

## National drowning research project in Finland

Kai Valonen<sup>1</sup>, Tom Hanän<sup>2</sup>, Kati Hernetkoski<sup>3</sup>, Philippe Lunetta<sup>4</sup>, Janne Ollikainen<sup>5</sup>  
and Markku Tuominen<sup>6</sup>

Accident Investigation Board of Finland<sup>1</sup>, Finnish Border Guard<sup>2</sup>, Department of Behavioural Science and Philosophy, University of Turku<sup>3</sup>, Department of Forensic Medicine, University of Helsinki<sup>4</sup>, The Finnish Worker's Sport Federation TUL5, National Bureau of Investigation NBI<sup>6</sup>

### Background

Finland (population 5.4 million) is a water-oriented society with high mortality in aquatic settings. According to WHO data, Finland continues to have, despite a downward trend, one of the highest drowning rates (ca. 3.8/100.000/year) among high-income countries. The quality of drowning data available in Finland is high, with 100% of bodies found in water currently undergoing police investigation and a full medico-legal autopsy, including toxicological analysis. The extensive medico-legal system of investigation of death and the high autopsy rates represent in Finland an excellent and reliable basis for studies on unintentional drowning. However, existing data on drowning collected and partially tabulated by Statistics Finland are clearly insufficient and inadequate to analyze drowning incidents and to develop effective preventive countermeasures. To implement the collection of data on drowning incidents, the Accident Investigation Board of Finland, operating under the Ministry of Justice, has launched, on 1 April 2010, a one-year multidisciplinary national research project on drowning.

### Aims

The main aims of the project are:

1. to analyze the circumstances, causes, and contributing factors of all unintentional drowning deaths occurring in Finland and among Finnish citizens abroad during the period 1 April 2010 to 31 March 2011
2. to establish targeted national safety recommendations to prevent drowning
3. to evaluate existing national databases on drowning and the possibility to develop and implement a permanent national surveillance system for water-related fatalities

### Methods

By means of a centralized police database, all cases and information concerning a body found in water are preliminarily selected for analysis. These selected cases are further screened, with results of the medico-legal investigations serving to identify cause and manner of death.

All cases of drowning deaths are subsequently analyzed by a multidisciplinary team using—in addition to key information collected from the police, rescue teams, and medico-legal investigation—an ad hoc questionnaire which gathers from police, victim's relatives, and bystanders further circumstantial and individual information (e.g. circumstances, weather conditions, supervision, victim's ability to swim, use of personal flotation devices) for each drowning case. In addition to the thorough study of each drowning case, the project team will select a sample of cases (5–10% of all unintentional drowning) to be analyzed by accident investigation methods such as interviews and technical / behavioral analyses.

The multidisciplinary project team has expertise in accident investigation, forensic medicine, safety research, behavioral science, crime investigation, swimming training, and lifeguarding. It cooperates extensively with all authorities and non-governmental organizations involved in drowning research, prevention, rescue, and education.

### Results

The project team has thus far (18 February 2011) collected and begun to process information from about total amount of 300 bodies found in water; data collection and processing will continue through the study period until 31 March 2011. In addition to the strategies used for data collection, our presentation will summarize the main results of the project, including demographic aspects of drowning in Finland, in-depth analysis of individual and circumstantial factors leading to death in water, and recommendations issued for drowning prevention.

### Conclusion

National research projects thoroughly examining the background of every single drowning are exceedingly rare. Strategies and approaches used during this research study may assist in developing and implementing a permanent and effective drowning surveillance system in Finland and may serve as a model also for other countries.

### Corresponding Author

M.Sc (Tech) Kai Valonen, Chief Accident Investigator  
Accident Investigation Board Of Finland  
Sörnäisten Rantatie 33C, Helsinki Finland 500  
Email: kai.valonen@om.fi  
Website: www.onnettomuustutkinta.fi  
Telephone: +358 9 16067902