Unintentional and intentional drug poisoning deaths in Australia in 2012-2016

Their demographic characteristics and drug pattern profiles

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SUMMARY of RESULTS

Unintentional versus intentional

- Compared with unintentional deaths, intentional deaths were more likely among females than males, and those aged 15-24 and 55+ than 35-44 years.
- Intentional deaths were more likely to involve hypnosedatives, other psychotropic medicines, non-opioid analgesics and anaesthetics.

Common unintentional profiles

- Opioids (excluding heroin) 13.3%
- Heroin 8.5%
- Alcohol 7.2%
- Opioids (excluding heroin) with hypnosedatives 6.2%
- Opioids (excluding heroin) with hypnosedatives and other psychotropic medicines 5.7%
- Stimulants 5.2%
- Other psychotropic medicines 3.0%
- Opioids (excluding heroin) with other psychotropic medicines 2.4%
  - Unintentional deaths involving heroin or stimulants only had a greater proportion of males (79% and 83%, respectively) and younger individuals aged 15-34 (30% and 40%, respectively).

Common intentional profiles

- Hypnosedatives 16.9%
- Other psychotropic medicines 9.5%
- Opioids (excluding heroin) 8.8%
- Hypnosedatives with other psychotropic medicines 8.7%
- Opioids (excluding heroin) with hypnosedatives 5.9%
- Opioids (excluding heroin) with hypnosedatives and other psychotropic medicines 5.2%
  - Intentional deaths involving opioids (excluding heroin) only, hypnosedatives only and opioids (excluding heroin) with hypnosedatives were mostly concentrated among those 55+ years (55%, 51%, and 46%, respectively) .

Introduction

Fatal drug poisoning ('overdose') is a key contributor to mortality globally and national public health data suggest that the rate of drug poisoning mortality is increasing in a number of countries (e.g., Australia, Canada, United States, England and Wales).[1-4] Moreover, most drug poisoning deaths, both intentional and unintentional, involve multiple drugs.[5-6] There are substantial differences between unintentional and intentional drug poisoning deaths, however, the common drug pattern profile or the demographic characteristics of individuals displaying these profiles have not been researched. Identifying the profile of unintentional versus intentional poisoning deaths is critical given some differences in prevention strategies.

Aims

1. Compare unintentional versus intentional deaths with respect to drug involvement and demographic features (i.e., age and sex);
2. Describe patterns of drug involvement in unintentional versus intentional deaths; and
3. Describe the sex and age characteristics of the most common drug pattern profiles for unintentional and intentional deaths.

Methods

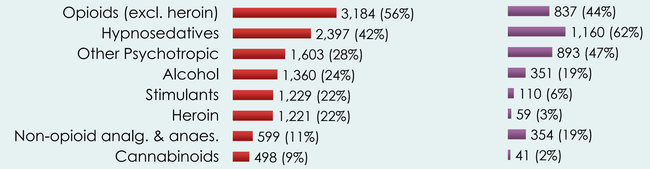
- Data from the 2012 to 2016 Cause of Death Unit Record File (COD URF) were analysed.
- Cases comprised deaths where drug (including alcohol) poisoning was the underlying cause of death (ICD-10 codes: X40-45 unintentional poisoning, X60-65 intentional poisoning, Y10-15 poisoning with undetermined intent) among Australians aged ≥15 years.
- Sex, age, and drug involvement were analysed by intent using logistic regression.

Drug classification	ICD-10
Opioids (excluding heroin)	T40.0, T40.2, T40.3, T40.4, T40.6
Hypnosedatives	T42.0 - T42.8
Other psychotropic	T43.0 - T43.5, T43.8, T43.9
Alcohol	T51.0, T51.9
Stimulants	T43.6, T40.5
Heroin	T40.1
Non-opioid analg. & anaes.	T39.0 - T39.9, T41.0 - T41.5
Cannabinoids	T40.7

- UpSet plot was used to identify intersections of drug classes by intent.
- Common drug profiles which cumulatively accounted for 50% of all deaths in each intent group were selected for further analysis.

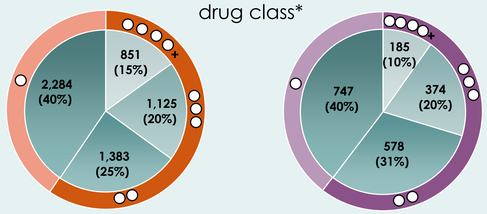
Results: **Drug poisoning deaths,** Australian adults 15+ years, 2012-2016

DRUG INVOLVEMENT



NUMBER OF DRUG CLASSES INVOLVED

60% of unintentional and intentional drug poisoning deaths involved **more than ONE** drug class*



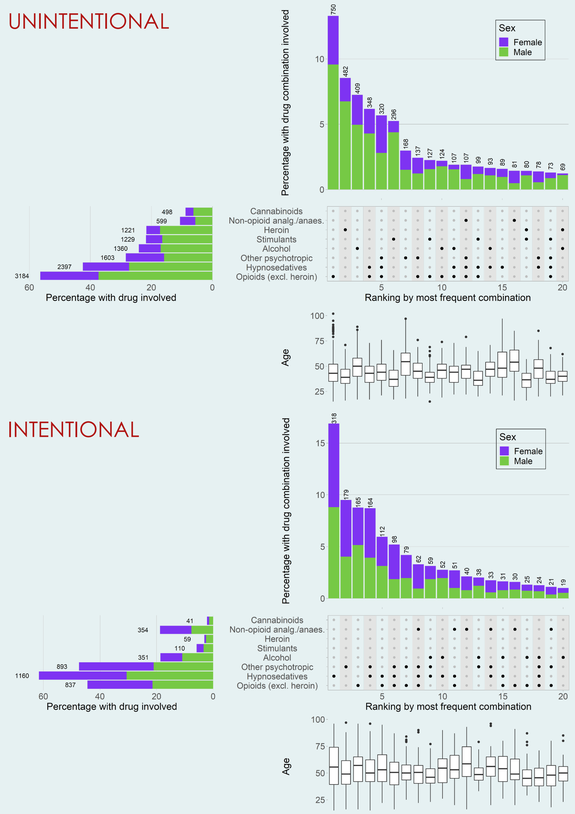
*With respect to number of drug classes involved, multiple substances may be involved from a single drug class.

Table 1. Comparison of intentional versus unintentional poisoning deaths by sex, age and drug involvement, Australian adults 15+ years, 2012-2016

Characteristics	Multivariable logistic regression Intentional vs Unintentional		
	OR	95% CI	p-value
Sex			
Male	Ref.		<0.001
Female	1.31	1.16 - 1.48	
Age at death			
15-24	1.49	1.12 - 2.00	<0.001
25-34	0.97	0.79 - 1.18	
35-44	Ref.		
45-54	1.15	0.98 - 1.36	
55-64	1.50	1.25 - 1.81	
65+	3.79	3.07 - 4.66	
Drugs involved*			
Opioids (excluding heroin)	0.40	0.35 - 0.45	<0.001
Hypnosedatives	2.11	1.87 - 2.39	<0.001
Other psychotropic	1.58	1.39 - 1.78	<0.001
Alcohol	0.52	0.44 - 0.60	<0.001
Stimulants	0.29	0.24 - 0.37	<0.001
Heroin	0.13	0.10 - 0.18	<0.001
Non-opioid analgesics & anaesthetics	1.48	1.25 - 1.73	<0.001
Cannabinoids	0.30	0.21 - 0.42	<0.001

TWENTY MOST COMMON DRUG PATTERN PROFILES

involved in drug poisoning deaths, by sex and age



Implications

The demographic and drug involvement profile of intentional and unintentional deaths were distinct. Overdose prevention efforts must recognise these differences and be tailored to address the diverse drug use and demographic subgroups represented within intentional and unintentional poisonings.

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DRUG TRENDS

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