

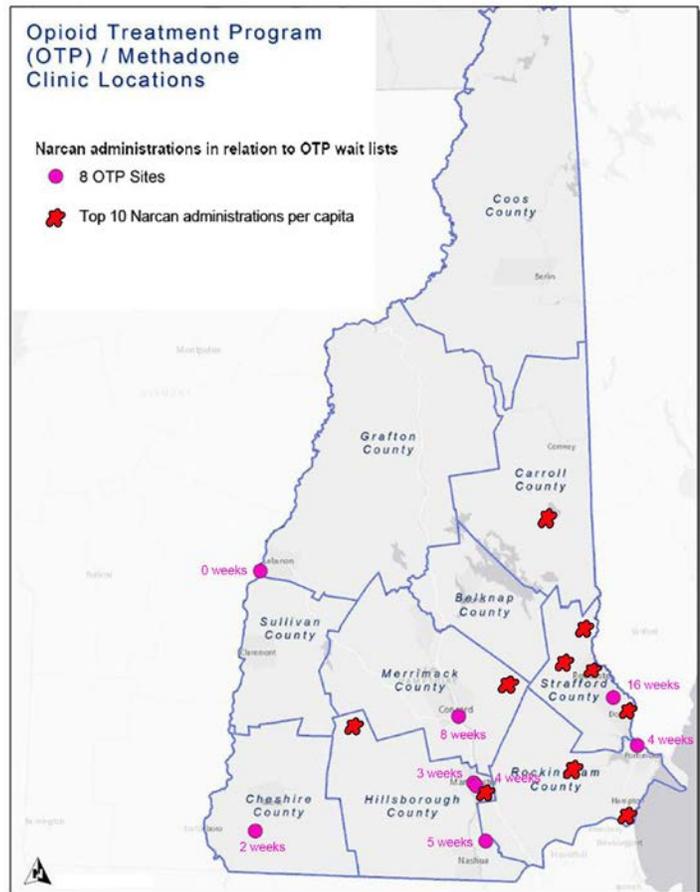


Figure C2.6. Narcan administrations in relation to OTP wait lists (Letendre et al., 2016).

New Hampshire Information & Analysis Center (NHIAC). (2016, May 20). *New Hampshire Drug Monitoring Initiative*. Retrieved from <http://www.dhhs.nh.gov/dcbcs/bdas/>

Park, H., & Bloch, M. (2016, January 19). How the Epidemic of Drug Overdose Deaths Ripples Across America. *The New York Times*. Retrieved from <http://www.nytimes.com>

Rossen, L.M., Bastian, B., Warner, M., Khan, D., & Chong, Y., (2016, January 19). *Drug Poisoning Mortality: United States, 1999–2014*. Washington, DC: National Center for Health Statistics, Centers for Disease Control and Prevention. Retrieved from <http://blogs.cdc.gov/nchs-data-visualization/drug-poisoning-mortality/>

Substance Abuse and Mental Health Services Administration (SAMHSA). (2016, June 9). Behavioral health treatment services locator. Retrieved from <https://findtreatment.samhsa.gov/>

Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality (SAMHSA CBHSQ). (2016, June 9). *National Survey on Drug Use and Health: Comparison of 2002-2003 and 2013-2014 population percentages (50 states and the District of Columbia)*. Retrieved from <http://www.samhsa.gov/data/population-data-nsduh/reports>

Wallstin, B. (2016, May 4). As N.H.'s Opioid Crisis Grows, Primary-Care Doctors Are Slow to Treat Addiction. *New Hampshire Public Radio*. Retrieved from <http://www.nhpr.org>

## V. Observations from NDEWS: The New Hampshire Site Visit

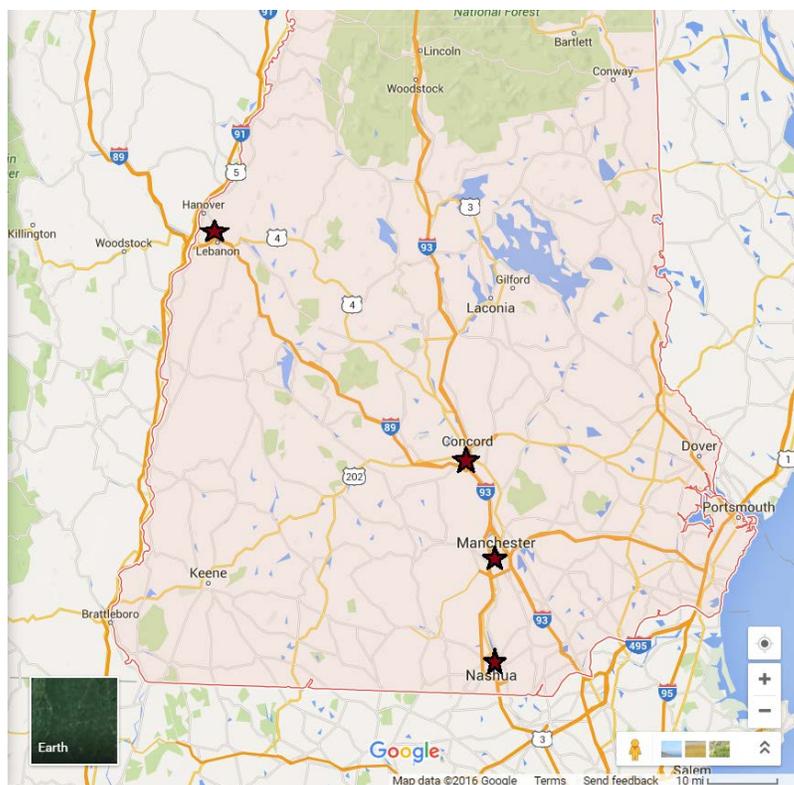
### Overview: Wide Variety of Fentanyl Products Available; User Knowledge Varies

Many different types of fentanyl mixtures are available in New Hampshire ranging in color from white to beige to brown. Site visit meeting participants reported that the dealers in New Hampshire would generally purchase fentanyl in Massachusetts and then bring it to New Hampshire where it could be sold for a higher price. Once the fentanyl is brought to New Hampshire, dealers will mix it with other drugs or substances to cater to local markets and some offer product options.

Most experts talked to agreed that the typical fentanyl user is White, male, and young adult (late 20s to early 40s). Nevertheless, a Nashua area treatment provider felt that there was not a typical user and that there was a fairly even split between males and females. Users tend to be poly drug users. The awareness of fentanyl in a drug product and of the inherent risk of using it varied by site, but participants in the Manchester meeting reported that users prefer to stick with specific dealers because they think they know their product.

A 3-day site visit was conducted by NDEWS staff in collaboration with Dartmouth College and NE HIDTA staff to assess the current status of the increase in fentanyl overdoses and to discuss who is affected, what the effects are, what types of fentanyl are currently available, and who is distributing fentanyl and how. Conversations were held with substance abuse experts with knowledge of the use of fentanyl and the consequences of its use. Staff did not meet directly with drugs users and dealers during this phase of the study. Conversations held during the site visit provided anecdotal confirmation of conclusions from the analysis of available

**Figure 10: Sites Visited by NDEWS Staff June 2016**



Source: Adapted by NDEWS from Google Maps July 2016.

data that indicated that Hillsborough County is a hotspot for fentanyl in New Hampshire. The conversations also revealed much more detailed information about the types of fentanyl available and the persons selling and using the fentanyl. In addition, we worked with the local experts to identify important questions that still need to be answered and additional research that could be conducted to address these questions.

### Fentanyl Products Available

Street terms of fentanyl products mentioned during site visit meetings included “Hot Shots”, “F\*\*\* You”, and “WB” (Warner Bros logo), which refer to various powder mixtures. Although fentanyl pills/counterfeit prescription opioids are available in neighboring states such as Massachusetts, none of the site visit participants were aware of pills being available in New Hampshire.

Many different types of mixtures are available, and the amount of fentanyl in them seems to have increased. Reportedly there has been a shift from heroin with fentanyl to fentanyl with heroin to fentanyl with a variety of drugs ranging from oxycodone to khat to synthetic cannabinoids to cocaine or methamphetamine. The potency of the mixture can vary from mixture to mixture and even within the same product. A law enforcement member of the Manchester RPHN reported that police now test a block of powder in multiple spots (up to 5 spots). Potency reportedly also can vary by dealer (so users like to stick with their dealer).

The color of the powder can vary depending on what the fentanyl is mixed with. According to participants in the site visit meetings, the color can vary from brown to tan to cream to white. A treatment provider in the Nashua area, for example, mentioned that a tan color is mentioned a lot by users. She explained that heroin in her area traditionally was brown, but the drug became increasingly white as a result of the fentanyl mixed in. She also described how dealers would add cocoa to the mixture to make the fentanyl appear darker and more appealing to the local market. The addition of cocoa also makes the product have a distinctly sweet taste (but different from the heroin sweet). So, now when a user comes to her program mentioning heroin, the person is asked about the color and taste of the drug used to help determine whether the user may have been sold a mixture containing fentanyl.

Representatives from the NE HIDTA participating in the Manchester RPHN meeting suggested that colored fentanyl powders may be the new up and comer. For example, a pink fentanyl and oxy mixture was recently found in Massachusetts. Other participants mentioned potential cases in Milton, Mansfield, and possibly Spalding (still waiting for lab results). A first responder in Manchester described a new product called White Tiger that was mentioned by a drug user who used what she thought was a synthetic cannabinoid but experienced opiate-like withdrawal symptoms.

The misuse of fentanyl patches was mentioned by a recovery group leader in Lebanon but not by participants in other parts of the state.

## Dealers

Site visit meeting participants reported that the dealers in New Hampshire would generally purchase fentanyl in Massachusetts and then bring it to New Hampshire where it can be sold for a higher price. The NE HIDTA and a recovery group leader from Lebanon reported that the trafficking route for fentanyl is Lawrence, MA, to Manchester to Concord to Lebanon traveling north up the interstate highways. According to participants from the Manchester RPHN, once in New Hampshire, the fentanyl will be prepared in mixing houses or mixing rooms where it will be mixed with other substances and packaged for street sales. To set up the mixing room, dealers will rent an apartment for a couple months or take over a user's place and give the user free drugs for use of his or her place.

Participants in the Manchester RPHN meeting felt that dealers knew that they were selling fentanyl. The treatment provider in the Nashua area reported that dealers will cater to their local market (e.g., add cocoa to make product look more like heroin) and that they will tell users what they think the users want to hear. The treatment counselor from Lebanon reported that some dealers will offer product options and that dealers will cut their heroin with fentanyl so that it seems like they have more heroin. Participants from the Manchester RPHN reported that users have particular dealers whom they prefer to stick with because they "know" the product they are purchasing. After a police raid, according to participants, they have seen overdoses increase because users have to switch dealers and the mixture is different.

## Users

Most site visit participants agreed that the typical fentanyl user is White, male, and young adult (late 20s to early 40s). Nevertheless, the Nashua area treatment provider felt that there was not a typical user and that there was a fairly even split between males and females.

The awareness of fentanyl in the product and of the inherent risk of using it varied by site. In general, participants in sites in areas close to the Massachusetts border reported more awareness among users than did those in sites farther north. For example, Manchester RPHN participants felt users knew about and that some even sought out fentanyl; Nashua RPHN participants also felt users were aware of risk and were starting to organize to keep each other better informed. Yet, in Lebanon, the reactions of users varied. Some may seek out a certain dealer or product when they hear about overdoses because they think that it must be good stuff. According to the group leader, only approximately a third of users knowingly use fentanyl, but the number of users is slowly increasing. Furthermore, he says that there is no sense of fear among the users who believe that they will not overdose like other users. Another treatment provider in Lebanon felt that users often did not realize that they had used fentanyl and would become alarmed upon discovering that they had.

Users tend to be experienced poly drug users. According to many site visit participants, something else always comes first. Users may start with prescription opioids or other illicit drugs. Specific prescription drugs reportedly used in combination with fentanyl are trazodone (an antidepressant), Adderall® (stimulant used to treat ADHD), gabapentin (an anticonvulsant), and bupropion (an antidepressant). Age of first use of drugs by those who use fentanyl, according to a treatment provider in Lebanon, can be as young as 12–14 years of age. Participants from treatment programs said that there are many reasons for use including falling in with the wrong crowd, having parents who were addicted, getting a prescription after an injury, and so on.

The treatment programs visited reported that they are starting to test users for fentanyl. In the Nashua area, fentanyl positives started to appear approximately eight months ago, whereas in Lebanon, fentanyl positives began to appear in the past three months. Furthermore, higher numbers of fentanyl positives were reported by the treatment program in the Nashua area than by the treatment program in Lebanon. Two of the three treatment programs also reported noticing increases in cocaine positives in recent months.

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## VI. What We Learned and Next Steps

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This NDEWS HotSpot study of the fentanyl outbreak in New Hampshire has reviewed available public health and law enforcement statistics, conducted a scan of local news stories about fentanyl, commissioned two special reports by local experts, and conducted a brief 3-day site visit with public health and law enforcement experts in five NH cities. We describe here the most important things learned along with our assessment of gaps in knowledge that could be pursued in a separate investigation.

### What have we learned?

This first NDEWS HotSpot study has taught us that it is possible to draw on the NDEWS framework, including its SAG members and SCEs, to assemble knowledgeable experts quickly to plan and undertake a rapid assessment of a drug outbreak. Without the help of the HotSpot Planning Committee and NIDA staff's recommendations for local experts to contact, we would have been unable to arrange to commission the special reports and to meet with the diverse group of local experts as part of a rapid site visit. The following is a summary of some of the most important findings from this HotSpot study.

**Overdose Deaths.** Fentanyl-related deaths nearly doubled from 2014 to 2015 (145 to 283) and accounted for nearly two thirds of all New Hampshire drug deaths. The commissioned report prepared by Dr. Sorg and Mr. Wren further highlights the increase in drug deaths citing an increase of 1629% in deaths caused by fentanyl and fentanyl analogs from 2010 to 2015, 41% of which occurred in Hillsborough County.

**Emergency Department Visits.** Data on fentanyl-related ED visits are not currently available. Nevertheless, the number of opioid-related ED visits more than doubled from February to July 2016 (from 317 to 666) and then decreased 20% in August (535). Hillsborough County in southern New Hampshire is disproportionately impacted by fatal and nonfatal overdoses, and the majority of ED cases statewide involved young adult males.

**Treatment Admissions.** Ms. Meier, Ms. McLeman, and Dr. Marsch highlight increases in drug treatment admissions in their commissioned report for heroin (including fentanyl), which exceed prescription opioid admissions at a rate of 155.5 admissions per month to 32 per month in May and April 2016.

**Law Enforcement Seizures.** The number of law enforcement seizures of fentanyl and drug items testing positive for fentanyl also increased. In 2015, the first year fentanyl was seized by NE HIDTA initiatives, 27 kilograms of fentanyl were seized, more than twice the amount of heroin seized. Another source, DEA NFLIS, shows that the percentage of fentanyl reports of all analyzed drug reports increased from less than 1% in 2011–2013 to nearly 13% in 2015.

**News Media Scan.** Although the available data underscored the increases in overdoses and seizures, the NDEWS News Media Scan provided an important picture of how fentanyl was being portrayed in the local news media. We found a rise in the number of fentanyl-related stories, and 2015 and 2016, the number of articles mentioning the diversion of legal fentanyl decreased, while the number mentioning illicit fentanyl and fatal overdoses increased. We also noted that the timing of these increases was correlated with politicians' comments about the opioid epidemic during the presidential primary season in New Hampshire and with comments about state and national legislation.

**Site Visit.** Discussions held with local experts during the site visit revealed that many different types of fentanyl mixtures are available in New Hampshire. Most experts we consulted agreed that the typical fentanyl user is

White, male, and young adult. Users also tend to be poly drug users. The awareness of users of fentanyl in a drug product and appreciation of the inherent risk of using the drug varied by site.

### **Additional special studies to be conducted through NDEWS**

This first HotSpot study was, by design, limited in duration and scope. Nevertheless, the information assembled has indicated it might be feasible to launch additional rapid studies that could provide more detailed information about the fentanyl outbreak in New Hampshire. The scientists who prepared the reports in Section IV of this report felt that they each could launch rapid 3- to 6-month studies—one of accessible OCME files and biologic specimens from fentanyl overdose cases and the second of fentanyl users in treatment, first responders, and ED personnel. Subsequent discussions with NIDA staff led to their approving resources to enable NDEWS to coordinate the additional studies described as follows.

#### Analyses of fentanyl-related case information and specimens in OCME files

Medical records are currently used by the OCME to determine the cause and manner of death for autopsy cases, as required by NH statute. The NDEWS Coordinating Center will work with the OCME and Dr. Marci Sorg to analyze these records to describe the characteristics of the decedents and their geographic dispersion throughout New Hampshire and neighboring states. Additional information about fentanyl analogs and other drugs contributing to fatal incidents will also be collected through expanded toxicological testing of already collected biologic specimens to be provided by the OCME.

#### Collection of information from users, first responders, and ED personnel

More information about fentanyl availability, patterns of use, and responses by health personnel will be collected through systematic interviews with a sample of active fentanyl users and those new to recovery/treatment, first responders, and ED personnel. These interviews will be conducted by staff at the Northeast Node of the Clinical Trials Network (CTN) at Dartmouth College and will target areas found during the HotSpot study to be disproportionately impacted by fentanyl use. Interviews with users will focus on questions that arose during the initial HotSpot study, including trajectory of fentanyl use, the supply chain, fentanyl-seeking behavior versus accidental ingestion, the value of harm reduction models (testing kits on the street) and prevention strategies, and treatment preferences. Interviews with first responders and ED personnel will focus on trends in fentanyl-related overdoses, including user characteristics and patterns, assessment/investigative protocols, symptoms treated, and referral practices.

#### Geospatial analyses of the location of fentanyl deaths by NDEWS staff

The NDEWS Coordinating Center will explore innovative opportunities for conducting geospatial analyses of the relationship between fentanyl deaths in New Hampshire and sociodemographic data. Geospatial analyses will be conducted to investigate the pattern of deaths and emerging hotspots caused by fentanyl poisoning in New Hampshire and adjacent states, including Maine, Vermont, and Massachusetts. Information from the OCME on fentanyl deaths will provide individual-level locational data on drug user deaths. Geospatial cluster analysis will be applied to detect hotspots including the pattern of emergence (trajectories of fentanyl use) over space and time in this region. The results of these analyses will be combined with sociodemographic data including median household income, employment, education, urbanization, race and ethnicity, age, and gender to understand relationships between fentanyl deaths and key sociodemographic variables, as well as to identify vulnerable counties through the use of predictive geospatial modeling tools.

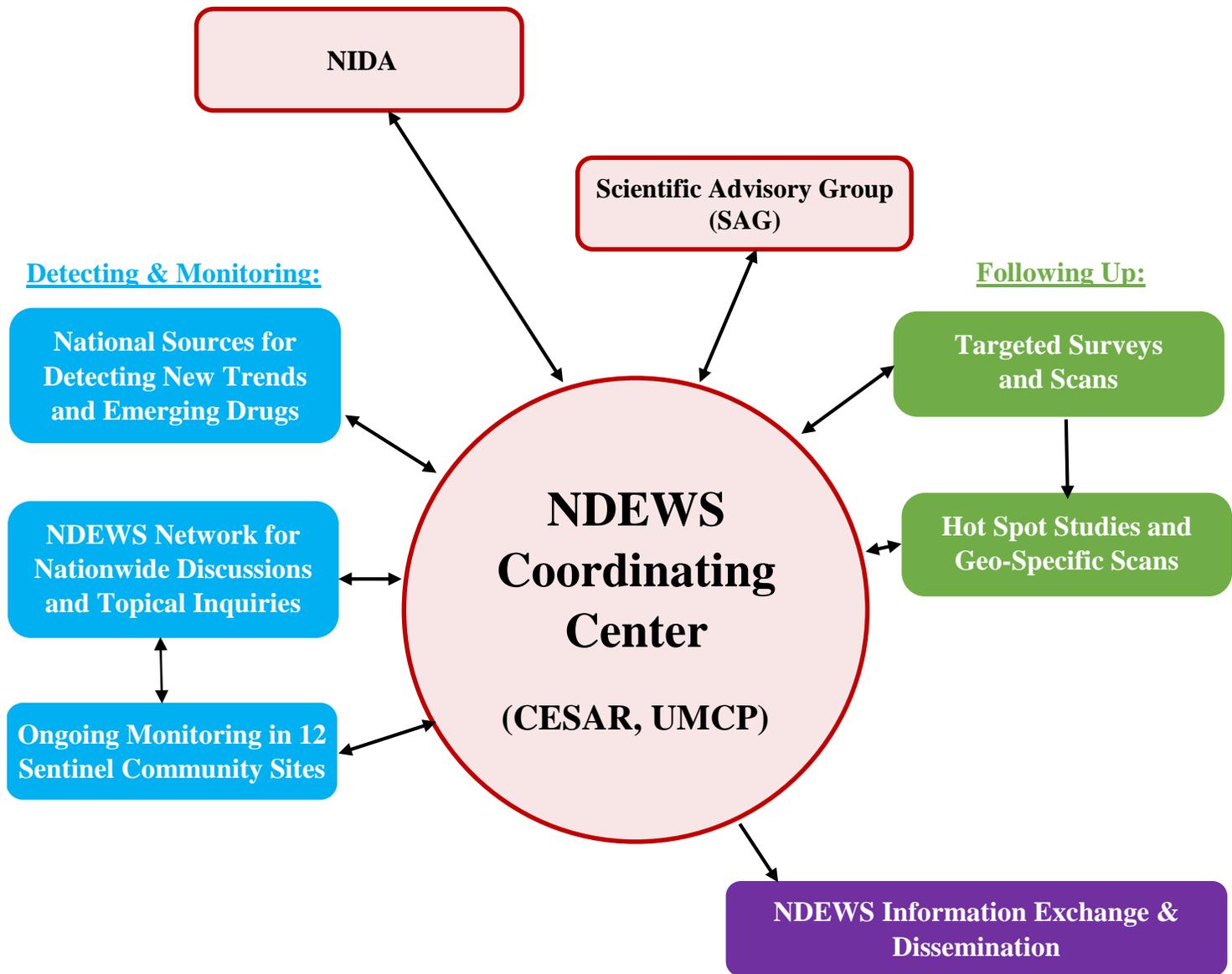
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## *VII. Appendices*

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- a. **NDEWS Graphic**
- b. **New Hampshire Contacts**
- c. **Planning Committee Meeting Agenda and Materials**
- d. **HotSpot Site Visit Meeting Agenda**

# National Drug Early Warning System (NDEWS)



## Appendix B. New Hampshire Contacts

| Name  | Title/   | Location              | Organization  |
|---|--|-----------------------|---|
| <b>NDEWS Network/NDEWS Webinar Participants N = 12</b>                                |  |                       |   |
| Laurie Warnock  | MPH; NH Ed Coord   | State                 | Northern New England Poison Center<br>Partnership for Drug Free NH, BOD Chair |
| Kevin Irwin   | Director of Public Health                                      | Somersworth           | Goodwin Community Health  |
| Melissa L. Fernald  | LICSW, MLADC<br>State Director                                 | Wolfeboro             | Sinfonia Family Services of NH  |
| Melissa Kimball   | LADC – drug counselor  | Concord<br>Central NH |   |
| Elisabeth Hager   | VP, Regional Medical<br>Director Mid Atlantic                  | State                 | Beacon Health Options   |
| Nicholas Pfeifer  | Clinical SUD Dir   |                       | Beacon Health Options   |
| Amy Kelly   | Clinical Social Worker   | Manchester            | NH DHHS DCYF<br>Consultant for child protection agency                        |
| Kim Nygard  |  |                       | Drug Free Communities   |
| Colleen Scarneo   |  | State                 | Department of Safety State Police Forensic Lab                                |
| Jennifer Archer   |  | State                 | DHHS Juvenile Justice Services  |
| Laurie Cincotta   |  | State                 | Anthem/Amerigroup   |
| Nancy Jackson-Reno  |  |                       | Partnership for Drug Free NH; ref by NDEWS Network member                     |
| <b>Site Visit approx. N = 45</b>  |  |                       |   |
| <b>Greater Manchester Regional Public Health Network (approx. 8 members attended)</b> |  |                       |   |
| Tim Soucy   | Public Health Dir,<br>Manchester                               | Manchester            | Manchester RPHN   |
| Christopher Hickey  | EMS Officer  | Manchester            | Manchester Fire Department  |
| Christopher Stawasz   | Regional Dir NH & ME   | Nashua                | AMR, Manchester RPHN, Nashua RPHN   |
| Jason Preston   | Clinical Ed Services   | Nashua                | AMR, Nashua RPHN  |
| Jenny O’Higgins   |  | Manchester            | Makin’ It Happen, Manchester RPHN   |
| Mary Forsythe-Taber   |  | Manchester            | Makin’ It Happen, Manchester RPHN   |
| Kimberly Fortier  | Public Health Analyst NH                                       |                       | NE HIDTA  |
| Kenneth Bradley   | Drug Intelligence Officer                                      |                       | NE HIDTA  |
| <b>Gov.’s Opioid Task Force Meeting (approx. 15 attendees)</b>                        |  |                       |   |
| Seddon Savage   | MD, Chair  | Concord               | Opioid Task Force   |
| Joe Hannon  | NH House of Reps;<br>sponsor of syringe leg;<br>recovery coach | Concord               | Opioid Task Force<br>SOS Recovery Cmty Centers                                |
| Rekha Sreedhara   |  | Concord               | Opioid Task Force   |
| James Potter  | Exec VP  | Concord               | NH Medical Society  |
| <b>NH Bureau of Drug and Alcohol Services (5 attendees)</b>                           |  |                       |   |
| Joseph Harding  | Dir  | Concord               | NH Bureau of Drug and Alcohol Services  |
| Drew  |  | Concord               | Gov’s Office  |
| Tym Rourke  | Dir, SUD Grant making  | Concord               | NH Charitable Foundation  |
| Lindy Keller  | Trng Admin   | Concord               | DHHS Resources and Development Unit   |
| <b>Habit OPTCO (1 attendee)</b>   |  |                       |   |
| Shelly  | Charge Nurse   | Lebanon               |   |

| <b>Recover Together (2 attendees)</b>                               |                                     |         |   |
|---|-------------------------------------|---------|---|
| Heather Prebish   | Clinical Dir                        | Lebanon | Recover Together  |
| Wayne Miller  | Sub Abuse Counselor                 | Lebanon | Recover Together  |
| <b>Nashua Regional Public Health Network (approx. 12 attendees)</b> |                                     |         |   |
| Aly McKnight  | Assis to Mayor                      | Nashua  | Nashua RPHN<br>Office of the Mayor                                |
| Janail Archer   | Sub Misuse Continuum<br>Facilitator | Nashua  | Nashua RPHN<br>City of Nashua, Division of Public Health Services |
| Lisa Vasquez  | Sub Misuse Prevent<br>Coord         | Nashua  | Nashua RPHN<br>City of Nashua, Division of Public Health Services |
| <b>Merrimack River Medical Services (2 attendees)</b>               |                                     |         |   |
| Heidi Ginter  | Chief Medical Officer               | Hudson  | Merrimack River Medical Services                                  |

**Appendix C. Planning Committee Meeting Agenda and Materials**

**NDEWS Hot Spot: New Hampshire  
Study Planning Committee Agenda**

**Friday, May 27, 2016**

- I. Introductions**
  - a. NDEWS Coordinating Center Staff
  - b. Planning Committee Members
  
- II. Hot Spot Overview and Scope of Phase I**
  - a. Overview of process
  - b. Study goal and research questions
  - c. Discussion of Phase 1 report
  
- III. Next Steps**
  - a. Suggestions for site visit and help arranging meetings

## Appendix D. HotSpot Site Visit Meeting Agenda

### I. Introductions

- a. Attendees
- b. NDEWS

### II. NDEWS and Hot Spot Overview

- a. Overview of NDEWS
- b. Study goal: Conduct a rapid short term study ( $\approx$  6 mths) to focus on the emerging public health problem of fentanyl use in New Hampshire to characterize the outbreak and inform local responses
- c. Hot Spot process
  - i. Phase 1: Describe the problem and identify gaps in knowledge
  - ii. Phase 2: What are the most important questions that still need to be answered?

### III. Open Discussion

- a. Is the situation getting better or worse?
- b. Who is affected? E.g. demographic characteristics of persons who have overdosed from fentanyl or visited the EDs
  - i. How are users obtaining fentanyl?
  - ii. What is the route of administration?
  - iii. Are users likely to be aware that they are using fentanyl or is it unknowingly mixed with heroin or disguised as another opioid?
- c. What are the desired effects and is fentanyl intentionally used with other drugs?
- d. What types of fentanyl/fentanyl analogs are being used? Pharm or illicit?
  - i. What form? White powder, counterfeit pills
  - ii. Has the form(s) available changed over time? (e.g. heroin cut with fentanyl, fentanyl cut with heroin, fentanyl no heroin, pills, other)
  - iii. Is there a demand for the pills? The powder?
- e. Are dealers likely to know that they are selling fentanyl?
- f. What is the source of supply for the pills/powder sold in your area?
  - i. MA or other NE states or other parts of US?
  - ii. Any knowledge of local clandestine labs?
- g. What are the most important questions that still need to be answered?
- h. What public health and prevention actions are recommended?
- i. What other actions are recommended?

### IV. Next Steps

- a. Write up site visit/Follow up questions
- b. ID options for additional research