

### H55 Prevalence and Etiology of Intervention-Related Deaths — A Swedish Perspective

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After attending this presentation, attendees will understand the etiology and prevalence of intervention-related deaths in Sweden.

This presentation will impact the forensic science community by providing information on prevalence, etiology, and associations of intervention-related deaths in a northern European population.

Deaths related to intervention by police are often highly publicized and often lead to accusations of the forensic and legal system covering up police brutality, leading to a risk of undermining the public's trust. Knowledge of risk factors, circumstances, and mechanisms related to these fatalities is therefore of value.

Two main mechanisms have been discussed in relation to sudden death during intervention: Excited Delirium Syndrome (EDS) and positional asphyxia. EDS is characterized as a life-threatening condition where the decedents expresses bizarre and violent behavior, hyperthermia, and sudden death, mostly following a violent restraint situation. The syndrome has a strong link to drug use, primarily cocaine and methamphetamine.<sup>1,2</sup> Positional asphyxia refers to a situation where the decedent has been put in a body position that restrains breathing that he or she could not escape. This is often combined with so-called traumatic asphyxia, a situation in which there is a heavy pressure exerted on the thorax, preventing normal breathing. The most common body position described is a prone position with arms and legs tied behind his or her back, often referred to as a "hog-tie" position.<sup>2</sup>

All deaths linked to intervention by the police and other authorities with direct or short-range contact from 1992 through 2014 were collected from the Swedish National Board of Forensic Medicine data base. The study included all deaths that could be directly linked with a physical intervention or shooting and where loss of consciousness or death occurred within ten minutes of the encounter.

During the study period, there were 22 shooting deaths and 33 non-shooting deaths, making an annual average of 0.010 and 0.016 deaths/100,000 citizens, respectively. There was a decline in the incidence of non-shooting deaths, 0.024 and 0.008/100,000 citizens during 1992-2003 and 2004-2014, respectively. The corresponding figures for shooting deaths were 0.009 and 0.012, respectively.

In the shooting-death population, all decedents were male with a mean age of 36.6 years. Eighteen (82%) were under the influence of alcohol and/or drugs, most commonly amphetamine. In most cases, there was a perceived threat by the police, the most common threat being the decedent attacking with a knife. The majority of shots fired by the police were at short range and without prior warning shots (59%).

In 20 (61%) non-shooting deaths, excited delirium syndrome was deemed the probable cause of death. Of the remaining 13 cases, the cause of death was traumatic asphyxiation in five cases (38%), aspiration of stomach contents in two cases (15%), cardiac arrhythmia in one case (8%), and undetermined in five cases (38%). In the EDS group, 17 were male and 3 female with a mean age of 37.4 years. The decedents in this group were all under the influence of drugs (80%) and/or showed psychotic behavior prior to death. Police were involved in 22 cases (67%) overall and in 18 of the EDS cases (90%).

Police are involved in the majority of these deaths, especially EDS cases; however, intervention-related deaths are rare and, compared to the number of people detained for intoxication in Sweden, there was roughly one death per 31,000 such events during the past ten years. The true rate of death per police intervention is probably far less.

The majority of decedents in Swedish intervention-related deaths are males in mid to late 30s with either significant comorbidity and/or drug intoxication, the most common intoxicating agent being amphetamine.

#### Reference(s):

1. Gill, J.R. The syndrome of excited delirium. *Forensic Sci Med Pathol* 2014;10:223-228.
2. Tamsen F., Thiblin I. Deaths during apprehensions of agitated persons. A review of proposed pathophysiological theories. *Scand J Forensic Sci* 2014;20:3-8.

#### Excited Delirium Syndrome, Police Intervention, Police Shootings