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## CHARACTERISTICS AND COSTS IN ADULTS WITH ACUTE POISONING ADMITTED TO THE EMERGENCY DEPARTMENT OF A UNIVERSITY HOSPITAL IN BELGIUM

Poisoning poses a significant global public health problem. According to World Health Organization (WHO) data, an estimated 193,460 people die worldwide from unintentional poisoning. Hospitals, and in particular emergency departments (EDs), are faced with a considerable number of admissions leading to a substantial number of hospitalizations and costs.

### AIM

The aim of this study is (1) to inventarize the characteristics of acute poisoning admissions to the ED in a Belgian university hospital, (2) to identify risk factors for hospitalization type and (3) to calculate the direct medical cost of acute poisonings.

### STUDY DESIGN

This study is a retrospective analysis of data considering patient records of all poisoning-related admissions of patients aged 14 years or older admitted to the ED of the Ghent University Hospital, a 1,062-beds tertiary care referral center in Belgium with about 34,000 ED admissions per year.

### METHOD

Data of 2017 (1st January to 31st December) were collected and analyzed using patients' medical records and hospital invoices.

- The minimum-hospital-data (MZG) containing administrative, medical and nursing data of hospitalized patients, were used as a first source of information.
- UREG, the emergency registration system for hospital EDs, was used as a second source.
- A third source of information was the electronic clinical file of the patient (EPD), available for both ambulatory and hospitalized patients.

Financial data on direct medical costs were obtained from the hospitals financial department. They were abstracted from the invoices of the individual patients. Cost was defined as the payer's cost.

To avoid overlooking patients who came in with a different chief complaint but were also poisoned, all ED patients with the codes for intoxication in general, carbon monoxide intoxication, suicide attempt, social, mental or psychological reason, were screened for poisoning. Patients aged 14 years or older were included in the study when the reason for admission could be encoded in ICD-10, T36-T50 (poisoning by drugs, medicaments and biological substances) or in T51-T65 (toxic effects of substances chiefly nonmedicinal as to source) of the International Classification of Diseases (ICD-10-be).

Patients were categorized in three groups: (1) ambulatory patients discharged home after treatment in the ED (ED-amb), (2) patients requiring observation in the ED for a maximum of 24 hours (ED-24h) and (3) patients admitted to the hospital ward (Hosp).

Factors associated with type of hospitalization were identified using appropriate statistics.



### RESULTS

A total of 1,214 hospital admissions were included, accounting for 3.6% of all ED admissions. Men (62.2%) and the age group 21-40 years (43.0%) accounted for the largest proportion. Substances most commonly involved were ethanol (52.9%), benzodiazepines (9.7%), cocaine (4.9%), cannabis (4.6%), antidepressants (4.6%) and psychostimulants (4.6%). A total of 4,561 treatments were recorded, most commonly monitoring of vital signs (63.6%) and administration of intravenous drip or medication (62.9%).

Patients were discharged home after having received care in the emergency department (ED-amb) in 54.5% of admissions, were admitted to the emergency-department-24-hours-observation unit (ED-24h) or were hospitalized (Hosp) in 24.6% and 20.9% of admissions, respectively.

Factors found to be associated with hospitalization type were hour of admission, category of ICD-10 involved agents, Manchester Triage Score, use of antidotes and need for medical imaging (all  $p < 0.05$ ).

The total direct cost for the treatment of 1,175 poisoned patients with a mandatory health and disability insurance amounted to €1,512,346.

### CONCLUSION

Acute poisonings account for a non-negligible proportion of ED admissions representing a significant organizational and financial burden to hospitals and healthcare workers. Efficient triage of patients to the appropriate level of care in a safe and qualitative way contributes to avoiding the negative aspect of overcrowding in EDs, resulting in less time left for qualitative care for the most severe cases. In this context, insight into the elements associated with the hospitalization is one of the key factors.

Because of the difficulty to compare results between different hospitals, it is strongly recommended to develop a uniform template aimed to support the highly-needed preventive and care measures with comparable facts and figures to be able to achieve the highest possible quality standard in the most cost-efficient way. The use of WHO International Classification of Diseases 10th Revision (ICD-10) is highly recommended. This use of a clear and international standard may be a first step in the development of a template for uniform data reporting and comparison between centers in order to facilitate international comparison.

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