Codification practices in some countries following the WHO revision of ICD coding guidelines related to DRDs

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Part III

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Acknowledgements

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Abbreviations

DRD   Drug related death

EMCDDA   European Monitoring Centre for Drugs and Drug Addiction

GMR   General Mortality Register

ICD   International Statistical Classification of Diseases and Related Health Problems

SR   Special Register

WHO   World Health Organisation

Main ICD-10 codes used in this report:

F10-F19: Mental and behavioural disorders due to psychoactive substance use;

I46.9: Cardiac arrest, unspecified;

R96: Other sudden death, cause unknown;

R98: Unattended death;

R99: Other ill-defined and unspecified causes of mortality;

T40: Poisoning by narcotics and psychodysleptics;

T43.6: Poisoning with Psychostimulants with abuse potential

T50.9: Other and unspecified drugs, medicaments and biological substances;

X41/X61/Y11: Accidental/Intentional/Undetermined intent, self-poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified;

X42/X62/Y12: Accidental/Intentional/ Undetermined intent, poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified;

X44/X64/Y14: Accidental/Intentional/Undetermined intent, poisoning by and exposure to other and unspecified drugs, medicaments and biological substances;

X49/X69/Y19: Accidental/Intentional/ Undetermined intent,poisoning by and exposure to other and unspecified chemicals and noxious substances;

Executive summary

- Discrepancies observed in drug related deaths are not solely due to differences in the actual deaths due to drugs but also due to certification and coding differences.

- The main aim of this part of the project was that through the collection of detailed data on drug related deaths from a number of countries, to further analyse their data in terms of codification practices and the changes in the codes and numbers of reported cases of drug related deaths, before and following the WHO updates in 2002/2003.

- The following 9 out of 10 countries contributed data at different levels of detail: Bulgaria, Denmark, England, France, Germany, Italy, Norway, Poland and Spain; Country experts were also involved in the compilation of their country report.

- Depending of the data sent the following analysis was carried out:

  o Description of the full disaggregated dataset of DRD cases including all retrieval codes and information.
  o Description of what cases are being captured under the ICD codes of X44, X64 and Y14.

- Of the nine countries which have sent us data only Denmark, Norway and recently the United Kingdom have fully implemented ICD-10 updates.

- In some countries the ICD-10 updates had no impact on trends in drug related deaths reported according to selection B. This was either due to updates not being implemented or in countries which have fully implemented ICD-10 updates this also had no impact on the overall trend in drug related deaths. In these countries a shift in coding e.g. from F to X or from X42 to X44 might have occurred however the corresponding new code was also included in the new selection B.

- In a few countries which have partially implemented ICD-10 updates this resulted in a shift in coding with a corresponding decrease in the number of drug related deaths reported according to selection B.

- The use of X44/X64/Y14 varies between countries and often depends on whether or not T codes are used in the coding of drug related deaths. However also in those countries which include X44/X64/Y14 in reporting DRDs according to the EMCDDA protocol still have a number of deaths being reported under these codes which are not reported to the EMCDDA due to the un-specificity of the associated T code.

- Cases placed under code T50.9 may be those in which not enough information is available to be able to identify and therefore code the drug specifically or the type of drug was specified, but is classified among the "rest" category in T50.9 as no specific ICD 10 code exist. The extent of use of T50.9 varied between countries as was the extent of use of other unspecified drug related death codes such as X49/X69/Y19.

- A number of recommendations detailed at the end of the document are outlined in this summary:

  - Countries are encouraged to report according to both sources (selection B and selection D) as this is useful especially in monitoring trends; Linkage between the two sources would also be beneficial when feasibly possible.
  - Countries need to make an effort to code all drugs using T codes even if in a number of cases not all drugs may be specified.
  - Detailed analysis of the main drugs and trends in drug type should be made by countries even if this is not possible at national level.
  - Updates should be implemented according to WHO recommended timeframes. Countries should be informed about an update related to drug related deaths well in advance. This could be done through WHO invited experts at the EMCDDA annual meeting on drug related deaths.
  - Countries are encouraged to carry out bridge coding exercises.
  - In countries where this is possible analysis of cases coded under T50.9 should be undertaken.
  - Further discussion by EMCDDA with WHO regarding deaths due to drugs with no specific T code should also be considered.
  - Countries should make an effort to obtain more information about drug related cases with an unspecified T code e.g. using T50.9 and linkage with other registers e.g. a drug register should be considered if permitted.
  - EMCDDA to consider asking for an update of drug related death data 2-3 years after the initial request to countries to take into consideration possible updates.
  - Countries who are aware of gross underestimation in the reporting of drug related deaths according to the EMCDDA definition could possibly develop a method of estimation to be able to produce a more realistic figure.
  - In countries which code all drugs involved in the death, multiple cause analysis can be undertaken to evaluate in more detail the trends in the drugs involved in drug related deaths.

1. Introduction

The collection of data regarding drug related deaths varies from country to country, with variations occurring at certification level and also at codification level. Previous work carried out by the EMCDDA (European Monitoring Centre for Drugs and Drug Addiction) and presented at the 2015 September 21-22 annual expert meeting[1] has shown that coding of drug related deaths varies between countries, and the adoption of the ICD-updates in DRDs of 2002/03 (to be implemented in 2006 and as described in the EMCDDA DRD protocol[2]) has not been uniform across countries[1]. The first report looked at codification issues in all countries who send data to the EMCDDA through analysing data from the EMCDDA website. The second report looked at the information flow to the general mortality register based on replies given by countries to the EMCDDA questionnaire developed in 2009 which was repeated in 2016. Through these two reports one could understand that discrepancies exist between countries as to the extent and accuracy of the collection of data on drug related deaths and subsequent reporting to the EMCDDA. The discrepancies observed in drug related deaths described in the graph below are not solely due to differences in the actual deaths due to drugs but also due to certification and coding differences.

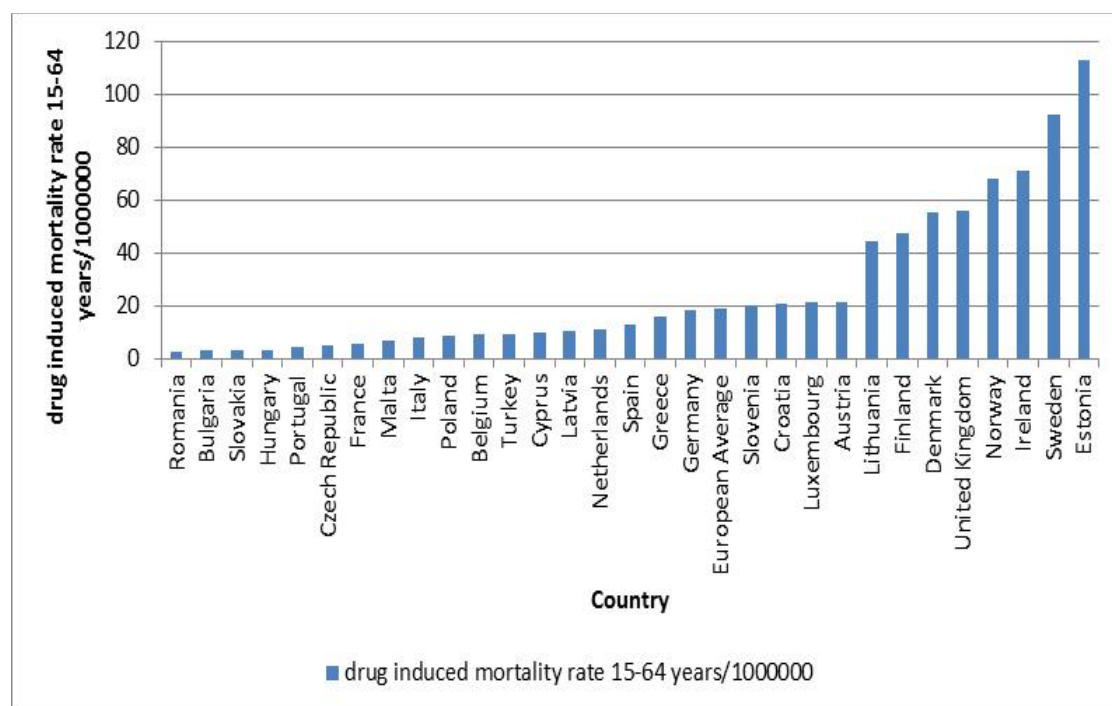Figure 1: Drug induced mortality rate 15-64 years per 100,000
Source: EMCDDA website, country overview[3]

Differences between countries start at the certification process with autopsy rates varying widely between countries, Also the extent of the autopsy and type of toxicological investigations carried out may vary. Overall autopsy rates in most countries are showing a downward trend (figure 2).

Countries	First available	Last available
004 Austria	34.7 - 1984	12.7 - 2014
009 Bulgaria	19.9 - 1980	4 - 2014
010 Croatia	10.95 - 1994	6.4 - 2014
011 Cyprus	9.21 - 1992	8.94 - 2014
012 Czech Republic	33.5 - 1970	17.9 - 2014
013 Denmark	52.1 - 1985	3.9 - 2012
014 Estonia	33.5 - 1989	19.2 - 2014
015 Finland	32.6 - 1970	22.7 - 2014
020 Hungary	51 - 1990	37.67 - 2014
022 Ireland	15.01 - 1994	17.88 - 2002
027 Latvia	36.4 - 1980	15.3 - 2014
028 Lithuania	34.6 - 1988	16.9 - 2014
029 Luxembourg	0.9 - 1998	1.9 - 2014
030 Malta	7.59 - 1999	8.31 - 2014
033 Netherlands	12 - 1981	3.9 - 2008
034 Norway	10.6 - 1992	7.9 - 2014
036 Portugal	7.7 - 1980	6.3 - 2005
038 Romania	13.8 - 1988	4.9 - 2014
042 Slovakia	25.1 - 1980	12.72 - 2013
045 Sweden	41.36 - 1980	11 - 2014
049 Turkey	3.1 - 2009	3.6 - 2013
052 United Kingdom	27.02 - 1980	23.16 - 1989
055 EU	23.53 - 1989	15.41 - 2014

Table 1: Autopsy Rate in different European Countries: Percentage for all deaths (source: WHO: HFA DB)[4]

Therefore the extent of investigation contributes to the accuracy of death certification in drug related deaths and is just one step in the whole process were variations between countries exist. The accurate coding of drug related deaths including the implementation of ICD-10 updates in large part depends on the information put down on the death certificate. As seen in the first report implementation of ICD-10 updates varies between countries for a number of reasons and this report will focus on more in depth analysis of codification practices of drug related death and the impact of the ICD-10 updates.

2. Aims and objectives

2.1 Main Aim

The main aim of this project is, that through the collection of detailed data on drug related deaths from a number of countries, to further analyse this data in terms of codification practices and the changes in the codes of the reported cases, in the different countries before and following the WHO updates in 2002/2003.

2.2 Objectives

a) Describe the disaggregated dataset of DRD cases (according to what countries can provide) including all retrieval codes and information on causes of death.
b) Analyse the DRD data from selected countries in order to describe in particular the cases captured under X44, X64 and Y14;
c) Analysis of non-specific codes for each country being studied.

The country specific analysis will contribute to a larger overall analysis of all countries studied and which will report on common and other particular issues identified, comparability issues raised, as well as recommendations and ways forward.

3. Methodology

A letter (annex A) was sent to ten countries (Bulgaria, Denmark, England, France, Germany, Italy, Norway, Poland, Romania and Spain) chosen as being representative of the European Union, asking them to provide information on a list of variables for cases with the following ICD-10 codes as underlying cause of death: F11 (.0-.9) to F19 (.0-.9), (excluding F17), X41, X42, X44, X49, X61, X62, X64, X69, Y11, Y12, Y14, Y19, R96.0, R96.1, R98, R99 if possible for the last 3 most recent years, from the GMR (and also from the SR, should codes be available from these as well).

The provision of case based data (without identifiers) would allow the most detailed analysis possible, however as for some countries it was not possible to provide case based data, another letter was sent out to these countries asking for aggregate level data for a number of ICD 10 codes (annex B).

Depending of the data sent the following analysis was carried out:

Description of what cases are being captured under the ICD codes of X44, X64 and Y14. In order to carry out this analysis the relevant T codes used in combination with X44, X64 and Y14 would ideally be supplied by the countries to be able to analyse in detail what these codes are being used for.

Description of the full disaggregated dataset of DRD cases including all retrieval codes and information, for the 'detailed dataset'. This was done for those countries which were able to supply the dataset and if possible textual causes of death. A detailed analysis was done of the different codes, where DRDs may be present but not routinely sent to EMCDDA due to lack of detailed information about the case and what % they would contribute too.

Each country report produced was discussed with the country national expert prior to compiling the report.

4. Main Findings

The detailed findings for each country can be accessed through the individual country reports (section 5).

Data was received from nine countries at different level of detail as described in table one below.

Country	Data sent
Bulgaria	Data according to ST 5: 2012-2014
Denmark	Case based data: 2012-2014
France	Cased based data including text: 2012-2013
Germany	Aggregate level including T codes: 2014
Italy	Aggregate level including T codes: 2011-2013
Norway	Case based data: 2011-2013
Poland	Data according to national definition (no T codes): 2014
Romania	No data
Spain	Aggregate level data: 2012-2014
United Kingdom Wales	Aggregate level data for England and Wales including T codes:2011-2013

Table 2: Description of data sent by the countries

The level of analysis that could be performed depended on the data that was provided by the country. However in order to supplement this, the World Health Organisation mortality database[5] was used to extract aggregate level data over various periods of time and according to different ICD-10 codes to analyse drug related deaths further.

4.1 The use of X44/X64/Y14 to report drug related deaths according to selection B

As documented in previous work (Part I) not all countries have implemented ICD-10 updates or have only implemented them partially. Of the nine countries which have sent us data only Denmark, Norway and recently the United Kingdom have fully implemented ICD-10 updates. Other countries have only partially implemented them due to the complete absence or general lack of T codes.

Also most of the countries reviewed send data to the EMCDDA according to selection B or selection D. However for Poland data is sent according to their national definition only and in Spain data is sent according to its national definition, selection B and selection D.

The use of X44/X64/Y14 varies between countries as seen in table 3 below:

Country	Deaths included under X44/X64/Y14
Bulgaria	No ICD updates so X44/X64/Y14 not used for selection B.
Denmark	Deaths included under X44/X64/Y14 include: 1. Drugs from more than one family, but the codes are not always drugs as such. 2. Unintentional wrong-use of other or unspecified drug or biological substance.
France	X44/X64/Y14 are not reported to the EMCDDA due to frequent absence of T codes. X44/X64/Y14 are mainly use to code 'Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances'.
Germany	Though the ICD updates and priority list related to DRDs has been introduced there is no evaluation how regularly it has been applied.
Italy	No information
Norway	X44 ("Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances") is used in accidental poisonings either: 1) by other specified substances, not covered in the other groups (X40-X43), 2) by a combination of substances, where no substance is clearly stated as the main intoxicant; or 3) Were the particular type of substance is unknown (but supposed to be a drug/medicament.
Poland	X44/X64/Y14 used in national definition but not in combination with T codes.
Spain	X44 is frequently used to code deaths due to 'overdose' which is often reported as such on the death certificates without any additional details. It is included in the national definition.
United Kingdom	As per ICD-10 protocol and updates.

Table 3: Use of X44/X64/Y14 by country

4.2 General Trends in reporting of drug related deaths according to selection B before and after the ICD-10 updates

In some countries the ICD-10 updates had no impact on trends in drug related deaths reported according to selection B. This was either due to updates not being implemented e.g. in Bulgaria, or where X44/X64/Y14 is only used sparingly e.g. in Germany. Also on the other hand in countries which have fully implemented ICD-10 updates e.g. in Norway and Denmark this also had no impact on the overall trend in drug related deaths. In these countries a shift in coding e.g. from F to X or from X42 to X44 might have occurred however the corresponding new code was also included in the new selection B.
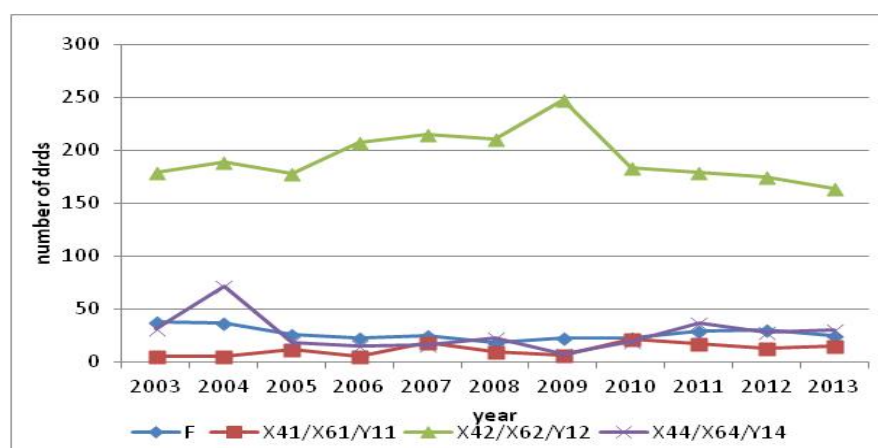
Figure 2: Trends in the number of drug related deaths according to ICD codes reported in selection B in Norway (Source: EMCDDA statistical bulletin)

In a few countries which have partially implemented ICD-10 updates this resulted in a shift in coding with a corresponding decrease in the number of drug related deaths reported according to selection B e.g. Spain. As seen in figure three below the number of drug related deaths according to the national definition which includes all codes reported in selection B but also includes X44 code is showing a steady decreasing trend. On the other hand drug related deaths reported according to selection B which includes ICD codes F11, F12, F14-F16, X42, X62 and Y12 but not X41/ X61/Y11 as well as X44/X64/Y14 since they do not include T codes has seen a drastic drop in the number of drug related deaths around the time of implementation of the ICD 10 updates. The fall in the number of drug related death around 2006 is associated with a corresponding increase in deaths due to X44 code (Figure 4).

The National definition Selection D reports according to the EMCDDA protocol for selection D but does not have national coverage.
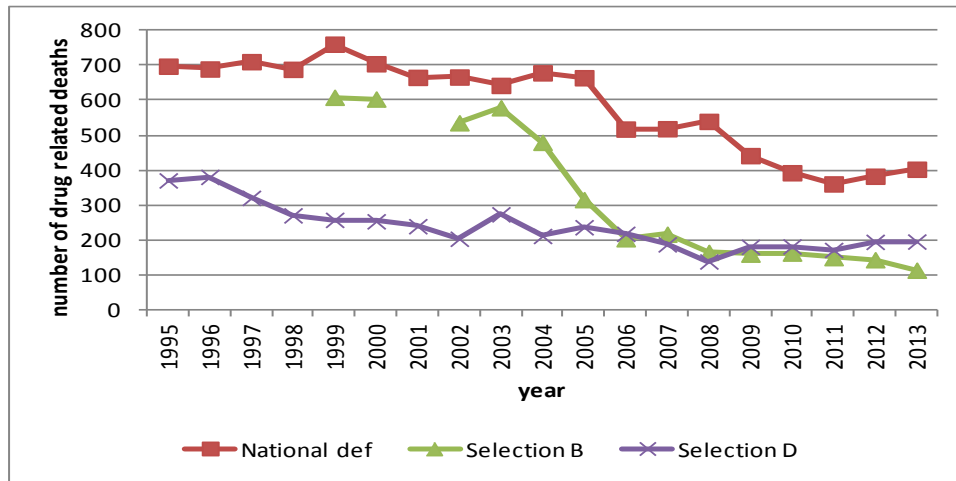
Figure 2: Trends in DRDS in persons aged 15-64 years according to different definitions in Spain[6]
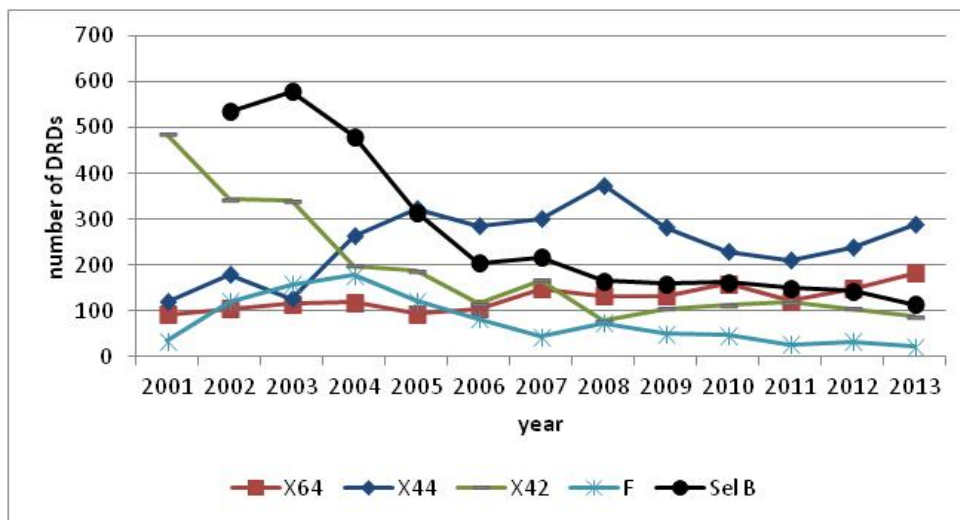
Figure 3: Trends in DRDs in 15-64 year olds according to the main ICD-10 codes and selection B in Spain[5]

4.3 Use of X44/X64/Y14 code in the various countries

As described above the use of X44/X64/Y14 varies between countries and often depends as to whether or not T codes are used in the coding of drug related deaths. However also in those countries which include X44/X64/Y14 in reporting DRDs according to the EMCDDA protocol still have a number of deaths being reported under these codes which are not reported to the EMCDDA due to the un-specificity of the associated T code. Figure 4 below shows this example in Italy were quite a high percentage of deaths are reported as X44/X64/Y14 in combination with T50.9.

		2011-2013	
CODE		**EMCDDA**	**NOT EMCDDA**
F		397	1
X41,X61,Y11		22	84
X42,X62,Y12		345	0
X44,X64,Y14*		3	224
X49,X69,Y19*		0	8

*Those not according to EMCDDA definition are in combination with T50.9 only

Table 4: Number of drug related deaths according to a selection of ICD codes in Italy

An analysis of the use of X44/X64/Y14 codes in Norway was also carried out and it resulted that less than half of X44/X64/Y14 cases fall within the criteria for reporting according to selection B (Table 5).

Year	X44/X64/Y14 included	X44/X64/Y14 not included	Total
2012	40 (37.7%)	66 (62.3%)	106
2013	34 (43.0%)	45 (57.0%)	79
2014	46 (47.4%)	51 (52.6%)	97

Table 5: Number and percentage of X44/X64/Y14 cases included in cases reported in selection B in Norway

Of the cases which did not fit the selection B criteria, over half the cases were coded as X44/X64/Y14 and T50.9 which represents 'other unspecified drugs, medicaments and biological substances' even though some of them have undergone an autopsy.

In France, which do not report X44/X64/Y14 in selection B, according to the analysis undertaken by the French National Focal Point when reviewing all cases of X41/X61/Y11 as well as X44/X64/Y14 an additional 76 cases could be considered as DRDs according to selection B in 2012. These were not normally included as since France do not include T codes, reporting of all X41/X61/Y11 and X44/X64/Y14 should not be included as this would represent an overestimation.

Codes	According to selection B	To include	To exclude	Total
F	140	0	26	114
X41/X61/Y11	0	11	0	11
X42/X62/Y12	124	0	25	99
X44/X64/Y14	0	65	0	65
Other codes	0	48	0	48
Total	**264**	**124**	**51**	**337**

Table 6: DRDs according to ICD 10 codes that would fit selection B and other codes in France

In Germany many deaths coded with X44/X64/Y14 are in combination with T50.9 and therefore drug related deaths which would fit the selection B criteria may be among these cases.

code	Included in selection B	Not included in selection B
F codes	769	9
X41/X61/Y11*	9	104
X42/X62/Y12*	319	7
X44/X64/Y14*	21	479
X49/X69/Y19*	0	7

*In combination with specific T codes as specified in annex 2

Table 7: number of DRDs according to selection B or not in persons aged 15=64 years in 2014

In Denmark the use of X44/X64/Y14 codes follows the WHO ICD-10 updates and is reported to the EMCDDA as per Selection B protocol. Over half (61%) of X44/X64/Y14 cases fall within the criteria for reporting according to selection B (table 8). These may include cases of T codes combined with F10-F19.

2012/2013	Selection B		Not selection B	
	autopsy	no autopsy	autopsy	no autopsy
X44/X64/Y14	165	31	57	70

Table 8: deaths with or without autopsy due to X44/X64/Y14 in 2012/2013 in selection B and not in selection B

Cases coded under X44/X64/Y14 in Denmark but which do not fall under selection B include cases with specific T codes and others with T50 as per table 3 below. 45 cases or 35% are coded as T50.9 and most of these (62%) have not undergone an autopsy. As seen in other country reports cases placed under this code may be those in which not enough information is available to be able to identify and therefore code the drug specifically or the type of drug was specified, but is classified among the "rest" category in T50.9 as no specific code exist.

X44/X64/Y14 not selection B	Number in 2012/13
Specific T code	60
T 50	61
Other	6
Total	127

Table 9: deaths coded as X44/X64/Y14 in 2012/2013 not in selection B

In England and Wales the use of X44/X64/Y14 is mainly in combination with T50.9 (Table 10) and often refers to poly-drug cases. An analysis undertaken by the UK focal point showed that a high percentage of the cases fit the criteria for reporting to the EMCDDA according to selection B (Table 11).

ICD-10 code	plus T code	2011	2012	2013
X44	T50.9	487	471	406
X64	T50.9	157	125	108
Y14	T50.9	97	113	77

Table 10: Deaths due to X44/X64/Y14 in combination with T50.9

Selection B	plus T code	2011	2012	2013
X44	T50.9	62.4% (n= 304)	56.2% (n=262)	41.6% (n=169)
X64	T50.9	43.9 % (n=69)	36.8% (n=46)	24.1% (n=26)
Y14	T50.9	37.1% (n=36)	43.4% (n=49)	31.2% (n=24)

Table 11: Percentage of deaths due to X44/X64/Y14 in combination with T50.9 which fit the EMCDDA criteria for selection B

This resulted in an updating of drug related deaths according to selection B reported by the Focal Point.

4.4 Unspecified deaths codes used to code causes of death in various countries

An analysis of the percentage of deaths within the unspecified general codes I469, R96, R98 and R99 was done for the countries participating in this part of the project. Data was obtained from the World Health Organisation website and the most recent year available was taken for each country and analysed. The percentage of deaths per code described above in the younger age groups (15-64) was calculated out of all deaths in that particular age group in order to check if unspecified deaths were frequent among the age group commonly associated with drug related deaths. However no conclusions can be drawn from this analysis as in some countries which had low percentages of these unspecified codes had higher percentages of unspecified drug related codes and even if the general unspecified codes were high this could not directly infer that these were drug related deaths. Table below shows an example for all countries for R99:

Country	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Bulgaria	4.65	6.69	8.61	5.63	5.39	4.71	3.26	2.36	1.62	1.04
Denmark	3.08	3.67	7.27	6.16	7.00	4.65	3.88	4.35	3.80	4.62
France	8.16	10.41	11.62	10.76	9.89	7.73	6.69	5.09	4.60	3.83
Germany	2.84	4.68	4.46	4.82	5.11	4.52	4.32	3.78	3.34	2.72
Italy	4.34	5.67	4.53	5.18	3.93	3.14	1.71	1.11	0.82	0.49
Norway	1.45	0.74	6.10	2.11	4.05	1.74	3.66	1.65	2.16	1.92
Poland	2.33	2.34	2.72	4.26	4.67	3.87	3.63	3.35	2.83	2.35
Spain	2.62	2.31	1.41	2.74	3.64	2.56	2.45	1.93	1.40	1.33
United Kingdom	1.39	1.47	1.70	1.51	1.81	1.40	1.18	0.76	0.66	0.46

Table 12: Percentage of deaths due to 'R99' code in various countries in the younger age groups[5]

5. Country Reports

The following sections will go into more detail the topics discussed above through the various country reports. From the analysis of the data a number of recommendations and conclusions will be presented at the end of the report.

5.1 Bulgaria

Situation Analysis regarding ICD-10 coding of DRDs in Bulgaria

In collaboration with the Bulgarian National Focal Point: Georgi Shopov and Momchil Vassilev

Background

Bulgaria report drug related deaths according to both the general mortality register (GMR) as well as the special register (SR). Autopsy is not obligatory in Bulgaria.

The main source of information for the GMR is the death certificate and drug related deaths are reported according to ICD-10 codes: F, X41, X42, X61, X62, Y11, Y12 in combination with the T-codes. Bulgaria uses ICD10 first version with no updates.

Information for the SR are obtained from two sources: The Forensic Medicine and Deontology Centers (FMDC) in Sofia (Aleksandrovska Hospital) and the Ministry of Interior. The national focal point of Bulgaria in recent years performed a study through the Centre of Forensic Medicine and deontology (Alexander's Hospital) in Sofia. This was done through a grant agreement with the European Monitoring Centre for Drugs and Drug Addiction. Data about drug related deaths was obtained in some detail. However this only covers cases of persons who have died in Sofia-city and region, and now NFC are unable to retrieve such data for other regional cities in Bulgaria.

Estimation of the number of Drug related deaths

When comparing the two sources of data the SR reported total deaths in 2013 and 2014 combined as 77 deaths, while for the same period the GMR reported 36 deaths. Also the SR only covers deaths from the region of Sofia City and Sofia region, while the GMR reports deaths for the whole country.

Use of X44 and other ICD-10 codes in reporting drug related deaths

2013 was the first year of implementation of the EMCDDA definition (excluding X44/X64/Y14) coupled with T-codes and use of the 4-digits in accordance with ICD-10 on causes of death. Bulgaria has seen a reduction in the number of drug related deaths from 2012 to 2013 and 2014, however it is not clear as to the actual reason for this.

Analysis of DRDs in Bulgaria

General Trends

As described above the number of DRDs according to selection B in recent years is less than that reported according to selection D. Also selection D only covers deaths from the region of Sofia City and Sofia region. Deaths according to selection B have remained relatively stable except for a spike in 2008.
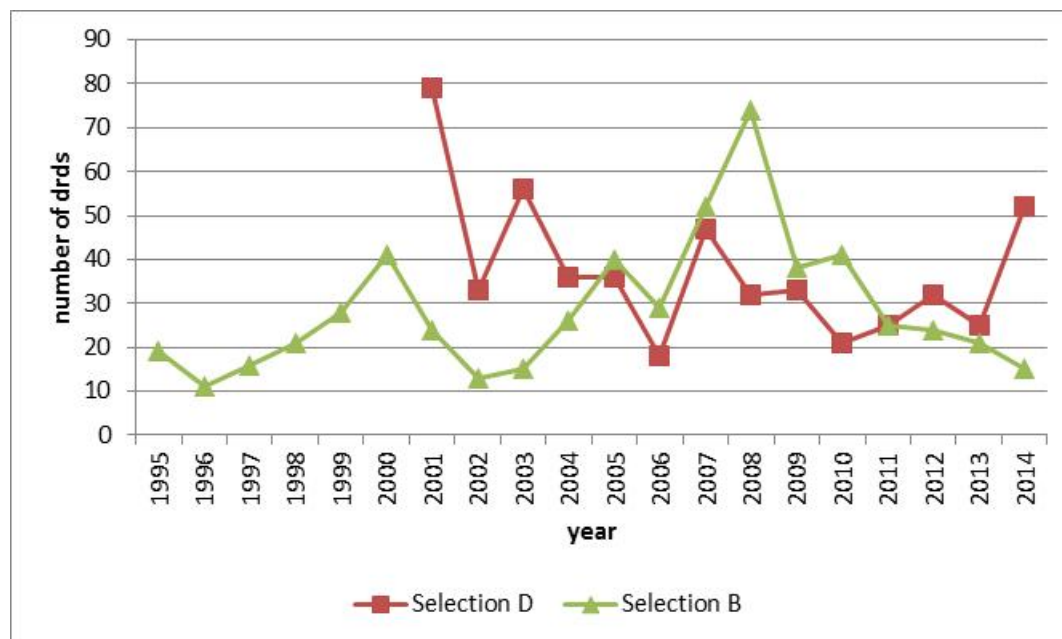
Figure 4: Trends in DRDS according to selection B and selection D[6]

Trends by ICD-10 codes

Bulgaria started using ICD-10 for the year 2005. Using the WHO Mortality database[5] trend analysis of ICD-codes related to drug related deaths was performed. Figure 5 and 6 below compares trends in DRDs according to ICD codes used in selection B as well as X44, X64 and Y14. The main ICD code responsible for DRDs was X42 which did not show any changes in trend in the year 2006 when the ICD updates related to DRDs should have been implemented. Similarly no change in trend was observed in the number of deaths in the other ICD codes including X44 in 2006. This corresponds to the fact that ICD-10 updates were not implemented in Bulgaria.
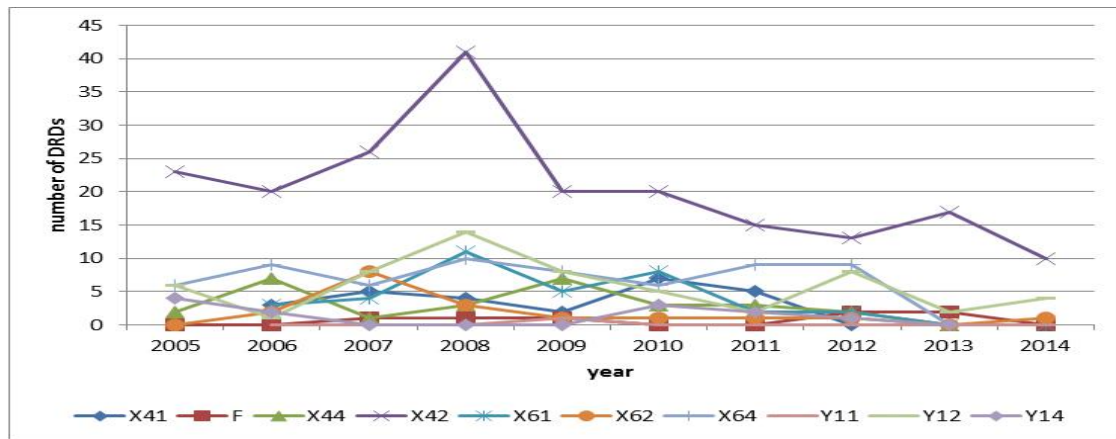
Figure 5: Trends in DRDs according to selection B and X44[5]
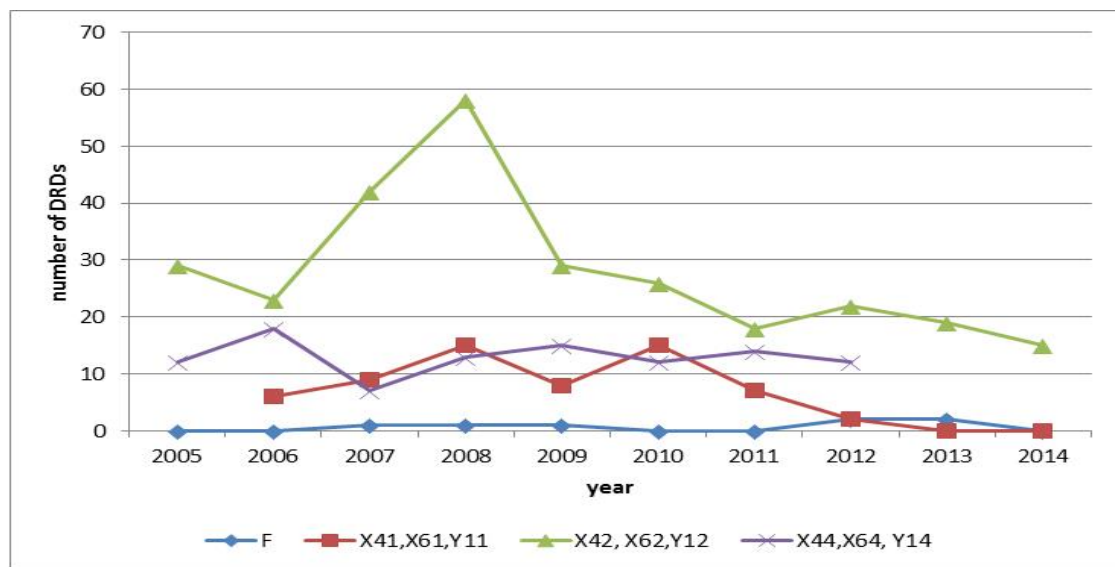
Figure 6: Trends in DRDS according to ICD groups[5]

Unspecified ICD-10 codes

Analysis of unspecified ICD codes as a percentage of total deaths in the age groups 15-64 revealed a high percentage in the R99 code especially in the younger age groups.

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
X44	0.00	0.00	0.30	0.00	0.00	0.00	0.05	0.00	0.00	0.00
X49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
X64	0.00	0.35	0.00	0.00	0.12	0.23	0.00	0.05	0.00	0.02
X69	0.58	0.00	0.30	0.20	0.00	0.08	0.10	0.05	0.02	0.01
Y14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Y19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R96	0.00	0.35	0.89	0.40	0.24	0.39	0.35	0.19	0.31	0.29
R98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.02
R99	4.65	6.69	8.61	5.63	5.39	4.71	3.26	2.36	1.62	1.04
I46	0.00	1.06	1.19	2.01	1.92	1.31	1.98	1.47	1.58	1.50

Table 13: Percentage of deaths according to non specific ICD codes out of total deaths in the age group 15-64 during 2012[5]

Discussion and conclusion

The drug-induced mortality rate among adults (aged 15–64) was 3.1 deaths per million in Bulgaria in 2014, well below the European average of 19.2 deaths per million. Since 2013 Bulgaria has implemented selection B whereby reported cases are according to X and Y in combination with T codes, as well as F codes. However no ICD updates have been implemented. Bulgaria has seen a reduction in the number of drug related deaths from 2012 to 2013 and 2014 and one possible cause could be that previously all cases under X41/X61/Y11 were reported while now only those specific to EMCDDA definition for selection B are reported.

Drug related deaths according to selection B are underestimated even when just comparing to selection D. The increase in DRD deaths according to selection B in 2008 is not well understood.

The analysis above shows that the percentage of deaths in unspecified codes is quite large especially 'R99' code and this is a problem related to certification and lack of information to complete the death certificate accurately. Estimations of number of DRDs may be required to obtain a more accurate picture on drug related deaths in Bulgaria. It is also encouraged that updates which include X44/X64/Y14 with the relevant T codes should also be implemented.

5.2 Denmark

Situation analysis regarding ICD-10 coding vis a vis DRDs in Denmark
In collaboration with the Danish National Focal Point: Henrik Sælan &
Claudia Ranneries

Background

In Denmark there are two sources of information for drug-induced deaths statistics namely the Police Register which is the Special Register (SR) and the General Mortality Register (Cause of death register) which is administered by the Danish Health Data Authority. Data is transmitted to the EMCDDA from both sources; however the General Mortality Register (GMR) is the primary source.

There are three forensic medicine institutes in Denmark which do all the post-mortems (autopsies and toxicological analysis) of suspicious deaths of the country. Also since the late 1960's all unnatural deaths of persons who were former or actual drug abusers or any drug abuse/intoxication were illicit drugs is suspected undergo a post-mortem. Post-mortem reports are sent to the police. Post mortem information is also sent to the General Mortality Registry for possible more precise cause of death diagnosis. Also on an annual basis the Danish Health Authority has a meeting with the forensic institutes where borderline cases are discussed.

Estimation of the number of drug related deaths

Based on the available information from death certificates and autopsy reports (where applicable), the GMR codes the deaths using ICD-10 together with all the updates.
The electronic death certificate has been implemented since 2007.

Use of X44 and other ICD-10 codes in reporting drug related deaths

The General Mortality Register reports according to selection B and has implemented all ICD-10 updates related to drug related deaths.
Deaths included under X44/X64/Y14 include:
1. Drugs from more than one family, but the codes are not always drugs as such.
2. Unintentional wrong-use of other or unspecified drug or biological substance.

Analysis of DRDs in Denmark

General Trends

Both the main source of reporting i.e. selection B and the other source of reporting, selection D, show a similar trend in deaths due to drugs, with the main source reporting more deaths every year (figure 7). As seen in table 14 below Denmark has fully implemented the ICD-10 updates with most deaths reported to the EMCDDA according to selection B being either X42/X62/Y12 or X44/X64/Y14. In 2012/2013, 75% of all deaths reported to the EMCDDA had undergone an autopsy. As expected the more non-specific codes e.g. the F codes had a higher percentage of deaths without autopsy.
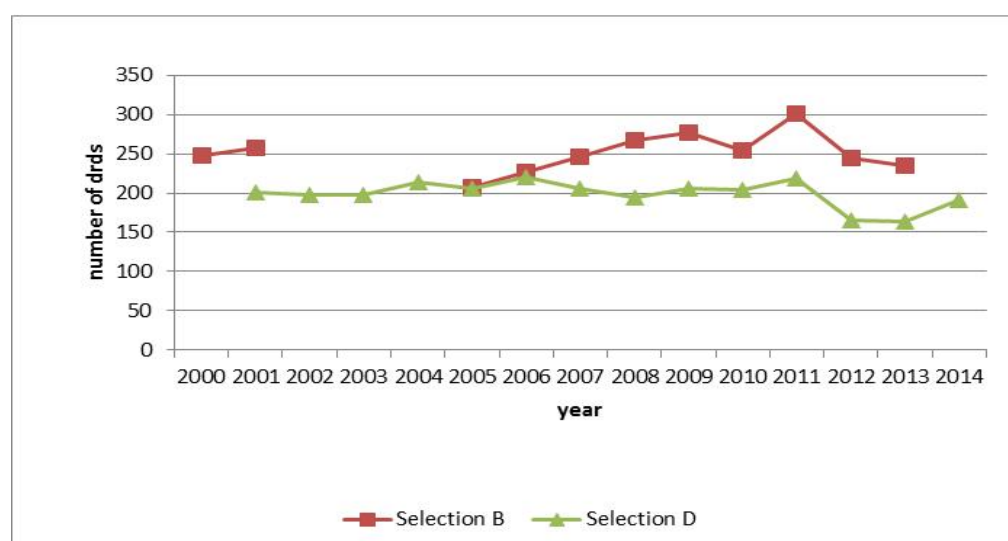

Figure 7: Trends in the number of drug related deaths according to selection B and selection D (Source: EMCDDA statistical bulletin)

2012/2013	Selection B	
	autopsy	no autopsy
F codes	9	38
X41/X61/Y11	4	0
X42/X62/Y12	178	47
X44/X64/Y14	165	31
Total	356	116

Table 14: DRDs with or without autopsy according to selection B in 2012 and 2013

Use of X44/X64/Y14 codes

The use of X44/X64/Y14 codes follows the WHO ICD-10 updates and is reported to the EMCDDA as per Selection B protocol. Over half (61%) of X44/X64/Y14 cases fall within the criteria for reporting according to selection B (table 15). These may include cases of T codes combined with F10-F19.

2012/2013	Selection B		Not selection B	
	autopsy	no autopsy	autopsy	no autopsy
X44/X64/Y14	165	31	57	70

Table 15: deaths with or without autopsy due to X44/X64/Y14 in 2012/2013 in selection B and not in selection B

Cases coded under X44/X64/Y14 but which do not fall under selection B include cases with specific T codes and others with T50 as per table 16 below. 45 cases or 35% are coded as T50.9 and most of these (62%) have not undergone an autopsy. As seen in other country reports cases placed under this code may be those in which not enough information is available to be able to identify and therefore code the drug specifically or the type of drug was specified, but is classified among the "rest" category in T50.9 as no specific code exist.

X44/X64/Y14 not selection B	Number in 2012/13
Specific T code	60
T 50	61
Other	6
Total	127

Table 16: deaths coded as X44/X64/Y14 in 2012/2013 not in selection B

Unspecified ICD-10 codes

An analysis of unspecified ICD-10 codes related to drugs i.e. X49 and X69 and Y19 as well as unspecified codes in general i.e. R96, R98 and R99 in the age groups 15-64

years was undertaken (tables 17). There were no cases coded as X49 or Y19 and very few cases under X69 reflecting no loss of cases to these codes. The more general codes particularly R99 accounted for a quite a large percentage of deaths. A number of these cases have not yet been reported to the GMR and some of them will be reported later. Therefore data will become more accurate and complete over time and the most recent year will have the highest share of cases with R99. It is very difficult to know if there would be any drug related deaths amongst these cases

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
R98	0.00	2.75	0.91	0.68	0.39	1.27	0.78	0.93	1.04	0.79
R99	3.08	3.67	7.27	6.16	7.00	4.65	3.88	4.35	3.80	4.62
X69	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.03

Table 17: Percentages of unspecified causes of death by ICD code and age group in 2012[5]

Discussion and conclusion

In 2013 the drug-induced mortality rate among adults (aged 15–64 years) was 55.1 deaths per million, compared to the European average of 19.2 deaths per million. The General Mortality Register in Denmark is very comprehensive and picks up all cases of drug related deaths undergoing an autopsy as all autopsy reports are forwarded to the GMR.

Denmark is one of the few countries which has fully implemented ICD-10 updates related to drug related deaths. Most cases coded under X44/X64/Y14 which fit the criteria under selection B fall under T40 codes often in combination with another code.

In other cases of X44/X64/Y14 which are not included in selection B, a high percentage of cases have T50.9 as the main injury code which is non specific. Often in these cases this is the only T code given. As described previously this may be either due to the substance causing death is not known or no specific T code is available for that substance/s.

5.3 France

Situation analysis regarding ICD-10 coding vis a vis DRDs in France

In collaboration with the French National Focal Point (ODFT): Anne-Claire Brisacier

Background

France has two main sources of information for drug related mortality statistics namely the General Mortality Register and the Special Register. The General Mortality Registry (INSERM CépiDc) has national coverage and reports drug related deaths to the EMCDDA according to selection B (limited ICD 10 codes). The Special Register (DRAMES), is maintained by the Agency for Medicines (ANSM) which records data from autopsies but does not have national coverage. The main aim of this register is to study poly drug use and the association of substances leading to death. France does not report according to selection D anymore.

Estimation of the number of Drug related Deaths

Drug related deaths reported according to selection B are considered to be underestimated.
Requests for autopsies are not systematic and depend on the prosecutor's decision. Forensic analysis may be canceled for external reason (budget constraints). Also some forensic physicians do not transmit data from legal investigation although the results of these analyses are supposed to be sent to the GMR. Often forensic laboratories cite confidentiality of legal investigation as the reason for this. In that case, the previous temporary "unknown or ill-defined causes of death" code will remain as such. Furthermore, the substances responsible for death are often poorly detailed, since the most frequently seen wording is that of "addiction" or "opioid overdose" without any further specifications. Finally this data only becomes available two years after they are recorded.

France reports according to selection B but ICD 10 updates have only been partially implemented because T codes are not included in the GMR database since the names of substances are often not specified on the death certificate. Therefore the ICD-10 codes reported according to selection B to the EMCDDA are F11-F12, F14-F16, F19, X42, X62 and Y12.

A new version of the French death certificate will be available in October 2016. With the new death certificate, it will be possible to send a complementary form to update the certificate, without doing another. This should permit the forensic laboratories to add information, such as toxicological results.

The SR is based on a convention signed between the ANSM and some toxicological experts or forensic laboratories and willing to participate. These laboratories transmit to the ANSM a short sheet with basic information. This system is not

exhaustive (it covers 60% of the activity of all toxicology laboratories in 2008) and is mainly useful for providing information on the substances involved.

Use of X44/X64/Y14 and other ICD-10 codes in reporting drug related deaths

Since the GMR does not include toxicological information and T codes due to frequent absence of specific information required to code using T codes reporting of X44/X64/Y14 is not reported to the EMCDDA. In France X44/X64/Y14 are mainly use to code 'Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances'. Therefore the lack of information on the death certificates has impeded France from implementing the ICD-10 updates.

Analysis of DRDs in France

Trends in DRDs

During the first years of reporting using both selection B and selection D a similar trend in DRDs was observed however from the year 2000 deaths according to selection D were much less then selection B, and soon after selection D was no longer used to report DRDs (figure 8). Trends according to ICD 10 codes reported in selection B do not show any particular changes around 2006 when ICD 10 updates should have been implemented (figure 9). Only deaths with F codes (F11-F12, F14-F16, F19) and X42/X62/Y12 are reported, missing any other cases in the other 2 groups: X41/X61/Y11 and X44/X64/Y14.
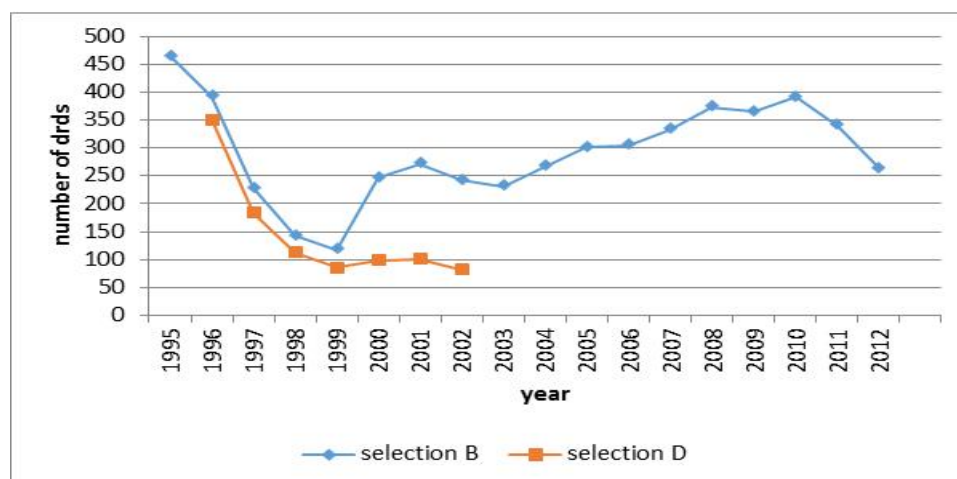

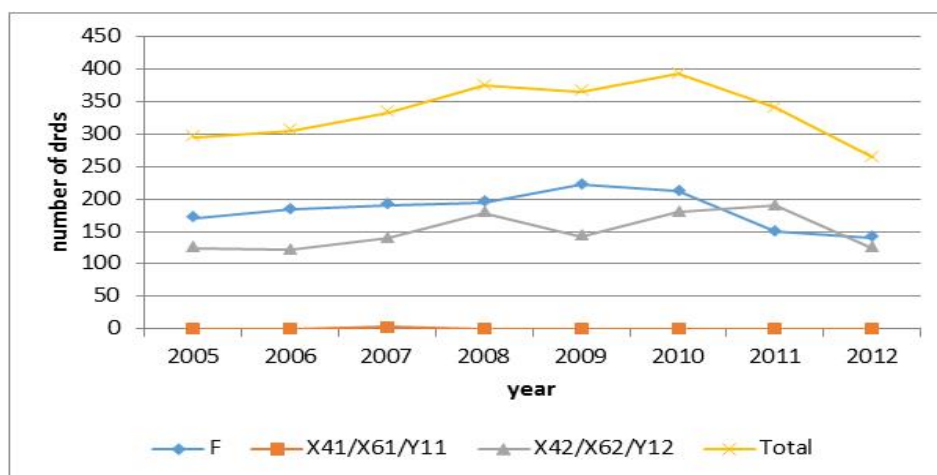Figure 8: Trends in DRDs according to selection B and selection D[6]

Figure 9: Trends in DRDs according to ICD 10 codes reported in selection B[6]

Loss of DRDs due to non-reporting of X41/X61/Y11 and X44/X64/Y14

According to the analysis undertaken by the French National Focal Point (see annex C) when reviewing all cases of X41/X61/Y11 as well as X44/X64/Y14 an additional 76 cases could be considered as DRDs according to selection B in 2012. These were not normally included as since France do not include T codes, reporting of all X41/X61/Y11 and X44/X64/Y14 should not be included as this would represent an overestimation. X41/X61/Y11 accounted for 110 deaths and X44/X64/Y14 accounted for 978 deaths in 2012. However also according to this analysis 51 deaths should not have been included in DRDs reported under selection B when reporting deaths due to ICD-10 codes X42/X62/Y12 and F codes since these deaths were considered, deaths of drug users not related to an overdose or deaths by opiates overdose out of drug addiction or use of drugs (Table 18). Finally this analysis would have included another 48 other cases involving a drug that could be also considered overdoses but don't appear as such because of the choice of another underlying cause of death. If one had to consider all this, one can estimate that there is an underestimation of at least 73 deaths (or 28%) due to coding issues.

Codes	According to selection B	To include	To exclude	Total
F	140	0	26	114
X41/X61/Y11	0	11	0	11
X42/X62/Y12	124	0	25	99
X44/X64/Y14	0	65	0	65
Other codes	0	48	0	48
Total	**264**	**124**	**51**	**337**

Table 18: DRDs according to ICD 10 codes that would fit selection B and other codes in 2012

The use or non-use of T codes

Although a number of DRDs may have information on the substance/s resulting in the death, currently France do not include T codes as often the information provided on the drug may be nonspecific. According to our analysis in the X42/X62/Y12, 36% were considered as non-specific and coded as 'overdoses' in the context of drug addiction. In the codes X41/X61/Y11, 30% were considered as psychotropics unspecified and would be coded as T43.9. However in both groups there were a number of cases in which the specific drug was not named but were mentioned in a more generic group e.g. opiates, neuroleptics e.t.c. Also while a number of cases had a named drug it was difficult to know if a code existed for these cases due to language barriers. In the case of X44/X64/Y14 based on a sample analysed: 78% were non-specific in the text written.

Also there were few cases in the X42/X62/Y12 as well as X41/X61/Y11 were multiple drugs from different groups were present and should possibly be coded in the X44/X64/Y14 category.

Unspecified ICD-10 codes

An analysis of unspecified ICD-10 codes related to drugs i.e. X49 and X69 and Y19 as well as unspecified codes in general i.e. R96, R98 and R99 was undertaken (table 19). X49/X69/Y19 accounted for a very low percentage of deaths reflecting little loss of cases to these codes. The more general codes particularly R99 but also somewhat R96 accounted for a large percentage of deaths and particularly in the age groups 15-44 could account for some DRDs.

ICD-10 code	Total	<1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	95+
'X49	0.02	0.00	0.00	0.00	0.17	0.37	0.18	0.05	0.02	0.01	0.00	0.00	0.00
'X69	0.01	0.00	0.00	0.00	0.07	0.13	0.11	0.07	0.03	0.01	0.01	0.00	0.00
'Y19	0.00	0.03	0.00	0.15	0.14	0.11	0.03	0.02	0.01	0.00	0.00	0.00	0.00
'R96	0.32	0.00	2.70	0.15	0.21	0.50	0.62	0.62	0.45	0.39	0.30	0.24	0.17
'R98	0.12	0.03	0.00	0.00	0.21	0.48	0.38	0.44	0.25	0.16	0.08	0.04	0.04
'R99	4.30	7.08	7.37	8.85	10.67	11.57	9.32	6.90	5.11	4.13	3.55	3.60	4.83

Table 19: Percentage of deaths due to non-specific ICD 10 codes in 2012[5]

Discussion and Conclusion

The estimated drug-induced mortality rate among adults (aged 15–64) is 5.4 deaths per million in 2012 (according to the most recent data available from the French mortality register), much less than the most recent European average of 19.2 deaths per million in 2012. Since France do not report according to the full protocol of selection B there are some cases which are lost as they are coded in the X41/X61/Y11 and X44/X64/Y14 ICD 10 codes. The non-specific ICD-10 codes particularly R99 account for quite a high percentage of deaths and especially in the

age groups 15-44 could possibly include some DRDs. The fact that autopsies are not systematically done would explain this high figure. Infact according to French data, 70% of deaths in the F11-F12, F14-F16, F19, X42, X62, Y12, X44, X64 and Y14 groups did not undergo autopsy in 2013.

A study carried out by Eric Janssen in 2011 undertook different capture-recapture techniques using different sources of DRDs and it was estimated that there was at least 30% underestimation of DRDs in France. It is thought that estimates of DRDs based on this and other techniques should be developed to get a better estimate of DRDs in France.

Also although specificity of drugs may not be routinely available an effort to start including T codes would be useful and may lead to the capture of more DRDs.

The use of X44/X64/Y14 according to the ICD-10 update but however not including T codes would lead to a number of drug related deaths previously coded in the X42/X62/Y12 and X41/X61/Y11 categories moving to the more non specific code X44/X64/Y14 and would not be captured under Selection B.

5.4 Germany

Situation analysis regarding ICD-10 coding vis a vis DRDs in Germany
In collaboration with the German National Focal Point: Axel Heinemann and Esther Dammer

Background

In Germany drug related deaths are reported to the EMCDDA from two main sources: the General Mortality Register which is based in the Federal Statistical Office (Statistisches Bundesamt) and reports DRDs according to selection B and the Police Register of the Federal Office of Criminal Investigation (Bundeskriminalamt/BKA) which reports DRDs according to the National definition. The national definition includes deaths following intentional or unintentional overdose, deaths as a result of long-term abuse, deaths as a result of suicide and deaths as a result of fatal accidents suffered by people under the influence of drugs.

ICD-Codes

The ICD codes used by the GMR to report DRDs according to selection B are: F codes, X41, X42, X44, X61, X62, X64, Y11, Y12, Y14 and associated T-codes. However most cases are still coded under F codes and therefore T codes are not so frequently used. In 2014, T-codes were recorded in only 33.0% of registered cases.
Though the ICD updates and priority list related to DRDs has been introduced there is no evaluation how regularly it has been applied by the persons responsible for the coding in the 16 Bundesländer.

Analysis of DRDs in Germany

General Trends

Although on average more drug related deaths are reported according to the national definition then according to selection B, the trend according to both sources is similar (figure 10).
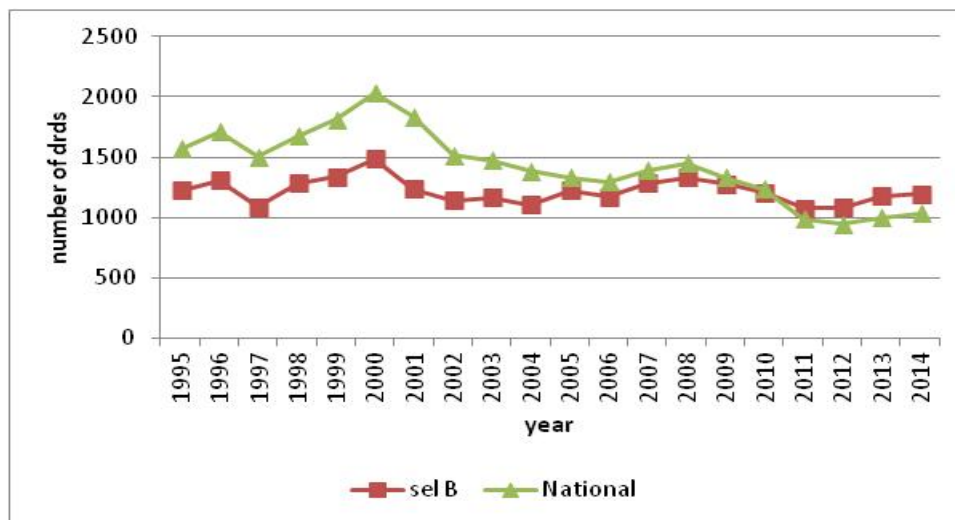
Figure 10: Trends in the number of drug related deaths according to selection B and national definition[6]

Trends by ICD-10 codes

Trends in the number of drug related deaths according to ICD codes reported in selection B show that F codes are responsible for most DRDs followed by X42/X62/Y12 codes. Very few deaths are reported using X41/X61/Y11 codes and X44/X64/Y14 codes. The ICD 10 update related to DRDs in 2002/2003 to be implemented in 2006 had little or no effect on the reporting of deaths according to the different ICD codes as seen in figure 11.
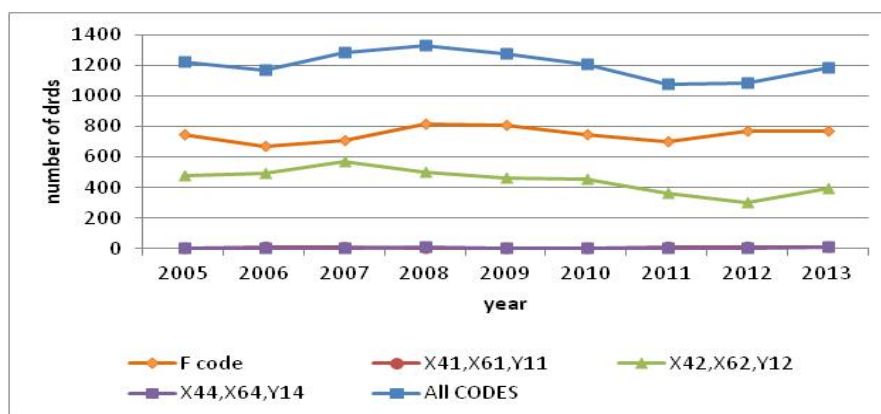
Figure 11: Trends in the number of drug related deaths according to ICD codes reported in selection B[6]

As described previously most DRDs are coded using F codes (see table 20). Quite a large number of deaths are coded using X41/X61/Y11, however these are often combined with specific T codes which do not fit the criteria for selection B. On the other hand many deaths coded with X44/X64/Y14 are in combination with T50.9 and could therefore include DRDs which would fit the selection B criteria. Only few deaths coded as X49/X69/Y19 with non-specific T codes are found.

code	Included in selection B	Not included in selection B
F codes	769	9
X41/X61/Y11*	9	104
X42/X62/Y12*	319	7
X44/X64/Y14*	21	479
X49/X69/Y19*	0	7

*In combination with specific T codes as specified in annex 2

Table 20: number of DRDs according to selection B or not in persons aged 15-64 years in 2014

In 2014 in the age group 15-64 years, 468 deaths were coded as X44/X64/Y14 and T50.9. T50.9 represents 'other unspecified drugs, medicaments and biological substances'. As seen in other country reports, cases placed under this code may be those in which not enough information is available to be able to identify and therefore code the drug specifically or the type of drug was specified, but is classified among the "rest" category in T50.9 as no specific code exist.

Unspecified ICD-10 codes

An analysis of unspecified ICD-10 codes in general i.e. I46.9, R96, R98 and R99 in the age groups 15-64 years was undertaken (table 21). Code R99 accounted for quite a high percentage of deaths in these age groups; however it is very difficult to know if there would be any drug related deaths amongst these cases.

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
I469	0.30	0.33	0.56	0.42	0.40	0.48	0.38	0.45	0.43	0.34
R96	0.10	0.00	0.00	0.00	0.06	0.00	0.05	0.04	0.03	0.03
R98	1.02	1.17	1.95	1.62	2.51	2.41	2.28	2.02	1.73	1.41
R99	2.84	4.68	4.46	4.82	5.11	4.52	4.32	3.78	3.34	2.72

Table 21: Percentages of unspecified causes of death by ICD code and age group in 2013[5]

Discussion and conclusion

In 2014 the drug-induced mortality rate among adults (aged 15–64 years) was 18.6 deaths per million in Germany, compared to the European average of 19.2 deaths per million. Though the General Mortality Register in Germany includes T codes and has also implemented the ICD-10 updates to a certain extent, many drug related deaths are still coded using F codes. In other cases of X44/X64/Y14 which are not included in selection B, a high percentage of cases have T50.9 as the main injury code which is non-specific. As described previously this may be either due to the substance causing death being unknown or the unavailability of a specific T code for that substance/s and may result in a degree of under-reporting of drug related deaths.

The use of two sources of information i.e. in this case the general mortality registry and that according to the national definition is useful especially in monitoring trends, because even though the two sources don't report the same number of DRDs every year, trends follow a similar pattern.

5.5 Italy

Situation analysis regarding ICD-10 coding vis a vis DRDs in Italy
In collaboration with the Italian National Focal Point: Roberta Crialesi and Francesco Grippo

Background

In Italy, data on drug related deaths (DRDs) is reported both according to selection B and according to selection D however the special register (i.e. selection D) is the main source of data on drug related deaths (DRDs). The Special Register of the DCSA (Central Directorate for Antidrug Services) is based on information obtained from police reports. The information on the substance involved is based on circumstantial evidence. Autopsy findings are not included in this data source.
The General Mortality Register resides in ISTAT (Italian National Institute of Statistics) and is based on the death certificate, coded according to ICD-10 and includes T codes. Not always autopsy findings are used for the cause of death certification.

General Trends

Both the main source of reporting i.e. selection D and the other source of reporting, selection B, show a very similar trend in deaths due to drugs, with the main source reporting more deaths every year. There has been a downward trend in DRDs in Italy for many years, which now seems to be leveling off.
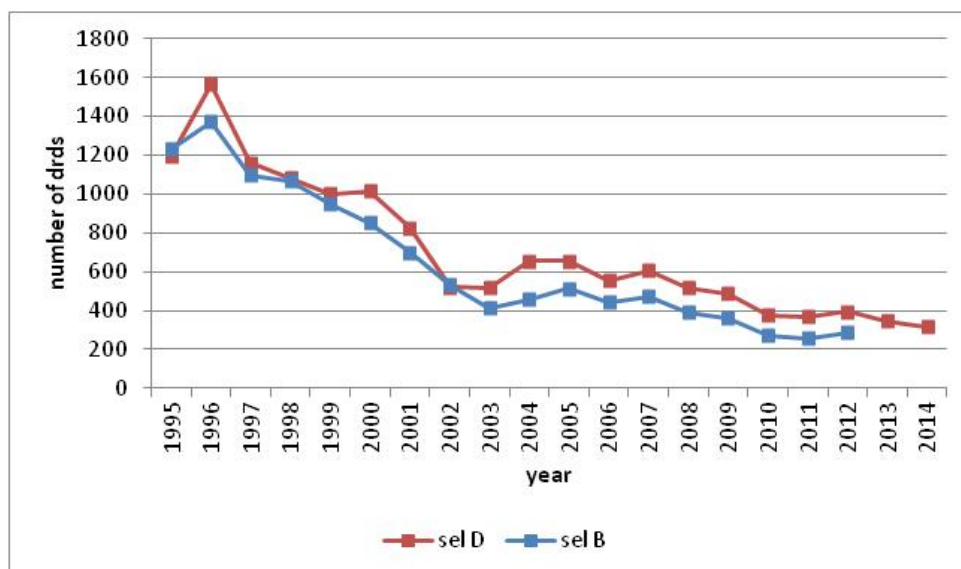
Figure 12: Trends in the number of drug related deaths according to selection B and selection D[6]

ICD-10 codes

As per table 22 below the main codes used in reporting DRDs according to selection B were F codes and X42/X62/Y12 codes. There were few reported deaths due to X41/X61/Y11 codes however X44/X64/Y14 codes were only very occasionally used in reporting DRDs according to selection B. Quite a large number of deaths reported under X44/X64/Y14 and X49/X69/Y19 which are not reported to the EMCDDA had a corresponding T code which was unspecified i.e. T50.9.

	2011-2013	
CODE	EMCDDA	NOT EMCDDA
F	397	1
X41,X61,Y11	22	84
X42,X62,Y12	345	0
X44,X64,Y14*	3	224
X49,X69,Y19*	0	8

*Those not according to EMCDDA definition are in combination with T50.9 only

Table 22: Number of drug related deaths according to a selection of ICD codes

Unspecified ICD-10 codes

An analysis of unspecified ICD-10 codes related to drugs i.e. X44, X64 and Y14 as well as X49, X69 and Y19 as well as unspecified codes in general i.e. I469, R96, R98 and R99 in the age groups 15-64 years was undertaken (table 23). X44/X64/Y14 and X49/X69/Y19 accounted for a very low percentage of all deaths in these age groups, however as seen in table 22 above, many of these deaths are associated with T50.9 which may include drug related death cases but are unspecified. The more general codes particularly R99 but also somewhat I46.9 accounted for a larger percentage of deaths. It is very difficult to know if there would be any drug related deaths amongst these cases and further analysis involving other sources of information would be required to possibly decipher these cases, since the death certificate does not contain any further information on the cause of death.

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
I469	1.59	1.10	1.84	2.20	2.02	1.93	1.72	1.33	1.28	0.98
R96	0.00	0.37	0.15	0.00	0.27	0.16	0.10	0.10	0.07	0.06
R98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R99	4.34	5.67	4.53	5.18	3.93	3.14	1.71	1.11	0.82	0.49
X44	0.14	0.09	0.08	0.17	0.10	0.10	0.02	0.03	0.00	0.01
X49	0.00	0.27	0.77	0.90	0.57	0.49	0.16	0.09	0.02	0.02
X64	0.00	0.00	0.15	0.23	0.13	0.18	0.12	0.17	0.07	0.02
X69	0.00	0.18	0.08	0.11	0.10	0.12	0.09	0.05	0.03	0.02
Y19	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00

Table 23: Percentages of unspecified causes of death by ICD code and age group in 2012[5]

Discussion and conclusion

In 2014 the drug-induced mortality rate among adults (aged 15–64 years) in Italy was 8 deaths per million, compared to the European average of 19.2 deaths per million. Trends in drug related deaths follow a similar pattern when reported according to selection D or selection B, with only minor discrepancies. Though Italy includes T codes in coding of drug related deaths, very few cases under X44/X64/Y14 are included under selection B with many cases coded in combination with T50.9. No further information is available as to what cases are placed under T50.9 however as with other countries this may be either due to the substance causing death is not known or no specific T code is available for that substance/s.

In countries which code all drugs involved in the death, multiple cause analysis can be undertaken to evaluate in more detail the trends in the drugs involved in drug related deaths. Also in countries where this is possible it would be interesting to try to analyse further the deaths especially in the younger age groups which were given an unspecified code such as R99.

5.6 <u>Norway</u>

Situation analysis regarding ICD-10 coding vis a vis DRDs in Norway
In collaboration with the Norwegian National Focal Point: Thomas Clausen and Christian Lycke Ellingsen and Vigdis Vindenes

Background

In Norway the General Mortality Register (GMR) is the main source of data on drug related deaths (DRDs). Until 2009 Norway also had a special register which was based on police reported overdoses/drug related deaths, but this does not operate anymore. The General Mortality Register obtains a copy of all forensic and medical autopsies however the detail of information received varies. Since it receives an autopsy report for almost all drug related deaths, its coverage is considered very good, however about 10% of cases reported to EMCDDA as DRDs are not based upon autopsies, but only a general doctor would have issued the death certificate.

In Norway the toxicology examination results are sent to the medical forensic examiner only, and not to the GMR. The GMR therefore only receives toxicology codes that the forensic examiner finds relevant to include in his/her report. Also the toxicology laboratory, does not receive back the conclusions from forensic examiner, and therefore cannot directly use their data to infer cause of death, only detection of the substances. A specific project where toxicology data and forensic examiner data are to be linked is underway, but not yet to be standard routine.

Toxicology in Norway is performed with a standard examination program, including more than 100 substances, but this may be extended due to circumstances, and specifically requested additional analysis. Most toxicological tests are performed at Norwegian Institute of Public Health in Oslo, and the other forensic lab is at St. Olavs Hospital Trondheim University Hospital.

Analytic methods

The analytical screening in Norway includes a large number of medicinal and illicit drugs, using peripheral blood as the preferred matrix; a selection of drugs are analysed by ultra-high performance liquid chromatography tandem mass spectrometry (UHPLC-MS/MS) and additionally a large number of medical substances are first analysed by an in-house UHPLC-MS/MS-method and later by targeted UHPLC-QTOF-MS (an ultra-performance liquid chromatography quadrupole-time-of-flight mass spectrometry) method. All positive screening results are confirmed with additional chromatographic methods.

Estimation of the number of drug related deaths

Based on the available information from death certificates and autopsy reports (where applicable), the GMR codes the deaths semi-automatically with the data

program IRIS/ACME. For all deaths with an external cause (injuries, poisonings etc), there is a manual evaluation. The GMR codes the final/definitive cause of death manually based on the available information, primarily autopsy reports. When the GMR receives the reports from an autopsy, the content varies quite a bit, from including the full report, also including all toxicology findings, to other cases with only the main findings and codes, without all the details.Only information from the post-mortem report that has relevance for the cause of death are coded into the GMR. The full post-mortem report is scanned and stored, but relevant information for the coding is retrieved manually and punched. Normally the conclusion from the forensic report will be the final cause of death coded by the GMR. The GMR performs the final coding based on ICD-10 manuals. The database also stores text of causes of death. Annually there are about 1-2% of deaths that do not have an issued death certificate or post-mortem report. These are registered as 'unknown cause', many of these deaths took place abroad (Norwegian citizens).

The General Mortality Register reports according to selection B and has implemented all ICD-10 updates related to drug related deaths.

Use of X44 and other ICD-10 codes in reporting drug related deaths

X44 ("Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances") is used in accidental poisonings either:
1) by other specified substances, not covered in the other groups (X40-X43),
2)by a combination of substances, where no substance is clearly stated as the main intoxicant; or
 3)where the particular type of substance is unknown (but supposed to be a drug/medicament.

T50.9 ("Poisoning: Other and unspecified drugs, medicaments and biological substances") is used either when the substance involved is 'specified', but not covered in the other groups (T36-T50.8) or when the substance is unknown (but supposed to be a drug/medicament). During recent years the number of T50.9 codes has been reduced and the rate of these deaths based on autopsy has increased during the same period, indicating a trend towards more specific and improved coding practice where other and alternative codes are increasingly applied when appropriate.

Analysis of DRDs in Norway

General Trends

Both the main source of reporting i.e. selection B and the other source of reporting, selection D, show a similar trend in deaths due to drugs, with the main source reporting more deaths every year. Until 2002 the national definition did not include "intentional poisoning" (ICD codes: X61, X62). From 2003 "Selection B" has become the national definition**.** In the case of selection D, these include cases in which the

police had knowledge of the death, but does not include suicide with drugs, since it is a different method of data collection and different definition, both contributing to differences in estimates, although trends were largely similar.
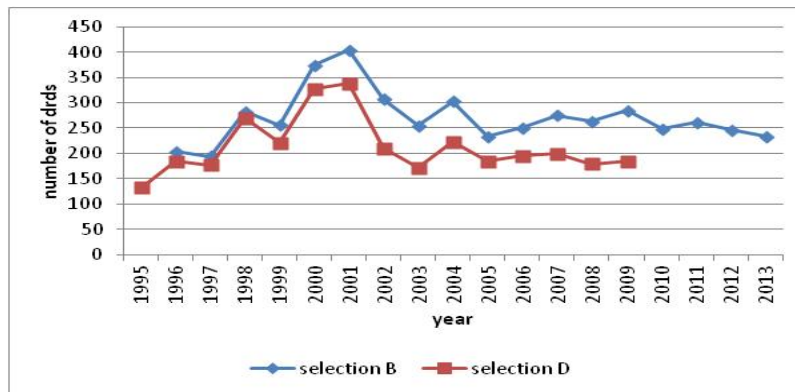
Figure 13: Trends in the number of drug related deaths according to selection B and selection D[6]

Trends by ICD-10 codes

Trends in the number of drug related deaths according to ICD codes reported in selection B shows that codes X42/X62/Y12 are responsible for most DRDs. X44/X64/Y14 codes have been in use and reported to the EMCDDA for many years even before the ICD-10 updates in 2006. Infact the ICD 10 update related to DRDs in 2002/2003 to be implemented in 2006 had no effect on the reporting of deaths according to the different ICD codes below, up to the year data according to ICD codes was reported to EMCDDA (i.e from 2003) as per figure 14 below.
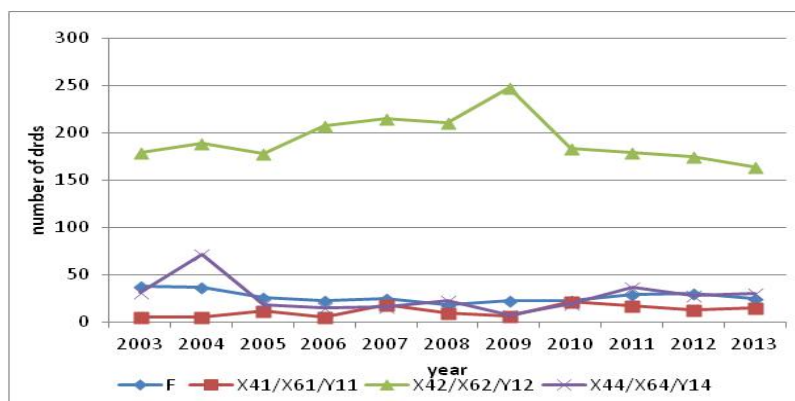

Figure 14: Trends in the number of drug related deaths according to ICD codes reported in selection B[6]

The overall percentage of drug related deaths undergoing autopsy in Norway is high. Most cases which do not undergo autopsy are in the F codes as would be expected

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as in these cases there would be limited information on the cause of death. However these account for a small percentage of deaths.

ICD 10 code	number and % of drds in 2012	Percentage with autopsy in 2012	number and % of drds in 2013	Percentage with autopsy in 2013	number and % of drds in 2014	Percentage with autopsy in 2014
F codes	11.8% (n=32)	53%	9.8% (n=25)	36%	5.4% (n=15)	20%
X41/X61/Y11	7.3% (n=20)	100%	8.2% (n=21)	100%	6.8% (n=19)	94.7%
X42/X62/Y12	66.1% (n=179)	90.50%	68.6 %(n=175)	93.10%	71.2% (n=198)	95.5%
X44/X64/Y14	14.8% (n=40)	87.50%	13.3% (n=34)	88.20%	16.5% (n=46)	91.3%
Total	100% (n=271)	86.30%	100% (n=255)	87.50%	100% (n=278)	90.6%

Table 24: Number and percentage of DRDs according to ICD 10 code reported in selection B and percentage in each group undergoing autopsy in 2012-2014

Use of X44/X64/Y14 codes

The use of X44/X64/Y14 codes follows the WHO ICD-10 updates and is reported to the EMCDDA as per Selection B protocol. Less than half of X44/X64/Y14 cases fall within the criteria for reporting according to selection B (Table 25).

Year	X44/X64/Y14 included	X44/X64/Y14 not included	Total
2012	40 (37.7%)	66 (62.3%)	106
2013	34 (43.0%)	45 (57.0%)	79
2014	46 (47.4%)	51 (52.6%)	97

Table 25: Number and percentage of X44/X64/Y14cases included in cases reported in selection B

The main injury code reported with X44/X64/Y14 which are included in selection B are as per table 26 below. X44/X64/Y14 codes reported to the EMCDDA include deaths with at least two T codes or more, or a T code and an F code with at least one drug (T or F code) which is according to selection B. However this drug as per selection B may not necessarily be the main injury code.

Main injury code (2012-2014)	number
T40 codes	88
T43 codes	9
T50 codes and other	23
Total	120

Table 26: Number of deaths in the X44/X64/Y14 categories (2012-2014) included in selection B and main injury code

 Of the cases which do not fit the criteria over half the cases are coded as X44/X64/Y14 and T50.9 which represents 'other unspecified drugs, medicaments

and biological substances' even though some of them have undergone an autopsy (tables 27,28,29). There are several possible reasons for this which includes:
a) An autopsy was performed, but no toxicological analysis was performed (very rarely in forensic cases, may be seen in hospital autopsies);
b) A toxicological analysis was performed, but no drug was clearly identified. Nevertheless the cause of death was stated as accidental poisoning. This may be the case in severe decomposition or when the person dies from late effects of the poisoning;
c) The type of drug was not clearly stated on the autopsy report (even if the results of the toxicological analysis was known to the pathologist), and there was no response to the GMR query;
d) The type of drug was specified, but is classified among the "rest" category in T50.9;

T codes associated with X44/X64/Y14	2012		
	with autopsy	without autopsy	Total
Specified T codes	19	8	27 (40.9%)
T50.9	27	12	39 (59.1%)
Total	46	20	66 (100%)

Table 27: T codes associated with X44/X64/Y14 not included in selection B in 2012

T codes associated with X44/X64/Y14	2013		
	with autopsy	without autopsy	Total
Specified T codes	9	6	15 (33.3%)
T50.9	12	18	30 (66.7%)
Total	21	24	45 (100%)

Table 28: T codes associated with X44/X64/Y14 not included in selection B in 2013

T codes associated with X44/X64/Y14	2014		
	with autopsy	without autopsy	Total
Specified T codes	12	11	23 (45.1%)
T50.9	13	15	28 (54.9%)
Total	25	26	51 (100%)

Table 29: T codes associated with X44/X64/Y14 not included in selection B in 2014

Unspecified ICD-10 codes

An analysis of unspecified ICD-10 codes related to drugs i.e. X49 and X69 and Y19 as well as unspecified codes in general i.e. R96, R98 and R99 in the age groups 15-64 years was undertaken (tables 30-32). X49/X69/Y19 accounted for a very low percentage of deaths reflecting no loss of cases to these codes. The more general codes particularly R99 but also somewhat R96 accounted for a large percentage of

deaths particularly in 2014 but also in 2013. It is very difficult to know if there would be any drug related deaths amongst these cases but other possible causes include deaths of Norwegian residents abroad with no access to the cause of death and deaths in which the additional information is still being sought and would then provide a clearer cause of death later on.

2012	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
R960	0.00	0.00	0.00	0.00	0.77	0.26	1.56	1.20	1.19	1.68
R98	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.07	0.14
R99	2.56	0.00	0.69	1.08	1.54	2.37	0.17	1.41	0.89	0.98
X49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00
X69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00

Table 30: Percentages of unspecified causes of death by ICD code and age group in 2012

2013	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
R960	0.00	2.30	2.11	0.00	1.61	1.18	1.52	1.92	3.36	2.43
R98	0.00	0.00	0.00	0.00	0.00	0.39	0.51	0.87	0.22	0.21
R99	0.00	1.15	2.82	3.73	3.76	3.54	2.28	5.24	3.47	2.64
X49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
X69	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 31: Percentages of unspecified causes of death by ICD code and age group in 2013

2014	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
R960	0.00	0.74	0.61	0.53	1.21	0.58	0.17	1.10	0.93	1.56
R98	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.11	0.00	0.16
R99	1.45	0.74	6.10	2.11	4.05	1.74	3.66	1.65	2.16	1.92
X49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
X69	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.11	0.00	0.00

Table 32: Percentages of unspecified causes of death by ICD code and age group in 2014

Discussion and conclusion

In 2013 the drug-induced mortality rate among adults (aged 15–64 years) was 67.8 deaths per million, compared to the European average of 19.2 deaths per million. Among confirmed cases of overdose deaths, the rate of autopsy is high, but the autopsy rate differs between districts. The General Mortality Register in Norway is very comprehensive and picks up all cases of drug related deaths undergoing an autopsy as all autopsy reports are forwarded to the GMR. The GMR is also a 'live' database allowing additional information to be included after the formal year of publication. For this reason the EMCDDA may need to request updated annual data 2-3 following the original data request.

Norway is one of the few countries which has fully implemented ICD-10 updates related to drug related deaths. Most cases coded under X44/X64/Y14 which fit the

criteria under selection B fall under T40 codes. However in other cases the main injury code is non-specific e.g. T50.9 as often the other code would be an F code.

In other cases of X44/X64/Y14 which are not included in selection B, a high percentage of cases have T50.9 as the main injury code which is non specific. Often in these cases this is the only T code given. As described previously this may be either due to the substance causing death is not known or no specific T code is available for that substance/s.

In countries which code all drugs involved in the death, multiple cause analysis can be undertaken to evaluate in more detail the trends in the drugs involved in drug related deaths.

5.7 Poland

Situation analysis regarding ICD-10 coding vis a vis DRDs in Poland
In collaboration with National Polish Focal Point Artur Malczewski and Janusz Sierosławski

Background

In Poland, data on drug related deaths (DRDs) is based on data from the Central Statistics Office (GUS). Data is reported according to their national definition and not according to selection B or selection D. It is based on ICD-10 and includes the following ICD 10 codes: F11-12, F14-16, F19, X42, X44, X62, X64, Y12, Y14. T codes are not available.

General Trends

The trend in drug related deaths in Poland showed an initial upward trend in the 1990s till 2002 followed by a downward and then stable trend.
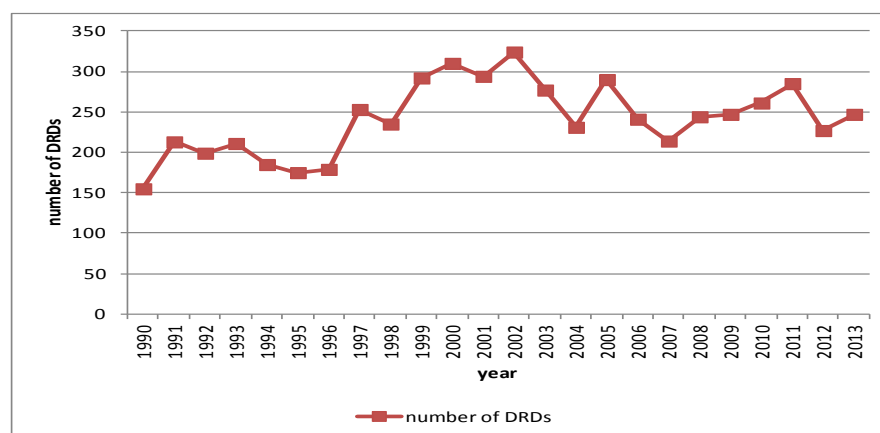

Figure 15: Trends in the number of drug related deaths according to national definition[6]

ICD-10 codes

Poland report deaths due to drugs using the following ICD-10 codes: F11-12, F14-16, F19, X42, X44, X62, X64, Y12, Y14. T codes are not available. The use of F codes has always been low even before the icd-10 updates. Also X44/X64/Y14 are used extensively and though there is some loss of reporting due to X41/X61/Y11 codes not being reported, on the other hand there might be over-reporting since all X44/X64/Y14 codes are reported. X49/X69/Y19 has been included in the graph below as quite a few drug related deaths are given this ICD code in Poland and some under-reporting may result from this in the data given to the EMCDDA. Recently figures for these codes have been quite small.
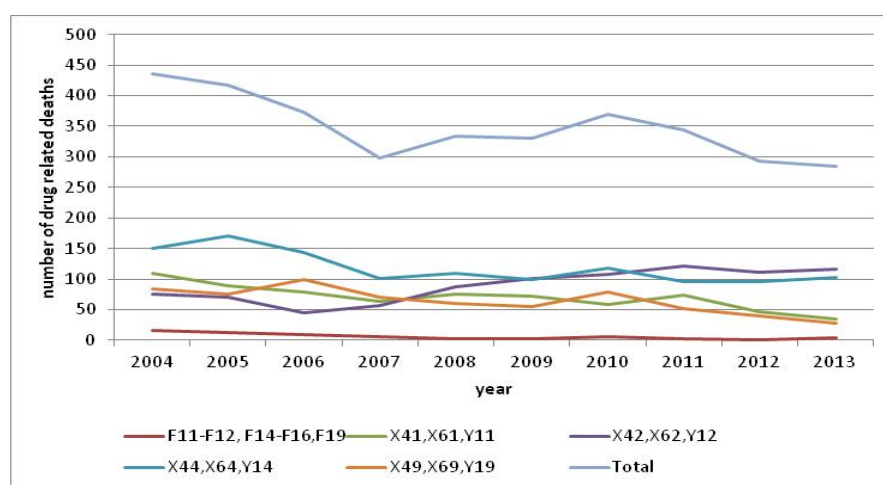

Figure 16: Number of drug related deaths in 15-64 years according to a selection of ICD 10 codes[5]

Unspecified ICD-10 codes

An analysis of unspecified ICD-10 codes in general i.e. I469, R96, R98 and R99 in the age groups 15-64 years was undertaken (table 33). These non specific codes account for a large percentage of deaths especially if taken together however it is very difficult to know if there would be any drug related deaths amongst these cases and further in depth analysis would be required to possibly decipher these cases, however often the information is not available.

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
I469	0.30	0.80	0.92	1.23	1.66	1.95	2.12	1.81	1.78	1.54
R96	0.51	1.41	2.52	3.68	3.94	4.17	3.45	2.87	2.10	1.54
R98	1.62	2.21	2.76	3.11	3.69	3.91	3.33	3.14	2.37	1.93
R99	2.33	2.34	2.72	4.26	4.67	3.87	3.63	3.35	2.83	2.35

Table 33: Percentages of unspecified causes of death by ICD code and age group in 2013[5]

Discussion and conclusion

In 2013 the drug-induced mortality rate among adults (aged 15–64 years) in Poland was 8.5 deaths per million, compared to the European average of 19.2 deaths per million. Poland does not report drug related deaths according to selection B or selection D to the EMCDDA also since it does not have T codes. Countries are encouraged to start using T codes as this adds greatly to the specificity of drug related deaths. It would also allow the implementation of ICD-10 updates in full.
Also in countries where this is possible it would be interesting to try to analyse further the deaths especially in the younger age groups which were given an unspecified code such as R99.

5.8 Spain

Situation analysis regarding ICD-10 coding vis a vis DRDs in Spain
In collaboration with the Spanish Observatory on Drugs. Alvarez Elena, Llorens Noelia, Sendino Rosario.

Background

Spain currently has, fundamentally, two sources of information for drug-induced deaths statistics namely a Specific Register of Mortality due to Acute Reaction to Drugs, administered by the Spanish National Focal Point and a General Mortality Register, managed by the National Statistics Institute.

The primary sources of information for the Special Register are the Forensic Anatomical Institutes, Forensic Physicians, National Toxicology Institute and University Legal Medicine Departments which send the data to their regions and these in turn send them to the database of the Spanish Observatory on Drugs and Drug Addictions of the DGPNSD. The Special Register covers persons aged 10 to 64 years and has around 50% population coverage and includes toxicology information.

The General Mortality Register resides with the Spanish National Statistics Institute (INE) and records the causes of death classified according to the World Health Organisation's International Classification of Diseases (ICD). The INE's mortality databases are administered in collaboration with the different regions. The primary source of information is the Civil Registers, which send the death reports to the INE's regional delegations on a monthly basis. Spanish GMR doesn´t record T codes and doesn´t include toxicology information.

Estimation of the number of Drug related deaths

The two sources of information mentioned above namely the Specific Mortality Register and the General Mortality Register have certain limitations and in order to

minimise these, an estimation of mortality is made using the information of both registers.

The Specific Mortality Register provides data on deaths from the reports of deaths due to drugs in some regions; however though it is a detailed register it does not have national coverage. On the other hand the General Mortality Register does have complete nationwide coverage and, although the quality of the register is good, detailed information on drug related deaths is not always available. It is estimated that, in Spain, deaths for drugs from the General Mortality Register are underestimated by 40%. Consequently, in order to estimate the number of drug-related deaths at the national level, the specificity of the Specific Register is combined with the greater coverage of the General register.

Use of X44 and other ICD-10 codes in reporting drug related deaths

Since the GMR does not include toxicological information and T codes due to absence of specific information required to code using T codes, X44 is frequently used to code deaths due to 'overdose' which is often reported as such on the death certificates without any additional details.

ICD 10 currently being used to report back to the EMCDDA according to the Spanish national definition are: F11-F12, F14-F16, F19, X42, X44, X62, Y12. X64 and Y14 are not included due to temporal comparability; however it is possible to select them.

Analysis of DRDs in Spain

The number of DRDs in persons aged between 15-64 years reported according to Selection B, Selection D and the national definition used in Spain varies as depicted in figure 17 below.

Selection B includes ICD codes F11, F12, F14-F16, X42, X62 and Y12. Since no T codes are available codes X41, X61, Y11 as well as X44, X64 and Y14 are excluded. The National definition includes all codes reported in selection B but also includes X44 code. Selection D reports according to the EMCDDA protocol for selection D but does not have national coverage. In Spain non-residents are included in the DRDs statistics.
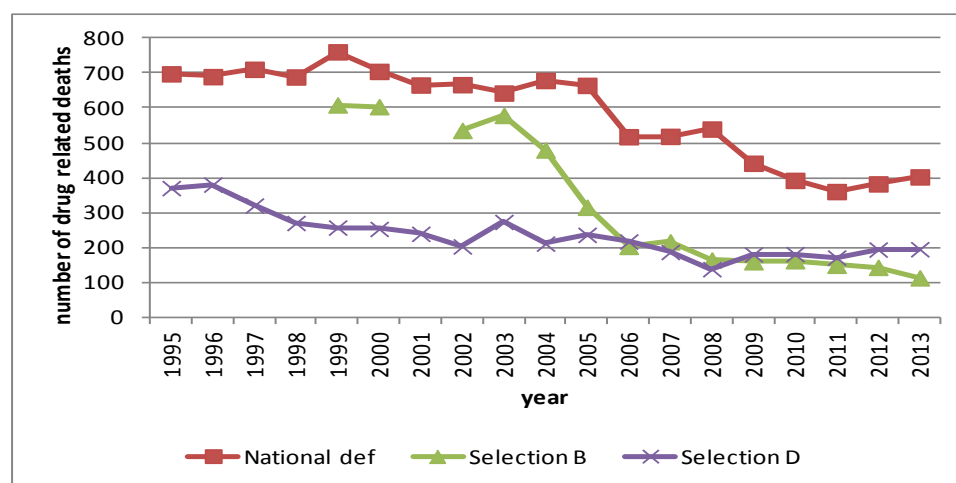
Figure 17: Trends in DRDS in persons aged 15-64 years according to different definitions[6]

In the ICD codes reported in table 34 below the ICD codes which account for the highest amounts of death are X44, X64, X42 and X49. However except for X42 these codes are relatively non specific in nature and with no T codes available. Therefore it is difficult to know the percentage of DRDs according to the EMCDDA protocol that would be found within these codes.

ICD-10 code	number of deaths	% of deaths in these categories
Y14	7	0.86
Y12	0	0.00
Y11	2	0.25
X64	183	22.48
X62	4	0.49
X61	29	3.56
X44	289	35.50
X42	87	10.69
X41	30	3.69
F11,F12, F14-F16,F19	22	2.70
Y19	7	0.86
X69	40	4.91
X49	114	14.00
Total	814	100.00

Table 34: Number of deaths and percentage of deaths in a number of ICD codes related to DRDs in 2013

A review of the trends in the number of deaths according to the ICD-10 codes that would be selected for selection B if T codes were available shows that a rise in the number of deaths coded as X44 occurred from 2005 onwards with a corresponding decrease in X42 codes and F codes (figure 18). The number of deaths in the other ICD codes remained relatively stable over the years. In figure 19 the main ICD codes responsible for most drug related deaths were compared to trends in DRDs according to selection B. One can observe a fall in the number of deaths according to selection B which follows a similar fall in the number of deaths in codes X42 and F codes. This occurred around the time of the ICD-10 updates related to DRDs and the shift of coding from X42 and F codes to X44 resulted in less deaths being reported to EMCDDA according to selection B.
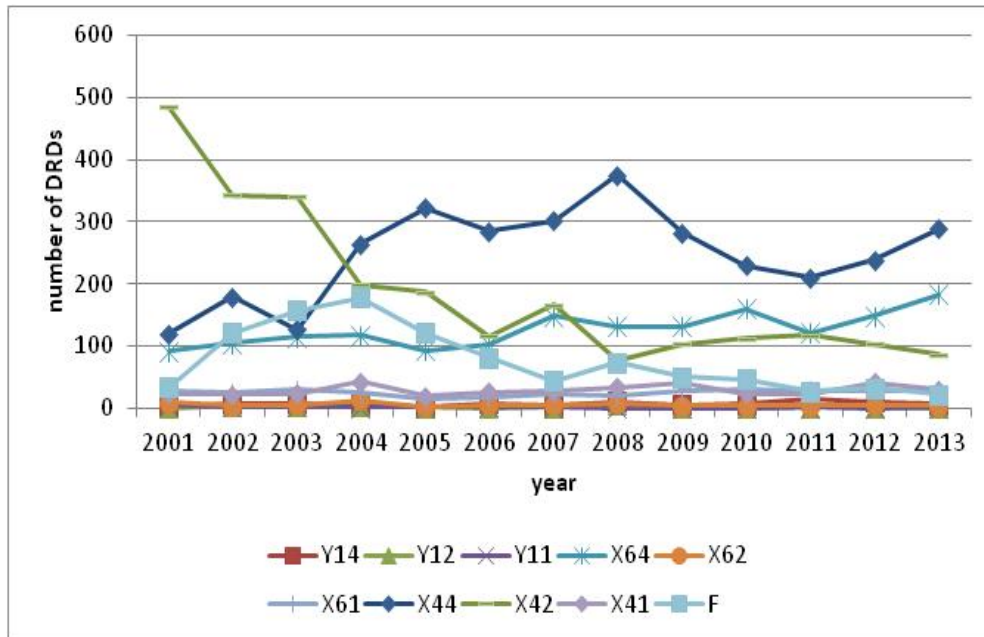
Figure 18: Trends in DRDs according to ICD 10 code in the 15-64 age group[5]
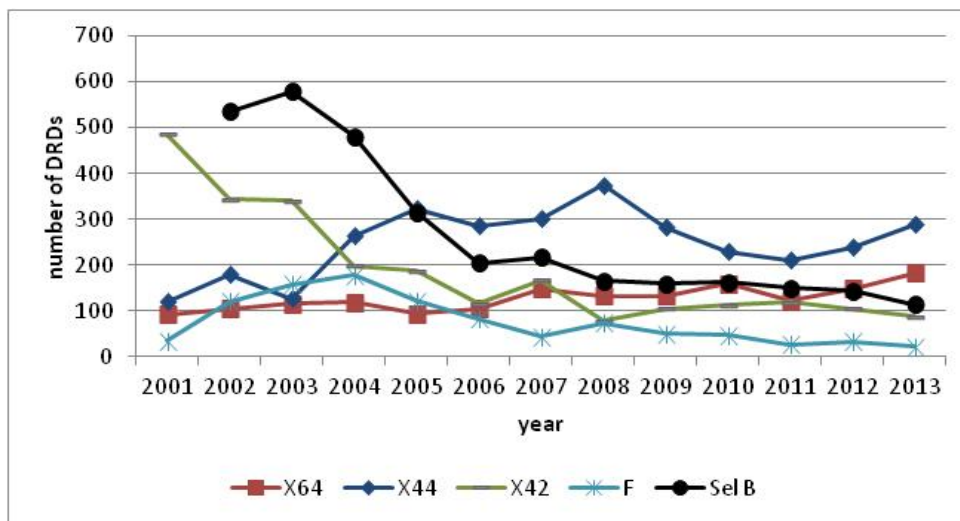

Figure 19: Trends in DRDs in 15-64 year olds according to the main ICD-10 codes and selection B[5]

Analysis of unspecified ICD codes as a percentage of total deaths in the age groups 15-64 revealed quite a high percentage in the R99 code and to a lesser extent in the X49 code in the younger age groups.

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Y19	0.00	0.00	0.12	0.00	0.00	0.00	0.06	0.00	0.01	0.01
X69	0.00	0.16	0.12	0.07	0.04	0.08	0.13	0.04	0.08	0.05
X49	0.26	0.33	0.94	1.01	0.75	0.77	0.23	0.10	0.10	0.01
R99 CODE	2.62	2.31	1.41	2.74	3.64	2.56	2.45	1.93	1.40	1.33
R98 CODE	0.26	0.33	0.59	0.36	0.50	0.54	0.41	0.36	0.13	0.14
R96.0/R96.1	0.26	0.82	0.70	0.72	0.50	0.34	0.23	0.17	0.12	0.09
I46	0.26	0.00	0.12	0.14	0.21	0.18	0.16	0.12	0.10	0.05

Table 35: % of deaths in specific ICD-10 codes out of all deaths in 2013 in Spain[5]

Discussion and conclusion

According to the national definition of Spain which includes reporting of DRDs due to X44 code (but not X64/Y14) the drug-induced mortality rate among adults (aged 15–64) is 13 deaths per million in 2013, lower than the latest estimated European average of 19.2 deaths per million.

Both the ICD-10 updates as well as the EMCDDA protocol for selection B can only be fully implemented in countries who's GMR has information from toxicology reports regarding drug related deaths which are then translated into T codes.

As described above reporting of DRDs according to selection B especially in recent years in Spain, resulted in a gross under-estimation of DRDs. This is a result of an increase in the use of X44 coding in 2004 and a fall in deaths due to X42 and F codes in 2004 and 2005 respectively. In countries that do not have T codes, deaths due to X44 code are not reported according to selection B.

5.9 United Kingdom

Situation analysis regarding ICD-10 coding vis a vis DRDs in the United Kingdom
In collaboration with the United Kingdom National Focal Point: Martin White and Rosie Amery from Office for National Statistics

Background

The United Kingdom provides data on drug related deaths to the EMCDDA according to selection B. This is provided by three General Mortality Registers (England/Wales, Scotland and Northern Ireland). There is also one Special Mortality Register. However the United Kingdom does not report according to selection D.
Though the United Kingdom report according to the EMCDDA definition of selection B, however at a National level two other definitions exist. 'The Drug Misuse definition, developed for the United Kingdom's former Drug Strategy, measures cases of death where the underlying cause is drug abuse, drug dependence or poisoning where any substances scheduled under the Misuse of Drugs Act 1971 are involved. The third definition, used by the Office for National Statistics, is much

wider than the other definitions and also includes death as a result of legal prescription and over-the-counter drugs'.

Estimation of the number of Drug related deaths

Deaths are not registered in England & Wales until investigations are complete, so the only certificate of cause of death that is issued is the final one. However if there is to be an inquest, an Interim Certificate of the Fact of Death can be issued to allow burial, however the death will only be registered once the inquest is concluded. As England and Wales experience lengthy delays in the registration of these deaths, prior to 2015 deaths for England and Wales were reported according to year of registration. However in 2015 the UK made several changes in the reporting of Selection B which included that reporting for England & Wales changed to report by the year deaths occurred rather than the year of registration. This is to give internal consistency with figures from Scotland which does not experience these delays. However, this means that the latest available reporting year will be two to three years behind, when it can be assumed that the large majority of deaths in England & Wales would have been registered.

Multiple codes are recorded by ONS (England and Wales), however historically the T code was identified only if it is listed as the secondary cause of death. Names of substances are also recorded as these are used for the 'drug misuse' definition.

Use of X44 and other ICD-10 codes in reporting drug related deaths

Although the GMR is considered to be accurate, prior to current updates recently implemented, it was believed that figures reported to the EMCDDA were underestimated, particularly for England, due to a combination of the full protocol of selection B not being applied and historical coding practices around poly drug deaths. In England and Wales, there are a large number of X44/X64/Y14 cases historically, many of which are poly drug deaths. Also, figures for England and Wales previously only referred to the secondary cause of death to identify a T code. In poly drug cases the secondary cause would be T50.9. However, if all causes of death were looked at more closely, T40 codes could often be identified. Scotland has very few cases under X44/X64/Y14 even under the broader ('ONS') definition. Therefore little change would be expected as a result of implementing the ICD-10 updates.
Deaths with an underlying cause of death of X44, X64 and Y14 alongside relevant T-codes have been incorporated into UK figures. Due to historical coding practice in England & Wales, this has substantially increased the number of deaths counted under this definition currently and historically. Figures for Scotland have also been revised, although there are very few cases under this definition, while deaths for Northern Ireland with these codes have been reported previously. Responsibility for calculation of England and Wales figures has moved from ONS to be calculated in-house by the UK Focal Point, via Public Health England and Public Health Wales. This has led to the exclusion of non-residents of England and Wales for reporting for those countries.

ONS have recently implemented a priority list so there will be fewer cases under these codes in future.

Analysis of DRDs in the United Kingdom

The number of drug related deaths according to selection B (figure 20 below) has been updated and figures are now fully compliant with the ICD-10 updates (of 2002/2003 to be implemented in 2006) related to drug related deaths.
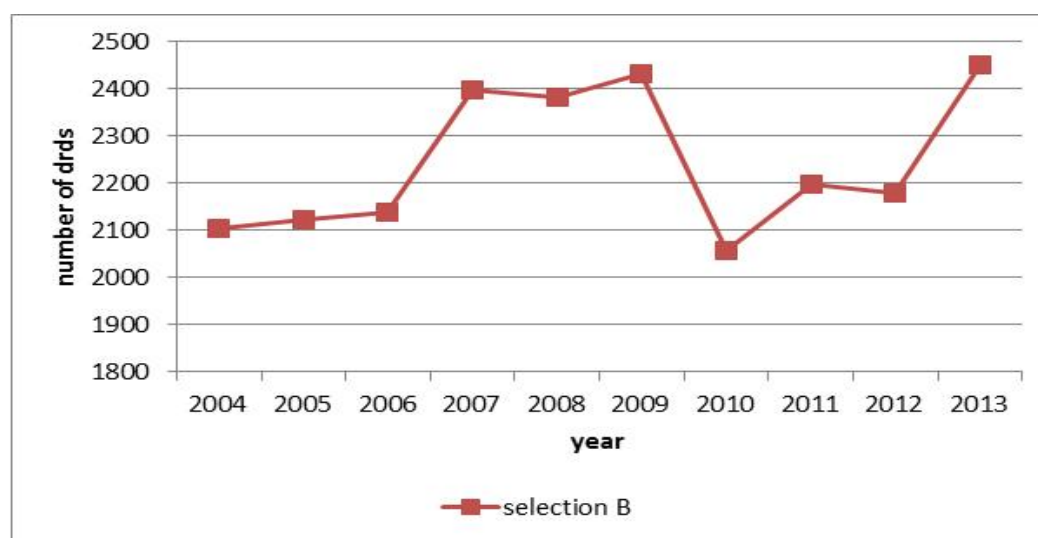
Figure 20: Trends in the number of drug related deaths in the United Kingdom according to selection B

Short term trends in drug related deaths according to selection B in England and Wales

It was only possible to look at very short term trends in drug related deaths by ICD-10 codes (figure 21). Most deaths are accounted for by ICD-10 codes X42/X62/Y12 which are showing a short term rising trend. F and X41/X61/Y11 account for few deaths and show a short term stable trend. There is a decline each year in deaths due to X44/X64/Y14. This is because the Office for National Statistics implemented the coding change for deaths registered from the start of 2014, and many deaths from 2013 (and some from earlier years) will have been registered after that and so will be coded to e.g. X42 under the new priority list, rather than X44.

Figure 21: Short term trends in DRDs in England and Wales according to selection B

Use of X44 code in England and Wales

The use of X44/X64/Y14 in combination with other T codes except for T50.9 is very low or practically nil. On the other hand also as described previously X44/X64/Y14 in combination with T50.9 is very often used (Table 36) and often refers to poly-drug cases. An analysis undertak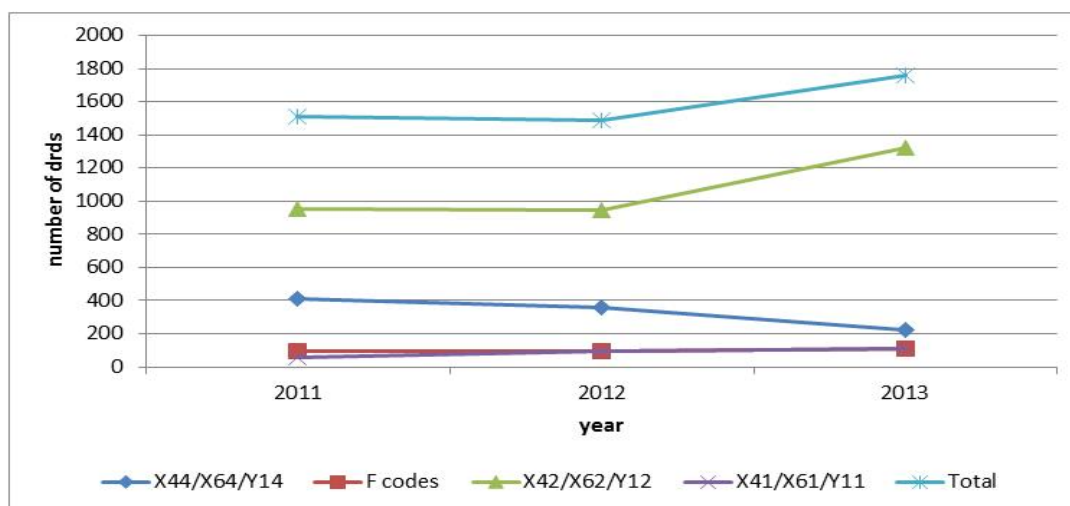en by the UK focal point showed that a high percentage of the cases fit the criteria for reporting to the EMCDDA according to selection B (Table 37). No assessment has been made of the remaining cases to determine what other T codes are present.

ICD-10 code	plus T code	2011	2012	2013
X44	T50.9	487	471	406
X64	T50.9	157	125	108
Y14	T50.9	97	113	77

Table 36: Deaths due to X44/X64/Y14 in combination with T50.9

Selection B	plus T code	2011	2012	2013
X44	T50.9	62.4% (n= 304)	56.2% (n=262)	41.6% (n=169)
X64	T50.9	43.9 % (n=69)	36.8% (n=46)	24.1% (n=26)
Y14	T50.9	37.1% (n=36)	43.4% (n=49)	31.2% (n=24)

Table 37: Percentage of deaths due to X44/X64/Y14 in combination with T50.9 which fit the EMCDDA criteria for selection B

Unspecified deaths in the United Kingdom

An analysis of the percentage of deaths within the unspecified drug related death codes X49/X69/Y19 as well as unspecified general codes R96,R98 and R99 resulted in a very low percentage of deaths within these ICD-10 codes (Table 38). This indicates that few if any drug related deaths are lost to these non-specific codes which have

been observed to be quite high in some countries especially when focusing on the 15-64 age groups which account for most drug related deaths.

Cause	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65& over
R96	0.96	0.74	0.50	0.50	0.29	0.17	0.06	0.02	0.02	0.01	0.00
R98	0.00	0.00	0.00	0.04	0.08	0.02	0.01	0.03	0.02	0.01	0.00
R99	1.39	1.47	1.70	1.51	1.81	1.40	1.18	0.76	0.66	0.46	0.08
X49	0.00	0.13	0.05	0.00	0.03	0.02	0.02	0.01	0.02	0.00	0.00
X69	0.00	0.00	0.05	0.00	0.11	0.02	0.01	0.00	0.01	0.00	0.00
Y19	0.00	0.07	0.05	0.00	0.11	0.02	0.02	0.01	0.01	0.00	0.00

Table 38: Percentage of deaths within non-specific ICD-10 codes in the United Kingdom in 2013[5]

The use of T43.8 (Other psychotropic drugs not elsewhere classified) and T43.9 (Psychotropic drugs unspecified) within the ICD-10 X and Y codes reported to the EMCDDA (i.e: X40-X44, X60-X64, Y10-Y14) are very low and these have also been verified by the Focal Point for cases which fit the selection B criteria and reported accordingly.

T code	2011	2012	2013
T43.8 & T43.9	8	11	12

Table 39: Deaths coded using T43.8 and T43.9 in X and Y codes reported to EMCDDA

Discussion and conclusion

The drug-induced mortality rate among adults in the United Kingdom (aged 15–64) was 55.9 deaths per million in 2013, almost three time more than the most recent European average of 19.2 deaths per million. Following the recent revisions carried out to include deaths with an underlying cause of death of X44, X64 and Y14 alongside relevant T-codes the United Kingdom is believed to capture a high percentage of drug related deaths with very little loss to non-specific codes.

A bridge coding study was undertaken by the Office for National Statistics of the UK for mortality data of England and Wales of 2011, following the introduction of ICD 10 version 2010 which replaced version 2001.2. The introduction of this new ICD-10 version resulted in the number of deaths coded as mental and behavioural disorders due to drug use (ICD-10 codes F11–F16 and F18–F19) decreasing drastically (by 84%) with a corresponding increase in deaths due to ICD 10 codes X40-X44 (by 44%) (table 40).

Number of deaths from drug-related poisoning: by sex and underlying cause, 2007-11[1,2]						
England and Wales[3]						Deaths
		2007	**2008**	**2009**	**2010**	**2011**
Mental and behavioural disorders due to drug use (excluding alcohol and tobacco) (F11–F16, F18–F19)	Males	662	705	586	504	86
	Females	119	139	101	96	17
Accidental poisoning by drugs, medicaments and biological substances (X40–X44)	Males	725	861	983	899	1,107
	Females	239	327	305	369	445
Intentional self-poisoning by drugs, medicaments and biological substances (X60-X64), and poisoning by drugs, medicaments and biological substances, undetermined intent (Y10–Y14)	Males	520	500	524	482	576
	Females	368	385	374	391	418
Assault by drugs, medicaments and biological substances (X85)	Males	7	9	5	5	3
	Females	0	2	0	1	0
1 Underlying cause of death was defined using the International Classification of Diseases, Tenth Revision (ICD-10) codes given in the table.						
2 Figures are for deaths registered in each calendar year.						
3 Figures for England and Wales include deaths of non-residents.						
Source: Office for National Statistics, United Kigdom						

Table 40: Number of deaths from drug related poisoning by underlying cause[7]

In the United Kingdom all drug related deaths are certified by a coroner which results in an inquest. Therefore data on drug related deaths is very accurate, however there are often long delays resulting from the inquest which results in long delays in the release of drug related death data by year of death.

6. Conclusion and Recommendations

A detailed review of coding practices involving drug related deaths was undertaken in nine countries and a number of conclusions and recommendations are detailed below.

6.1 Reporting according to selection B and Selection D or other national definition

The reporting of drug related deaths according to selection B and selection D, often use different sources of information. In some countries the register which reports according to selection D was not developed to collect nationwide data on drug related deaths but rather to study poly drug use and the association of substances leading to death.
In this case though not covering the whole population it can provide detailed information on the drugs involved in the drug related deaths.

Recommendations

- Countries are encouraged to report according to both sources as this is useful especially in monitoring trends;
- Also in countries where it is known that gross underestimation of numbers of drug related deaths are being reported from the main source may be able to

use the other source of data to make better estimates of number of drug related deaths.

- Where possible linkage between the two sources, would help improve accuracy and completeness of both registers.
- Detailed analysis of the main drugs and trends in drug type should be made by countries even if this is not possible at national level.

6.2 Implementation of ICD-10 updates

As discussed in the country reports above the implementation of ICD-10 updates has not been uniform across countries and there are various reasons for this which include:

- The level of availability of information on drug related deaths detailed on the death certificate. The use of T codes and implementation of ICD-10 updates requires the availability of information on the specific drugs causing the death to be written on the death certificate.
- In other cases information on the drugs causing the death may be available, however these may not be coded using T codes.
- Sometimes although countries do include T code, due to the large number of cases with non specific information on the drugs causing the death, a large number of cases may have non-specific T codes such as T50.9 which would not be included in the EMCDDA Selection B definition.
- Other countries may take some time to implement ICD-10 updates and do not implement them according to WHO recommendation timeframes.

Also the effect of implementation of the ICD-10 updates on reporting of deaths according to selection B had different impacts.
In some countries which have fully implemented the ICD-10 updates saw a shift in coding of drug related deaths from F codes to X and Y codes and also a shift to coding of more X44/X64/Y14. However this had no overall impact on the number of drug related deaths reported.

On the other hand in countries who only partially implemented the ICD-10 updates due to e.g. lack of T codes saw a shift in coding from F and X42 to X44, but since X44/X64/Y14 should not be reported in selection B without T codes, this resulted in a corresponding decrease in the number of drug related deaths according to selection B. This was particularly seen in Spain which now use the national definition which in this case includes X44/X64/Y14.

Recommendations

- Countries need to make an effort to code all drugs using T codes even if in a number of cases not all drugs may be specified.
- Updates should be implemented according to WHO recommended timeframes. Countries should be informed about an update related to drug related deaths

well in advance. This could be done through WHO invited experts at the EMCDDA annual meeting on drug related deaths.

- Countries are encouraged to carry out bridge coding exercise when ICD updates are implemented to assess the impact of the update.

6.3 Non specific ICD 10 codes

An analysis was undertaken were possible to review deaths coded as X44/X64/Y14 and corresponding T50.9. As described previously in this report cases placed under this code may be those in which not enough information is available to be able to identify and therefore code the drug specifically or the type of drug was specified, but is classified among the "rest" category in T50.9 as no specific code exist. The extent of use of T50.9 varied between countries as was the extent of use of other unspecified drug related death codes such as X49/X69/Y19. Also the extent to which cases to be reported under selection B could be possibly found under these non specific codes varies. However in countries were the majority of drug related death are coded with these non specific codes would definitely have a high degree of under-reporting to the EMCDDA when reporting according to selection B.

Other non-specific general codes in the younger age groups were also analysed but little conclusion can be drawn at this point about what the figures mean.

In some countries specific information about a drug may arrive late, possibly 2-3 years after the death had occurred. These are sometimes coded non-specifically initially but updated when more information becomes available.

Recommendations

- In countries where this is possible analysis of cases coded under T50.9 should be undertaken, similar to that done by England.
- Further discussion by EMCDDA with WHO regarding deaths due to drugs with no specific T code should also be considered.
- Countries should make an effort to obtain more information about drug related cases with an unspecified T code e.g. using T50.9   and linkage with other registers e.g. a drug register should be considered if permitted.
- EMCDDA to consider asking for an update of drug related death data 2-3 years after the initial request to take into consideration possible updates.

6.4 Conclusions

There are wide discrepancies in the reporting of drug related deaths by countries and often it is difficult to make any inferences form the reported data due to known certification and coding issues.

Countries who are aware of gross underestimation in the reporting of drug related deaths according to the EMCDDA definition could possibly develop a method of estimation to be able to produce a more realistic figure. Country examples of estimation exist.

Further collaboration between the General Mortality Register and the Special Register could also be a way of improving the quality and comprehensiveness of the data.

In countries which code all drugs involved in the death, multiple cause analysis can be undertaken to evaluate in more detail the trends in the drugs involved in drug related deaths.

Also in countries where this is possible it would be interesting to try to analyse further the deaths especially in the younger age groups which were given an unspecified code such as T50.9 and R99.

Finally the EMCDDA selection B definition should be always kept under review, firstly due to the effect of ICD-10 updates and ICD-11, but also due to how countries are managing to report according to this definition.

7. References

1. EMCDDA; Codification practices of DRD following the WHO revision of guidelines of 2002-2003 (to be implemented in 2006) http://www.emcdda.europa.eu/attachements.cfm/att_243598_EN_04.%20I.%20Giraudon%20-%20Codification%20practices%20of%20DRD.pdf

2. EMCDDA ; EMCDDA standard protocol to collect data and report figures for the key indicator drug-related deaths (DRD-Standard, version 3.2). EMCDDA, 2010; http://www.emcdda.europa.eu/html.cfm/index107404EN.html

3. EMCDDA; Country reports: http://www.emcdda.europa.eu/countries

4. World Health Organisation; European health for all database, WHO Regional Office for Europe, Copenhagen, Denmark. http://data.euro.who.int/hfadb/; accessed on the 12th November 2016.

5. World Health Organisation: WHO Mortality Database; http://apps.who.int/healthinfo/statistics/mortality/causeofdeath_query/; accessed on the 12th August 2016.

6. **Emcdda: EMCDDA Statistical bulletin 2016; http://www.emcdda.europa.eu/data/stats2016**

7. Office for National Statisitcs, UK: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoninginenglandandwales/2012-08-29#icd-coding-changes-implemented-in-2011; accessed on the 2nd September 2016

8. Annexes

Annex A

13th June 2016

Dear National Expert,

Re: **The collection and analysis of data on DRDs in order to contribute to the EMCDDA review of the drug-induced deaths data at codification level**

Background and rationale

The collection of data regarding drug related deaths varies from country to country, with variations occurring at certification level and also at codification level. Previous work carried out by the EMCDDA (European Monitoring Centre for Drugs and Drug Addiction) and presented at the 2015 September 21-22 annual expert meeting[1] has shown that coding of drug related deaths varies between countries, and the adoption of the ICD-updates in DRDs of 2002/03 (to be implemented in 2006 and as described in the EMCDDA DRD protocol[2]) has not been uniform across countries[1]. The aim of this project is, that through the collection of detailed data on drug related deaths from a number of countries, to further analyse this data in terms of codification practices.

The aim of this part of the project is to:

d) Describe the disaggregated dataset of DRD cases, (according to what countries can provide) including all retrieval codes and information on causes of death.
e) Analyse the DRD data from selected countries in order to describe in particular the cases captured under X44, X64 and Y14;

I have been entrusted by EMCDDA to perform this work and in order to be able to carry out the detailed analysis we kindly ask each national expert on DRDs in the selected countries to provide the following information on the cases as per protocol below for the last 3 most recent years, from the GMR (and also from the SR, should codes be available from these as well). We expect case-based data on the variables described below according to availability of information.

The dataset you will be sending will be solely under my responsibility (and no one other than EMCDDA person in charge will have access to your data) however it is very important, that no identifiable data should be included in the dataset that you provide me or EMCDDA for this project.

Data requested

Data is being requested for three consecutive years of data (preferably latest available) for all deaths requested. Note that the extracted and reported cases should include cases with the following ICD-10 codes as underlying cause of death:

F11 (.0-.9) to F19 (.0-.9), (excluding F17), X41, X42, X44, X49, X61, X62, X64, X69, Y11, Y12, Y14, Y19, R96.0, R96.1, R98, R99 if possible.

For each case the following variables are being requested according to what is available:

Variable Number	Variable	Description/coding	Example
1	Reference number	A unique number for this dataset given to a case by the country (should not be identity number)	1, 2, etc
2	Sex	1=Male, 2=female, 3=Unknown	
3	If included or not in yearly EMCDDA request	1= Yes, 0= No,	
4	Year of death		2014, 2013, 2012
5	Age at death	If possible single years of age, otherwise as per EMCDDA groupings	
6	Causes of death text including all mentioned drugs and alcohol	Text as given on the cause of death section of the death certificate (if possible in English)	e.g. part I: overdose by heroin and cocaine; part II: high alcohol levels
7	List of all substances identified	All substances reported (from in the toxicology analysis, or from the text of the death certificate) (e.g. alcohol, prescription drugs, illicit psychoactive substances…)	Heroin, cocaine, alcohol
8	Code of the	F11 (0.0-0.9) to F19	e.g. X42.0 T40.1,

		(0.0-0.9) (excluding F17), X41, X42, X44, X49, X61, X62, X64, X69, Y11, Y12, Y14, Y19, R96.0, R96.1, R98, R99;	T40.5
	underlying cause of death and if available T codes considered as directly related to the cause of death.		
9	All other ICD codes especially T codes. This should include those codes also not considered as directly related to cause of death		e.g. T51.9
10	Intentionality	Especially if using F codes e.g. if accidental, suicide, homicide or unknown	
11	If autopsy and toxicology was done.	1=Yes, 2=No 3 unknown	

Table 1: Variables to be reported for each case according to availability

If it not possible to report each case with all the above mentioned variables, kindly report case based data with the variables which are available for your country.

Also if it is not possible to provide case-based data with the above mentioned ICD-10 codes, we kindly ask you to provide case based data according to EMCDDA selection B (as per DRD protocol available from http://www.emcdda.europa.eu/system/files/publications/615/DRD_Standard_Proto col_version_3.2_216365.pdf pgs 32 and 68) together with the above mentioned variables in table 1 as is available in your country.

Analysis to be performed

Depending of the availability of detailed disaggregated (case based) data sent to me for your country the following analysis will be carried out:

1) **Describe what cases have been being captured under the ICD codes of X44, X64 and Y14.**

In order to carry out this analysis the relevant T codes used in combination with X44, X64 and Y14 would ideally be supplied by the countries to be able to analyse in detail what these codes are being used for.

Describe the full disaggregated dataset of DRD cases (for 3 consecutive years, according to what your country can provide) including all retrieval codes and information, for the 'detailed dataset'.

This will be done for those countries which are able to supply the dataset and if possible textual causes of death. A detailed analysis can be done of the different codes, where DRDs may be present but not routinely sent to EMCDDA due to lack of detailed information about the case and what % they would contribute too.

Following the analysis carried out above, a summary report per country supplying us with the detailed information will be done and discussed with the particular national expert and EMCDDA. This will include an overview on the data existing in this area and other analysis according to what is made available by the particular country.

The country specific analysis will contribute to a larger overall analysis of all countries studied and which will report on common and other particular issues identified, comparability issues raised, as well as recommendations and ways forward and will be submitted to EMCDDA.

All national experts and national focal points who participate will be acknowledged in the report produced.

I would like to thank you in advance for contributing to this project and hope to receive your data by latest 4th July 2016. Please feel free to contact me in case difficulty or if you have any queries.

Kind regards

Kathleen

Dr Kathleen England
Public Health Medicine Specialist

Annex B

ICD codes requested in persons aged 15-64 years

ICD-10 code		ICD-10 code	plus T code	ICD-10 code	plus T code
F11.0	F14.7	X41	T42.3	X42	T40.0
F11.1	F14.8	X41	T42.4	X42	T40.1
F11.2	F14.9	X41	T42.5	X42	T40.2
F11.3	F15.0	X41	T42.6	X42	T40.3
F11.4	F15.1	X41	T42.7	X42	T40.4
F11.5	F15.2	X41	T43.6	X42	T40.5
F11.6	F15.3	X61	T42.3	X42	T40.6
F11.7	F15.4	X61	T42.4	X42	T40.7
F11.8	F15.5	X61	T42.5	X42	T40.8
F11.9	F15.6	X61	T42.6	X42	T40.9
F12.0	F15.7	X61	T42.7	X62	T40.0
F12.1	F15.8	X61	T43.6	X62	T40.1
F12.2	F15.9	Y11	T42.3	X62	T40.2
F12.3	F16.0	Y11	T42.4	X62	T40.3
F12.4	F16.1	Y11	T42.5	X62	T40.4
F12.5	F16.2	Y11	T42.6	X62	T40.5
F12.6	F16.3	Y11	T42.7	X62	T40.6
F12.7	F16.4	Y11	T43.6	X62	T40.7
F12.8	F16.5			X62	T40.8
F12.9	F16.6			X62	T40.9
F13.0	F16.7			Y12	T40.1
F13.1	F16.8			Y12	T40.2
F13.2	F16.9			Y12	T40.3
F13.3	F18.0			Y12	T40.4
F13.4	F18.1			Y12	T40.5
F13.5	F18.2			Y12	T40.6
F13.6	F18.3			Y12	T40.7
F13.7	F18.4			Y12	T40.8
F13.8	F18.5			Y12	T40.9
F13.9	F18.6				
F13.10	F18.7				
F13.11	F18.8				
F13.12	F18.9				
F13.13	F19.0				
F13.14	F19.1				
F13.15	F19.2				
F13.16	F19.3				
F13.17	F19.4				
F13.18	F19.5				

F13.19	F19.6
F14.0	F19.7
F14.1	F19.8
F14.2	F19.9
F14.3	
F14.4	
F14.5	
F14.6	

ICD-10 code	plus T code	ICD-10 code	plus T code
X44	T42.3	X4*	T43.8
X44	T42.4	X4*	T43.9
X44	T42.5		
X44	T42.6	X6*	T43.8
X44	T42.7	X6*	T43.9
X44	T43.6		
X44	T40.0	Y1*	T43.8
X44	T40.1	Y1*	T43.9
X44	T40.2	X44	T50.9
X44	T40.3	X49	T50.9
X44	T40.4	X64	T50.9
X44	T40.5	X69	T50.9
X44	T40.6	Y14	T50.9
X44	T40.7	Y19	T50.9
X44	T40.8		
X44	T40.9	R96.0	
X64	T42.3	R96.1	
X64	T42.4	R98	
X64	T42.5	R99	
X64	T42.6		
X64	T42.7		
X64	T43.6		
X64	T40.0		
X64	T40.1		
X64	T40.2		
X64	T40.3		
X64	T40.4		
X64	T40.5		
X64	T40.6		
X64	T40.7		
X64	T40.8		
X64	T40.9		
Y14	T42.3		
Y14	T42.4		
Y14	T42.5		

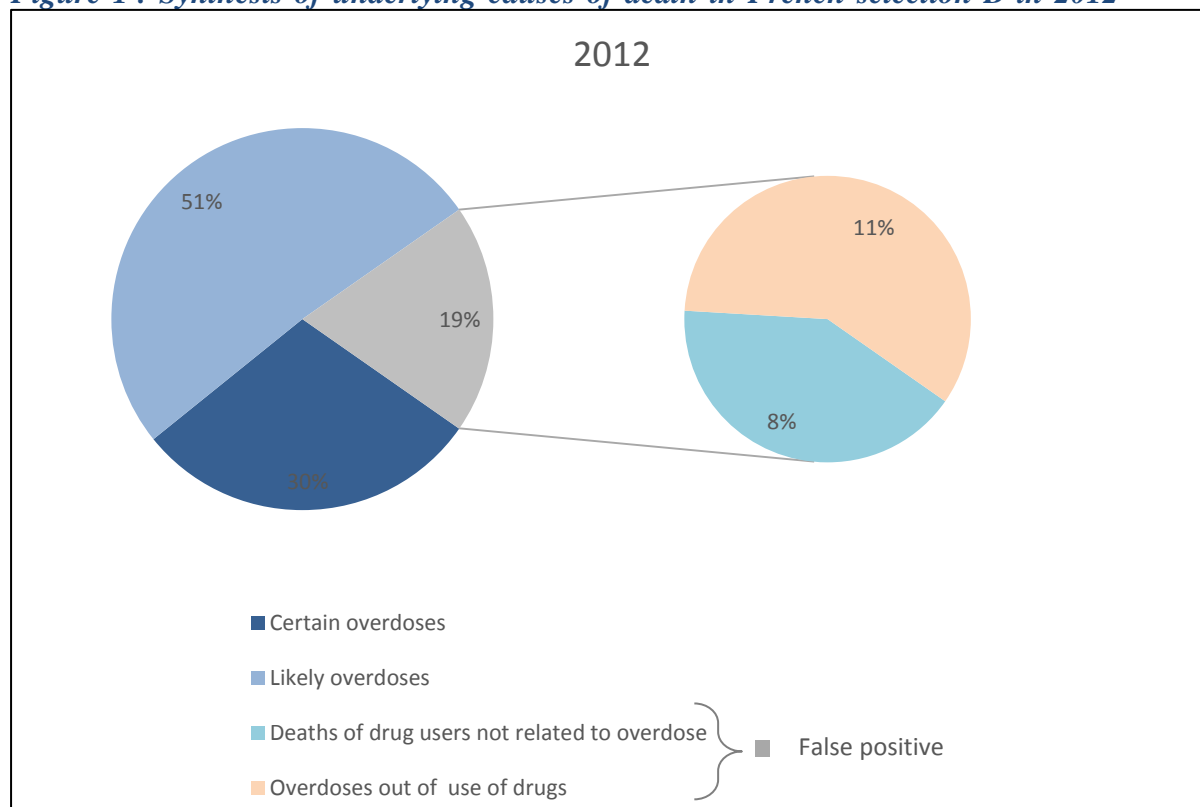|	
Y14	T42.6
Y14	T42.7
Y14	T43.6
Y14	T40.0
Y14	T40.1
Y14	T40.2
Y14	T40.3
Y14	T40.4
Y14	T40.5
Y14	T40.6
Y14	T40.7
Y14	T40.8
Y14	T40.9

ANALYSIS OF 2012 CAUSES OF DEATH

French National Focal Point: Anne-Claire Brisacier

Table 1. Synthesis of underlying causes of death in French selection B in 2012

Causes of death	Certain overdoses		Likely overdoses		Deaths of drug users not related to overdose		Overdose out of context of addiction or use of drugs		Total
Code ICD 10 underlying causes	N	%	N	%	N	%	N	%	N
F11	4	19,0	13	61,9	3	14,3	1	4,8	21
F12	0	0,0	4	100,0	0	0,0	0	0,0	4
F14	0	0,0	3	100,0	0	0,0	0	0,0	3
F15	0	0,0	1	100,0	0	0,0	0	0,0	1
F19	1	0,9	88	79,3	16	14,4	6	5,4	111
Total F	**5**	**3,6**	**109**	**77,9**	**19**	**13,6**	**7**	**5,0**	**140**
X42	63	64,3	15	15,3	2	2,0	18	18,4	98
X62	8	34,8	10	43,5	0	0,0	5	21,7	23
Y12	2	66,7	1	33,3	0	0,0	0	0,0	3
Total French selection B	**78**	**29,5**	**135**	**51,1**	**21**	**8,0**	**30**	**11,4**	**264**

Source : Données CépiDc, INSERM, exploitation OFDT.

2012

- ■ Certain overdoses
- ■ Likely overdoses
- ■ Deaths of drug users not related to overdose ⎫ ■ False positive
- ■ Overdoses out of use of drugs ⎭

Source : Données CépiDc, INSERM, exploitation OFDT.

Conclusion on 2012 data :

In 2012, 264 deaths were identified by CépiDc via the French definition of the selection B. According to our analysis, 81 % of them can be considered as overdoses, in a more or less certain way (30 % of certain overdoses and 51 % of likely overdoses), whereas the remaining 19 % constitute false positive, representing deaths of drug users not related to an overdose (8 %) or deaths by opiates overdose out of drug (11 %).

Concerning the methods of coding, the codes T are little associated to the codes X and Y. However, according to our study, to associate these codes would be possible only in a third of the deaths, this modification being limited by the lack of precision of substances mentioned in death certificates.

In addition to these cases, deaths by overdose not identified as such because not coded by a code of the French selection B in underlying cause could be added: 76 coded cases X41/X61/Y11 or X44/X64/Y14 (11 and 65 respectively) could be considered as overdoses (among which 30 have a code of the French selection B but not as underlying cause). Furthermore, 48 other cases involving a drug could be also considered overdoses but don't appear as such because of the choice of another underlying cause, masking the information concerning the drug (myocardial infarction for 11 cases and alcohol consumption for 27 cases).

ANALYSIS OF 2013 CAUSES OF DEATH

Tableau 2. Synthesis of underlying causes of death in French selection B in 2013

Causes of death	Certain overdoses		Likely overdoses		Deaths of drug users not related to overdose		Overdose out of context of addiction or use of drugs		Total
Code ICD 10 underlying causes	N	%	N	%	N	%	N	%	N
F11	2	9,5	12	57,1	7	33,3	0	0,0	21
F12	0	0,0	2	66,7	1	33,3	0	0,0	3
F14	0	0,0	8	100,0	0	0,0	0	0,0	8
F15	0	0,0	0	0,0	0	0,0	0	0,0	0
F19	4	3,3	89	73,6	24	19,8	4	3,3	121
Total F	**6**	**3,9**	**111**	**72,5**	**32**	**20,9**	**4**	**2,6**	**153**
X42	88	53,0	21	12,7	1	0,6	56	33,7	166
X62	16	55,2	12	41,4	0	0,0	1	3,4	29
Y12	1	100,0	0	0,0	0	0,0	0	0,0	1
Total French sélection B	**111**	**31,8**	**144**	**41,3**	**33**	**9,5**	**61**	**17,5**	**349**

Source : Données CépiDc, INSERM

Figure 2: Synthesis of underlying causes of death in French selection B in 2013

Source : Données CépiDc, INSERM

65
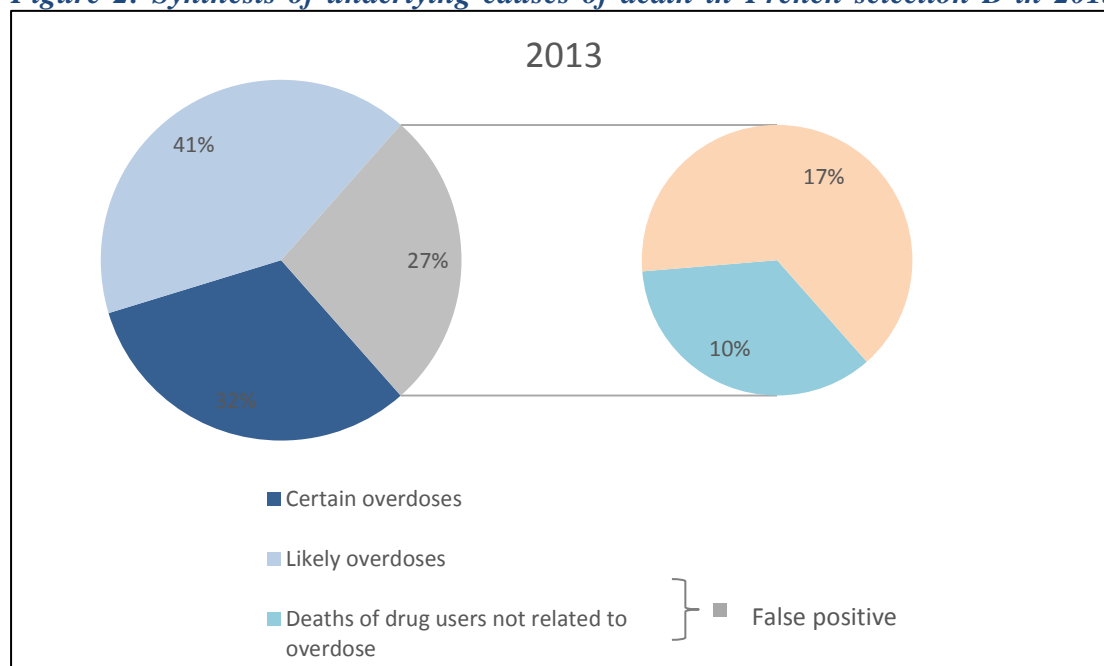
Conclusion on 2013 data :

In 2013, 349 deaths were identified by CépiDc via the French definition of the selection B. According to our analysis, 73 % of them can be considered as overdoses, in a more or less certain way (32 % of certain overdoses and 41 % of likely overdoses), whereas the remaining 27 % constitute false positive, representing either deaths of drug users not relates to an overdose (10 %) or deaths by opiates overdose out of drug (17 %).

Compared with 2012, there is an increase of the false positive (from 19 to 27 % is an increase of 8 points), which contributes to produce lower-quality data which can explain partially the increase of the number of deaths by overdose between 2012 and 2013. Indeed, the number of deaths by overdose increased by 85 cases (from 264 to 349 deaths) between these two years. The false positives' increase of 8 points - essentially overdoses of morphine or other opiates - correspond to an increase of 30 deaths (8 % of 349 deaths). There are thus 55 additional deaths not attributable to the false positive in the increase of the 2012 deaths. It would thus seem that the "real" number of deaths by overdose increased itself.

In addition to these cases could be added deaths by overdose not identified as such because not coded by a code of the French version of the selection B in initial cause: 43 coded cases X41 X41/X61/Y11 X61 or X44 X44/X64/Y14 X64 (11 and 32 respectively) could be considered as overdoses, among which 39 possessing a code of the selection B French.