



**ATTORNEY  
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DEPARTMENT  
OF JUSTICE**

**OFFICE OF  
CHIEF  
MEDICAL  
EXAMINER**

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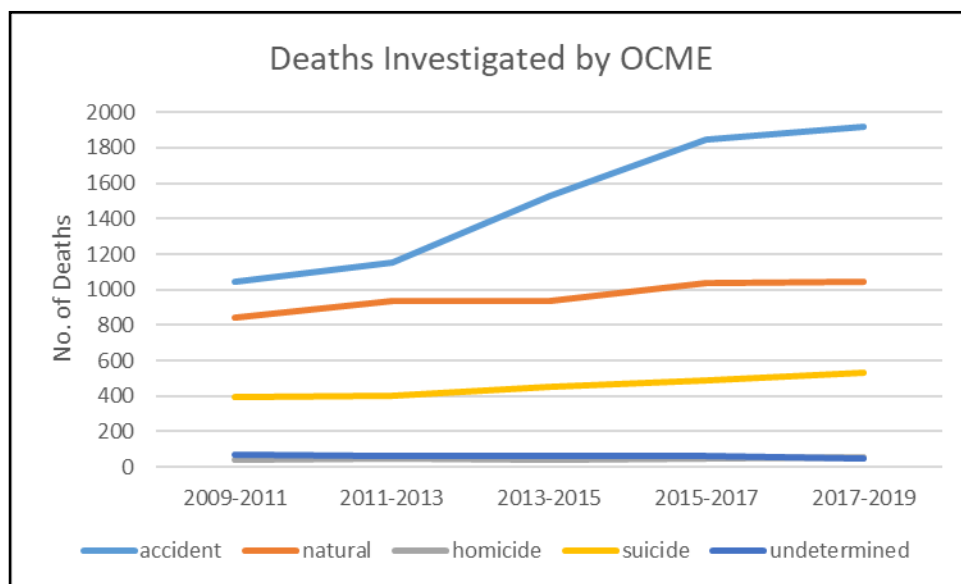
**BIENNIAL  
REPORT  
2017-2019**

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The mission of the Office of Chief Medical Examiner is to promote the health and safety of the citizens of New Hampshire by accurately determining the cause and manner of deaths falling under the jurisdiction of the OCME through compassionate, objective and comprehensive death investigation.

## New Hampshire Office of Chief Medical Examiner

The Office of Chief Medical Examiner (OCME) is charged with investigating and determining cause and manner of death for cases that fall under their jurisdiction as outlined in RSA 611-B. In brief, RSA 611-B authorizes OCME to investigate sudden and unexpected deaths including all accidents, suicides and homicides, as well as a significant number of natural deaths. As illustrated in Figure 1, the number of fatal accidents, natural deaths and suicides investigated by OCME has increased over the last five biennium's whereas the number of homicides and deaths in which the manner of death could not be determined, has remained static. Fatal accidents increased sharply following the 2011-2013 biennium coinciding with the opioid epidemic.



*Figure 1 Deaths investigated by OCME from 2009-2019 by manner of death.*



# OCME Biennial Report 2017 - 2019

## OCME Staff

The case load is handled by an OCME staff consisting of three board certified forensic pathologists (chief medical examiner, deputy chief medical examiner and associate medical examiner), a chief forensic investigator, two administrative assistants and a part-time evidence technician. In addition, there is a full-time Planning Analyst and part-time Data Clerk, funded by grants from the Centers for Disease Control and Prevention (CDC). The Data Clerk is responsible for entering information into a case registry of sudden unexpected infant deaths (SUID). The responsibilities of the Planning Analyst are varied and encompass data analysis and management for the National Violent Death Reporting System (NVDRS) and the Overdose Data to Action (OD2A) programs in collaboration with the National Center for Injury Prevention and Control (NCIPC) of the CDC. The Planning Analyst reports and disseminates findings to numerous stakeholders and also participates in committee meetings related to violent deaths and opioid overdoses. The SUID Data Clerk and the Planning Analyst are not involved in the daily operation of the OCME.

## Assistant Deputy Medical Examiners

In addition to the office-based staff, OCME personnel include field-based Assistant Deputy Medical Examiners (ADME). ADMEs are independent contractors, appointed, trained and supervised by OCME to conduct death scene investigations. ADMEs must be skilled and knowledgeable in the science of medicine and complete a training program in death investigation provided by the OCME. The training program consists of a minimum of 55 hours of didactic lectures, observation of at least 20

autopsies and attendance at a minimum of 20 death scene investigations with an experienced ADME. As of July 2019 there were 23 appointed ADMEs available to conduct death scene investigations around the clock and throughout the state.

OCME provides semiannual continuing education for the ADMEs. In the last biennium, speakers included forensic pathologists, investigators from the NH State Police Major Crimes Unit, prosecutors from the NH Attorney General's Office, Mobile Crisis Response Teams and Emergency Services, State Archeologist, a forensic anthropologist and staff from the NH Vital Records Administration. In addition to semiannual in-service training, ADMEs, along with OCME staff, also participated in mass casualty drill exercises at Pease International Tradeport and Manchester Airport.

ADMEs are dispatched by local law enforcement dispatch agencies upon notification of a death that may fall under OCME jurisdiction. If an ADME accepts jurisdiction, he/she responds to the death scene and gathers information from police, witnesses, family and medical personnel. ADMEs work alongside of but independent from law enforcement. They make observations of the scene, perform a limited physical examination of the body and consult with the on call forensic pathologist to determine if an autopsy is necessary to determine cause and manner of death. In approximately 1/3 of cases, the body is transported to OCME for autopsy. If no autopsy is required, the body is transported to a funeral home where the ADME completes a thorough physical examination, documents any findings, and obtains specimens for toxicology testing.



## Death Investigations

In the last biennium, OCME actively investigated 3592 deaths. Of those, 1149 received an autopsy and 2443 received an external examination (Figure 2). OCME was also consulted but declined jurisdiction on approximately 4,000 deaths. In addition, ADMEs viewed over 25,000 decedents prior to cremation and reviewed their death certificates to identify any deaths that needed further investigation. OCME activity in the last biennium is illustrated in the following charts.

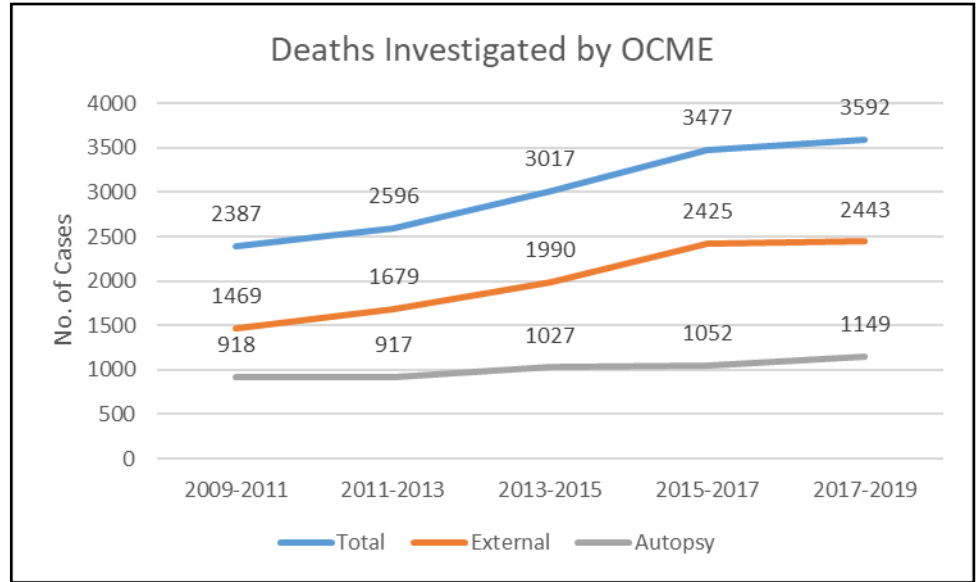


Figure 2 Deaths investigated by OCME from 2009-2019 by external examination or autopsy.

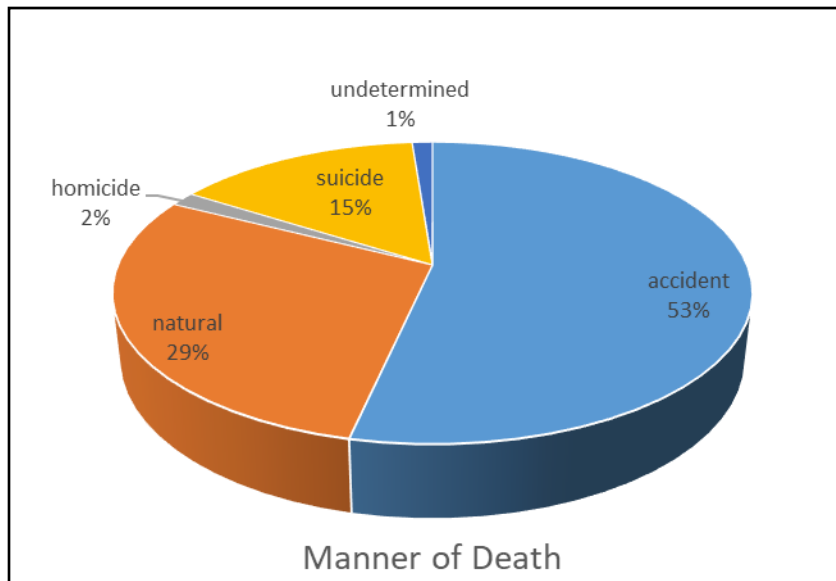


Figure 3 Deaths investigated in 2017-2019 by manner of death.

## Manner of Death

Figure 3 shows the manner of death distribution for the 3592 deaths investigated in the 2017-2019 biennium. The majority of deaths are fatal accidents (1921, 53%) followed by natural deaths (1041, 29%) suicides (531, 15%) and homicides (55, 2%). In 44 (1%) cases the manner of death could not be determined.



## Fatal Accidents

Figure 4 shows the major causes of death for the 1921 fatal accidents. The majority of fatal accidents are almost evenly divided between fatal drug overdoses and deaths resulting from blunt trauma.

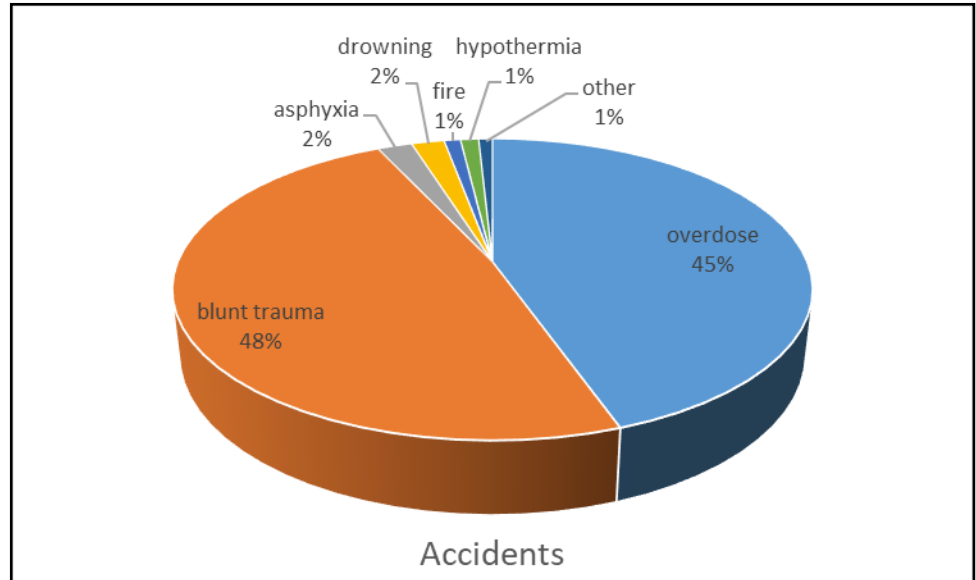
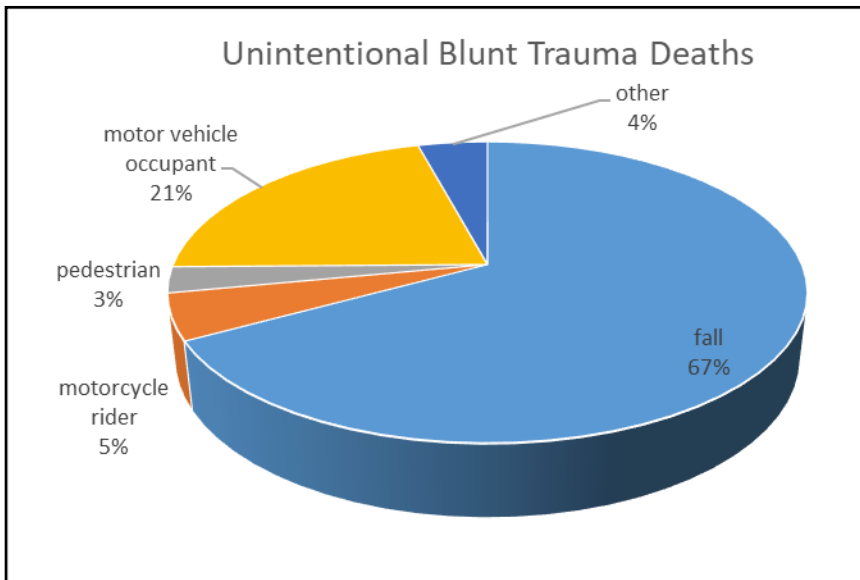


Figure 4 Major causes of death for accidents investigated in 2017-2019



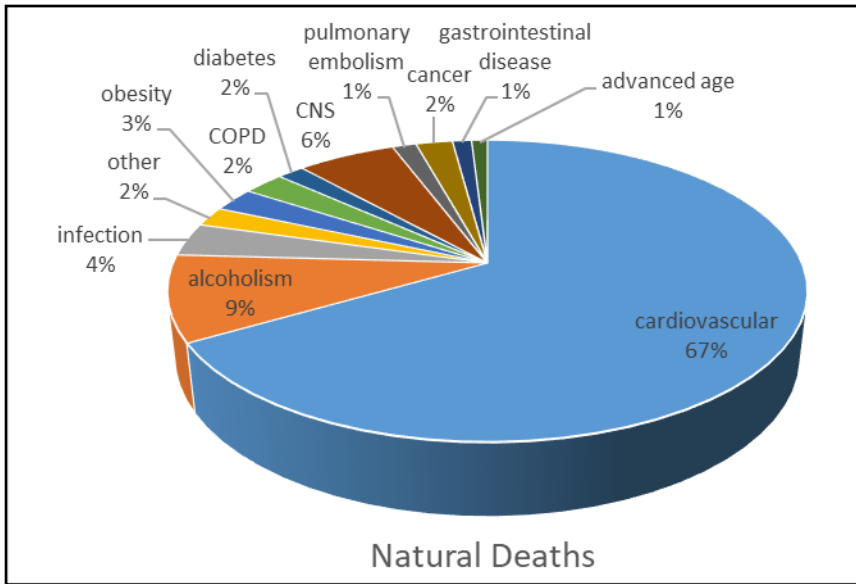
## Fatal Accidents from Blunt Trauma

The major causes of the blunt trauma deaths are shown in Figure 5. Approximately 2/3 of accidental deaths from blunt trauma resulted from falls and most of the remaining deaths resulted from motor vehicle collisions. Approximately 90% of the deaths resulting from falls occurred in individuals 65 years or older.

Figure 5 Major causes of the fatal accidents in which death resulted from blunt trauma



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## Natural Deaths

Figure 6 shows the major causes of death for the 1,041 natural deaths. Approximately 2/3 of natural deaths are due to cardiovascular diseases including heart disease and aneurysms. Complications of alcoholism rank a distant second followed by diseases of the central nervous system, including epilepsy, stroke and degenerative diseases such as Alzheimer Disease. Fatal infections, including pneumonia, bacterial endocarditis and urosepsis, ranked fourth.

Figure 6 Major causes of natural deaths investigated in 2017-2019

## Homicides

Figure 7 shows the major causes of death for the 55 homicides. Over half (33, 60%) resulted from gunshot wounds followed by blunt trauma (9, 16%), asphyxia (7, 13%) and sharp injuries (5, 9%) i.e. cuts and stab wounds. Most of the homicidal asphyxias were caused by strangulation. In one case the cause of death could not be determined due to advanced decomposition.

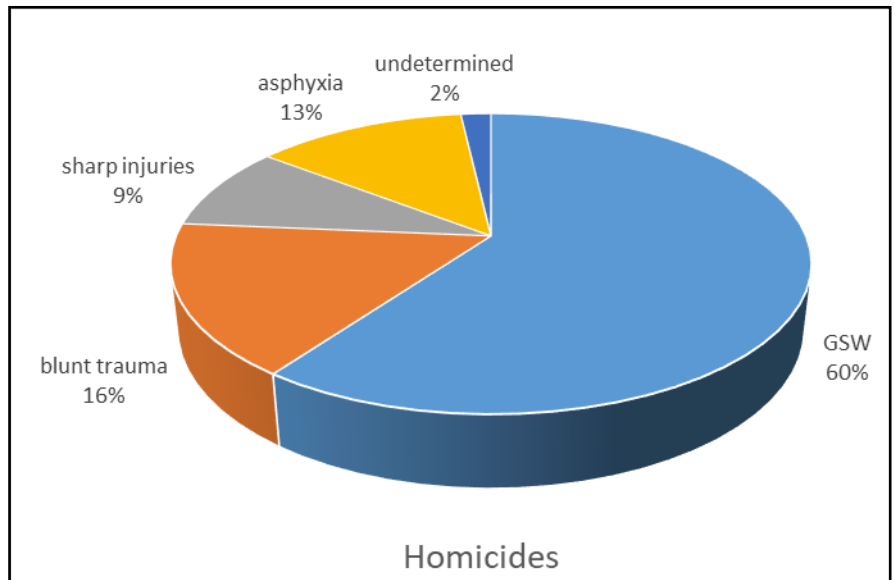


Figure 7 Major causes of death for homicides investigated in 2017-2019



## Suicides

Figure 8 shows the major causes of death for the 531 suicides. Almost half of deaths resulted from self-inflicted gunshot wounds (GSW), one third from asphyxia (predominantly hanging) and 13% from intentional overdose.

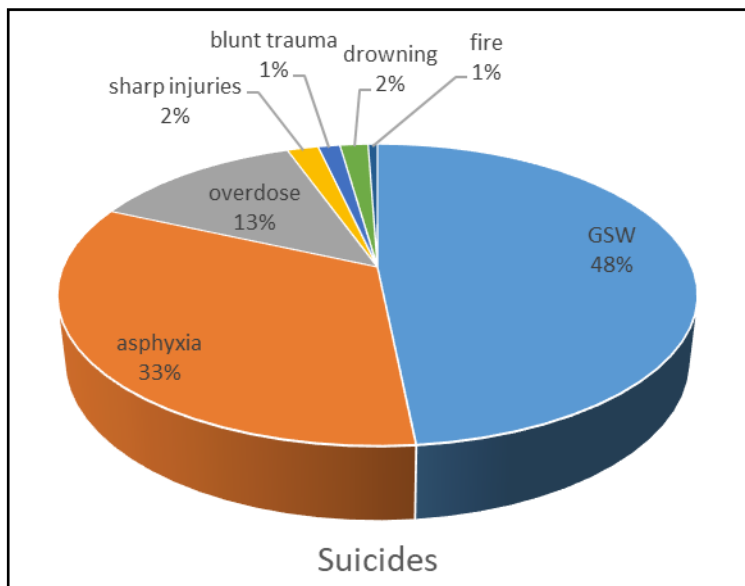


Figure 8 Major causes of death for suicides investigated in 2017-2019

## Undetermined Deaths

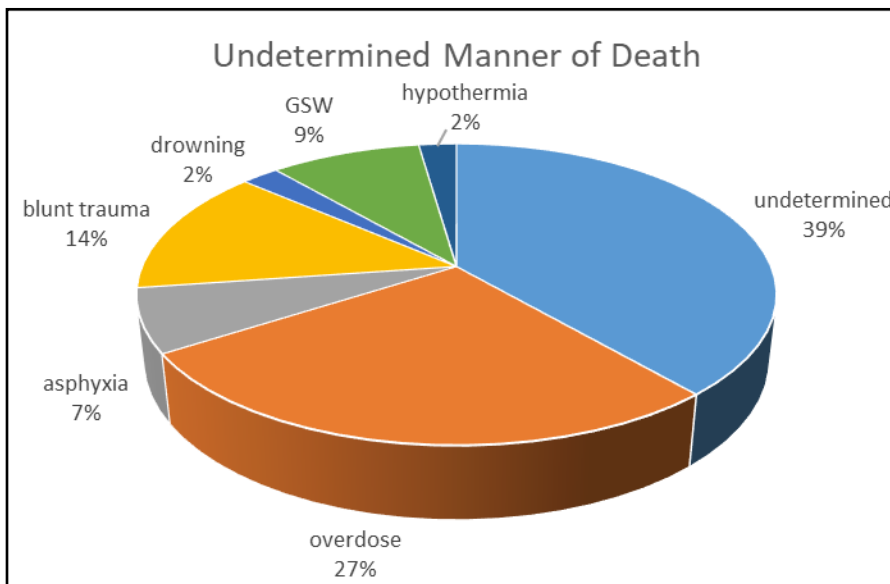


Figure 9 Major causes of death in 2017-2019 with undetermined manner of death

Figure 9 shows the major causes of the 44 deaths where the manner of death could not be determined. In the majority of cases, the manner of death could not be determined because the cause of death could not be determined, usually due to advanced decomposition. However this category also includes five infants discovered deceased in unsafe sleep environments. Fatal overdoses with undetermined manner of death typically represent cases where it is not possible to differentiate an intentional from an accidental overdose. Similarly, most traumatic deaths with undetermined manner of death typically represent cases where it is not possible to differentiate self-inflicted from accidental trauma.



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## Other Professional Activities

In addition to the daily caseload, OCME staff actively participate in the following state wide fatality review committees and the Office of National Drug Control Policy Emerging Threats Committee. Committees review the circumstances of death, identify risk factors and develop recommendations with the goal of preventing future deaths.

- Child Fatality Review Committee
- Trauma Fatality Review Committee
- Sudden Unexpected Infant Death Committee
- Sudden Death in the Young Committee
- Drug Overdose Fatality Review Committee
- Maternal Mortality Committee
- Elderly and Incapacitated Adult Fatality Review Committee
- Suicide Prevention Committee
- Domestic Violence Fatality Review Committee

OCME pathologists and ADMs may be called to provide deposition or trial testimony in criminal and civil cases in Superior Court, district and family courts, or before other agencies such as the State Labor Board and Medical Board. In the last biennium, the chief medical examiner, deputy chief medical examiner and associate medical examiner were deposed 14 times and testified in 14 criminal trials.

OCME staff, including ADMs, are very involved in teaching students at all levels from elementary school to medical school. The Forensic Pathology Lecture Series in the pathology residency program at Dartmouth Hitchcock Medical Center is taught by OCME staff. OCME also hosts pathology residents, medical students and physician assistant students for month long rotations to learn technical skills and get a first hand look at anat-

my, disease processes and patterns of injury. In addition, OCME staff, including ADMs, are frequently invited to speak to local and municipal agencies, law enforcement agencies, and health care providers on a variety of subjects.

OCME staff are also regularly invited to speak at local and regional conferences. Conferences in the last biennium included the Annual Northern New Hampshire Emergency Medical Services conference (October 28-29, 2017 and October 20, 2018, North Conway, NH), the 3<sup>rd</sup> Annual Summit on Treating Opiate-Dependent Patients (November 17, 2017, Manchester, NH), the 24<sup>th</sup> Annual Education Conference of the New England Division International Association for Identification (December 5, 2017, Portsmouth, NH), the 22<sup>nd</sup> Annual Northeast Regional Psychiatric Nursing Conference (April 6, 2018, Concord, NH), the 2018 New England Fire Investigation Seminar (May 25, 2018, Manchester, NH), the 2018 New Hampshire Association of Peri-Operative Nurses (June 2, 2018, Dover, NH), the 2019 Elliot Hospital EMS Conference (March, 7, 2019, Bedford, NH), the Annual New Hampshire Emergency Preparedness Conference (June 4, 2019, Manchester, NH) and the 4<sup>th</sup> Annual New England Regional Public Health Conference (June 13, 2019, Kennebunkport, ME).

For many years OCME staff have served as faculty members of the Annual New England Seminar in Forensic Sciences at Colby College in Waterville Maine. Presentations by NH OCME staff in the last biennium included "Implantable Cardiac Devices and Cause of Death", "Update and Review: The Choking Game", Forensic Case Studies, "Sudden Death in Chronic Alcoholism", "The Negative Autopsy", "Identification, Finding Family and NamUs", and "Investigation of Related Cases: Bodies in Barrels".



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## The Opioid Epidemic

New Hampshire continues to experience a large number of deaths from drug overdoses (Figure 10). Although drug overdose deaths appear to have stabilized over the last biennium, New Hampshire ranked 6<sup>th</sup> in the country in drug overdose mortality in 2018.

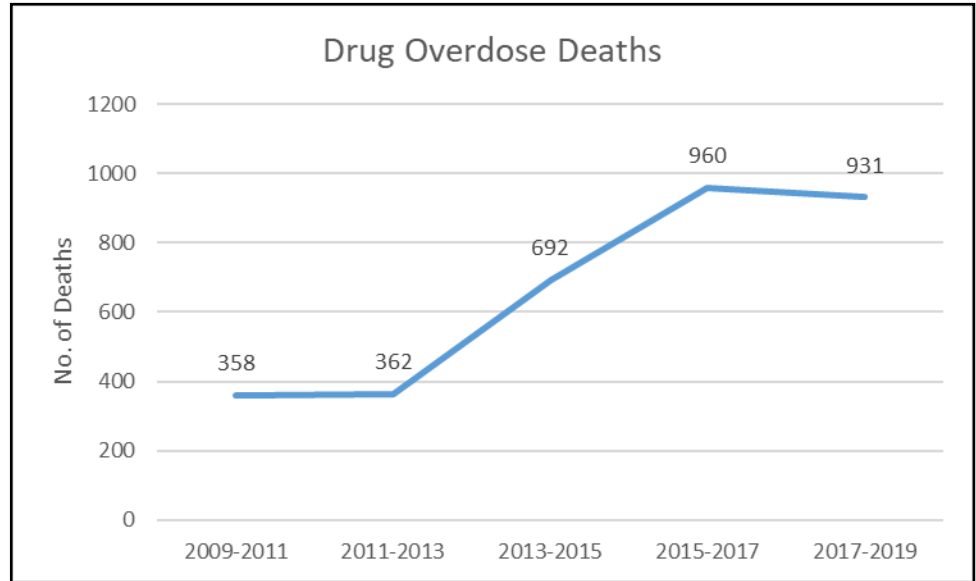


Figure 10 Drug Overdose Deaths in New Hampshire

As in previous years, the drug driving the high rate of overdose deaths in New Hampshire is fentanyl (Figure 11). Fentanyl is a pharmaceutical drug but the fentanyl found at most death scenes is non-pharmaceutical fentanyl produced in illicit labs in Mexico and China. Heroin, a major contributor to drug overdose deaths at the start of the opioid epidemic, has all but disappeared. Only 17 of the 931 drug overdose deaths in the last biennium involved heroin.

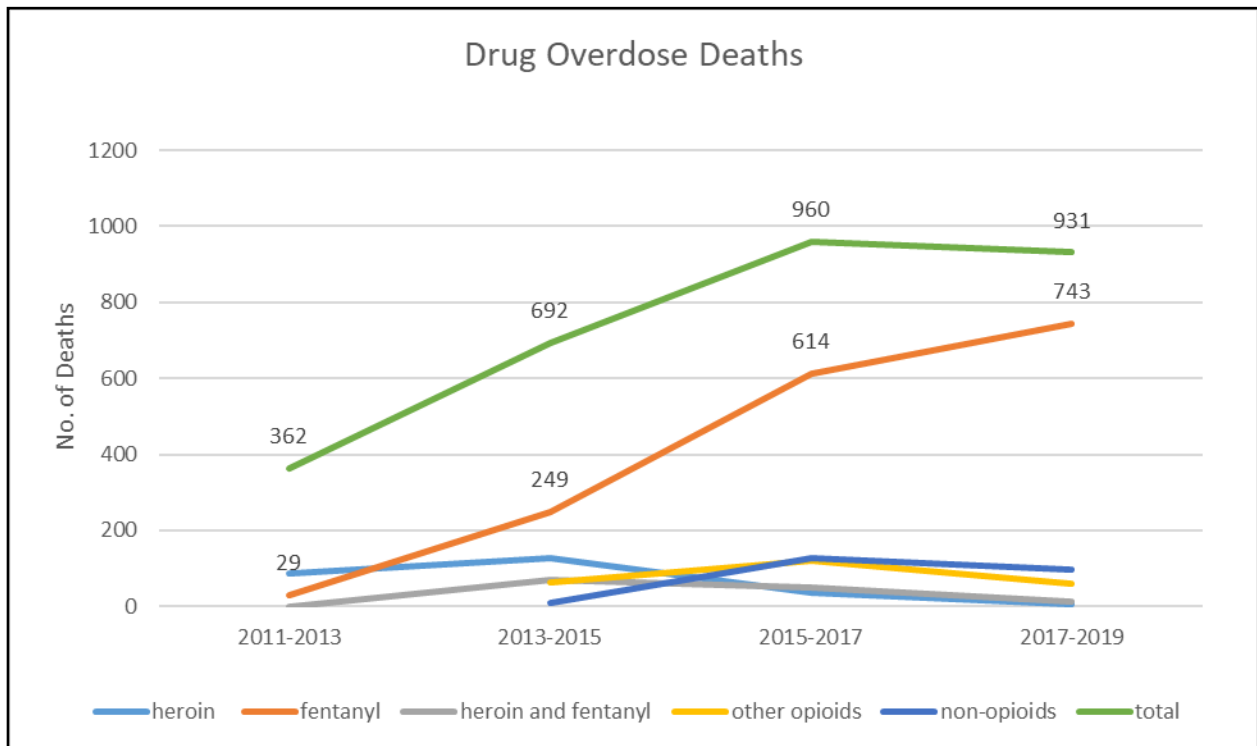


Figure 11 Drug Overdose Deaths in New Hampshire





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Fentanyl may also be combined with other drugs including fentanyl analogues and other novel psychoactive substances. Fentanyl analogues are drugs that are chemically similar to fentanyl but may be more or less potent than fentanyl. By far the most frequently detected fentanyl analogue in the last biennium was acetyl fentanyl, contributing to 186 deaths. Very few deaths involved other fentanyl analogues/synthetic opioids: valeryl fentanyl (4), para-fluoroisobutyrylfentanyl (1), combined carfentanil and U-47700 (1), and combined furanyl fentanyl and para-fluorobutyryl fentanyl (1). Of the five deaths involving mitragynine (Kratom), an herbal supplement with stimulant and opioid-like properties, four also included fentanyl.

An increasing number of drug overdose deaths are attributed to the combination of fentanyl and methamphetamine or cocaine. In the last biennium, 108 out of 130 (83%) cocaine-related deaths and 47 out of 55 (85%) methamphetamine-related deaths included fentanyl. Eight of these deaths resulted from the combination of cocaine, methamphetamine and fentanyl. Four additional deaths involving methylenedioxymethamphetamine (MDMA), a stimulant structurally similar to methamphetamine, also included fentanyl.

OCME staff compile the drug overdose death data, update it monthly and distribute it to over 250 local, state and federal agencies as well as numerous media outlets. Many recipients use the drug death data to plan their agency response to the crisis.

The high rate of overdose deaths continues to strain the staff and resources of OCME. The investigation report, medical record, autopsy findings, and toxicology report must be thoroughly reviewed by the forensic pathologist before the death is confirmed to be an overdose. The high caseload has overwhelmed the staff pathologists resulting in delays in finalizing death certificates and autopsy reports. These delays can interfere with law enforcement investigations and present a hardship for families who cannot receive death benefits until the death certificate is completed. Although there are currently three legislated positions for staff pathologists, the nationwide shortage of trained forensic pathologists has hampered the ability to fill all three positions. Thus the OCME continues to rely on intermittent contracted forensic pathologists to offset the caseload and meet accreditation standards.

The Office of Chief Medical Examiner was fully accredited for a 5 year period for the third consecutive time in 2017 by the National Association of Medical Examiners (NAME). Accreditation by NAME indicates that the office is performing at a high level of competence and public service.