

Research paper

Lack of overlap and large discrepancies in the characteristics of the deceased in two sources of drug death. A linkage study of the Cause of Death and the Police Registries in Norway 2007–2009



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ABSTRACT

Background: Registries for drug deaths may include different persons and provide different characteristics of the deceased. The aim of this study was to establish whether a database of drug-induced deaths (Cause of Death Registry (CDR) using the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) definition and the Police registry of drug deaths) included the same persons and provided the same characteristics of the deceased and thus yielded the same information for establishing targeted prevention measures.

Methods: Notifications from 2007 to 2009 were drawn from the CDR and the police registry of drug deaths and the unique Norwegian personal identification number was used to match the registrations.

Results: The two sources of drug deaths yielded 1384 registrations, encompassing 929 individuals of whom only 49% were included in both registries. A large proportion of the deceased (40%) were not listed in the police registry. This group was older (mean age 43 years vs. 35 years); dependence and suicide were listed more often as cause of death (33% vs. 8%); and heroin was listed less often as the type of drug causing death (24% vs. 67%) than those included in both registries. In particular, among women not included in the police registry, the cause of death was identified with much greater frequency as pharmaceuticals with morphine or codeine (47% vs. 16%).

Conclusion: The large discrepancies in size, overlap, and characteristics of the deceased included in two sources of drug death imply that prevention measures based on the two sources will differ.

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Introduction

Premature death is the most severe consequence of illegal drug use. Even though many judge the ethical responsibility to fall upon the user, it is now generally accepted that aiming to prevent such deaths must be included in central and local drug policies (Darke, Degenhardt, & Mattick, 2007). The accurate registration of relevant cases and studies of populations at high risk for drug death are necessary in order to improve prevention measures.

Although every case of death among high-risk drug users may be considered premature, overdoses call for special attention (Giraudon, Buster, Espelt, Matias, & Vicente, 2015). “Drug-induced deaths” is the term now commonly used in Europe to refer to deaths occurring shortly after the consumption of one or more psychoactive drugs and directly related to such consumption (Drug-related deaths and mortality—An overview of the methods

and definitions used. European Drug Report 2015: Data and Statistics, 2015a). Currently, national statistics are improving in most European countries, and their definitions are becoming more closely aligned or relatively similar. However, the use of definitions is different for cause of death registries and special (forensic or police) registries (Data and statistics. Statistical bulletin, 2016). Several countries still include deaths related to psychoactive medicines or non-overdose deaths, generally as a limited proportion. However, while the definitions used for registries are becoming more similar, the underlying procedures for recording cases and instances of underreporting may vary (European Drug Report 2015: Trends and Developments. European Drug Report, 2015b; Waal & Gossop, 2014).

In general, an investigation including toxicological tests for illegal drugs and pharmaceuticals will improve the likelihood of determining the cause of death most accurately. The frequency of post-mortem investigation (including autopsy rates) varies, as does the frequency of undefined causes of death in registries (Mathers, Fat, Inoue, Rao, & Lopez, 2005).

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Death may occur in the home, on the streets, in hospitals, or elsewhere. Deaths in hospitals may occur among patients whose hospitalization has been planned as well as among short-term, emergency-department patients who have been brought to a hospital after an overdose. Because of the technology and employee expertise available in hospitals, it seems natural to assume that deaths in hospitals are easier to avoid than deaths in the home or elsewhere.

Different sources of drug deaths may yield different figures within a country. The exchange of information between general mortality registries and special (forensic or police) registries can be insufficient or lacking, and routines used for registrations may differ. This compromises the quality of information and increases confusion regarding targeting successful prevention measures.

The aim of this study was to establish whether a database of drug-induced deaths (Cause of Death Registry (CDR) using the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) definition and the Police registry of drug deaths) included the same persons and provided the same characteristics of the deceased and thus yielded the same information for establishing targeted prevention measures.

Methods and materials

By law, physicians in Norway must provide certificates of death for the deaths they encounter in their work. The certificates are sent to the Norwegian CDR, which has used the 10th revision of the International Classification of Diseases (ICD-10) for coding cause of death since 1996 ([The Norwegian Cause of Death Registry, 2014](#); [ICD, 2011](#); [International Statistical Classification of Diseases and Related Health Problems, 2011](#)). Delayed certificates are reported by year of death, not year of registration; therefore, the number of deaths may increase each calendar year after the first publication. Delayed registrations are few, however. By regulation, physicians must also notify the police if the death is unnatural, where “unnatural” includes the use of narcotics or suspicion of such use. In some cases where illegal drugs are involved, the police find the deceased and a physician writes the certificate of death later. The police decide whether an autopsy must be performed. In general, an autopsy is performed when the cause of death is uncertain or unknown and death occurs suddenly and unexpectedly. The police have no obligation to perform an autopsy, however, in cases where narcotics are suspected to be the cause of death. Notifications are investigated by the local police and reported to the National Criminal Investigation Service (NCIS), which published national and local figures until 2009 ([Narkotikastatistikk 2009/drug statistics 2009](#)).

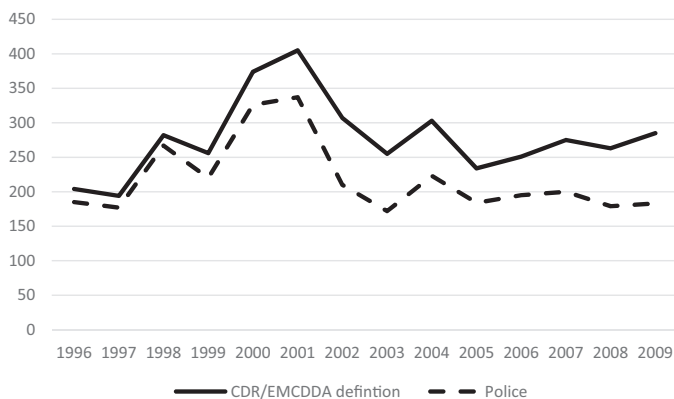


Fig. 1. Drug-induced deaths as reported by the EMCDDA definition in the Cause of Death Registry and drug deaths due to narcotics reported by the police. Source: Table 5.4 in the open publication ([Edland-Gryt, 2012](#))

In this study, notifications from 2007 to 2009 were drawn from the CDR and the police registry of drug deaths. As shown in [Fig. 1](#), yearly reports from the CDR and the police since 1996 reveal that the numbers of deaths reported by the police were lower than the numbers reported by the CDR ([Edland-Gryt, 2012](#)).

There is no universal agreement about which ICD-10 codes to include in a definition of drug-related death, especially regarding pharmaceuticals. A definition has been developed by the EMCDDA in agreement with national experts, focusing on those deaths directly related to the ingestion of illegal substances. The definition of “drug-induced deaths” implemented by the EMCDDA includes mental and behavioural disorders and poisonings (non-intentional and intentional) related to narcotics, including prescribed opioids, as the underlying (primary) cause of death. The definition includes:

- Mental and behavioural disorders (dependence): F11–F12, F14–F16, and F19 as underlying cause of death;
- Non-intentional poisoning (overdose): (1) X41, X44, or Y11 as the underlying cause of death, in combination with the first contributing cause of death being T43.6; or (2) X42, X44, Y12, or Y14 as the underlying cause of death, in combination with the first contributing cause of death being any of T40.0–T40.9;
- Intentional poisoning (suicide): (1) X61 or X64 as the underlying cause of death, in combination with the first contributing cause of death being T43.6; or (2) X62 or X64 as the underlying cause of death, in combination with the first contributing cause of death being any of T40.0–T40.9.

During an investigation, the police gather information based on previous knowledge of the deceased, evidence found or seized at the scene, and information provided during the investigation. This information could be eyewitness reports from friends, acquaintances, family members, and neighbours, or from health and emergency personnel with knowledge of the incident. Information from the autopsy is included locally and centrally if it is completed and available before the information is submitted from the local to the central level. The information obtained from police about illegal drugs and active ingredients is not standardized, but described in one column of a spreadsheet. The local and central police make a selection of deaths from all reported cases, including narcotics described in the EMCDDA definition, and label them drug overdoses or drug deaths at publication. No formal ICD-10 codes (or ICD-9 codes from autopsies) were included in the study data from the police.

The unique Norwegian personal identification number was used to match data from the CDR and the police registry ([The Norwegian ID number, 2016](#)). For some persons, an identification number (ID) was not available in the police data, either because the person was not registered with an ID in Norway or the CDR, or because it was not available to the doctor or the police. From 2007 to 2009, the CDR registered only Norwegian residents, while the police registered all cases of unnatural death, regardless of residency. After electronic matching, manual matching was conducted for those in the police registry to any with an ICD-10 code F, X, or Y as an underlying cause of death in the CDR. Persons were matched if they had police-registry death records with the same date of death, gender, age, concordant information on cause of death, and same location of death.

Four groups emerged among the death registrations: (1) unmatched: those noted as deceased in the police registry without a match in the CDR; (2) matched only in the police registry: those noted as deceased in the police registry with a match in the CDR but not included in the EMCDDA definition; (3) included in both: those noted as deceased in the police registry and included in the

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