



ATTORNEY
GENERAL
DEPARTMENT
OF JUSTICE

OFFICE OF
CHIEF
MEDICAL
EXAMINER

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BIENNIAL
REPORT
2015 - 2017

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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 our 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 four biennials 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.

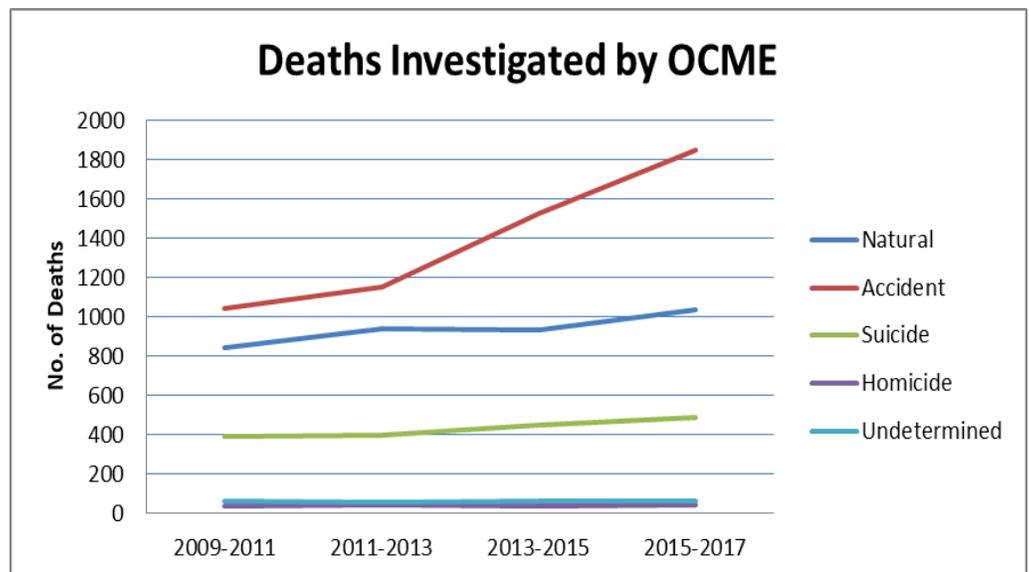


Figure 1 Deaths investigated by OCME from 2009-2017



OCME Biennial Report 2015 –2017

OCME Staff

The case load is handled by an OCME staff consisting of four full-time employees - two board certified forensic pathologists (chief and deputy chief medical examiners), a chief forensic investigator, an administrative assistant as well as a part-time evidence technician. In addition, there is a part-time Data Clerk, funded by a grant from the Centers for Disease Control and Prevention (CDC), who is responsible for entering information into a case registry of sudden unexpected infant deaths (SUID).

In late 2015, OCME hired a Planning Analyst for the National Violent Death Reporting System (NVDRS), also funded by a grant from the CDC. The responsibilities of the Planning Analyst are varied and encompass data analysis and management not only for NVDRS but also for Enhanced State Opioid Overdose Surveillance (ESOOS) deaths 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. In the last biennium, OCME trained 2 new ADMEs and added 2 ADMEs with previous death investigator training and experience to their ranks. As of July 2017 there were 21 appointed ADMEs available to conduct death scene investigations around the clock and throughout the state.

OCME provides biannual continuing education for the ADMEs. In the last biennium, speakers included forensic pathologists, investigators from the State Police Major Crimes Unit, the chief of the NH DOJ Homicide Unit, the director of the NH DOJ Victim Witness Advocate Program, an agent from the United States Drug Enforcement Agency, and the director of NH Vital Records Administration. In addition to biannual 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. The ADME responds to the death scene and gathers information from police, witnesses, family and medical personnel. ADMEs work alongside 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 one third 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 biennial, OCME actively investigated 3486 deaths. Of those, 1,128 received an autopsy and 2,358 received an external examination. OCME was also consulted but declined jurisdiction on approximately 3,700 deaths. In addition, ADMs viewed over 22,000 decedents prior to cremation and reviewed their death certificates to identify any deaths that needed further investigation. OCME activity in the last biennial is illustrated in the following charts.

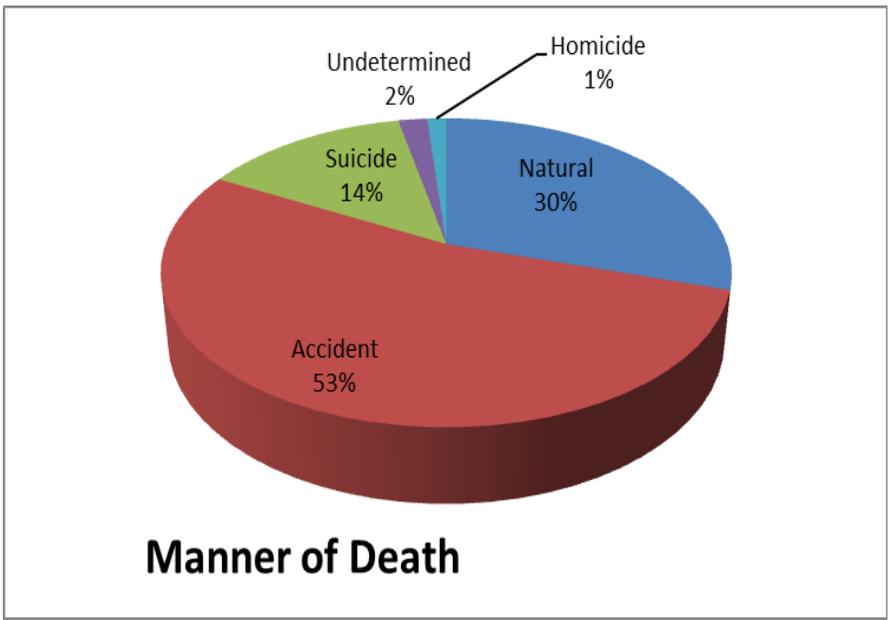


Figure 2 Deaths investigated in 2015-2017 by manner of death.

Figure 2 shows the manner of death distribution for the 3,486 deaths investigated in the 2015-2017 biennium. The majority of deaths are fatal accidents (53%) followed by natural deaths (30%) and suicides (14%). In 2% of cases the manner of death could not be determined. Only 1% of the deaths investigated are homicides.

Natural Deaths

Figure 3 shows the major causes of natural death. Approximately two thirds of natural deaths are due to cardiovascular diseases including heart disease and aneurysms. Complications of alcoholism rank a distant second followed by infectious diseases. (CNS , central nervous system; COPD, chronic obstructive pulmonary disease)

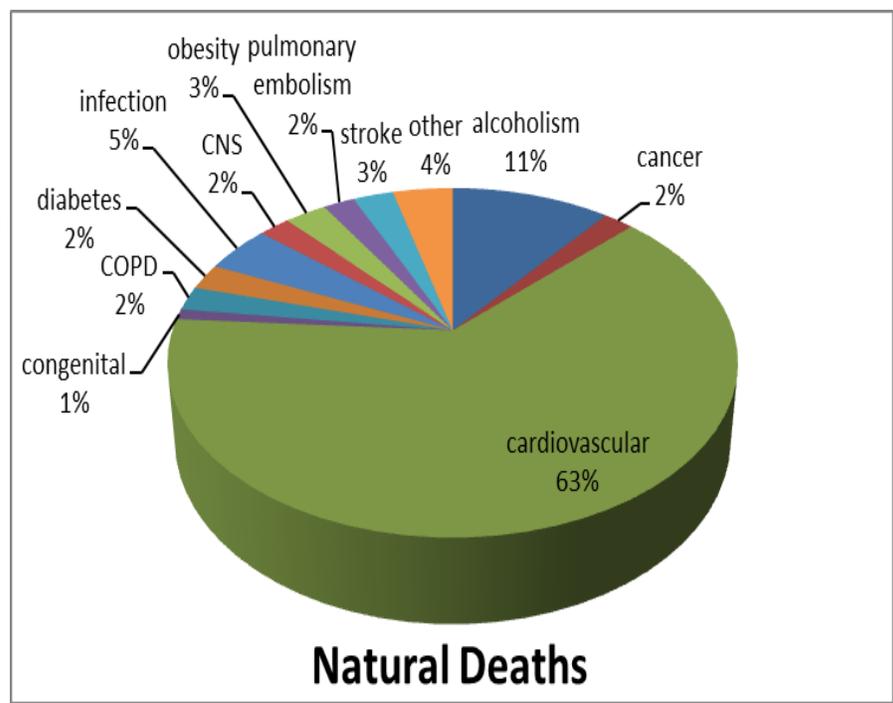


Figure 3 Major causes of natural deaths investigated in 2015-2017



Fatal Accidents

Figure 4 shows the major causes of death for fatal accidents. The vast majority of fatal accidents are evenly divided between fatal drug overdoses and deaths caused by blunt trauma. The major causes of the fatal accidents in which death resulted from blunt trauma is shown in Figure 5. Approximately two thirds of accidental deaths from blunt trauma resulted from falls and most of the remaining one third resulted from motor vehicle collisions. Approximately 90% of the deaths resulting from falls occurred in individuals over the age of 64 years.

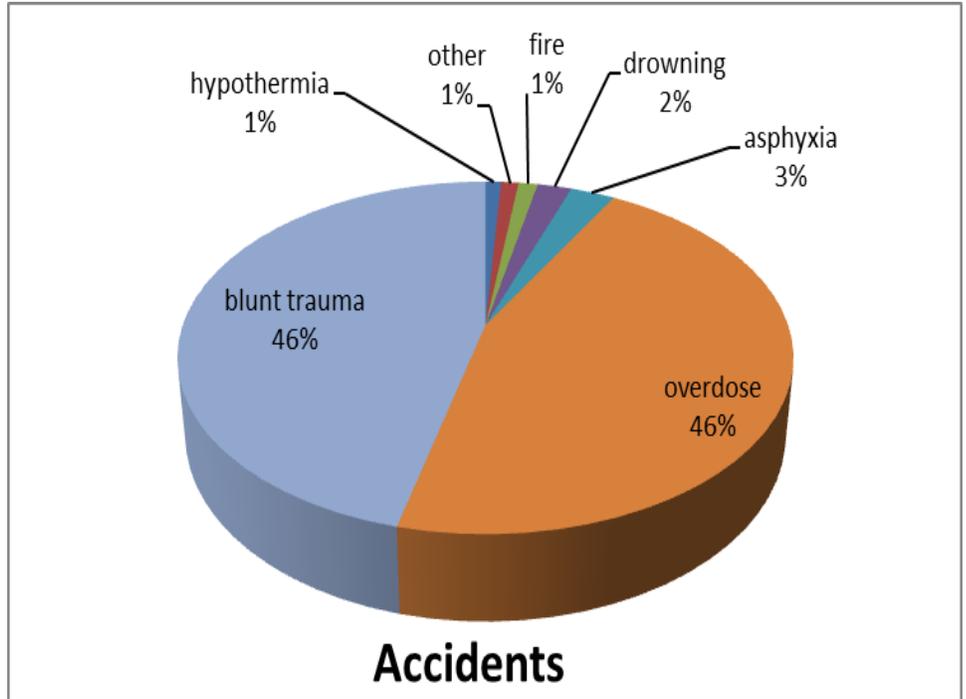


Figure 4 Major causes of fatal accidents investigated in 2015-2017

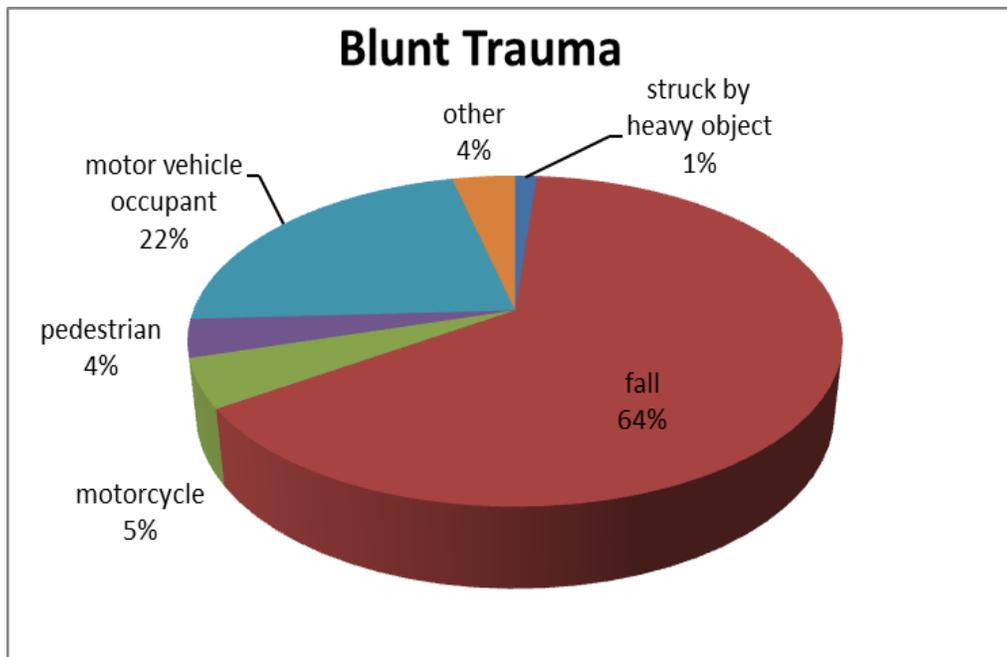


Figure 5 Circumstances leading to fatal accidents from blunt trauma in 2015-2017



Suicides

Figure 6 shows the major causes of death for suicides. Almost half of deaths resulted from self-inflicted gunshot wounds (GSW), one third from asphyxia (predominantly hanging) and 15% from intentional overdose.

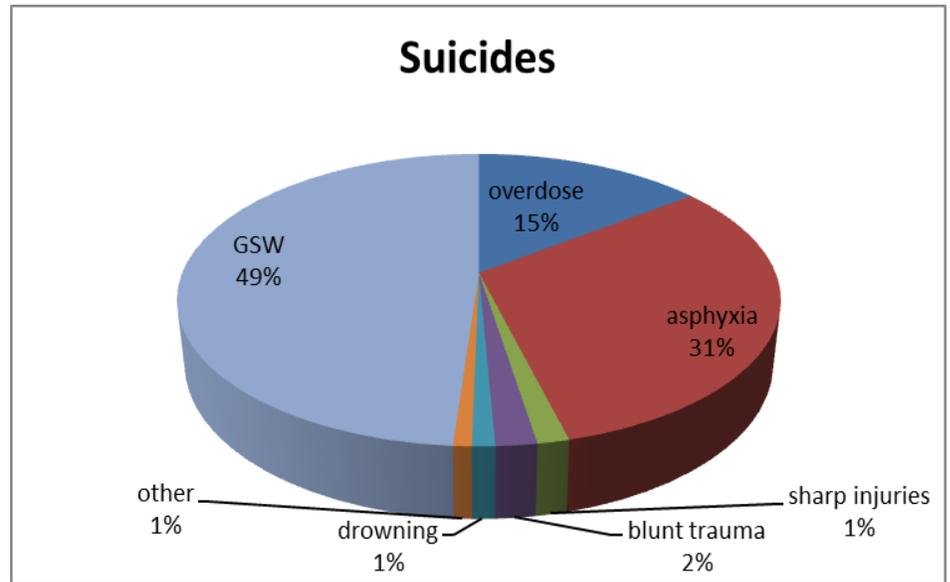


Figure 6 Major causes of suicides investigated in 2015-2017

Undetermined Manner of Death

Figure 7 shows the major causes of death where the manner of death could not be determined. The majority of deaths were evenly divided between fatal drug overdose and deaths where the cause of death also could not be determined. Over half of cases with undetermined cause and manner of death occurred in infants discovered de-

ceased in unsafe sleep environments. In most of the remaining cases the cause and manner of death could not be determined due to advanced decomposition. Fatal overdoses with undetermined manner of death typically represent cases where it is not possible to differentiate an intentional from an unintentional 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.

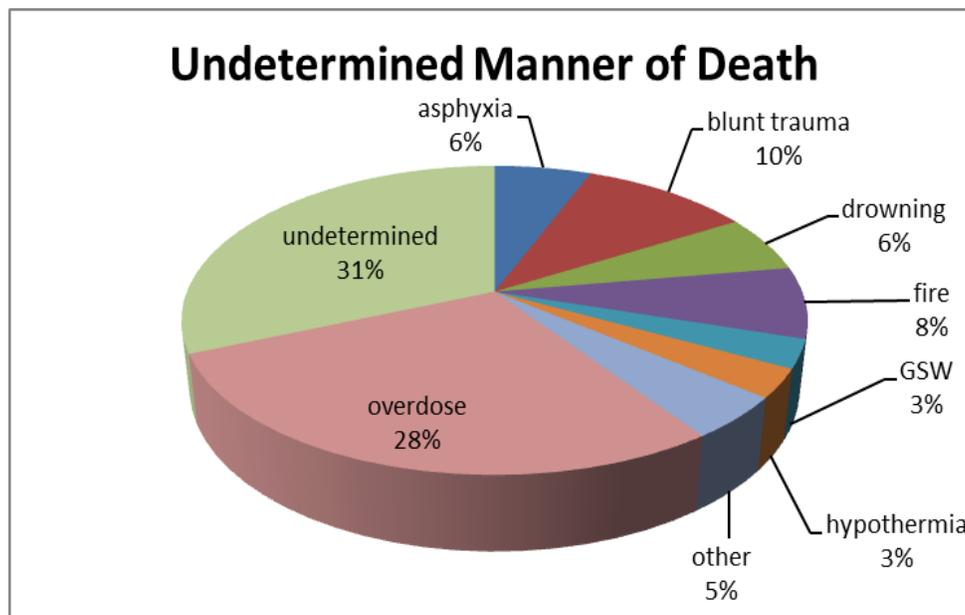


Figure 7 Major causes of death with undetermined manner of death in 2015-2017



Homicides

Figure 8 shows the major causes of death for the 45 homicides investigated in the last biennium. Half (23) resulted from gunshot wounds, 10 from blunt trauma and 6 from sharp injuries (i.e. cuts and stab wounds). The remaining cases included arson fire (1), strangulation (2), homicide by undetermined means (1), and overdose (2). The overdose victims were infants who died from acute fentanyl intoxication and acute methamphetamine intoxication, respectively.

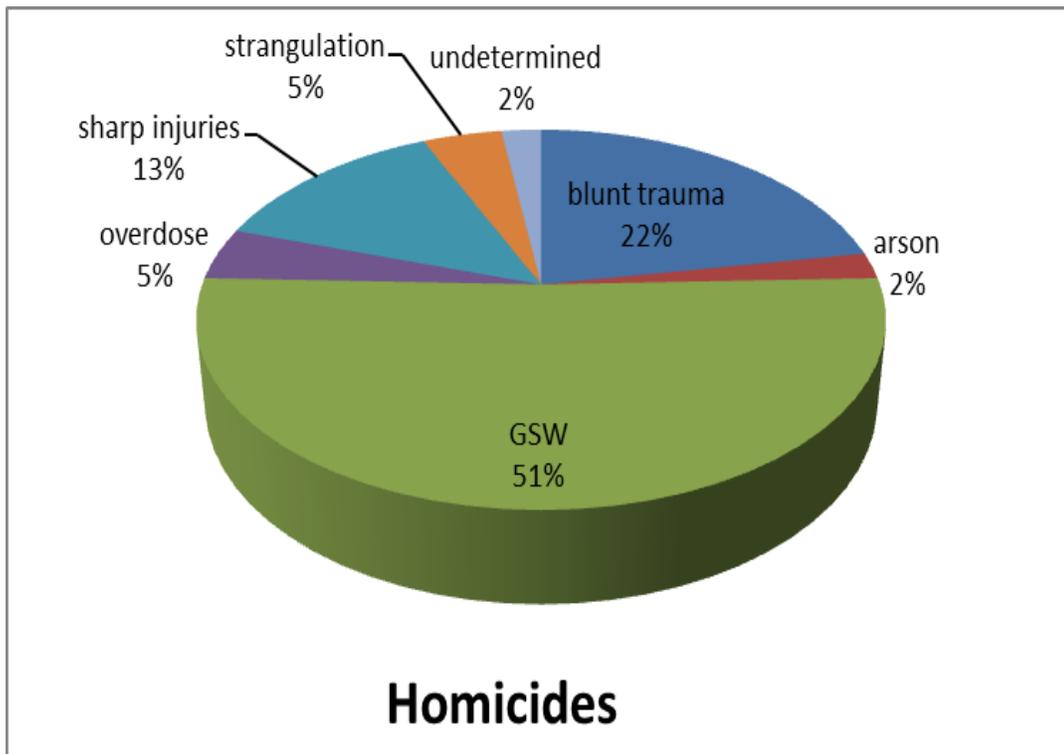


Figure 8 Major causes of homicides investigated in 2015-2017



Professional Activities

In addition to the daily caseload, OCME staff actively participate in the following state wide fatality review committees. 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 biennial, the chief medical examiner and deputy chief medical examiner were deposed 20 times and testified in 16 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 anatomy, 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.

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 biennial included Maternal Deaths, Elder Abuse, Forensic Controversies, Infant Death Investigation, Implantable Cardiac Devices, Forensic Case Studies, and Identification, Finding Families and NAMUS (National Missing and Unidentified Persons System).

OCME staff regularly present proffered papers at national and international scientific meetings and publish articles in scientific journals. Presentations in the last biennial included “Bound to Die” at the American Academy of Forensic Sciences Annual Scientific Meeting in 2017 and “Dissection Allows Certification of a Pill Death that is Neither Asphyxiation nor Intoxication” at the National Association of Medical Examiners Annual Meeting in 2015. “Common Findings and Predictive Measures of Opioid Overdoses” was presented at the National Association of Medical Examiners Annual Meeting in 2016 by an OCME intern who won the Best Student Paper award for her research and presentation.

Articles published in scientific journals in the last biennial include:

- “Confronting an upsurge in opiate deaths with limited resources” *Acad Forensic Pathol.* 2017 Mar; 7(1): 7-18
- Common findings and predictive measures of opioid overdoses. *Acad Forensic Pathol.* 2017 Mar; 7(1): 91-98.
- Additive Effects of Cointoxicants in Single-Opioid Induced Deaths. *Acad Forensic Pathol.* 2016 6(3): 532-542.
- An association of hippocampal malformations and sudden death? We need more data. *Forensic Sci Med Pathol.* 2016. doi:10.1007/s12024-016-9765-1.
- “Congenital and acquired causes of toxic megacolon” *ASCP Case Reports Forensic Pathology No. FP 16-2*



Drug Deaths

As may be inferred from recent publications, New Hampshire has been experiencing an overwhelming number of deaths from drug overdoses, predominantly opioid overdoses, in recent years. In 2016 New Hampshire had the third highest rate of drug overdose deaths in the country. There were 362 deaths in the 2011-2013 biennial, 692 in the 2013-2015 biennial and 960 death in the 2015-2017 biennial as illustrated in Figure 9.

years is fentanyl. 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.

Fentanyl may also be combined with heroin, cocaine and other drugs including fentanyl analogues. Fentanyl analogues are drugs that are chemically similar to fentanyl but may be more or less potent than fentanyl. More than 80 fentanyl deaths in the last biennial also included the fentanyl analogues furanyl fenta-

nyl, fluoro-fentanyl, and/or acetyl fentanyl. Also detected was U-47700, yet another novel synthetic opioid.

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.

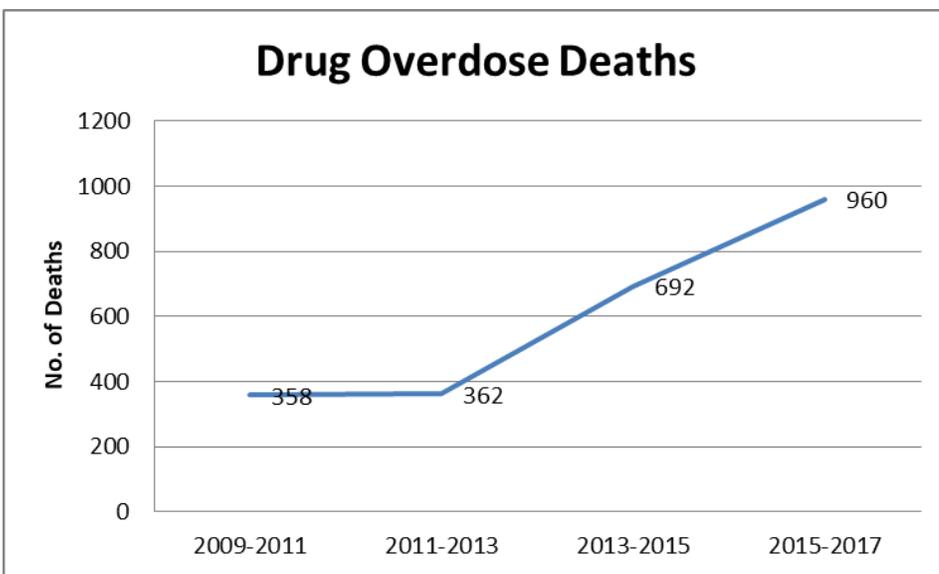


Figure 9 Drug overdose deaths in New Hampshire

New Hampshire has seen a shift in the predominant opioid responsible for fatal overdoses. In 2013, heroin deaths in NH almost doubled from the previous year. 2014 saw another sharp increase in heroin deaths. In the following years, deaths from heroin fell as deaths from fentanyl rose sharply. Fentanyl (alone or in combination with other drugs excluding heroin) caused fewer than 30 deaths in the 2011-2013 biennial, almost 250 in the 2013-2015 biennial and over 600 deaths in the 2015-2017 biennial, as illustrated in Figure 10. By far, the drug driving the increase in overdose deaths in the past few

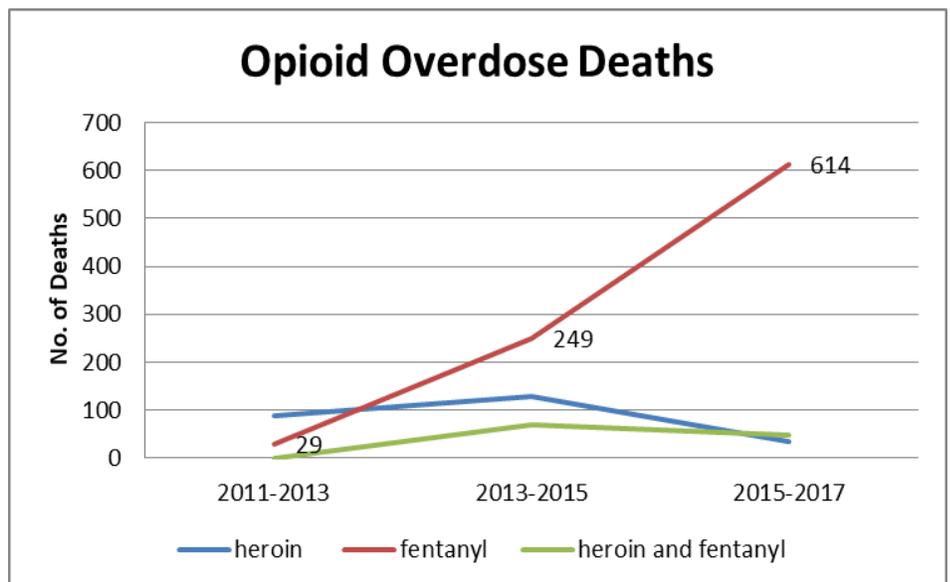


Figure 10 Opioid overdose deaths in New Hampshire



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Impact of the Opioid Epidemic on the OCME

The increase in overdose deaths has put a severe strain on 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 two staff pathologists resulting in long 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. In response, the legislature created two new full time positions at OCME for a third pathologist and an administrative assistant.

With the promise of additional staff, 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.