



H42 A Review of Manner of Death in Denver's Homeless Population (2016–2018)

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Learning Overview: After attending this presentation, attendees will understand the trends of manner and manner subtypes of death in the homeless population of Denver, CO.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by describing emerging trends of various causes involving specific drug types, natural disease processes, and multifactorial related deaths in Denver's homeless.

In 2016, 10,550 individuals experienced homelessness in Colorado.¹ The state experienced the third-largest percent increase in homelessness nationally between 2015 and 2016. Homeless individuals are at a greater risk for illness and death than the general population. The experience of being homeless has been found to be an independent risk factor for mortality.² Studies show that homeless persons report difficulty accessing health care and experience low rates of outpatient care.³ Harsh living conditions, such as sleeping outdoors in extreme weather and crowded shelters, increase the risks of exposure to disease, violence, and poor access to proper nutrition. These factors further limit an individual's ability to obtain health care and medications, preventing them from managing health issues. Furthermore, a state of homelessness can result in the exacerbation or development of behavioral health problems.

The Denver Office of the Medical Examiner (DOME) investigates deaths in the City and County of Denver and is responsible for the certification of death. It is involved with the investigation of more than 2,000 deaths and performs approximately 800 autopsies annually. Board-certified forensic pathologists are charged with the examination of a body to determine the cause, manner, and mechanism of death as well as documentation of any injuries or diseases. In this jurisdiction, deaths are categorized by manner, which consist of natural, accident, suicide, homicide, undetermined, and are further subcategorized by cause.

The DOME maintains a searchable database of all deaths occurring in Denver County that are reported to the office. The database was queried for deaths from 2016 to July 2018 in known cases of homeless persons. Specific details of each case were examined, including age, race, and gender of the decedent, as well as place of injury, place of death, any contributing factors, manner, and final cause of death. In cases in which toxicology studies are performed, the specific drug or drugs detected are identified. Toxicological testing is performed primarily on samples of postmortem peripheral blood with occasional substitution of heart or cavity blood. Additional toxicologic studies are performed on urine or antemortem specimens in some cases. Toxicological testing was performed according to internal laboratory protocols with appropriate controls at National Medical Services, Inc, Willow Grove, PA, by means of High Performance Liquid Chromatography/Tandem Mass Spectrometry (HPLC/MS/MS).

The total number of homeless deaths in Denver within the specified time was 230. Of those, 114 were accidental (10 traffic related), 80 were natural, 15 were suicide, 11 were homicide, and 10 were undetermined. The total number of homeless deaths in 2016 was 79. Thirty-seven were accidental (4 traffic related), 26 were natural, 5 were suicide, 4 were homicide, and 7 were undetermined. The total in 2017 was 103. Fifty-three were accidental (5 traffic related), 36 were natural, 7 were suicide, 6 were homicide, and 1 was undetermined. The total from January 2018 to July 2018 was 48. Twenty-four were accidental (1 traffic related), 18 were natural, 3 were suicide, 1 was a homicide, and 2 were undetermined. Emerging trends in all three years included deaths ruled as accidental ($n=104$, 45%) or natural ($n=80$, 34%) as the most common manners. Approximately 50% of the accidental deaths were due to intoxication, showing detection of heroin, cocaine, and methamphetamine or a combination of illicit drugs in combination with prescription drugs or ethanol. Among natural deaths, heart disease with various contributing factors was the most common cause of death at approximately 40%. The majority of cases examined were complete autopsies; however, ($n=20$, 8.7%) of these were external examinations only.

Reference(s):

1. The number of homeless individuals is measured by point-in-time counts, which are unduplicated one-night estimates of both sheltered and unsheltered homeless populations. The one-night counts are conducted by Continuums of Care nationwide and occur during the last week in January of each year. *Continuum of Care Homeless Assistance Programs Homeless Populations and Subpopulations*. HUD, 2016.
2. Morrison. Homelessness as an Independent Risk Factor for Mortality: Results From a Retrospective Cohort Study. *International Journal of Epidemiology*, 38 (2009): 877-883.
3. Bushnell et al. Factors Associated With the Health Care Utilization Of Homeless Persons. *JAMA*. 285 (2001): 200-206.

Denver, Homeless, Deaths