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Analysis of the data sources, numbers and characteristics of cocaine-related DRD cases reported in SMRs, or eventually in GMRs

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Background to project

- Increased numbers of cocaine-related deaths reported in some European countries since early 1990s.
- Indications that cocaine deaths are more difficult to define, detect and record as such in mortality registries, and in some countries' GMRs due to coding practices.
- It is unclear how cocaine deaths are identified in Europe.
- It is possible that deaths occurring shortly after, and induced by, cocaine use, but are not poisonings in the strict sense, are not identified or reported as induced by cocaine.
- The EMCDDA decided to undertake a project aimed at providing better information on this phenomenon.



Objectives

- analyse the characteristics (age, gender, simple ‘substance’ typology) of cocaine-related DRD cases reported in SMRs, in a limited number of countries over the last 5 available years (5–7 countries were *a priori* considered likely to provide sufficient cases);
- describe the trend in numbers over 15 years where possible;
- compare the numbers and basic characteristics, if possible, of cocaine deaths in SMRs and GMRs in this small number of countries;
- attempt to establish how cocaine deaths are identified and classified, and gauge the level of, and possible reasons for under-reporting.



Timeline

Table 1: Project timeline

Period	Activity
October–November 2011	Development of draft protocol and survey questionnaire
November 2011	Presentation and parallel session at DRD Expert Meeting (available from DRD intranet)
February–March 2012	Mini-survey (detailed responses and summary table available in Annex 1)
April–May 2012	Completion of the protocol, questionnaire and MS Excel® workbook data templates (Annex 2 and 3)
June 2012	Analysis and writing up
June–July 2012	Submission of report and circulation to NFP experts for review



Methods

- Preliminary ideas were drawn up by the contractor and the EMCDDA and developed into a draft study protocol and survey questionnaire.
- Project was outlined at the DRD expert meeting November 2011; parallel session discussed the documents, conceptual and methodological issues.
- Mini-survey being conducted in February and March 2012 to explore some of these issues including data availability, case identification and classification.
- Revised questionnaire and Microsoft Excel® dataset templates to collect aggregated data were circulated to selected countries for completion during April and May 2012.



Participants

- The Mini-survey was sent to a total of 30 NFP experts/SMRs in the European Union and Croatia, Norway and Turkey.
- Twenty-three (77 %) expressed an interest in participating; responses were eventually received from 19 (63 % of all countries) of them.
- The protocol and data-table templates were sent to a total of 9 NFP experts/SMRs who had expressed their interest: Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain and the UK.



Key results

Information used for case identification

- For GMRs, it is mostly cause of death and toxicology which are used to identify cocaine-related DRDs. Three out of 8 GMRs use ICD codes as the basis for categorising cocaine deaths, with 3 others appearing to be based on ICD coding; the criteria principally used relate to causality — probably based on cause of death. Some GMRs do not use T-codes; one does not use S, T or Z codes for underlying cause of death.
- A wider range of factors is used by SMRs to identify cases: toxicology, autopsy, evidence and cause of death. For them there is more flexibility with 4/8 stating they could adopt any categorisation scheme; for the other three there were several different ways of categorisation, again based primarily on toxicology or cause of death. Most SMRs do not have ICD codes for case-identification of cases.
- Apart from cocaine itself, the principal metabolites commonly identified or screened for are: benzoylecgonine, ecgonine methyl ester, cocaethylene and ecgonine. Most GMRs do not distinguish crack from powder cocaine, but 7/10 SMRs could provide some information.



Key results

Classifying deaths

- Poisonings and somatic deaths overlap; difficult to distinguish. Germany, Spain and Luxembourg focus on the cardiovascular aspects of cocaine deaths. Fatal excited delirium cases have been noted in Germany, Netherlands and the UK. Several countries have reports of road traffic accident fatalities deaths where cocaine was present in PM toxicology and/or involved in death.
- 4/5 GMRs classify cocaine DRDs but did not state how; 3 others could do it. 2/4 SMRs classify such deaths but did not say how, 3 others could do classification exercise. For GMRs, 3/8 use specific ICD codes as basis for categorising cocaine deaths, 3 others seem to be based on ICD coding; the criteria principally used relate to causality — probably based on cause of death. 4/8 SMRs could adopt any categorisation scheme; 3 others had different ways of categorisation, again based primarily on toxicology or cause of death.



Key results

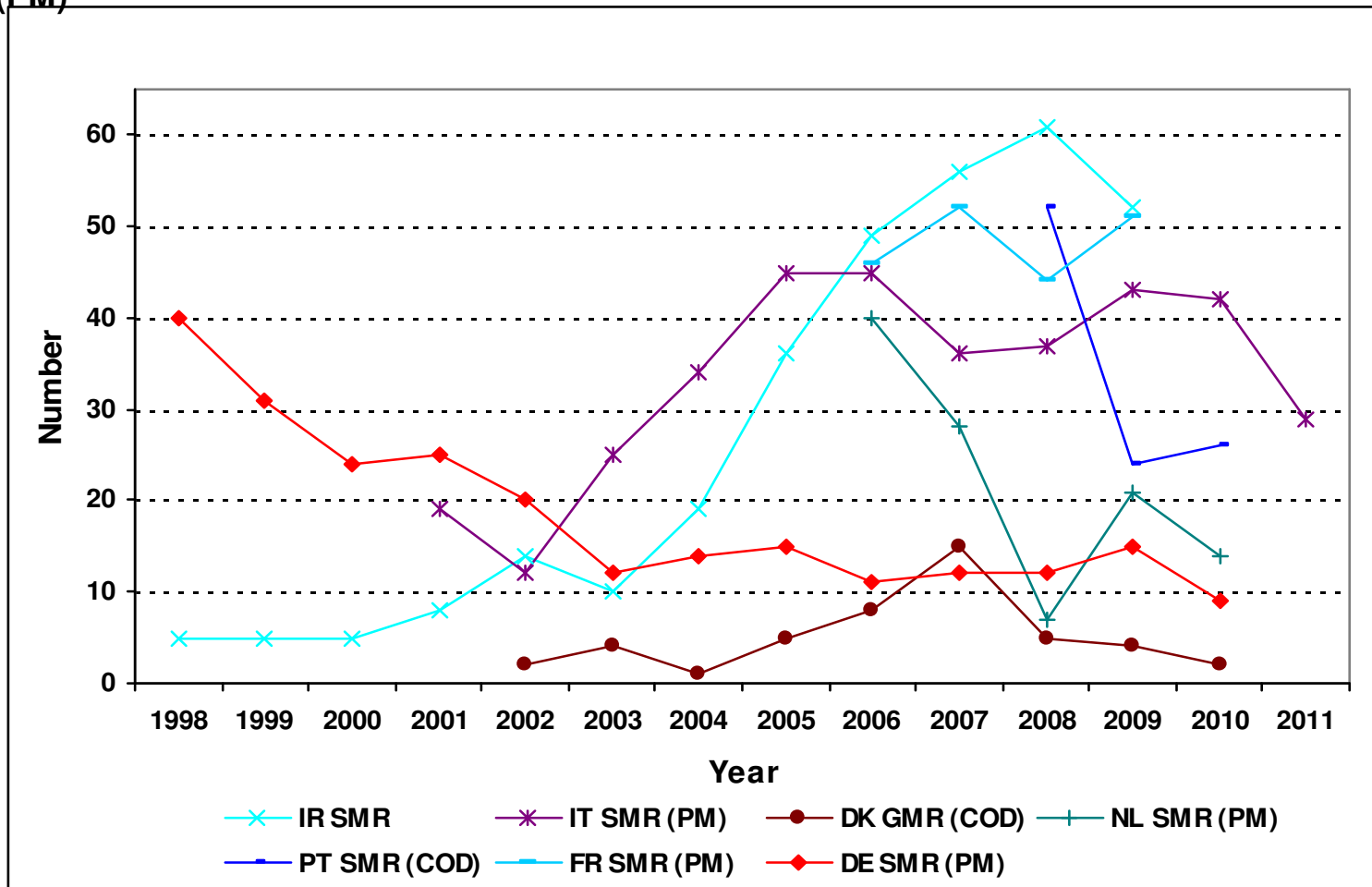
Trends

- Mixed picture in terms of trends in numbers of cocaine-related DRDs in participating countries
- In 2000s, generally an increasing upward trend in such cases, followed by a decline in most countries
- Timing of the peak occurred in different years
- Comparing 2009 and 2008: 5 fall or stabilization; 4 increase
- Consistent pattern for UK GMR and SMR figures.
- Numbers of cocaine-related deaths reported varied across countries.
- Most cases were in the UK (2 423 SMR cases in 1998–2009) & Spain (1 635 cases in 2005–10)



Key results

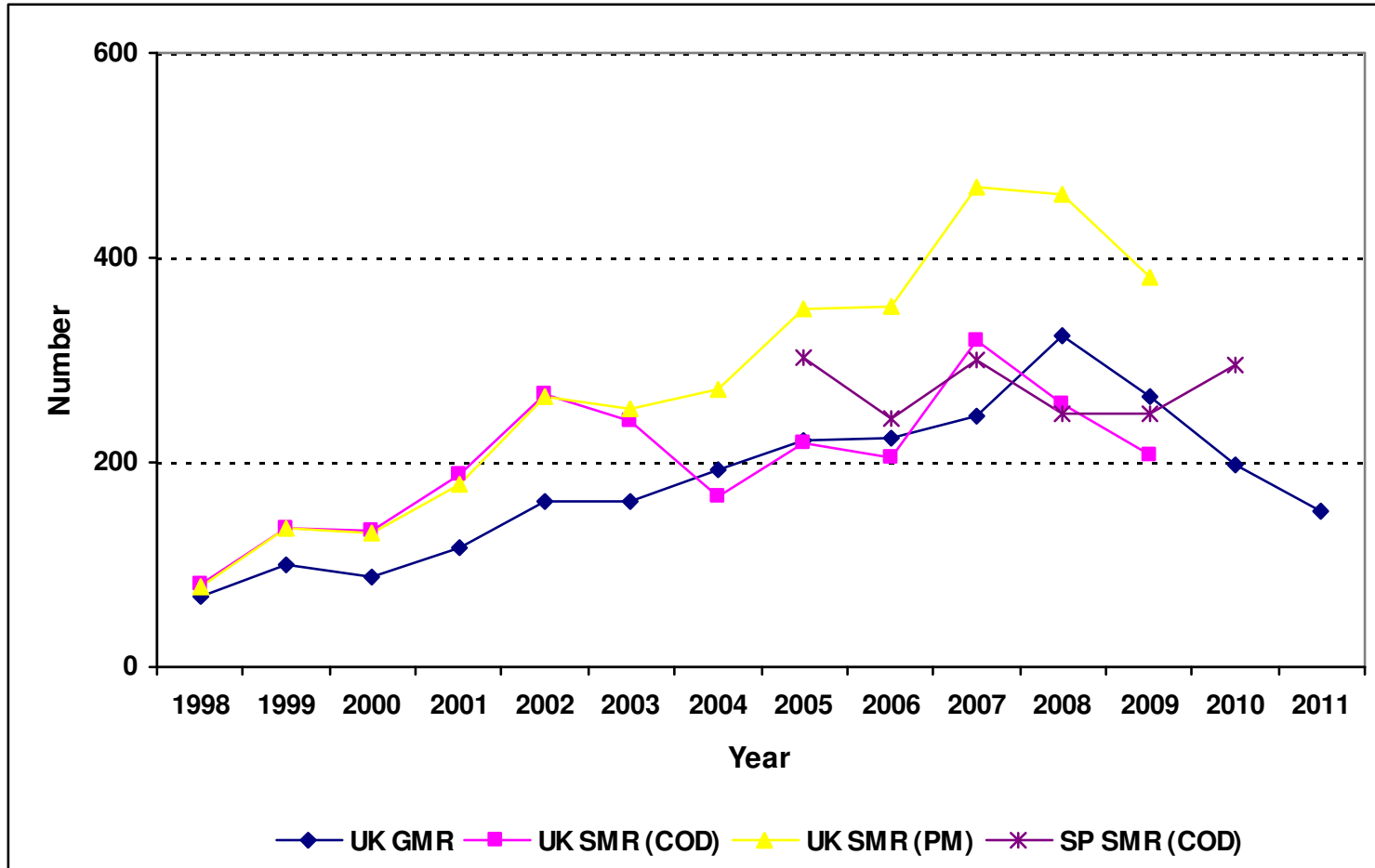
Figure 1: Trends in cocaine-related DRDs (any mention) by country/region (excluding Spain, UK): actual numbers in 7 EU countries in 1998–2011 based on SMR and GMR and reported for cocaine mentioned in the cause of death (COD), or identified in post mortem (PM)





Key results

Figure 2: Trends in cocaine-related DRDs (any mention) Spain and UK: actual numbers in 1998–2010, based on SMR and GMR and reported for cocaine mentioned in the cause of death (COD), or identified in post mortem (PM)





Key characteristics

- C. 90% of deaths in 20–24 to 45–49 years age groups in 5 countries, and 84% in a 6th country. Minimum age = 15, Maximum typically in 60s. Mean age typically = late 20s or early 30s. Males accounted for 73% to 93% of cases.
- Cocaine overdoses account typically for c. 2/3 of all reported cases. The role of cocaine alone being mentioned/implicated in cocaine-related DRDs typically in 20+ % range.
- Similar variation in cocaine + alcohol proportion.
- Opioids involved in most cases (56 - 92%), often without other substances.



Key characteristics

- Non-overdose cocaine-related deaths were less frequently reported.
- For 4 countries (D, NL, P, UK) majority ascribed to underlying cause (82 - 91%); IR underlying and contributory causes both 46%, Hamburg 96% was 'other causes'.
- 'General medication condition' appears to play a significant role in such cases, ranging in 5 countries 10-63 %.
- Deaths involving accidental injury and road traffic accidents also feature as do suicides (often by hanging) in most countries.
- Mental and behavioural disorders coded cases play a role in deaths in 2 countries.
- 'Other causes' of deaths are mentioned in 4 countries.



Key characteristics

Table 2 in report provides an overview of the key characteristics for the data submitted; 'cause of death data' selected in preference to 'PM' data where available.

- For 5 countries, the proportion of cases occurring in the 20–24 to 45–49 years age-groups is very close (range 90.2 to 92.1%) but is lower in the Netherlands (84.2 %).
- Minimum age 15 years; in 2 countries oldest decedents in 60s but in UK was an 81-year old.
- Mean age 29.4 - 34.3 years.
- Males 72.9 - 92.5% for 7 countries information provided



Implications for public health

- The patterns in cocaine-related DRDs need to be set in a wider context.
- Part of the recent decline apparent in some countries, may be related to a decline in cocaine purity and/or a shift to using alternative stimulants, including 'legal highs'.
- Mean purity of powder cocaine seized by the police in England & Wales fell from 33 % in 2007 to 24 % in 2010; the purity of 'Crack' cocaine is reported to have fallen during the same period from 52% to 31%. Last year use of powder cocaine amongst 16–59 year-olds in England & Wales fell from 3% in 2008/9 to 2% in 2010/11.
- Fall in UK ecstasy and cocaine-related deaths since 2008 may be because users switching to 'legal highs' with the suggestion that this may have had an unintended harm reduction effect.



Implications for public health

- There is now emerging evidence of a large problem of cocaine-related morbidity leading to hospitalisation and emergency visits (Mena et al., 2012).
- Emergency department visits and hospital admissions involving cocaine need to be monitored as well as DRDs.
- Analyses of non-overdose, cocaine-related fatalities undertaken by this project suggests that it would be valuable to examine in more detail those cases ascribed to ‘general medical conditions’, ‘cardiovascular and other issues’, etc.
- Scientific medical literature is increasingly featuring small-scale case-study or anecdotal reports of conditions associated with the acute and chronic use of cocaine. It is important to seek a more accurate picture of the numerical extent of such conditions (and its possible underestimation) and a fuller understanding of what conditions and diseases are caused, and how, by cocaine use.



Methodological issues

- Other countries interested in supplying information were unable to do so because of insufficient time or resources;
- Others were unable to do so because of legal or confidentiality issues. The latter meant that some countries were unable to provide age and gender breakdowns in case individual decedents became identifiable.
- For the most part, it is difficult to compare the data provided by one country with that from another for several reasons:
 - (a) different types of data-sources from registries with different roles, purposes and nature;
 - (b) underlying differences in the data-items collected;
 - (c) different definitions of DRDs, even where based on ICD 10 codes there are varying approaches;



Methodological issues

- (d) different criteria used to define cocaine-related DRDs; and
- (e) varying lengths of time for which data are available.
- It is possible to look at trends over time within a country/region, but even then consistency of data may vary over time in terms of geographical coverage (e.g. the UK SMR), quality of data reported, and level of detail recorded.
- These are issues common to previous data-collation exercises conducted by Charlotte Wirl (2010).



Methodological issues

- Levels of under-identification and reporting cannot be gauged without undertaking further investigations to establish in detail the full range of reasons for under-reporting and their extent.
- Some form of audit of relevant data-sources/providers is necessary, e.g. of coronial files.
- For this reason, we did not compute rates of cocaine-related mortality which could be misleading as the reporting systems differ and make difficult to compute sufficiently robust rates at the population level.



Conclusions

- Main objectives were achieved - describing trends in numbers of deaths & identifying some of the key characteristics of decedents, the substances involved in their deaths, and why/how they died.
- Some core commonalities have been observed; they confirm and quantify what was already known.
- More information is needed though, in order to flesh out the skeleton presented here. The data and information presented provide major insights into the nature and possible extent of the phenomenon of cocaine-related DRDs in Europe.
- Other areas that could also be examined in the future include: the role of cocaine in deaths involving accidental injuries, road traffic accidents and suicides — especially by hanging.



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