

EUROHRN II PROJECT

Supporting Innovative Measures to Address
the Reduction of Drug Related Harm in Europe

Preventing Avoidable Deaths: Essentials and Recommendations On Opioid Overdose

2014



*With financial support from the Drug
Prevention and Information
Programme of the European Union*



akzept e.V.
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This publication has been produced with the financial support of the Drug Prevention and Information Programme of the European Union. The contents of this publication are the sole responsibility of APDES and Akzept and can in no way be taken to reflect the views of the European Commission.

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Foreword

This report offers a comprehensive analysis of drug-related deaths, and suggestions of how to overcome these risks for drug users. On the one hand it is looking at the individual level of risk taking behaviour and skills to avoid these risks. On the other hand it is analysing the structural level of living conditions (e.g. poverty and education), discriminating laws (prohibition), insufficient services (ban on state-of-the-art treatments), and marginalizing attitudes producing stigma and fear.

It is only the look at both levels that is promising to identify and implement successful strategies in order to increase the general and individual awareness of OD risks and the individual and institutional knowledge and practical skills.

Overdose deaths e.g. from opioids is not an inevitable occurrence, for many drugs it can be tackled successfully by various means consisting of individual training and for instance the provision of medications (e.g. naloxone) to partners, family members, friends. However, for some drugs it is not that easy as there are no quickly effective antidotes available yet. This points on the one hand to the need of more research and to the other hand to a more comprehensive understanding of the overdose situation and concrete circumstances as well as knowledge, awareness of drug users and friends.

This report points out the evidences for this intervention and for many others. One of the biggest obstacles are the juridical and political constraints and thus being located on a structural societal level. We already know the evidences for far more interventions than we have implemented so far. We are identifying a substantial implementation gap. Serious obstacles for successful OD prevention have been identified on the structural level, meaning that effective and efficient therapies and provision of tools cannot be introduced simply because they are not accepted. Opioid Substitution Treatment for instance should be offered on a continuous basis, no matter where the drug user is living. Yet, in many prisons in Europe, OST is being interrupted once people get into police custody or are imprisoned. Especially when leaving prison the re-take-up of OST is in many countries extremely difficult, so the risk of

relapse into opioid consumption is very high. The numbers of overdose deaths shortly after release are confirming this sad phenomenon.

Changes on the structural level are not that easy to achieve. It takes a long time to change opium laws and even longer to change attitudes of politicians and the general population. Thus it is of utmost importance and highest priority to collect evidences of effectiveness of certain strategies in order to make the healthier choice the easier choice – for all involved!

Heino Stöver, Project Partner, Akzept, Germany

Abbreviations and Acronyms

ACMD	Advisory Council on the Misuse of Drugs
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Treatment
SFAD	Scottish Families Affected by Drugs
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CPR	Cardiopulmonary Resuscitation
CSFD	Civil Society Forum on Drugs
DCR	Drug Consumption Rooms
ECDC	European Centre for Disease Control and Prevention
EHRN	Eurasian Harm Reduction Network
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
EU	European Union
EuroHRN	European Harm Reduction Network
EuroPUD	European People Using Drugs
GRASP	Grief Recovery After a Substance Passing
HAT	Heroin-Assisted Treatment
HBV	Hepatitis B Virus
HBsAg	Hepatitis B Surface Antigen
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HOORAT	Housing Opiate Overdose Risk Assessment Tool
ICT	Information and Communication Technologies
IDU	Injecting Drug User
IDPC	International Drug Policy Consortium

MDMA	3,4-Methylenedioxymethamphetamine
MDPV	Methylenedioxypropylone
MEDLINE	Medical Literature Analysis and Retrieval System Online
NPS	New Psychoactive Substances
OD	Overdose
OSF	Open Society Foundation
OST	Opioid Substitution Treatment
PND	Peer Naloxone Distribution
PUD	People Who Use Drugs
PWID	People Who Inject Drugs
SAMSHA	Substance Abuse and Mental Health Services Administration
THN	Take Home Naloxone
UK	United Kingdom
UKDPC	United Kingdom Drug Policy Commission
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization
WP	Work Package

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About This Report: Scope and Structure



What is the European Harm Reduction Network?

The European Harm Reduction Network (EuroHRN) works to reduce the health and social harms related to drugs and drug policies. It promotes human rights and health of people who use psychoactive substances through collective advocacy, research and information exchange. EuroHRN is the only harm reduction network and advocacy alliance that covers the entire European Union. Its overall objective is to expand the knowledge base of harm reduction in Europe, raise awareness of drug-related harms and promote and support public health and human rights based responses to drug use across Europe. More specifically it aims to:

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- Facilitate networking at European, sub-regional and national level;
 - Advocate for harm reduction in the European region;
 - Map the state of harm reduction and good practice (especially related to the prevention of drug related deaths) in Europe;
 - Advocate for evidence-based harm reduction models;
 - Establish and promote models of innovative practice and meaningful participation of people who use drugs and their associations.
-

Founded in 2009 by ten organisations with a shared interest in advocating for and sharing knowledge on harm reduction within Europe, EuroHRN is comprised of three sub-regional networks covering North, South and Eastern Europe. EuroHRN is managed by a coordinator based at Harm Reduction International (formerly known as the International Harm Reduction Association; IHRA).

EuroHRN II Project

The EuroHRN II Project “Supporting Innovative measures to address the reduction of drug related harm in Europe” was developed by six organizations from the North, South, East and West of Europe (AFR, APDES, Akzept, EHRN, FRG, IHRA).

The specific objectives of this project were:

-
- Facilitate networking at the European, sub-regional and national;
 - Map good practices and develop recommendations on harm reduction measures to prevent drug related deaths, most particularly drug-induced deaths;
 - Establish an expert group on drug related deaths in Europe;
 - Advocate for evidence-based opioid overdose management models and establish models of meaningful engagement for people who use drugs and their associations around the prevention of overdose;
 - Promote innovative practices for the prevention of drug related deaths and the improvement of health for people who use drugs;
 - Support harm reduction stakeholders from across Europe in sharing practices related to working with local stakeholders;
 - Gather and disseminate the project's findings and outputs, allowing partners, key stakeholders and network members to publicize results, share information and engage in transnational learning through an event organized in 2014.
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This report is a product from the WP1 included in Euro HRN II project: Overdose prevention in Europe – Collating lifesaving practices. This work stream was coordinated by APDES in collaboration with Akzept.

Report Structure

This report aims to contribute for a comprehensive analysis of the drug-related deaths - more specifically the drug-induced deaths issue - as well as of the existing and necessary measures to mitigate it. It also aims to draw recommendations on policies, practices and research domains to mitigate what we consider to be avoidable deaths. The first chapter is related to the mapping (according to existing data) of the extent of the issue of drug-related mortality in the 28 European member states, Switzerland and Norway. The information presented covers the epidemiological situation of drug-related mortality (e.g. number of deaths caused directly by drug use – overdoses; number of deaths caused indirectly by drug use - infectious diseases, other chronic health problems, accidents, violence etc.; characteristics of the deceased;

mortality among problem drug users), as well as the types of substances implicated in drug-induced deaths (including poly-drug use and the so called 'New Psychoactive Substances'). By summarizing the existing information and characterising the situation in different European countries this report intends to identify the extent of drug-related mortality.

The **second chapter** focuses on a comprehensive perspective about the state of the art on the prevention of drug-related mortality. It concerns both the scientific production and actions developed in the field by European countries (28 European member states, Switzerland and Norway). The analysis is mainly focused on the topic of drug-induced deaths by opioids, since it continues to be the first cause of deaths among drug users. Interventions designed to prevent overdose occurrences and deaths are analysed based on evidence and the best European and international practices are highlighted. The contents were organized according to a multi-level overdose prevention framework created to approach measures that cover both the individual and broader environment. It's fundamental to clarify that the term 'prevention', when used alone, is conceptualized as a broad term that defines actions at three levels:

- Minimizing the harms of overdose experiences (e.g., by individually assessing personal risk; by providing health education on high-risk consumption practices);
- Educating about overdose symptoms' recognition; and
- Mitigating overdose deaths when an episode takes place.

The **third chapter** works as a conclusion for the previous one, by mapping harm reduction measures (overall protective or specifically designed) capable of contributing for the reduction of drug-related deaths, and particularly of drug-induced deaths. It covers the 28 European member states, Switzerland and Norway.

Finally, the **fourth chapter** delineates a set of recommendations that resulted from the literature review and mapping, from the inputs of the European group of experts coming from Portugal, Germany, Spain, Italy, UK and Finland, and from the technicians and peer educators' feedback. The recommendations were organized according to 3 domains: a) Practice, b) Research and c) Policies.

Chapter 1

Drug-Related Deaths in Europe: Mapping The Extent of The Problem



About this Chapter

The following chapter provides an overview on deaths caused directly and indirectly by drug consumption in 30 European countries. Section 1 explores the epidemiology of drug-induced deaths (overdose deaths), including a mapping of the current situation, trends in overdose deaths, characteristics of those dying from overdose and substances involved in drug-induced deaths, as well as individual and social risk factors for non-fatal and fatal overdoses. Section 2 presents information on drug-related deaths due to infectious diseases, in particular due to HIV/AIDS and viral hepatitis. It includes data on the prevalence of HIV/AIDS, hepatitis C and B among drug users, especially among those who inject, as well as trend data and information on special groups of drug users (e.g., injecting drug users in prisons). Section 3 explores other causes of drug-related mortality such as deaths due to non-infectious diseases, suicide, violence or accidents. Section 4 concludes with a summary and discussion of the results presented.

Methodology and Limitations

The information of this chapter was drawn from existing data sources, including statistics and reports provided by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Harm Reduction International, the European Centre for Disease Control and Prevention (ECDC), the Joint United Nations Programme on HIV/AIDS (UNAIDS), other multilateral and national agencies, harm reduction networks, the international scientific literature as well as experts working in the harm reduction field. The information provided seeks to reflect the most recent available data on the epidemiology of drug-related mortality for each of the 30 surveyed countries at time of data collection (November and December 2013). Sources are provided for all of the estimates reported. Discrepancies in data are noted in footnotes within the tables or in the text. Countries selected for this mapping are the 28 Member States of the European Union, which are at the same time, members of European Harm Reduction Network. Norway and Switzerland, two additional network members, are included as well.

In the absence of a common definition of drug-related mortality, the methods used across Europe to collect information vary, which limits the comparability of the data. Thus, direct comparisons between countries (e.g. regarding the numbers or rates of drug-related deaths

and the coverage of harm reduction services) should be made with caution. The statistics presented here are mainly based on data collected in 2010/2011. However, earlier studies where more recent data were unavailable have been included. The report focuses on the mortality related to illicit substances. It does not cover deaths related to alcohol and tobacco use or deaths related to the use of prescription drugs (except the ones used in OST). Furthermore, specific data are not always available for each of the 30 countries.

Drug Use and Drug-Related Deaths in Europe

Deaths both directly and indirectly related to drug use account for a considerable proportion of mortality among young adults in Europe. Recent data show that almost 4% of all deaths among 15 to 39 year olds are attributed to illicit drug overdose (drug-induced deaths), with men being far more likely to die from an overdose than women (EMCDDA, 2013a). After a sharp increase in the number of drug-induced deaths during the 1980s and early 1990s, paralleling the rise in heroin and injection drug use, more than six up to more than eight thousand overdose deaths have been reported in Europe each year since the mid-1990s (EMCDDA, 2012). Although the annual number of reported deaths peaked around the turn of the millennium, drug overdose still accounted for more than 70,000 deaths in Europe in the following decade. Most often, these deaths are associated with injecting drug use, especially with injecting opioid use (EMCDDA, 2013b).

Yet, overdose deaths only constitute part of the mortality attributable to drug use. In addition to mortality directly related to the use of drugs a significant number of drug deaths are caused by indirect effects. These include infectious diseases (e.g. HIV/AIDS, HCV) transmitted through certain patterns of use, particularly through sharing drug equipment, other chronic or long term health problems related to repeated drug use (e.g. cardiovascular and lung diseases), violence (e.g. due to criminal and violent structures associated with street drug scenes and public drug markets), as well as accidents and suicides due to effects on the physical or mental state of drug users (EMCDDA, 2012). Cohort studies show annual mortality rates of 1-2% among problem drug users, revealing an excess mortality for this group 10 to 20 times greater than for the general population. According to an analysis conducted by the EMCDDA, between 10,000 and 20,000 opioid users die in Europe each year (EMCDDA, 2011a). Thus, in order to estimate the magnitude of drug related mortality, both direct and indirect causes have to be taken into account.

Definition of Drug Related Mortality

The epidemiological indicator ‘drug induced deaths and mortality among drug users’ as it has been defined by the EMCDDA in collaboration with national experts, comprises two complementary components: 1) deaths caused directly by and within a short time of the consumption of at least one illicit substance (referred to as drug-induced deaths or overdose¹) and 2) mortality among problem drug users. The first and core component of the indicator (drug-induced deaths) is based on national statistics on deaths directly linked to illicit drug use which are collected annually by the majority of European countries. The aim is to provide valid, reliable and comparable information on the number, rates, characteristics and circumstances of people dying from drug overdose. The second component, which incorporates both overall and cause-specific mortality among problem drug users, is mainly based on longitudinal mortality cohort studies. It provides additional information on deaths that may be indirectly related to drug use such as infectious diseases, injuries and violence, suicides, and other causes of death. While the number and characteristics of overdose deaths can be understood as a reflection of the current patterns of drug use in Europe, overall mortality may be influenced by other concurrent aspects, such as the prevalence of HIV, access to health care, harm reduction services and drug treatment, violence related to drug markets or the magnitude of social exclusion of drug users. Taken together, these two components aim to fulfil several public health objectives: they serve as an indicator of the overall health impact of drug use and the different factors involved, and can help to identify particularly risky patterns of use and potential new risks. Thus, the indicator seeks to improve understanding of the health impact of different forms of drug use and its correlates and determinants, with the aim to inform the development and evaluation of policies and interventions aimed at reducing health problems, in particular mortality, related to drug use (EMCDDA, 2009a).

It is estimated that at least 85 million Europeans aged 15-64 – about a quarter of the adult population in Europe – have used an illicit drug at least once in their lifetime. Cannabis is by far the most commonly used illicit drug (with 77 million Europeans reporting lifetime use), followed by cocaine (14.5 million), amphetamines (12.7 million) and ecstasy (11.4 million) (EMCDDA, 2013c). However, only a minority of those who have used an illicit drug at some point in their lives continue to use drugs on a regular basis and an even smaller percentage goes on to develop problem drug use (EMCDDA, 2012). For Cannabis it is estimated that about 23 million Europeans (6.8% of the adult population; one in three lifetime users) have used the substance during the last year and that 12 million (3.6%; nearly half with last year use) have done so in the last month, indicating a more regular use. The percentage of daily or almost daily cannabis users is estimated at 1%. Last year’s prevalence for cocaine is 1.2% (about 4 million Europeans; one in four lifetime users), the last month use 0.5% (about 1.5 million).

¹ As established in the presented definition the terms ‘overdose’ and ‘drug-induced deaths’ will be used indiscriminately as synonymous.

Approximately 0.6% of European adults (about 2 million; one in six lifetime users) have used amphetamines or ecstasy during the last year (EMCDDA, 2012).

Estimates on the number and rates of problem drug users are available for 16 EU Member states, amounting to a total of about 1,6 million problem drug users in these countries (with numbers ranging from close to 1,5 million up to almost 1,8 million). The highest rates of more than nine problem drug users per 1,000 aged 15-64 are found in Italy, Latvia, the UK and Denmark. The lowest rates (less than three problem drug users/1,000 ages 15-64) are reported for Cyprus, Greece, Slovakia and Poland (see table 1) (EMCDDA, 2013a).

In Europe, the use of opioids – especially heroin, but other opioids such as methadone, buprenorphine and fentanyl as well – remains to be a major factor when it comes to drug related morbidity and mortality. Opioid users are often polydrug users and are more likely to be socially marginalised (e.g. unemployed, homeless) than non-Opioid users (EMCDDA, 2013c). The number of problem opioid users in Europe is estimated at 1,4 million, with an average prevalence of 0.41% in the adult population (15-64 years). Recent data suggest a downward trend in heroin use especially in western European countries: the number of new heroin users has decreased, as has the number of new heroin clients entering treatment. Overall, those in treatment appear to be an aging population. Furthermore, a long-term decline in heroin injection can be observed (EMCDDA, 2013c). Among those countries providing recent data, the approximate rate varies between less than one (Hungary) and more than eight problem opioid users (Latvia, UK, Ireland, and Malta) per 1,000 aged 15-64 (average: 3.7 problem opioid users/1,000 ages 15-64). In the 11 countries that provided data on both the number of problem drug users and the number of problem opioid users on average about 70% of problem drug users are thought to be problem opioid users. In this regard, the lowest proportions are found in the Czech Republic (23%), Slovakia (46%) and Italy (49%), whereas in Austria, Greece, Croatia and Luxembourg problem opioid users make up more than 90% of problem drug users (see table 1). It has to be noted, that recent estimates for problem methamphetamine use reveal relative high numbers for the Czech Republic (0.42% in the adult population aged 15-64) and for Slovakia (0.21%)(EMCDDA, 2013c).

Table 1: Estimated numbers and rates (per 1,000 population aged 15-64) of problem drug users, problem opioid users and injecting drug users, percentage of opioid users and injecting drug users among problem drug users

Country or territory	No. of problem drug users (range) ¹	Problem drug users rate per 1,000 aged 15-64 (range) ¹	No. of problem opioid users (range) ²	Problem opioid users rate per 1,000 aged 15-64 (range) ²	% opioid users among problem drug users ^a	No. of injecting drug users (range) ³	Injecting drug users rate per 1,000 aged 15-64 (range) ³	% of injecting drug users among problem drug users ^b
North Europe								
Austria	30,306 (29,500-31,111)	5.3 (5.2-5.5)	30,306 (29,500-31,111)	5.3 (5.2-5.5)	100%	17,500 (12,000–23,000) ⁴	*	58%
Belgium	*	*	*	*	*	24,810 (18,286-36,896)	3.4 (2.5-4.8)	*
Denmark	33,074 (31,151-34,997)	9.1 (8.6-9.7)	*	*	*	12,754 (10,066–16,821)	3.6 (2.8-4.7)	39%
Finland	*	*	*	*	*	15,650 (12,200–19,700) ⁴	*	*
Germany	200,402-237,977	3.7-4.4	156,164-185,445	2.9-3.4	78% (66%-92%)	94,250 (78,000–110,500) ⁴	*	40%-47%
Ireland	*	*	20,790 (18,136-23,576)	7.2 (6.2-8.1)	*	6,289 (4,694–7,884) ⁴	*	*
Luxembourg	2,070 (1,553-2,623)	6.2 (4.6-7.8)	1,900 (1,608-2,463)	5.9 (5.0-7.6)	92%	1,907 (1,524-2,301)	5.7 (4.5-6.9)	92%
Netherlands	*	*	17,700 (17,300-18,100)	1.6 (1.6-1.6)	*	2,390 (2,336–2,444)	0.2	*
Norway	*	*	9,450 (6,600-12,300)	3.0 (2.1-3.9)	*	9,730 (8,299-11,757)	3.0 (2.5-3.6)	*
Sweden	29,513	4.9	*	*	*	*	*	*
Switzerland	*	*	*	*	*	31,653 (24,907–38,399) ⁴	*	*
United Kingdom	383,534 (372,560-406,406)	9.4 (9.1-9.9)	335,496 (327,659-351,438)	8.2 (8.0-8.6)	87%	133,112 (126,852–143,278)	3.3 (3.1-3.5)	35%
South Europe								
Cyprus	1,240 (1,045-1,506)	2.1 (1.8-2.5)	936 (780-1,157)	1.6 (1.3-2.0)	75%	231 (192-301)	0.4 (0.3-0.5)	19%
France	274,000-360,000	6.7-8.8	*	*	*	122,000 ⁴	*	34%-45%
Greece	20,473 (18,529-22,688)	2.7 (2.5-3.0)	20,473 (18,529-22,688)	2.7 (2.5-3.0)	100%	7,847 (6,904-9,951)	1.0 (0.9-1.3)	38%
Italy	393,490 (382,500-404,500)	10.0 (9.7-10.2)	193,000 (170,000-216,000)	4.8 (4.3-5.4)	49%	326,000 ⁴	*	83%
Malta	*	*	2,159 (1,987-2,369)	7.5 (6.9-8.2)	*	*	*	*
Portugal	*	*	*	*	*	10,950-21,900 ⁴	*	*
Spain	*	*	38,500 (36,093-41,250)	1.2 (1.1-1.3)	*	7,393 (7,098-7,886)	0.2	*
Eastern Europe								

Country or territory	No. of problem drug users (range) ¹	Problem drug users rate per 1,000 aged 15-64 (range) ¹	No. of problem opioid users (range) ²	Problem opioid users rate per 1,000 aged 15-64 (range) ²	% opioid users among problem drug users ^a	No. of injecting drug users (range) ³	Injecting drug users rate per 1,000 aged 15-64 (range) ³	% of injecting drug users among problem drug users ^b
Bulgaria	31,316 (23,050-42,920)	6.0 (4.4-8.2)	*	*	*	20,250 (16,200-24,300) ⁴	*	65%
Croatia	9,795 (8,104-12,553)	3.3 (2.7-4.2)	10,726 (9,598-11,853)	3.6 (3.2-4.0)	94% ^c	1,431 (1,184-1,833)	0.5 (0.4-0.6)	15%
Czech Republic	40,200 (32,700-47,700)	5.5 (4.5-6.5)	9,300 (8,800-9,750)	1.3 (1.2-1.3)	23%	38,600 (37,300-39,850)	5.3 (5.1-5.5)	96%
Estonia	*	*	*	*	*	13,801 (8,178-34,732) ⁴	*	*
Hungary	*	*	3,130 (2,780-3,480)	0.5 (0.4-0.5)	*	5,699	0.8	*
Latvia	13,141 (10,849-16,811)	9.5 (7.8-12.1)	10,169 (7,662-15,177)	6.6 (5.0-9.9)	77%	*	*	*
Lithuania	*	*	5,458 (5,314-5,605)	2.4 (2.3-2.4)	*	5,458 ^{4,d}	*	*
Poland	79,500 (56,000-103,000)	2.9 (2.1-3.8)	*	*	*	*	*	*
Romania	*	*	*	*	*	17,000	*	*
Slovakia	10,519 (8,182-33,489)	2.7 (2.1-8.5)	4,888 (3,966-9,782)	1.3 (1.0-2.5)	46%	18,841 (13,732-34,343)	4.9 (3.5-8.9)	>100% ^e
Slovenia	*	*	*	*	*	7,310 ⁴	*	*

NB: * data/information not available

a. calculation based on the estimated number of problem drug users and estimated number of problem opioid users as shown in the table.

b. calculation based on the estimated number of problem drug users and estimated number of IDUs as shown in the table.

c. the percentage is based on the highest estimates of problem drug and problem opioid users

d. number of problem opioid users is identical with the number of IDUs indicated in the Harm Reduction International's report

e. estimated number of IDUs is from 2006, the estimated number of problem drug users from 2008.

References: 1. EMCDDA, 2013a.
2. EMCDDA, 2013a.
3. EMCDDA, 2013a.
4. Harm Reduction International, 2012.

People who inject drugs are at high risk of experiencing health problems due to their drug use, with the risk of contracting HIV, HCV or other blood-borne viruses or of suffering from non-fatal or fatal overdose being among the most serious ones. It is estimated that more than one million people in Europe are injecting drug users (Harm Reduction International, 2012). The highest number of injecting drug users is found in Italy, the UK and France. Among the 13 countries with recent estimates on the prevalence of injecting drug use a range between less

than one (the Netherlands, Spain, Cyprus, and Croatia) and more than five (Luxembourg, Czech Republic) injecting drug users per 1,000 adults aged 15-64 are found. On average, there are 2.5 injecting drug users per 1,000 in this age group. Among the 12 countries where estimates of both the number of problem drug users and the number of injecting drug users are available, on average about half of problem users are injectors. At a national level, the respective proportions range from less than 20% in Croatia and Cyprus to more than 90% in the Czech Republic and Luxembourg. Sufficient trend data on injecting drug use available for eight countries indicate a decreasing trend in the UK and a relatively stable situation in Greece, Cyprus, Hungary, Slovakia, Croatia and Norway. The Czech Republic, in contrast, has experienced an upward trend in injection drug use. Although injection is most commonly associated with opioid (and especially heroin) use, some countries report a fairly high number of people who inject amphetamines (including methamphetamine), cocaine or other stimulant drugs. In the Czech Republic for example, the increase in the number of injectors seems to be largely attributable to injecting methamphetamine use. There, but also in Latvia, Finland, Sweden and Norway, the majority (63%-80%) of (meth-) amphetamine clients entering treatment report to mainly inject the substances (EMCDDA, 2012). The injection of new psychoactive substances, mainly cathinones such as mephedrone and MDPV, has been reported for a few countries (Hungary, Austria, Romania and the UK) that have seen a heroin shortage in recent years. Here, cathinones seem to function as an opioid replacement for injecting drug users. The underlying motives for switching from injecting heroin to cathinones, two substances with very opposite effects, are not fully understood yet, but may be partly linked to the easy availability and the perceived high quality of NPS (EMCDDA, 2013c).

New Psychoactive Substances

During the past few years, a large number of new psychoactive substances (NPS) or so called “legal highs” have emerged on the European market. These substances mimic the effects of known illicit drugs but are not (yet) controlled by the international drug control conventions. Between 2005 and 2012 the early-warning system set up by EMCDDA in 1997 identified more than 230 new substances with the highest number of 73 new substances in 2012 (2011: 49).

Reference: EMCDDA, 2013c.

Deaths Caused Directly and Indirectly by Drug Consumption

Overdoses, diseases (in particular HIV, HBV and HCV), suicide and trauma (referring to deaths due to injuries from accidents and violence, including assaults and homicide) have been identified as the major causes of drug-related deaths and the following sections are structured around these four categories. It is roughly estimated that overdoses account for between one third and half of deaths among drug users, while one to two fifths are attributable to suicide and trauma and less than a tenth to HIV/AIDS. A considerable proportion of drug-related deaths are due to other causes, mostly somatic and chronic conditions including liver diseases due to viral hepatitis, cardiovascular and lung diseases, cancer and other infections. However, causes of death may not be clear-cut, since other factors such as social marginalization, difficulties to access services and treatment, abuse of licit drugs or psychological comorbidities may also affect mortality rates among drug users. Problems linked to drug-related deaths are most often found among long-term users of opioids, users who inject and to a lesser degree among people who use some form of stimulants (EMCDDA, 2011a).

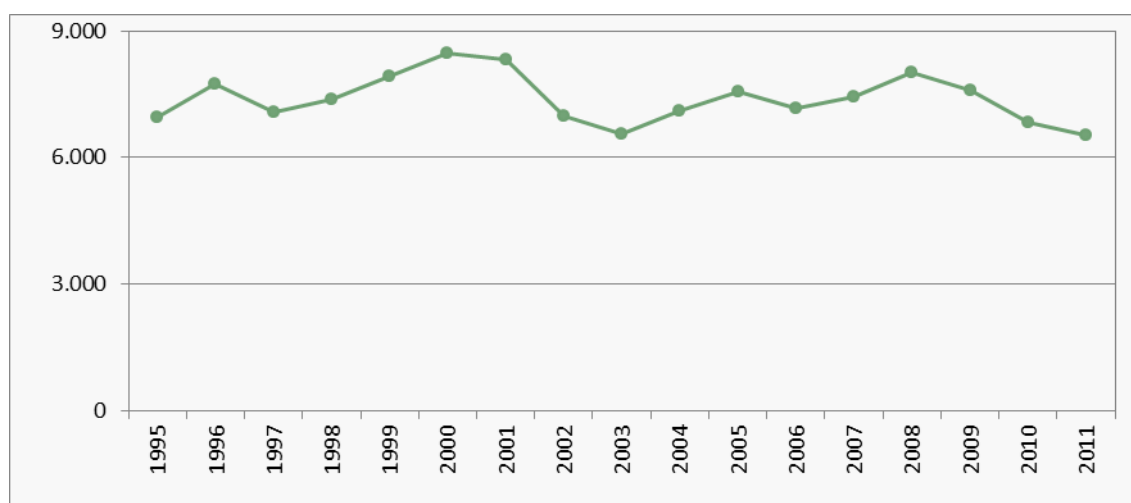
Overdose Deaths

Overdose is a leading cause of death among illicit drug users, particularly among injecting opioid users. Since 1995, between approximately 6,500 and 8,500 overdose deaths have been recorded in the EU Member states, Norway and Switzerland each year, adding up to more than 125,000 deaths (Bundesamt für Polizei, 2009; EMCDDA, 2013a).² It has to be noted, though, that these numbers are likely to be conservative as national data may be affected by under-reporting or under ascertainment of drug-induced deaths. As figure 1 indicates, drug-induced deaths continuously increased between 1997 and 2000, but dropped until 2003. This decline was again followed by an increase until 2008. The most recent data available for the EU Member States, Switzerland and Norway suggest the number of drug-induced deaths to be more than 6,800. This number includes the reported drug deaths in Belgium and Switzerland, where the latest data are available for 2008. The most recent estimates provided by the other 28 countries suggest that there were around 6,500 drug-induced deaths in 2011³, showing a continuing decrease since 2008, when more than 8,000 people died from an overdose (EMCDDA, 2013a).

² In Switzerland, between 361 and 143 overdose deaths per year were reported from 1995 to 2008.

³ The estimate is based on 2011 data for 22 EU member states, and 2010 data for five others and Norway.

Figure 1: Trends in drug-induced deaths in the 28 EU Member States, Norway and Switzerland

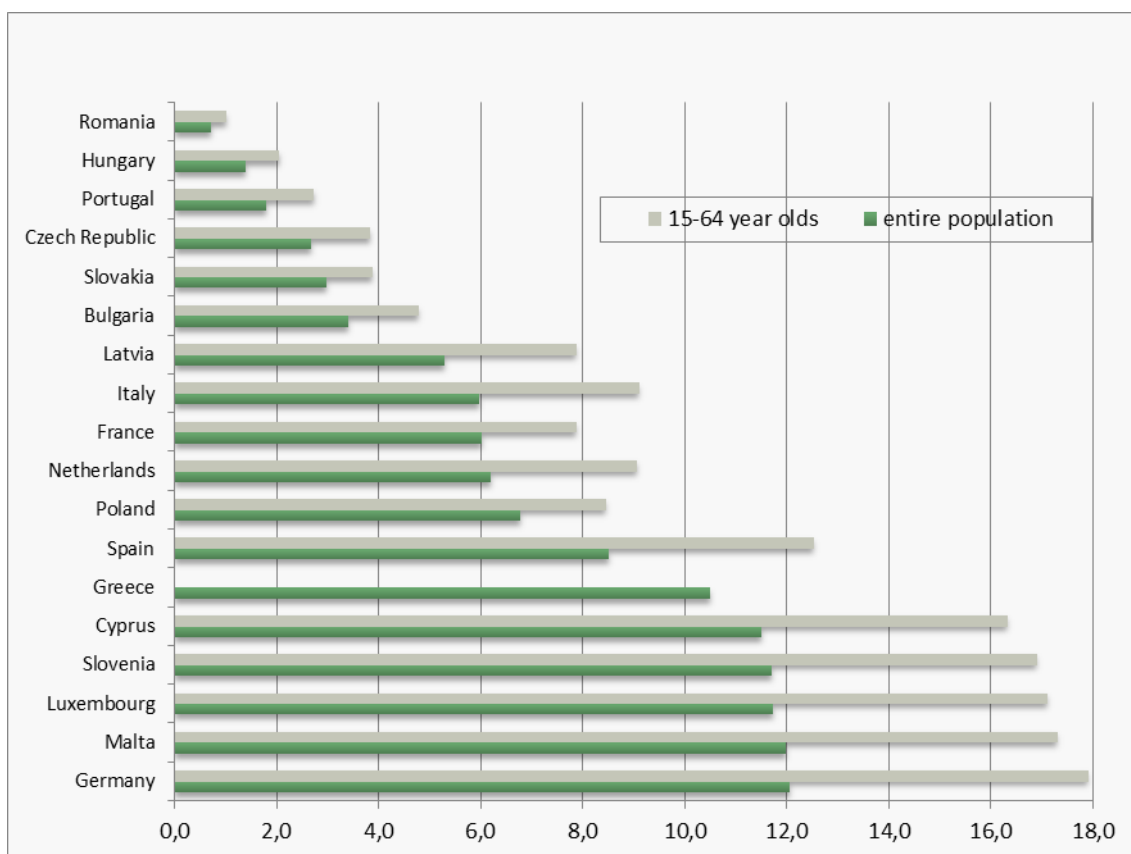
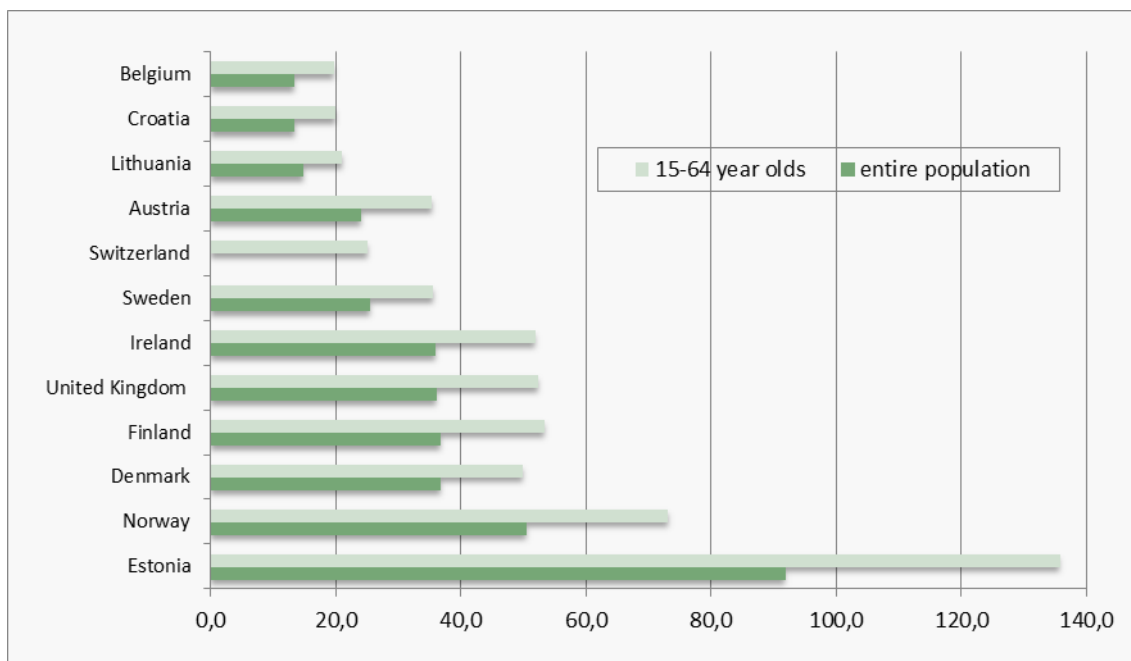


NB: Belgium and Switzerland are excluded after 2008, as no data are available. The 2011 estimate is based on 2011 data for 22 EU Member States and 2010 data for five others and Norway.

References: EU Member States and Norway: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical Bulletin. Table DRD-2: Number of drug-induced deaths recorded in EU according to national definitions. Part (i): Total drug-induced deaths, 1995–2011, EMCDDA: Lisbon; Switzerland: Bundesamt für Polizei (2009): Polizeiliche Kriminalstatistik PKS, Schweizerische Betäubungsmittelstatistik. Bundesamt für Polizei: Bern (from 1995 to 2008 between 361 and 143 overdose deaths were recorded in Switzerland each year).

Nevertheless, the situation varies between different countries. A stable decrease in the number of reported deaths since 2008 can be seen in Germany, Spain, Italy, Portugal, Slovenia, Slovakia, and the United Kingdom, whereas an increase can be observed in Estonia, Austria, France, Poland and Finland (EMCDDA, 2013a). The United Kingdom and Germany, the two nations with the highest number of drug-induced deaths, account for half of all overdose cases reported in 2011. However, regarding the death rate per million population, the UK remains among the five countries with the highest rate, whereas Germany ranks in the upper mid-range. The average EU rate is estimated at 13 overdose deaths per million population, with higher rates among younger cohorts: among 15-64 year olds the estimated rate is 18.3 deaths per million, among 15-39 year olds 22.2 deaths per million population. There are considerable differences between countries: on the one hand, six countries report rates of less than 5 deaths per million for both the entire population and 15-64 year olds, on the other hand, eight countries report more than 20 death per million for the entire population *and* more than 35 deaths per million population aged for 15-64. Rates of close to or more than 50 deaths per million in this age cohort are found in six countries. The by far highest rates of drug-induced deaths are found in Estonia and Norway (EMCDDA, 2013a). As the following Figure 2 shows, most countries with a mortality rate above the European average are located in North Europe, whereas all South European countries show below-average mortality rates.

Figure 2: Drug-induced mortality rates (cases per million population) in the entire population and among 15-64 year olds – countries with rates above (top) and below (bottom) the EU average



NB: No data available for Switzerland (entire population) and Greece (15-64 year olds). The estimated rates are based on 2011 data for 22 EU Member States, 2010 data for five others and Norway and 2008 data for Belgium and Switzerland.

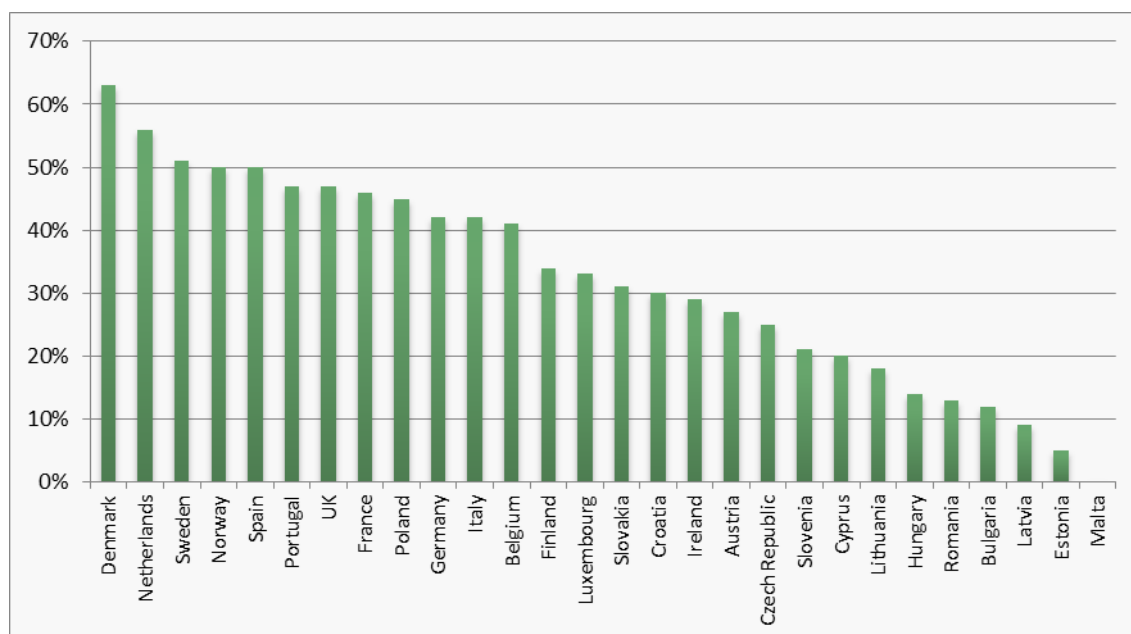
References: EU Member States and Norway: EMCDDA, 2013a; Switzerland: UNODC, 2012.

In Estonia more than a fifth (21.2%) of all deaths among 15 to 39 year olds are attributed to drug overdose, while for Norway the respective percentage is 13.5%. In two other countries – Ireland (11.6%) and Finland (10.7%) – drug-induced deaths account for more than a tenth of all deaths in this age group, whereas in six countries (Bulgaria, Czech Republic, Slovakia, Hungary, Portugal, and Romania) less than one per cent of all deaths among young adults are attributed to overdose. According to recent data, 3.6% of 15-39 year old Europeans died from a drug overdose (EMCDDA, 2013a).

Those dying from an overdose are on average in their mid-thirties, with a wide range of the mean age among the various countries: from as low as 30 years in Romania, Estonia and Latvia to as high as 44 and 45 years in France and Denmark (EMCDDA, 2013a). Less than 14% of people dying from an overdose are under 25 years: the highest proportions of young people among the deceased are found in Austria (30.3%), Hungary (28.6%) and Malta (25%), but in Ireland, Romania and Bulgaria this age group still accounts for a fifth of overdose victims. The lowest proportions of under 25 year olds are reported for Slovakia (0%), Spain, Croatia and Portugal (about 5%); five additional countries (the Netherlands, Denmark, Germany, the UK, and France) report proportions of less than 10%. In Denmark, Spain and the Netherlands more than 70% of people dying from overdose are 35 years or older (EMCDDA, 2013a). Drug users aged 40 or more accounted for more than two fifths of all reported overdose deaths in Europe. At a national level, proportions of more than 50% of at least 40 year olds are reported for Denmark, the Netherlands and Sweden, percentage rates of less than 10% are found in Malta, Estonia and Latvia. In general, the data indicate that especially countries in Eastern Europe respectively countries that joined the European Union after 2003 report comparatively low proportions of older drug users among the deceased (see figure 3). This might be partially explained by longer-standing heroin problems in countries that joined the European Union before 2004 (EMCDDA, 2011a).

Men are far more likely to suffer from fatal drug overdoses than women. Overall, men account for 80% of overdose deaths in Europe. The highest proportions of males among the deceased are reported for Cyprus, Malta (100% respectively) and Hungary (93%), the lowest rates are found in Luxembourg (50%), Poland (61%) and Sweden (69%)(EMCDDA, 2013a).

Figure 3: Percentage of people aged 40+ among the deceased in drug-induced deaths in 27 EU Member States and Norway



References: EMCDDA, 2013a.

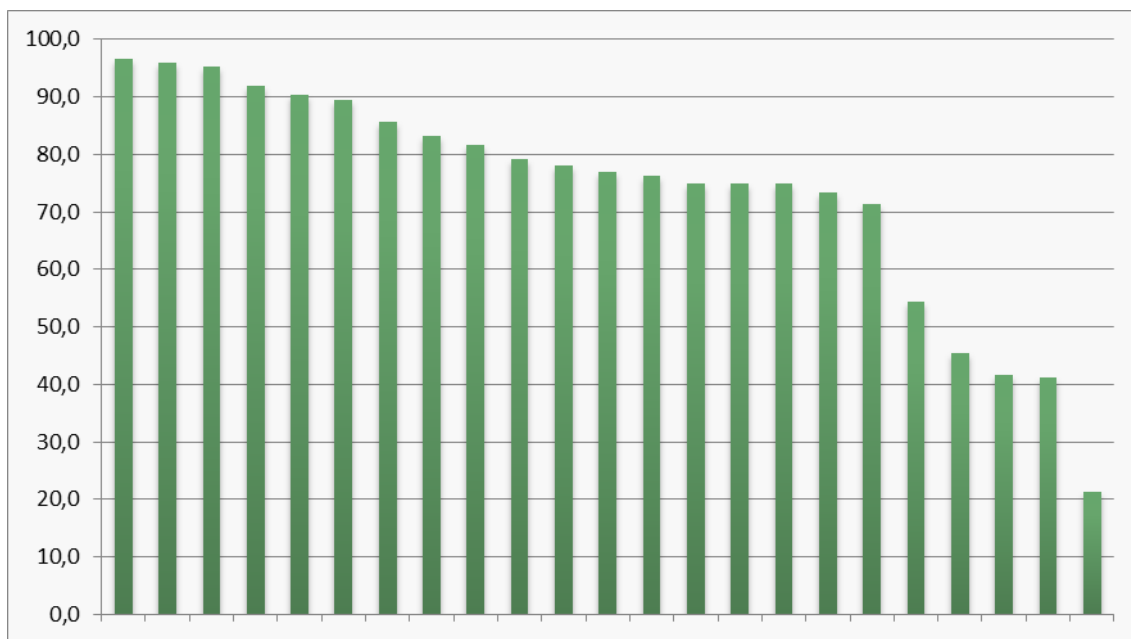
Implicated Substances

The use of opioids, in particular the use of heroin, accounts for the vast majority of overdose deaths in Europe. In the 23 countries providing data for 2010 or 2011, opioids were on average present in 74% of the cases. Nine countries report proportions of more than 80%, among the five countries with proportions of more than 90%. A comparatively low prevalence of opioids of less than 50% is found in Latvia, Slovenia and France. In the Czech Republic, the nation with the by far lowest proportion of overdose deaths due to opioids, these substances only account for about one in five overdose deaths (see figure 4).

Where more detailed information on the type of opioids is available, the percentage of overdose deaths involving heroin (with or without additional drugs) varies between as low as 24% in Denmark to as high as 91% in Greece (Norway: 38%, UK: 46%, Italy: 48%, Germany: 58%). Opioid substitution medications are also reported in a number of cases, with methadone alone or in combination with other drugs accounting for 5% or less of overdose deaths in Spain, Italy, Lithuania and the Czech Republic and more than half in Denmark, Romania and Croatia (Portugal: 6%, Norway and Austria: 15%, Germany: 20%, Hungary: 29%, Slovenia: 33%, Ireland: 37%). Increasing numbers of deaths due to methadone have been reported for Portugal and Croatia (in the latter case methadone accounted for three quarter of drug-

induced deaths in 2011). In contrast, deaths due to buprenorphine are relatively rare – only 29 cases were reported, with 17 cases in Norway, 9 cases in Germany, 2 in Austria and 1 case in the Czech Republic. In Estonia, the majority of drug-induced deaths (75%) are associated with the synthetic opioids fentanyl and 3-methylfentanyl. In the UK some overdose case were linked to tramadol (EMCDDA, 2013a).

Figure 4: Prevalence of opioids (%) in overdose deaths in 21 EU Member States and Norway



References: 21 EU Member States and Norway: European Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical Bulletin: Table DRD-1. Summary of characteristics of the deceased in drug-induced deaths according to national definitions. Part (ii): Numbers of drug-induced deaths and toxicology, 2011 or last year with available information. EMCDDA: Lisbon; Germany: Bundeskriminalamt (BKA) (2012): Rauschgiftkriminalität: Bundeslagebild 2011 – Tabellenanhang. BKA: Wiesbaden, Denmark: European Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical Bulletin: Table DRD-108. Drug-induced deaths: Detailed qualitative national information on deaths due to specific substances in EU. EMCDDA: Lisbon.

Deaths due to non-opioids make up a minority of drug-induced mortality in most European countries, with the exception of the Czech Republic and Slovenia where almost 80% and 60% respectively of overdose deaths are attributed to substances other than opioids. Deaths involving cocaine account for less than 5% of all overdose deaths in Norway, Lithuania, Denmark and the Czech Republic, for less than 10% in France, Hungary, Croatia, Italy, the UK and Germany. Ireland, Austria and Slovenia report proportions of cocaine of about 12%, whereas in the Netherlands the substance is involved in 18% and in Portugal in 26% of drug-induced deaths. The highest proportion of cocaine-induced deaths is found in Spain, where the substance is involved in 57% of fatal overdoses; however, compared to previous years, the percentage of cocaine in overdose deaths has decreased (2007: 67%). A downward trend for cocaine involvement in drug-induced deaths is also reported for the UK. Stimulants other than

cocaine, such as amphetamines or ecstasy/MDMA, are rarely reported as being involved in overdose deaths: most recent data available show a total of 42 fatal overdose cases related to ecstasy or ecstasy-type substances, with the United Kingdom accounting for almost 60% and Germany accounting for nearly a quarter of these cases (EMCDDA, 2013a). Overdose deaths related to amphetamines (including methamphetamine), though relatively rare, are reported by some countries, in particular those with a comparatively high number of problem amphetamines users. Yet, it has to be noted that overdoses due to amphetamines may be more difficult to identify since the symptoms may be less specific (EMCDDA, 2013c).

Other substances that have been found in toxicology reports in 2011 include inhalants (16 cases in Slovakia, 1 case in Cyprus), benzodiazepines (9 cases in Slovakia, 3 cases in Cyprus), and barbiturates (1 case in Italy). Deaths associated with new psychoactive substances, cathinones such as mephedrone and MDPV have been reported in Europe but only in a few cases. More than 20 overdose deaths have been linked to the amphetamine-related substance 4-methylamphetamine. In 2010, Ireland reported six deaths involving new psychoactive substances (either alone or with another drug or substance) (EMCDDA, 2013a).

The majority of overdose deaths in Europe involve drug combinations, thus indicating that a substantial proportion of drug-induced deaths are associated with polydrug use. Substances found in addition to the aforementioned are alcohol or prescription drugs.

Risk Factors for Non-Fatal and Fatal Overdoses

It is roughly estimated that for every fatal overdose, there are 20 to 25 non-fatal overdoses that occur in Europe, suggesting a number of around 150,000 non-fatal overdoses each year (EMCDDA, 2010a). A number of factors that can be categorised as individual and contextual factors can be identified as contributing to the likelihood of both non-fatal and fatal drug overdose. These interacting factors not only influence the risk of an overdose but may also determine whether or not an overdose will have a fatal outcome. Research suggests that the more risk factors are present, the greater the likelihood for a fatal overdose (Frisher, Baldacchino, Crome, & Bloor, 2012).

Individual risk factors are:

- **Type of drug used:** Especially the use of opioids, in particular heroin, is associated with drug overdoses (see above). Most commonly deaths are caused by respiratory

depression. Heroin has a very low safety (lethal) ratio, thus increasing the likelihood of overdosing. A review conducted by Frisher and colleagues (2012) found that about 2% of people who inject heroin die each year, indicating a mortality rate up to 20 times that of the general population of the same age and gender.

- **Mixing drugs:** Overdoses are often the result of polydrug use (see above). Drugs when taken together may interact in ways that increase their overall effect, thus increasing the risk of overdose substantially. Especially the use of heroin or other opioids in combination with other central nervous depressants such as alcohol and benzodiazepines are linked to an increased overdose risk. However, mixing depressants (e.g. heroin) with stimulants (such as cocaine) may also heighten the risk for overdose because 1) the body has to process more drugs, 2) the stimulant causes vasoconstriction and therefore causes the body to use more oxygen while the depressant reduces the breathing rate and 3) people who combine depressants and stimulants may inject more frequently than users who do not mix both types of substance (Harm Reduction Coalition, 2012).
- **Route of administration:** Methods that deliver the drug quicker to the brain are associated with a higher risk for overdose with injection being most commonly linked to overdoses. Despite the significant strain on the lungs and the respiratory tract caused by smoking, it can be concluded that inhalative use – measured by the indicators “overdose” and “viral infections” is considerably less dangerous than intravenous use (Stöver and Schäffer 2014b). The available data suggest that the risk of accidental overdose when smoking heroin is substantially reduced compared to injecting. Moreover, the risk of HIV and Hepatitis B or C infection is considerably reduced when smoking heroin. Despite these harm-reducing effects of inhalative use, there is only very limited scientific survey on this subject. Kools (2010) described the Dutch experience in promoting transition away from injecting drug use to inhaling. Pizzey and Hunt (2008, 5:24) and Chandler et al. (2008) studied the introduction of foils in four facilities in the Northwest of England. Stöver and Schäffer (2014) also showed in their study that targeted media and personal intervention in association with the dispensation of attractive drug use equipment can motivate opiate users to change their method of drug use. The main reason for inhalative use is that it is significantly less dangerous, measured by the indicators ‘overdose’ and ‘viral infections’. They conclude that all drop-in centres should expand their syringe-

exchange services to include the dispensation of smoking foils (Stöver and Schäffer 2014a).

- **Quantity and quality/strength of drugs:** The content and quality of illicit drugs is unpredictable. Variations in the strength and purity of drugs significantly increase the risk of accidental overdose. This includes the purity being unexpectedly high, getting a “bad batch”, or buying illicitly produced prescription drugs that are of low quality (Rome, Shaw, & Boyle, 2008).
- **Previous overdoses:** Many people who overdose have done so on previous occasions. In a Scottish study (Rome et al., 2008) close to half of the participants had experienced at least one personal overdose. Previous overdoses do not appear to prevent further risky use. Actually, people who have had a non-fatal overdose in the past may be even at increased risk for overdose in the future. Darke, Mills, Ross and Teesson (2011) found that drug users with a history of opioid overdose were three times more likely to die from an overdose than users who had never overdosed. This may be related to drug use patterns and potentially risky behaviour.
- **Age and duration of use:** Aging drug users with longer drug using careers are at heightened risk for drug-induced deaths and available data suggest an aging cohort of problem opioid/heroin users in several European countries (see above). This increased risk may be due to the cumulative effects of long-term substance use, which may include the cumulative toxicity of the drugs over the years and an overall poor health status with kidney, heart, lung, liver or circulation problems associated with aging, other chronic conditions including viral hepatitis, HIV or other infections, cancer, chronic bronchitis or endocarditis. Older people who overdose seem to be less likely to survive their overdose than younger people (EMCDDA, 2011a; Harm Reduction Coalition, 2012).
- **Gender:** Men account for the vast majority of drug-induced deaths in Europe (see above).
- **Social marginalization and social exclusion:** Drug users who are unemployed or have accommodation problems including homelessness have been identified as being at

higher risk for overdosing. Housing and other social factors seem to play an important role in determining the health of drug users and reducing their health risks, including the risk of overdose (Rome et al., 2008).

- **Psychiatric co-morbidity:** Research suggests that drug users with a history of mental health problems, a psychiatric diagnosis and who have been prescribed psychotropic medicines are more likely to overdose. Levels of anxiety and suicidal thoughts with suicidal ideation appear to be predictive of overdose (Rome et al., 2008).
- **Being HIV-positive:** Research also suggests that drug users who are HIV-positive have an increased risk for non-fatal and fatal overdose. Although the underlying mechanisms for this heightened risk remain controversial, this may be partly due to the fact that people with HIV are often exposed to opioid medications during their treatment; others may continue to use illicit opioids despite their diseases status (Green, McGowan, Yokell, Pouget, & Rich, 2012).
- **Overall health:** Users with a compromised immune system, who have been sick or have a current infection (like an abscess) are also at higher risk of overdose because their body is weakened. Stimulant users are more at risk for a seizure, stroke or heart attack if they have other health issues such as high blood pressure, heart disease, diabetes or high cholesterol. Liver and lung health also plays an important role. A poorly functioning liver (because of hepatitis or cirrhosis) decreases the body's ability to metabolise substances in a timely manner, leading to a build-up of drugs in the body system which may be toxic and make the effect of certain drugs last longer. Since depressants cause the breathing to slow down, drug users with asthma or other breathing problems are at higher risk for overdosing. Poor lung function decreases the body's capacity to replenish oxygen supply (Harm Reduction Coalition, 2012). Furthermore, poor cardiac health may increase the risk of hypoxia-induced cardiac arrest (Rome et al., 2008).

Contextual factors relating to settings that cause reduced levels of opioid tolerance (e.g. abstinence due to treatment and imprisonment) or to the circumstances of overdose include:

- **Not being in treatment, disruption or discontinuation of treatment and care:** Although being in treatment, especially in opioid substitution treatment, has been identified as a protective factor against drug-related mortality (because of reduced rates of illicit drug use, injection and drug-related infections and an overall improved physical health status), users of opioids have a heightened risk of overdosing in the time immediately after treatment drop-out or discharge from drug-free treatment (Fischer, Nava & Stöver 2012). In both cases the risk of overdosing is elevated because of a greatly reduced tolerance to opioids (EMCDDA, 2011a). It has also been suggested that the time immediately after beginning to receive opioid substitution treatment is also a period of increased risk. Problems may arise when the initial dose is too high or too low (in the latter case, leading to the additional use of other opioids) (Advisory Council on the Misuse of Drugs, 2012).
- **Prison release:** Release from prison is a particular risky period for overdosing when ex-prisoners resume using heroin while their tolerance to opioids is reduced. Research suggests the prospect of newly released prisoners dying from a drug overdose in the first two weeks after discharge to be eight times higher than during a subsequent occasion at liberty (EMCDDA, 2011a; WHO Europe, 2010; Stöver & Kastelic 2014). Illicit drug use is overrepresented among the prison population. A high proportion of prisoners use illicit drugs prior to imprisonment and many continue to do so in the prison setting, though on a less regular basis (Stöver 2012). Recent data show a lifetime prevalence of illicit drug use among prisoners between 14% (Croatia) and 79% (Netherlands, United Kingdom), with 12 out of 16 countries reporting close to or more than 50%. In some countries (Lithuania, Spain, Italy and the UK) more than a third of prisoners report a history of heroin use (EMCDDA, 2013a). Furthermore, between 5% (Croatia) and 48% (Lithuania) of prisoners have ever injected drugs, with the majority of countries reporting proportions of lifetime injecting among prisoners of a fifth to a third (EMCDDA, 2013a). Compared to the general population (lifetime prevalence of injecting in the EU: 0.25%; see above) this is an extremely high rate.

Regarding drug use in prisons, it is estimated that about 5% (Bulgaria, Romania) up to 56% (Luxembourg) of prisoners use illicit drugs while incarcerated, with the majority of countries reporting estimates of about a quarter to a third. Heroin use among prisoners in prisons is estimated at between 1% (Hungary, Bulgaria) and 15% (United Kingdom) (EMCDDA, 2013a), whereas the prevalence of injecting is estimated at

between 1% (Hungary) and 31% (Luxembourg). Comparatively high percentages of injecting drug use while in prison are also found in Germany (22%) and to a lesser extent in Portugal (11%) and Latvia (10%) (EMCDDA, 2013a). Two interrelated processes represent the principal factors for drug-induced deaths of prisoners immediately after release: These are decreased tolerance to drugs after a period of relative abstinence or reduction in drug intake during imprisonment and concurrent use of multiple psychoactive substances. Interrelated with these processes are risk factors such as treated or untreated chronic diseases progression and socio-demographic characteristics (e.g. age, gender, duration of drug use, lack of psychological and social support structures, homelessness) (WHO Europe, 2010).

- **Injecting in public:** Because safety from public and police view may be prioritised over the risk of overdose, injecting in public places is usually done in haste and users may not take the time to test the drug's strength.
- **Being alone when overdosing:** Using alone increases the chance of dying from an overdose because no one is there to intervene.
- **Lack of response or inadequate interventions by those witnessing overdoses:** The chance of overdoses having a fatal outcome is also increased when bystanders do not intervene or intervene inadequately whether this is due to their poor first aid knowledge, the lack of access to effective medication, their own state of intoxication or fear of legal repercussions (EMCDDA, 2013b). Research suggests that the majority of drug-induced deaths occur in the presence of others and that overdose witnesses only call an ambulance in a small proportion of cases (Rome et al., 2008).

Deaths Due to Infectious Diseases

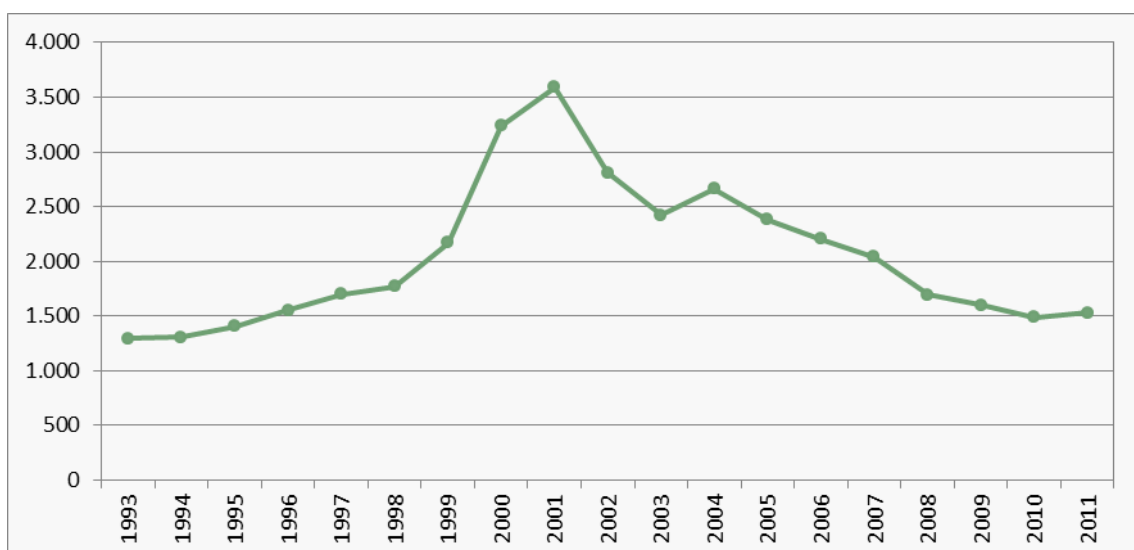
In addition to deaths caused by overdose, infectious diseases are among the most serious drug-related harms. Especially injecting drug use remains a contributing factor for the transmission of HIV and viral hepatitis, the most common infectious diseases among drug users.

HIV and AIDS

The most recent estimate suggests that about 1,700 injecting drug users died of HIV/AIDS in Europe in 2010 with data indicating a downward trend.

A total of 1,529 new HIV infections attributed to injecting drug use were reported in the 28 EU Member States, Norway and Switzerland in 2011 (EMCDDA, 2013a). Regarding overall trends in HIV infection, figure 5 indicates that after a sharp increase in the reported number of newly diagnosed cases between 1993 and the peak in 2001, numbers have been falling significantly until 2010. To a large extent this can be attributed to the increased availability of prevention, treatment and harm reduction services (including opioid substitution treatment, needle and syringe exchange programs and drug consumption rooms) as well as to the decline in injecting drug use in recent years. However, the most recent data available suggest a slight increase in the number of new HIV cases in 2011 (2010: 1,489), thus interrupting the continuous downward trend observed since 2004.

Figure 5: Trends in newly recorded HIV diagnoses attributed to injecting drug in the 28 EU Member States, Norway and Switzerland

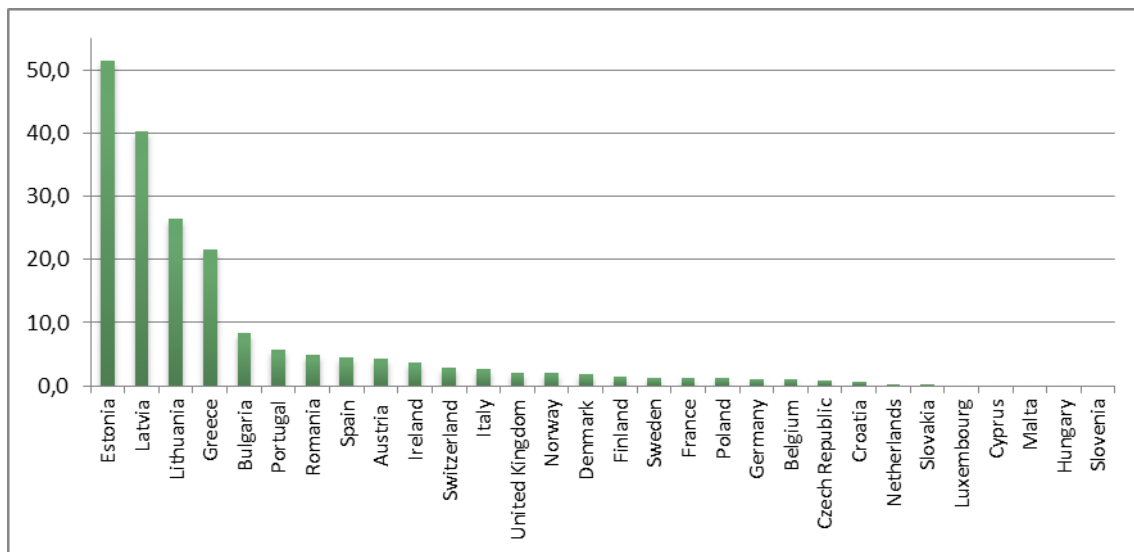


References: EU Member States and Norway: European Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical Bulletin: Table INF-104. HIV infections newly diagnosed and AIDS diagnosed among injecting drug users, by country and year of diagnosis. Part (i): HIV infection in the EU, Croatia, Turkey and Norway: (a) cases per million population, (b) number of cases and (c) population sizes. EMCDDA: Lisbon; Switzerland: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical Bulletin: Table INF-104. HIV infections newly diagnosed and AIDS diagnosed among injecting drug users, by country and year of diagnosis. Part (ii): HIV infection in non-EU countries of the WHO European region: (a) cases per million population, (b) number of cases and (c) population sizes. EMCDDA: Lisbon.

At a national level, contrary to the general trend in Europe, an increase in the number of HIV cases in recent years is found in Bulgaria, Lithuania and to a lesser extent in Italy. In Bulgaria newly recorded HIV diagnoses among injecting drug users had increased more than tenfold between 2004 (7) and 2009 (74). Following a decline in 2010 (56), there were still 63 reported cases in 2011. Lithuania saw, after a peak in 2002 (379 new HIV cases) and a subsequent decline (2008: 42 cases) an increase in the number of new HIV diagnoses in 2009 (117). However, in the two subsequent years this number has dropped again to 86 cases in 2011. Italy reported after a high number of new HIV cases in 2004 (192) and a decline in subsequent years, a sharp increase in 2010 (222), followed again by a slight decrease in 2011 (161). Looking at the latest data, Greece and Romania are the most striking cases. Both countries have seen HIV outbreaks in 2011: compared to 2010 the number of newly diagnosed HIV cases has increased twelvefold in Romania (from 9 to 108 cases) and elevenfold in Greece (from 22 to 245 cases) (EMCDDA, 2013a). In both countries the outbreaks of HIV infections were preceded by an increase in hepatitis C (HCV) prevalence rates among drug injectors, suggesting that rising HCV prevalence may signify an increase in risk behaviour among these users, before HIV has started to spread (EMCDDA, 2012). Taken together, these two countries account for almost a quarter of all newly reported HIV cases in the European Union, Norway and Switzerland in 2011, Greece being now the country with the highest number of new HIV diagnoses. It has been suggested that these outbreaks of HIV transmissions in Greece and Romania are associated with low levels, or reductions, in the provision of prevention and harm reduction services as well as an increased stimulant use. In response, Greece did considerably increase the coverage of needle and syringes exchange programmes and drug treatment, especially opioid substitution treatment capacity (EMCDDA, 2012).

With a rate of 21.7 per million population (2010: 1.9), Greece is also found among the four countries with the highest rates of newly reported HIV cases in 2011. Even higher rates are found in Estonia (51.5), Latvia (40.4) and Lithuania (26.5) (see figure 6). On average, three new HIV diagnoses per million population were reported in the European Union in 2011 (EMCDDA, 2013c).

Figure 6: Rates of newly diagnoses HIV infections (per million population) among injection drug users in the 28 EU Member states, Norway and Switzerland



References: EMCDDA, 2013a.

Estonia, Latvia, Portugal and Lithuania have seen exceptionally high rates of new HIV infections since 2000, with 109 cases per million in Lithuania (in 2002), more than 146 cases per million in Portugal (in 2000), more than 281 cases in Latvia (in 2001) and even more than 980 cases per million population in Estonia (also in 2001). Though, especially Portugal has experienced a significant and continuous downward trend since the beginning of the 2000s. While current rates of HIV infections in Lithuania, Latvia and Estonia are also much lower than they used to be, due to the unsteady numbers in recent years the data do not indicate a clear trend.

According to most recent national and sub-national data, the HIV prevalence among injecting drug users is estimated at less than 1% in Malta, Hungary, Slovakia, Finland, and the Czech Republic, and up to 5% in Luxembourg, Denmark, Norway, the Netherlands, Switzerland (Harm Reduction International, 2012), the United Kingdom, Cyprus, Greece, Bulgaria, Austria, Sweden, Poland, and Slovenia. Estimates of more than 5% are reported for Belgium, Germany, Ireland and France, whereas prevalence rates of more than 10% are found in studies conducted in Italy, Portugal, Latvia and Romania. However, the highest HIV prevalence levels were recorded in Lithuania (up to 21.4%), Spain (33.6%) and Estonia (52.6%) (EMCDDA, 2013a)⁴. In the 18 countries where trend data for 2006-2011 are available, four (Bulgaria, the Czech Republic, Greece, Romania) report increasing HIV prevalence rates among national or

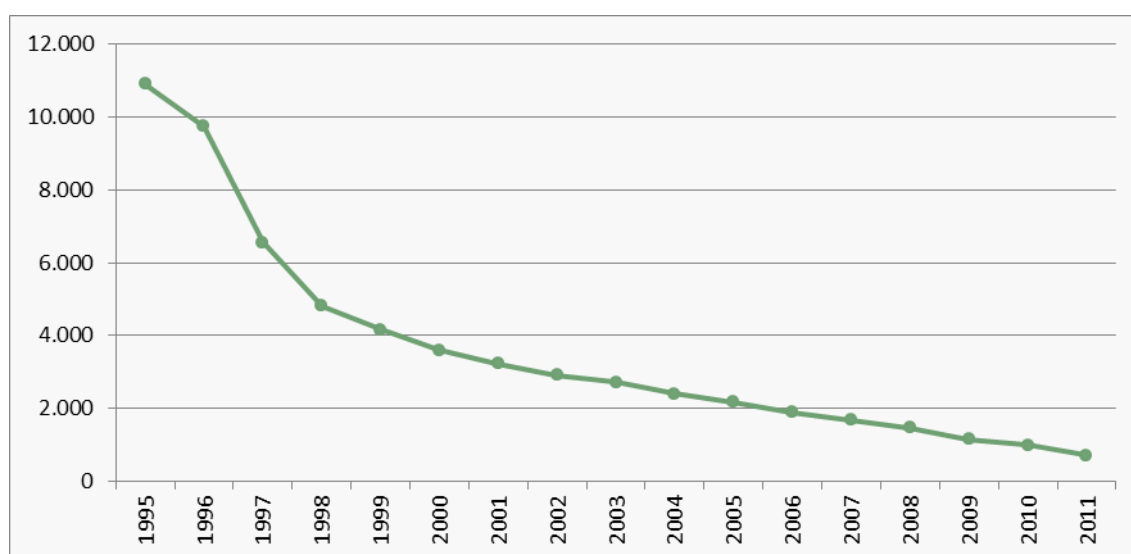
⁴ No data for Croatia available.

sub-national samples of injecting drug users, whereas a continuous downward is found in Portugal and Poland (EMCDDA, 2013a).

In the six countries where recent data on HIV prevalence among drug injectors in prisons are available, the estimates are usually even higher ranging from 0,1% in Finland up to 39.7% in Spain (Switzerland: 1% [Favrod-Coune et al., 2013], Germany: 2% [Eckert & Weilandt, 2008], Bulgaria: 2.7%, Sweden: 7.7% [EMCDDA, 2010b]).

Information on the incidence of AIDS can be important for evaluating new occurrence of symptomatic diseases and can also function as an indicator for the availability and coverage of antiretroviral treatment (ART). In 2011, 710 new AIDS cases among injecting drug users were recorded in the European Union, Norway and Switzerland, with Spain (n=215) and Italy (n=136) accounting for almost half of them. Over the past 17 years the number of AIDS cases has decreased 93% (see figure 7). This decline is especially seen in North and South European countries, whereas countries in Eastern Europe either reported increasing numbers until the mid to late 2000s followed by a decrease (as this is the case for Estonia, Latvia, Lithuania and Poland) or are still reporting an increase. This is true for Bulgaria – where the number of AIDS cases has increased from 1 to 17 between 2004 and 2011 – and for Romania, where the increasing number of HIV diagnoses (see above) has apparently led to a concurrent rise in AIDS cases (EMCDDA, 2013a). It remains to be seen whether or not Greece will experience a similar growth in the future.

Figure 7: Trends in AIDS cases attributed to injecting drug in the 28 EU Member States, Norway and Switzerland



References: EMCDDA, 2013a.

The highest rates of AIDS incidence related to injecting drug use are found in Latvia, with 23.8 cases per million population (down from 29.8 cases in 2010) and Estonia with 14.9 cases (up from 10.4 cases in 2010). Relatively high rates are also reported for Spain (6.5 cases) and Portugal (5.0 cases) – however, the data suggests a clear downward trend for both countries. In addition, six countries have a rate of between two and three cases per million population (Bulgaria, Switzerland [EMCDDA, 2013a]), Ireland, Italy, Lithuania, and Luxembourg], whereas ten countries report an incidence rate of less than 0.5 per million population (Belgium, the Czech Republic, Germany, Greece, the Netherlands, Finland, Sweden, the United Kingdom, Croatia and Norway) (EMCDDA, 2013a).

New psychoactive substances (NPS) have contributed to the increased risk of HIV and hepatitis transmission in several European countries, particularly in Hungary and Romania, where a significant share of heroin and amphetamine users have turned to injecting NPS. Since these substances may be injected more frequently (for example compared to heroin) this can result in an increased likelihood of sharing injection equipment (Harm Reduction International, 2012).

Viral Hepatitis: HCV and HBV

In contrast to relative low HIV prevalence rates among drug injectors in recent years, levels of viral hepatitis, in particular hepatitis C (HCV) remain disproportionately high among drug users in Europe with hepatitis C virus (HCV) being the most common infectious disease among those who inject.

Recent data available for 17 European countries indicate that the vast majority of hepatitis C infections are linked to injecting drug use. On average drug injection accounted for 58% of all HCV cases and for 41% of the acute diagnoses where the transmission route is known (EMCDDA, 2013c). In five countries (the Czech Republic, Germany, Hungary, Slovakia and Sweden) between approximately two thirds and three quarters of HCV cases are associated with drug injection, four countries (Denmark, Ireland, Finland and Norway) report proportions of more than 80% and five countries (Estonia, Lithuania, Malta, Luxembourg, the United Kingdom) of more than 90%. Low proportions, in comparison, are found in Latvia (29%-39%), Poland (7%-14%) and in particular in the Netherlands (2%) (EMCDDA, 2013a).

The extent to which Hepatitis C affects injecting drug users varies considerably across the countries. Of the 11 countries with recent national estimates (2010 or 2011) of HCV antibodies among injecting drug users, Norway, Greece, Italy and Portugal⁵ report the highest levels of more than 60%. Prevalence rates of more than 40% are found in Cyprus, Croatia and the United Kingdom, whereas Malta and Austria⁶ report a HCV infection rate of more than 30%. Slightly lower levels are found in Slovenia (28.5%), Hungary (24%) and the Czech Republic (18%). An additional eight countries reported sub-national data, with HCV prevalence among drug injectors ranging from 40% in Slovakia to more than 80% in Belgium⁷ and Latvia⁸ (Estonia: 76%, Bulgaria: 69%, Sweden: 56%, Germany: 56%-72%, the Netherlands: 50%-67%) (EMCDDA, 2013a). Trend data available for 13 countries for the period 2006-2011 show increasing rates of HCV infections among injecting drug users at a national level in Greece and Cyprus, whereas a downward trend can be seen in Italy, Portugal and Norway (EMCDDA, 2013a).

Data on the prevalence of hepatitis C among drug injectors aged under 25 years indicate an increase in Bulgaria, Greece, Cyprus and Austria, while there is no national data pointing to a decline of HCV in this cohort (EMCDDA, 2013a). In addition, increasing rates of HCV infections are found among new drug injectors (injecting less than two years) in Greece (EMCDDA, 2013a).

Data on the prevalence of HCV among drug injecting prisoners are rarely available and if so, the information is rather outdated. National or sub-national studies conducted in the 2000s show a wide range of HCV infection from as low as 11.5% (Hungary) to as high as 91% (Luxembourg). Of the other seven countries where data is available, Sweden reports HCV levels of up to 80%, Germany (Radun, 2007, September 13) and the Czech Republic of more than 50% and Croatia of more than 40%. Lower rates, of about a fifth to a quarter are found in Bulgaria, Finland and Belgium (EMCDDA, 2010b).

The high HCV prevalence among injecting drug users is likely to result in considerable numbers of deaths over time due to liver disease. It is estimated that about three quarters of those infected will go on to develop chronic infections. Of these, around 7% will develop cirrhosis within 20 years of exposure to the virus. Among those who develop cirrhosis, every year an

⁵ In Portugal data are available from two different studies with considerably varying estimates of 36.5% and 79.9%.

⁶ In Austria the reported HCV prevalence ranges from 34.2% to 48.5%.

⁷ For Belgium estimates of 42.3% to 81.5% are reported.

⁸ For Latvia estimates of 50% to 81.5% are reported.

estimated 4% will suffer from liver failure and 2% will develop liver cancer. Research further suggests that many drug users are unaware of their infection (EMCDDA, 2011a).

Regarding the epidemiology of hepatitis B virus (HBV) it is estimated that injecting drug users account for 7% of all diagnoses and for 15% of acute diagnoses recorded (EMCDDA, 2013c). Of the 16 countries with recent data, four (Malta, Finland, the Netherlands and the United Kingdom) report proportions of less than 1% of HBV transmissions attributable to injecting drug use and two countries (Denmark and Poland) of less than 10%. In an additional six countries (Slovakia, Germany, Latvia, Norway, Sweden, and the Czech Republic) injecting drug use accounts for less than a fifth to about a quarter of HBV infections, whereas in Hungary the proportion is estimated at a third. Very high percentage rates of HBV infections related to drug injection are found in Estonia (56%-69%), Luxembourg (86%) and Lithuania (100%). Increasing proportions of hepatitis B cases attributed to injecting drug use are reported for Hungary and Norway, whereas a decline can be seen in Sweden and the United Kingdom (EMCDDA, 2013a).

The proportion of injecting drug users infected with HBV (with HBsAg, the surface antigen of the hepatitis B virus indicating a current infection) varies profoundly across European countries, although the prevalence rates are generally much lower than for hepatitis C. Of the eleven countries providing national or sub-national data in 2010/2011 regarding the Hepatitis B prevalence among injecting drug users, four countries report levels of less than 2% (Germany, Norway, Cyprus and Hungary) and five countries of less than 5% (Belgium, Bulgaria, Greece, Croatia and Portugal). The highest HBV prevalence levels among injecting drug users of about 6% are found in Austria and Latvia. Trend data available for eight countries show decreasing levels of HBV infections in Bulgaria, Cyprus and to some extent in Greece and Portugal in recent years. Stable rates are reported for Belgium, Hungary, Austria and Norway, while no country has seen a significant increase in HBV infections among injecting drug users over the last years (EMCDDA, 2013a).

Cohort studies among problem drug users suggest that 5% to 10% may die because of viral hepatitis, though it often remains unclear whether these deaths caused by liver disease are related to viral hepatitis or to heavy alcohol use. In a Scottish study among young injecting drug users, for example, problematic alcohol use seemed to have played a larger role in liver-related morbidity and mortality than HCV infections (McDonald et al., 2011). In an Australian study among older problem drug users, however, deaths caused by viral hepatitis were found to be twice as frequent as deaths due to alcoholic liver disease (Gibson, Randall, &

Degenhardt, 2011). These different findings may suggest that infected drug users often survive long enough to experience harms from this slowly developing liver condition (EMCDDA, 2011a). Furthermore, the interaction between viral hepatitis and alcohol use has to be taken into account since heavy alcohol use worsens liver disease originally caused by viral hepatitis (EMCDDA, 2013c).

Other Infectious Diseases

Although far less prevalent than HBV, HCV and HIV, drug users are at risk for other infectious diseases that carry a risk of death including other types of hepatitis viruses (e.g. A, D), sexually transmitted infections, tetanus, and endocarditis. Deaths among injecting drug users due to anthrax infections, most likely caused by contaminated heroin, have been recorded in Europe in recent years. The first case was reported from Norway in 2000, followed by an outbreak in 2009/2010 with 52 confirmed cases and 17 deaths in Scotland, five cases in England and three cases in Germany. Recently (between June 2012 and March 2013) 15 drug-related anthrax cases were reported in Germany, France, Denmark and United Kingdom, of which seven resulted in fatalities (EMCDDA, 2013c; Grunow et al., 2013). Available data on the prevalence of active tuberculosis among drug users in treatment show variations from 0% (in Austria and Slovakia) to 3.1% in Lithuania (Greece: 0-0.5%, Portugal: 0.1-1%). In four countries where information on the transmission route of new tuberculosis cases is available, Hungary reported the lowest proportion of (injecting) drug use (0.9%), followed by Belgium (1.2%), the United Kingdom/Wales and England (3.3%) and Latvia (5.9%). Furthermore, research suggests people infected with HIV have a 20- to 30-fold greater risk for developing tuberculosis (EMCDDA, 2012).

Other Causes of Drug-Related Deaths

Non- Infectious Diseases

The use of illicit drugs is also associated with a number of non-infectious diseases that are potentially fatal. Cardiovascular diseases are commonly reported as the cause of death among drug users, especially among aging drug users. For example, in a Swedish longitudinal study of 1,705 illicit drug users 20% of opioid users and 14% of stimulant users had died of cardiac causes within 37 years (Stenbacka, Leifman, & Romelsjö, 2010). Cardiovascular diseases are also frequently reported among long-term users of stimulants, especially among cocaine and amphetamine users. Other non-infectious diseases that are regularly reported as causes of deaths among drug users include lung diseases (e.g. pneumonia, chronic obstructive pulmonary disease) and cancer (EMCDDA, 2011a).

Suicide

It is estimated that suicide accounts for between 10% and 20% of deaths among problem drug users. Among heroin users, the suicide rate has been estimated to be 14 times that of the general population. Research suggests that the major risk factors for suicide among heroin users are similar to those for the general population (e.g. gender, mental health problems, family dysfunction, social marginalization), though heroin users are more widely exposed to these factors. The prevalence of depression, as a key risk factor for suicide, appears to be especially high among problem drug users.

A review of several studies conducted in Europe, Australia and the USA shows that between 17% and 43% of problem drug users had attempted to commit suicide at least once. Furthermore a previous suicide attempt appears to be a strong predictor of a repeat attempt (Darke, Degenhardt, & Mattick, 2007). Comparable to the general population, illicit drug users who attempt suicide are far more likely to be female, whereas those who complete suicide are far more likely to be male (EMCDDA, 2011a).

Trauma

Deaths resulting from violence, homicide, accidents and injuries are estimated to account for at least 10% of deaths among drug users in Europe. Being involved in illegal activities or

turning to sex work in order to support personal drug use have been identified as major risk factors for being exposed to violence. Driving under the influence of drugs is associated with an elevated risk of being involved or causing accidents and in some studies, mortality due to road accidents accounts for the majority of deaths caused by trauma. In addition, impairment due to intoxication may also contribute to an increased risk for fatal accidents (e.g. falls from heights, drowning). Drug users dying of trauma are usually younger than those dying from chronic diseases. Drug using women appear to be at particular risk for trauma-related deaths (EMCDDA, 2011a).

Summary and Conclusions

The main objective of this report was to analyse the epidemiology of drug-related mortality in 30 countries: all EU Member States, Switzerland and Norway. The presented information was obtained from different data sources, though predominantly from statistics collected and provided by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). The findings reveal a great variation in the level of drug-related deaths across the surveyed countries – this applies to deaths directly related to drug use as well as to deaths indirectly related to drug use.

Overdose is the leading cause of death among (injecting) drug users. Overall the number of overdose deaths has declined in Europe in recent years; however, some countries still report an increase. Regarding the rate of drug-induced deaths per million population, exceptionally high levels are found in Estonia and to a lesser extent in Norway, whereas all South European countries show rates below the EU average (13 deaths/million population). Countries in Eastern Europe or more specifically nations that joined the European Union after 2003 report lower proportions of older drug users among those dying from overdose than nations that joined the EU before 2004, a finding that seems to be largely attributable to the longer-standing heroin problem in the latter countries. Men account for the vast majority of drug-induced deaths in all countries equally.

Opioids, especially heroin, are the most common drugs implicated in overdose death, accounting for three quarters of drug-induced deaths in Europe. In some countries, opioids are involved in more than 90% of overdose deaths, whereas in a few countries less than half of drug-induced deaths are related to opioid use. Other non-opioid substances that are commonly involved in overdose are cocaine, amphetamines, benzodiazepines and to some extent new psychoactive substances.

The prevalence of HIV and AIDS among injecting drug users in Europe has decreased significantly during the 2000s. It has been suggested that this decline is on the one hand largely attributable to the increased availability of prevention, treatment and harm reduction services and on the other hand associated with the decrease in injecting drug use in recent years. Nonetheless, compared to 2010 more new HIV cases were reported in 2011, thus indicating an increase after years of decline. Rising numbers of HIV-positive injecting drug

users are especially seen in Greece and Romania, but some other countries, located in Eastern and South Europe, have also experienced a rise in HIV infections in recent years. Estonia, the country with the highest rate of drug-induced death is also top of the list when it comes to the rate of newly diagnosed drug-related HIV infections, followed by Latvia and Lithuania. Furthermore, Latvia and Estonia are the countries with the highest incidence of AIDS among injecting drug users.

The found differences between the countries regarding the prevalence of HIV and AIDS and the extent to which the virus affects injecting drug users can be largely attributed to the variation and discrepancy in harm reduction measures. On the one hand, an implementation of harm reduction responses very early in the HIV epidemic (in countries like the Netherlands or the United Kingdom) seem to have led to a stable and relatively low national HIV and AIDS prevalence among drug injectors. On the other hand, in countries where harm reduction responses were implemented later in the HIV epidemic (e.g. in Spain or Portugal) and thus at a time when a large proportion of drug injectors were already infected, still high, though decreasing prevalence rates are found. In contrast, several Eastern European countries, where harm reduction services are very limited or not available are seeing growing numbers of HIV and AIDS cases.

Levels of viral hepatitis, especially hepatitis C, remain disproportionately high among injecting drug users in Europe, with some countries reporting a prevalence rate of more than 60%. While data suggest a downward trend in HCV infections in some countries, other nations still see an increase. This seems to be especially true for younger drug injectors.

Other infectious or non-infectious diseases as well as other causes of deaths (trauma, suicide etc.) also appear to play a significant role in mortality related to drug use, although systematically collected data is rarely available.

In order to further investigate and understand the mechanisms behind drug related mortality, especially with regards to the remaining high death rates among illicit drug users in Europe, more detailed, systematic and comparable research is needed. This especially applies to a more sufficient and regular data collection in European countries, which would not only contribute to an improved understanding and clearer picture of the phenomenon but would also facilitate a trend analysis in a more efficient, timely manner.

Chapter 2

Drug-Induced Deaths: A Comprehensive Review of Existing Knowledge on Overdose Prevention



About This Chapter

This chapter aims to provide a comprehensive perspective about what is being produced by science concerning responses and measures designed for, or able to contribute to the prevention of overdose occurrence and death. This analysis comprehends the European region (with a special focus on 28 European member states, Switzerland and Norway), privileging the scientific production and actions developed in these countries.

Focus

The comprehensive literature review, as well as the recommendations presented in chapter 4, will focus on the topic of drug-induced deaths since it continues to be the major cause of mortality in Europe. Recent Eurostat data (2012)⁹ shows that it accounts for more than 3.5% of overall deaths among males under 40 years of age, and for 35% of deaths among opioid users enrolled in treatment (EMCDDA, 2015). Despite there is a general European trend for the decreasing number of deaths related to heroin, this substance continues to be the most reported in overdose toxicological reports (EMCDDA, 2014) (EMCDDA, 2014). In fact, opioid overdoses account for almost half of all deaths among intravenous heroin users, exceeding the ones associated with HIV and other diseases (UNODC, 2013). Considering the scale of the problem and the insufficient amount of responses on this issue, a comprehensive and integrated analysis on opioid overdoses should be conducted.

The present chapter is organized in 6 sections:

Section 1 focuses on the frequently ignored role of the socioeconomic determinants on both the problematic drug use and drug-induced deaths.

Section 2 presents a perspective about the influence that the countries' Drug Policy Models have on overdose risk factors and epidemiology.

Section 3 focuses on interventions capable of contributing to the decline of opiate overdoses.

Section 4 approaches the intervention measures targeted to mitigate the incidence of fatal outcomes when an overdose episode takes place.

Section 5 explores the "opportunistic" interventions that can take place when non-fatal overdose episodes occur.

Section 6 reflects on the procedures that follow overdose fatal outcomes.

⁹ Data retrieved from:

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Causes_of_death_statistics#Further_Eurostat_information

Methodology

The following content is based on a comprehensive literature review on drug-related deaths, particularly focused on a set of complex issues concerning drug-induced deaths. The information collected included theoretical and fundamental research, but also discussions surrounding practices and policies in this area. The most recent data sources were used, including research papers and reports from the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA); research papers retrieved from scientific data bases (e.g., Science Direct, MEDLINE, CINAHL, Cochrane) and grey databases (e.g. Google Scholar); publications produced by multilateral organisms (e.g. EU, WHO, UNODC, UNAIDS, ECDC); documents released by European and international non-governmental organisations (e.g. OSF, Harm Reduction Coalition, Harm Reduction International); and finally, position papers from civil society organizations working in the harm reduction area, and organisations of people who use drugs. The review included 89 scientific papers and official documents from Europe and 67 concerning global contributions. For each document considered in the review, the most relevant contents were categorized, contributing to the definition of the dimensions presented in this review, and later in the recommendations. Lastly, the non-systematic nature of this review should be highlighted as a limitation.

Framework for Overdose Prevention

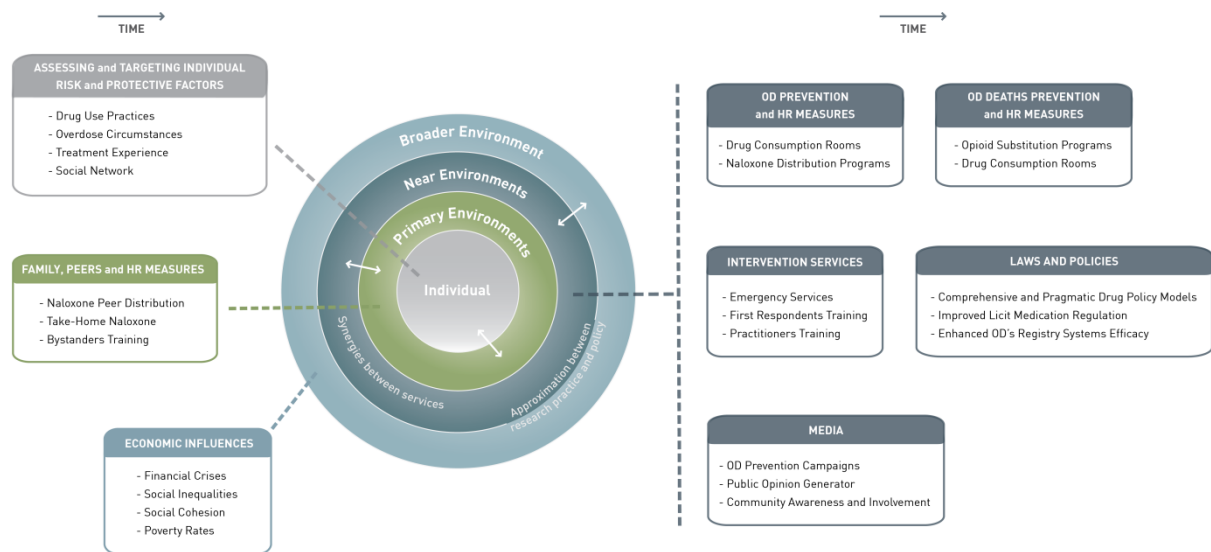
The occurrence of an overdose and its consequences depend on a complex combination of factors, that range from the individual level (drug use patterns, treatment history, overdose circumstances) to the organizational level (response from general healthcare, drug treatment, harm reduction, emergency, and prison services), and the observers level (witnesses response) (EMCDDA, 2012). Nevertheless, this phenomenon encompasses an even greater degree of complexity. Macro environmental factors, like economic, cultural and political influences have an important role in the structure of this phenomena, as well as in the character of responses designed to address them. So, we may roughly say that the fluctuations in the amount of fatal and non-fatal overdoses result from the operation of multi-level factors like the social environment (state of the economy, social cohesion, stigma on drug users), drug models and policies adopted, drug market behaviours, individual risk and protective factors, services' accessibility and effectiveness (namely, harm reduction services), among others. As a consequence, the demand for an effective overdose prevention strategy is equivalent to the

phenomenon's complexity: it requires a multi-level approach that includes the individual and circumstantial level as well as the environmental ones.

This proposal presents a circular relation between the process of implementing Harm Reduction strategies, reducing risks, recognizing overdose, managing the situation, getting the person to the hospital, managing medical emergency, and assessing the needs (Rome et al., 2008).

The next figure presents a schematic presentation of the framework used in both literature review and in the design of recommendations (chapter 4). Variables/conditions associated with overdose phenomena in four main levels of intervention - individual, primary, near and broader- were considered.

Figure 8: Framework for multi-level strategic overdoses prevention: guideline for literature review and design of recommendations. Inspired in Bronfenbrenner Human Environmental Framework (1979)



This framework, besides presenting the interrelated nature of these environmental levels, also suggests the need to articulate interventions in order to effectively prevent overdose occurrences and death. Additionally, this framework includes two different moments on overdose prevention: interventions designed to decrease overdose occurrences and interventions aimed at the reduction of fatal outcomes when overdose takes place (Fisher et al., 2012). At both levels, strategies used include the scaling-up of known protective factors and the reduction of existing risks.

Socioeconomic Determinants of Problematic Drug Use and ODs

“Overdose involves personal and societal issues; only when these are addressed is the level of fatal overdose likely to decrease”

(Frischer et al., 2012, p. 31)

Before talking about specific strategies of overdose prevention, we need to ask ourselves if OD is simply an individual health issue that could be “cured” improving health responses and maximizing its access. If we believe so, we fail to answer why poverty, as Cohen, Farley and Mason (2003) stated, is unhealthy, i.e., why social economic status is strongly associated with mortality rates. Why, as Holmes (2002) stated “if poverty were a disease it would be the most insidious, devastating and life threatening disease that Americans suffer” (p.5). Poverty is associated with higher death rates, lack of access to health care, lack of access to education, higher rates of imprisonment and death penalties. Why is that a girl born today could have a life expectancy of 80 years if she is born in some countries and half of this rate if she is born in others (Commission on Social Determinants of Health, 2008)? Also, we need to ask why, within countries, the levels of social disadvantage are closely associated with such dramatic differences in health (ibidem) and why socioeconomic inequalities have such impact in mortality rates, namely for causes of death that are preventable (Phelan, Link, Diez-Roux, Kawachi & Levin, 2004).

We have to ask ourselves why social stigma is “a fundamental driver of population health” (Hatzenbuehler, Phelan, Bruce & Link, 2013, p. 813) and why there are more stigmatizing societies than others. We need to ask ourselves for what reason people at the margins of society are most at risk of developing a drug problem (Shaw, Egan & Gillespie, 2007). The answer is: we urgently need (and more than ever) to address social and economic determinants on drug abuse and its consequences, such as overdoses and infectious diseases associated with drug consumption, if we want to present effective responses at European level.

In 2012, the Civil Society Forum on Drugs highlighted (as one of the 16 recommendations to the EU Member States and to the European Commission regarding the new EU Drugs Strategy

and Action Plan) the need to take into account the social/economic dimensions on drug policies:

Poverty, Deprivation, social inequality, discrimination and stigma must be given their full and proper place in all considerations of drug demand reduction policies, at local, Member State and European levels (Civil Society Forum on Drugs, 2012, p.6).

This same recommendation has been previously stressed by other reports such as the document published by the Scottish Drugs Forum (SDF) on behalf of the Scottish Association of Alcohol and Drug Action Teams:

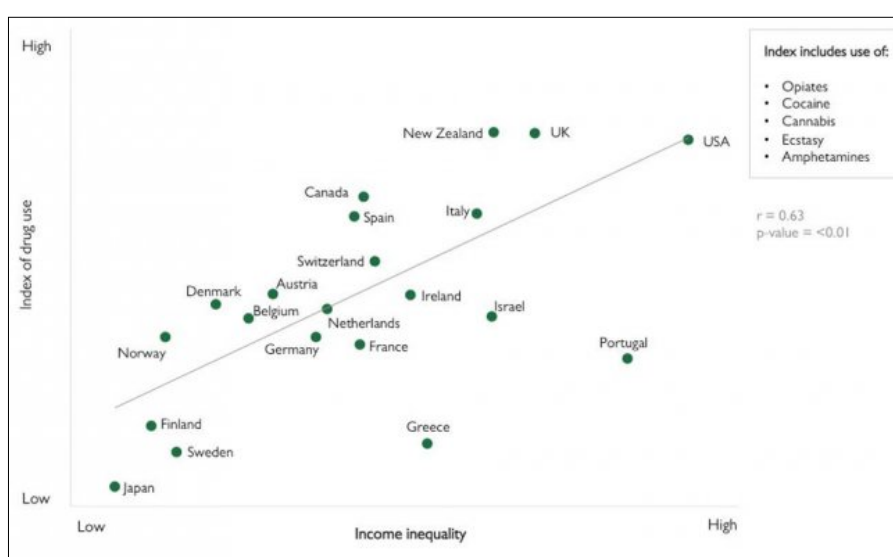
Relative poverty, deprivation and widening inequalities, such as income, are important factors that need to be given a more central role within the drug policy debate as they weaken the social fabric, damage health and increase crime rates (Shaw et al., 2007, p.3).

Research developed in this field has shown that substance use rates, patterns of consumption, number of people on treatment, and the marginalization of consumption and consumers are associated with economic and social indicators such as unemployment and poverty rates (e.g., Arkes, 2007, 2011; Ritter & Chalmers 2011; Lakhdar & Bastianic 2011; Storti, Grauwe, Sabadash & Montanari, 2011). One of the most developed indicators in this field refers to the association between measures of social inequalities and abusive substance use. In fact, it seems that countries with higher social inequalities rates and lower social cohesion rates face additional challenges in what concerns the number of problematic drug users per head of population (CSFD, 2012).

However, in spite of the consistent data on social and economic determinants on problematic drug use, in what concerns drug-related and drug-induced mortality, the number of studies is still very limited. Crude mortality rates for PWID seem to be higher in low and middle income countries when compared with high income countries (Mathers et al., 2013). Wilkinson and Pickett (2007) found a large correlation ($r = 0.60$, $p < 0.001$) between the number of overdoses and state income inequality in USA (see figure 9). In a study carried out in 59 residential community districts in New York City, within a two year period (1990-1992), Marzuk and colleagues (1997) found out that poverty status seem to predict 69% of the variance in drug overdose mortality rates. Gale and colleagues (2003) have also found that overdoses in New

York City were more likely to occur in more inequitable neighbourhoods, independently of the demographic characteristics such as age, race and sex. This data led the authors to stress the need of considering the neighbourhoods' level of inequality when conducting public health interventions on overdose. In another research developed more recently, Cerdá and colleagues (2013) found a different pattern of drug fatalities when comparing heroin overdose fatalities, analgesic opioid overdose fatalities, and non-overdose fatalities in New York City neighbourhoods. "Whereas analgesic fatalities typically occur in lower-income, more fragmented neighbourhoods than non-overdose fatalities, they tend to occur in higher-income, less unequal, and less fragmented neighbourhoods than heroin fatalities" (Cerdá et al., 2013, p.2). The authors stress the need to identify, in future studies, the specific mechanisms of neighbourhoods underlying heroin and analgesic overdoses. Despite the conclusions of the previous studies, which emphasise the need of considering socio-economic variables on the prevention of problematic drug use and overdoses, there is still a lack of research concerning the mediating and moderating dimensions of this association. One potential mediator is the marginalization and stigmatization of these populations (Room, 2005). Moreover, this dynamics seems to feed back up, since stigma seems to be a fundamental driver of population health inequalities (Hatzenbuehler et al., 2013), namely in stigmatized groups such as drug users (Ahern, Stuber & Galea, 2007). "The association of stigma and discrimination with poor health among drug users suggests the need for debate on the relative risks and benefits of stigma and discrimination in this context" (Ahern et al., 2007, p. 188).

Figure 9: The use drugs is more common in more unequal countries



Notes: Image courtesy by the authors.

References: Wilkinson & Pickett, 2009, p. 71

The research on this topic should be further supported and include comparative studies on the impact of broader variables such as inequality measures, the unemployment/risk of poverty ratio on overdoses rates. Drug action plans and interventions, including the ones targeting overdoses, should also stress the need to define consistent environmental prevention strategies. According to EMCDDA:

Environmental strategies are prevention strategies aimed at altering the immediate cultural, social, physical and economic environments in which people make their choices about drug use. This perspective takes into account the fact that individuals do not become involved with substances solely on the basis of personal characteristics (EMCDDA, 2012 February 24).

In spite of the scientific community perception that problematic drug use causality is complex and involves the combination of biological, psychological and social dimensions, the majority of interventions are still pretty much confined to universal, selective and indicated preventions strategies. Thus, they neglect broader socio-economic measures to prevent social exclusion and the cluster of pernicious dimensions associated with it, such as problematic drug use and its direct and indirect consequences. This doesn't mean that all marginalized people will develop a drug problem, but that they are at most risk of developing it (Shaw et al., 2007). If we neglect that, we will fail to delineate upstream preventative measures regarding drug-related mortality.

The Role of Drug Policy Models in Overdoses

“Evidence of the failure of drug prohibition to achieve its stated goals, as well as the severe negative consequences of these policies, is often denied by those with vested interests in maintaining the status quo.

This has created confusion among the public and has cost countless lives.

Governments and international organisations have ethical and legal obligations to respond to this crisis and must seek to enact alternative evidence-based strategies that can effectively reduce the harms of drugs without creating harms of their own.”

(The Vienna Declaration, 2010)

There is a growing consensus that prohibitionist drug policy models not only have proved to be highly ineffective in achieving the goals they set, but also had produced collateral damages. First, the “War on Drugs” has failed in its primary goal of decreasing drugs supply, contributing merely for the well-known “balloon effect” (UNDC, 2003). In resemblance to what happens when the air is pressured out of a balloon, counternarcotic efforts in one site only succeed in moving the production elsewhere. Frequently, “elsewhere” means remote and more vulnerable regions and communities, with few social, economic and governance infrastructures, where the impact of drugs associated problems can scale-up (Count the Costs, s/d). Similar counterproductive mechanisms are seen regarding drugs transit, with intensified counternarcotic activities in target regions resulting in an expansion of trafficking routes through adjacent countries¹⁰. As exemplified by a Canadian study evaluating nationally adopted supply-side strategies, “the massive heroin seizure appeared to have no measurable public health benefit” (Wood et al., 2003, p.165), with no impact on indicators like drug use patterns or non-fatal overdoses rates (ibidem). In the late 2000’s, the Australian “heroin drought” provided a rare opportunity to assess the impact of the reduction in heroin supply in the drug related harms and in the potential effect of supply-side policies. In this period, a

¹⁰ An example highlighted by the Ameripol report (2013) concerns cocaine traffic routs. The greater border control in Latin America, worried with the major cocaine entry point in Europe (Spain), produced a collateral effect of pushing new entry routes for West African territory, where borders are harder to control and is easy to use pre-existing traffic networks like the Morocco one. Like stressed in the report “Owing to the institutional weakness in many African countries, the high corruption levels and poverty rates and coastlines with no surveillance, Latin American cartels have found this new route ideal to introduce their cargoes” (Ameripol, 2013, p.132).

significant decrease in fatal and non-fatal opioid overdoses rates occurred (25% in 2000 and plus 58% in 2001). According to the Australian Government, the reduction of heroin supply was due to the successful implementation of law-enforcement strategies (Bush, Roberts & Trace, 2004). Nevertheless, the increase in the availability of other drugs such as cocaine and methamphetamine suggest that the most plausible explanation was related to “strategic decisions and actions of the crime syndicates that supply the Australian market” (ibidem, p.3). Also, the heroin drought impact on drug associated harms was quite less enthusiastic than the flagged decrease on opioid overdoses: high frequency of injection was associated with the lower quality of available heroin; increase on injected use of “substitute” substances - cocaine and benzodiazepines - highly damaging when used by this route (e.g. high overdose risk); increase in mental disorders associated with greater use of methamphetamines; decrease in the number of syringes exchanged that seems disproportional to the number of users that changed the route of consumption; and decrease in the number of drug users seeking treatment (Bush, Roberts & Trace, 2004). In fact, Australia case seems to have materialized what a considerable amount of evidence shows: supply-side approaches have been generating devastating consequences in terms of public health and safety (Werb et al., 2011; UNODC, 2012). Werb and colleagues (2011) concluded - from a systematic review - that increasing drug law enforcement (e.g. disrupting drug markets), instead of reducing drug-associated violence, paradoxically increased gun violence and homicides rates (accounting for the number of drug-related deaths).

Similarly, the “War on Drugs” failed to accomplish the demand reduction, with worldwide levels of consumption showing no signs of decline (Buchanan & Young, 2000; Carvalho, 2013; Count the Costs, s/d). Instead, the costs resulting from the Prohibitionist approach surpass the ones caused by the problematic drug consumption, through the onset of mechanisms that maximise health and social harms. The criminalization of drug users exacerbated high risk behaviours, and promoted the proliferation of septic and unsafe consumption environments (Count the Costs, s/d; Rhodes et al., 2005). Evidence suggests that high levels of enforcement on possession (substance and/or paraphernalia) and/or consumption can: encourage needle sharing and increase risks for blood-borne viruses transmission (Rhodes et al., 2005); hurry injecting, impeding users to test the sample (ibidem); promote more risky consumption routes (injecting for maximizing the dose; bioavailability theory) due to enforcement-related price increases (Lakhdar & Bastianic, 2011); hinder access to accurate information, namely on high risk behaviours like poly-drug use (Count the Costs, s/d); lead to the fear of prosecution for drug use and possession, and, by this way prevent witnesses of calling emergency services in

case of overdose (Frisher et al., 2012); remove the right of imprisoned drug users to have access to harm reduction programs (Count the Costs, s/d); push drug users away from protective interventions like OST (ibidem) and promote stigma and social disapproval, as well as consequent marginalization, alienation and social distress (Ahern, Stuber & Galea, 2007). In fact, these mechanisms compose a set of well-identified risk factors for overdose occurrence and death (see Chapter 1).

Several international agencies and NGO's working on the drugs/human rights fields, have been advocating for comprehensive, pragmatic and humanistic drug policy models. Since the 70's, several nations across the globe have been adopting, out of the spotlight, alternative policies to address drug use, including the decriminalization of drug possession and consumption (removal of sanctions under criminal law). Worldwide, it is estimated that around 25–30 countries continue to enforce some form of decriminalisation (Rolles & Eastwood, 2012). Portugal was one of those nations, having decriminalised drug use in 2001, and becoming a worldwide laboratory for alternative drug policies. It wasn't the first country to adopt this approach, but did it so as a response to a national drug problem at that time, thus facing the traditional "emergency policy responses". In the early 90's drug use was the main target of social concern (European Commission, 1997). Drug consumption occurred in open scenarios and was crystalized in big urban centres; HIV, tuberculosis, Hepatitis B and C between drug users reached worrisome rates being HIV-related deaths rate the second more highest in Europe; and drug-related deaths increased 57% from 1997 to 1999 (Hughes & Stevens, 2010). In response to this scenario, in 1998, a committee of experts was invited to work on what would be called the Portuguese Drug Strategy. Two sets of recommendations were particularly innovative in this document: the decriminalization of drug possession/use of both the (imprecisely called) hard and soft drugs, and the need to invest in comprehensive and pragmatic responses on drug use, namely through harm reduction measure.¹¹ A comprehensive review developed by Hughes and Stevens (2007) emphasised that in the Portuguese case "decriminalization has brought definite advantages, particularly for addressing and reducing problematic drug use" (Ibidem, p. 10). One of these advantages was

¹¹ Harm reduction, prevention, treatment and reintegration are the four PORI vectors (Operational Plan of Integrated Responses) designed to function as indivisible pieces from the same well oiled-machine. This contrasted with the reforms carried out in other countries, in which avoiding criminal penalties for drug users was the only action available (Hughes and Stevens, 2010). Today, the Portuguese Drug Policy Model internationally acclaimed as one of the most interesting experiences regarding alternative drug policies. It was highlighted for several reasons: the decriminalization was applied to both the so-called "hard" and "soft" drugs; a clear distinction was established between drug use inserted in the health sphere and drug trafficking inserted in the criminal one; a comprehensive attitude provided a meaning to the legislative framework, namely by emphasising the Harm reduction approach; and a Commission for the Dissuasion of Drug Addiction was designed to intervene with drug users according to a healthcare-based approach.

the significant decrease in mortality associated with heroin, between 1999 and 2003, as well as in the general drug-related deaths (59%). This change was attributed to the increase of drug users entering in OST, a protective intervention for overdose (Tavares, Graça, Martins & Asensio, 2005). Other European nations, like Spain and Italy, showed similar positive trends regarding the drug-related deaths indicator after decriminalization (although more noticeable in Portugal; Hughes & Stevens, 2010). Besides the limitations caused by the variations on decriminalization models between nations, European studies (as well as studies from other countries) (Degenhardt et al., 2008; EMCDDA, 2011b; Hughes & Ritter, 2008) showed that the fear associated with the significant increase of the prevalence of consumption is not properly supported. Only some marginal increase patterns are found in some cases, but with significant differences in terms of drug-related harms (ibidem).

The main message to society presented by comprehensive drug policies and the decriminalization approach is: treating drug users as criminals will not solve problematic drug use neither for the consumers, neither for society; on the contrary: oppressive approaches have been proving to be powerful mechanisms for exclusion¹². Treating drug possession as a crime has therefore a pernicious effect on problematic drug use and drug-related mortality. Oppositely, “decriminalisation does appear to direct more drug users into treatment” (Rosmarin & Eastwood, 2012, p. 12). Also, in some cases, “a decriminalisation approach coupled with investment in harm reduction and treatment services can have a positive impact on both individual drug users and society as a whole” (Rosmarin & Eastwood, 2012, p. 14).

In fact, in resemblance to what happens with all drug-related harms “Overdose prevention needs to form part of a comprehensive approach to responding to drug users that includes measures to address the wider health and social problems this group faces” (EMCDDA, 2004, p. 4). Currently, many of those measures require legislative reforms to be implemented, and the lack of initiative by the political bodies, as well as their inexistent legal responses, are the main obstacles to the prevention of overdose deaths. Several governments, particularly those

¹² Ground-breaking dialogues aimed to rethink and reconfigure national drug policies are now focusing on legalization/ legal regulation* approaches to deal with illicit substances. At the same time, nations from Latin America initiated the discussion on the drugs control regime, calling for a public debate aimed to establish context-adapted solutions that take into account the historical, cultural, social, and economic realities of each country (Comisión Latinoamericana sobre Drogas y Democracia, 2009). In 2013, Uruguay was the first country to legalize the cultivation, sale and use of marijuana at national level. Also, Bolivia is trying to create regulated markets for illicit substances, and in the states of Colorado and Washington, measures towards the creation of a state-regulated market for cannabis are already being developed. In contrast to what happens with cannabis, debates on the legalization/regulation of the so called hard drugs are still at an early stage.

*Legalization: “removal from the sphere of criminal law of all drug-related offences: use, possession, cultivation, production, trading, and so on.” (Jelsma, 2011, p.9); Legal regulation: “drug-related offences are no longer controlled within the sphere of criminal law, but production, supply and use are strictly regulated through administrative laws, as is the case for tobacco or alcohol” (IDPC, 2012, p. 24).

still relying on repressive drug models, continue to raise obstacles to comprehensive measures, believing that those will present the wrong message: “We support drugs”. Paradoxically, as stated by Rolles and Eastwood (2012) decriminalization can mainly “aspire to reduce harms created, and costs incurred, by the criminalisation in the first place” (p.163). In the meantime, harm reduction measures with relative efficacy on mitigating overdose deaths, such as DCR, low threshold OSP, peer-based naloxone programs, and HAT continue to be blocked and caught in the middle of non-comprehensive drug policies.

Preventing Overdoses Occurrence

Information and Communication for Overdose Prevention

Different forms of information, communication and education have been largely used in the prevention of drug use and, in minor scale, in the prevention of drug-related harms (e.g., overdose). Messages are usually conveyed by leaflets, posters, advocacy events and social marketing campaigns, and are normally integrated in broader interventions (e.g., mass media campaigns, harm reduction and treatment interventions, etc.).

The literature dedicated to the assessment of the efficacy of this kind of interventions is scarce, despite some suggestions that in some cases, they can have a short-term effect in raising awareness but not in changing behaviours (Trimbos Institute, 2006). In order to enhance its effectiveness, these campaigns need to be part of more comprehensive prevention or harm reduction projects (Aggleton, Jenkins & Malcolm, 2005). Also, they have to contain messages and use strategies tailored to the needs of specific target groups (ibidem). A good example of this comes from the Public Health Agencies of Catalonia and Barcelona, with the creation of an overdose-awareness video to be broadcasted in the waiting rooms of drug facilities (available in several languages at: <http://vimeo.com/album/1655129>).

Among the channels used to convey information on the drug consumption topic, it is relatively common to find the use of mass media campaigns, normally provided by public bodies. They range from the isolated use of one campaign to the integration on complex social marketing programs. The major potential of mass media campaigns is associated to their ability to express messages to large audiences with a low cost per capita. However, the use of these media resources faces several challenges until achieving the goal of changing health-related behaviours: messages can be counterproductive and their homogeneous nature can fail to achieve heterogeneous groups of interest; they could get “asphyxiated” by the increasing fractured media environment; there could be inappropriate or poorly evidence-based formats and contents, and sometimes they focus on behaviours that are hardly addressed by the target groups (Wakefield, Loken, & Hornik, 2010).

Currently, there is a debate and controversy surrounding the effectiveness and cost-effectiveness of recurring to mass media strategies for addressing health behaviours, in particular (risky) drug use behaviours (Ferri, Allara, Bo, Gasparrini & Faggiano, 2013). Mass

media campaigns are expensive universal prevention strategies and the scarce studies dedicated to assess their effectiveness are not conclusive or don't support their positive impact (Ferri et al., 2013; Trimbos Institute, 2006; Hornik et al., 2003). In addition, there are methodological challenges in the study of this topic, being difficult to isolate the effect of mass media campaigns. In the European context, there is no systematic assessment about the impact of mass media campaigns in behaviour associated with drug use and harms. Also, few of those have been formally evaluated, and in the ones that were (e.g. campaigns from Bulgaria, Denmark, France, Netherlands, Sweden, United Kingdom) only data concerning understanding, empathy and retention of the message was analysed (Ferri et al., 2013). In the specific case of overdose prevention campaigns, results seem to be inconclusive or discouraging (e.g. UK "Lifeguard" social marketing campaign, Roberts & McVeigh, 2004; Canadian "It's more about the heroin" warning campaign, Kerr, Small, Hyshka, Maher & Shannon, 2013) not enabling solid conclusions about its effectiveness.

The likelihood of improving media campaigns' success increases according to the availability of multiple interventions (e.g., overdose videos in outreach teams mobile units); the access to key services (where the promotion of these services is done by the media; e.g. overdose prevention training); and the creation of policies that support the change in behaviours (Wakefield et al., 2010).

Specifically, in what concerns overdose prevention messages, they should: a) focus on the "main areas of risk; be time-limited and address one priority issue at a time (National Treatment Agency, 2004, p. 14); b) be time limited and change regularly (ibidem); c) use meaningful and suitable messages; and d) invite people to make choices according to their own insights, not being paternalistic (Trimbos Institute, 2006).

Additional challenges surrounding mass media are associated with their power to greatly influence the public opinion. The nature of the messages on the topic of drug use and overdoses is certainly not ignored by the communities or by the decision makers. When depreciating messages and prejudice regarding drug user(s) and drug deaths are spread by media, PUD and their families face devastating effects (e.g., stigma can prevent their access to treatment; it can invalidate the grieve processes in cases of drug-related deaths; DrugScope, 2011). Myths or inaccurate information about drug-induced deaths in media, with potential impact on PUD, are found in the scarce literature on this topic. A study developed in the UK shows that drug-induced deaths tend to be more extensively reported in the media when

ecstasy is involved, in spite of the fact that the annual level of mortality associated with this substance is very low (UKDPC, 2010). This is an example of a message that is inaccurately conveyed, thus presenting the idea that people who consume ecstasy are the ones at most risk of an overdose. Another important result of the study revealed that 60% of national participants consider that people with drug problems are often stigmatised by the press (UKDPC, 2010). In order to tackle the myths present in drug-associated stories, some recent European initiatives invested in gathering evidences about the stigma conveyed by mass media and producing guidelines for journalists about the topic. Good examples on these initiatives were produced by the UK Drug Policy Commission (“Dealing with the stigma of drugs: A guide for journalists”, 2012) and by the Drug Scope (“The media guide to drugs: Key facts and figures for journalists”, 2011).

We can conclude that “mass media messages can set an agenda for and increase the frequency, depth, or both, of interpersonal discussion about a particular health issue” (Wakefield et al., 2010, p. 1262), but they are largely ineffective if not combined with a proximal intervention. Also, it is vital to carefully plan and test the campaign content and format according to the needs assessment and resources of the target groups.

Overdose Risk Assessment and Management

Ten years ago, EMCDDA stated that “Individual overdose risk assessment should become a priority issue” (EMCDDA, 2004, p.2). Nowadays, among the 27 countries that provided this information, almost half of them (more precisely, 12) reported the inexistence of individual overdose risk assessment (delivered by trained professionals in the drugs/healthcare areas), or rare/limited coverage (see table 4). On the other hand, positive examples regarding the provision of overdose risk assessment are seen in Italy, Malta, Croatia and Lithuania (EMCDDA, 2013b). Research on this topic is for this reason very limited when compared with the research on the topic of prevalence, incidence and patterns of drug use, as well as in drug responses, determinants, risks and protective factors (EMCDDA, 2009b). Currently, we only have access to several recent publications dedicated to overdose risk factors and strategies to mitigate them (e.g., Frisher et al., 2012; UNODC, 2013). If we take into account the myriad of complex biological, psychological and social factors, individual overdose risk assessment appears to be a complex, but fundamental practice. As we know, overdose risk assessment allows the early identification of individuals at risk, constituting the basis for the development of further prevention and to decrease the number of overdose occurrences. Training professionals in

screening practices is particularly relevant when considering that many PUD underestimate the risk of overdose occurrence (Darke et al., 2011; EMCDDA, 2014). In fact, it is absolutely vital that the staff who work closely with drug users (e.g., in drug services, outreach teams, infectious disease services) and (ideally) all professionals working in health services, receive training in overdose prevention, recognition and response. Also, the training programs on those dimensions don't need to depend on naloxone availability or be conditioned by it. The staff's training and qualification should be focused on issues such as: the identification of risk and protective factors for PUD, as well as harm reduction measures to address them; provision of routine health education and recognition of overdose situations and response measures¹³. However, little is known about the training received by professionals working in this field and its quality standards, especially in what concerns the training of outreach teams (frequently provided by each organization intervening in harm reduction, without the existence of national training guidelines or standards). For more on this topic, please check PrOWfile Project at:

http://www.apdes.pt/files/prowfile/EBook_Prowfile_OWHR.pdf).

Similarly, in spite of the fact that some studies have been focusing on the healthcare staff's knowledge about overdose management (especially on naloxone administration), there's still insufficient data concerning staff's (especially, non-medical one) level of knowledge on overdose risk factors and prevention of overdose occurrence. In a Scottish research PUD and their families identified some gaps in the transmission of oral information on overdose as provided by professionals (Rome et al., 2008). It was suggested that this could possibly reflect a lack of knowledge among staff, in regards to overdose risk factors and prevention (ibidem).

Considering this, assessment tools that provide more targeted information about overdose risks can be highly useful. They can introduce some systematization and uniformity to the assessment practices, while contributing to the connection between research and practice. In recent years, a few local efforts have been made in the development of checklists with this purpose (e.g., Flemen, 2010¹⁴). According to our knowledge, there isn't a single one of these tools that is validated and used in a standardized way in the European territory. In addition, some efforts were made to develop a computerized decision support system for the assessment of overdose risk, resulting in the ORION project (Humphris et al., 2013), that was implemented in UK, Germany, Italy and Denmark. Although this tool has received positive

¹³ At the moment, only a few documents address the training programs on this field, mostly developed by the civil society. Some examples are the following publications: Harm Reduction Coalition, 2012; National Treatment Agency, 2004; and Curtis & Guterman, 2009.

¹⁴ Housing Opiate Overdose Risk Assessment Tool (HOORAT) - checklist specific for homeless people, developed in Ireland.

feedback from staff and PUD, due to its usefulness in facilitating communication, acquiring knowledge about overdose risk factors, and attractiveness to young users (Humphris et al., 2013), it's still being tested.

Also important for the provision of effective individual overdose risk assessment practices is the liaison between services used by PUD. In fact, when the several services ensuring the person's attendance are disconnected, they can involuntarily contribute to increment the exposure to overdose risk factors. This is highly probable when there is lack of communication between: drug services providing OST and mental health services or infectious disease services; general practitioners and drug services' physicians; and prison institutions and community services. This is particularly important when PUD holds a record on, or is being prescribed with psychotropic medication; is HIV positive or has other infection that compromise it's immune system (see chapter 1: risk factors for non-fatal or fatal overdoses; Frisher et al., 2012; Oyefeso, Valmana, Clancy, Ghodse & Williams, 2000). In fact, obstacles to the communication between these responses are far from being new among healthcare services, although there is still significant territorial variation on the quality of information exchange. Relevant efforts to improve and facilitate the communication between healthcare services in recent years were accomplished through information and communication technologies. We'd also like to highlight the creation of software that allows the hierarchical access to users' information by several physicians within different connected services.

The liaison between prison facilities and health/drug/social services acquires an increased relevance if we consider the person's disconnection from community services during incarceration and the increased vulnerability to an overdose occurrence after the release period. Thus, as stated by UNODC (2013) addressing these risk factors requires that:

Prison pre-release interventions ensure that prisoners participate in overdose prevention awareness programmes; include opioid maintenance either continuously during imprisonment, starting at least several weeks prior to release or commencing in the community on the day of release; and ensure that the release of drug-dependent prisoners is planned in coordination with drug treatment services in the community (UNODC, 2013, p. 12).

Nevertheless, these practices are still very limited. The last report on the prevention and reduction of health-related harm associated with drug dependence in EU and candidate

countries, shows that only 7% have full/extensive coverage of prison release management, including management of overdose risk (Busch, Grabenhofer-Eggerth, Wegl & Wirl, 2013).

In conclusion, the communication between services is vital to provide an improved assessment of overdose risks and it can be crucial to the provision of protective interventions. In addition to the improved communication between these services, it is very important to invest in the establishment of a trustworthy relationship between them and PUD, in order to promote the active involvement in their own healthcare progress. Finally, if we look at the acknowledgeable progress that has been made concerning the identification and definition of risk factors for overdose occurrence, we can conclude that a proportion of overdose occurrences can be prevented.

Drug Treatment

Specialized drug treatment, namely Opioid Substitution Treatment (OST), has proven to have a critical role in the protection of opioid users regarding both overall mortality and drug-induced deaths (Brugal et al., 2005; Clausen, Anchersen & Waal, 2008; Darke, Williamson, Ross & Teesson, 2005; Davoli et al., 2007). OST contributes to the reduction of overdoses through the minimization of drug use, risky behaviours, and overall health harms by offering a comprehensive set of medical, pharmacological, psychological and social strategies. Compared to detoxification, methadone and buprenorphine maintenance treatment significantly reduces drug-induced death (Dark et al., 2005; WHO, 2009). The use of these two substitution substances is a bit unbalanced across Europe, with methadone being the most common choice (ECDC & EMCDDA, 2011; see table 5)¹⁵. Regardless of the substitution substance used, certain conditions need to be fulfilled in order to achieve the effective impact of OST in the PUD lives, as described above. At the present, we know that the period of retention in treatment, both in terms of duration and relapse frequency, is crucial (Dark et al., 2005; Cornish, Macleod, Strang, Vickerman & Hickman, 2010; Frisher et al., 2012). An Australian research conducted by Darke and colleagues (2005), showed that each day of treatment was associated with a reduction of 1% (in a one year period) in overdose risk. On the contrary, the number of treatment episodes and the degree of overdose risk are positively related: the greater the number of treatments, the greater the risk due to fluctuations in tolerance (ibidem). PUD that cease treatment before time tend to return to overdose risk levels similar to those out of treatment (Degenhardt et al.,

¹⁵ Also, it is noteworthy that currently, and according with the available data on EMCDDA countries' situation (some countries don't report data on this topic), 10 European countries allows that office-based medical doctors prescribes OST, in some cases methadone (M), buprenorphine (B) or both (MB): Cyprus (B, only office based doctors); Croatia (MB); Czech Republic (B); Denmark (MB); France (B); Germany (MB); Italy (MB); Netherlands (MB); Portugal (B); United Kingdom (MB).

2009). Thus, long-term OST are more effective in reducing overdose occurrences (Best et al., 2000; Darke & Zador, 1996; EMCDDA, 2011b).

In spite of the indubitable protection provided by OST, this option is not exempt of risks when interacting with a specific set of circumstances. The moments of induction and transition, as well as the ones immediately following treatment abandon/stopping, are especially risky for overdose occurrence (Cornish et al., 2010). Dosage issues also deserve special attention, regarding the risks associated with inadequately low or high initial doses and also a quick dosage increase (the latter essentially concerning methadone prescription; Baxter et al., 2013; Frisher et al., 2012; Wolff, 2002). According to a review done by an American group of experts, a large number of people in OST suffered a methadone-associated death in the induction phase. This was associated with the treatment staff's overestimation of PUD tolerance (Baxter et al., 2013). In this initial phase, it is suggested that there are differences in the overdose risk carried by the prescription of methadone or buprenorphine, with the first having additional ones (WHO, 2009). Thus, although treatment options are clinical complex decisions, guidelines concerning evidence-based adequate dosages are potentially great allies in reducing overdoses. Guidelines from WHO (2009) state the need to adapt the doses to the personal level of neuroadaptation, in order to prevent overdoses, improve levels of retention in treatment and favour the reduction in the level of consumption. In the induction phase, it is recommended that the methadone doses should not surpass 30mg, and buprenorphine doses (in cases of people moderately adapted to the substance) should range between 4 to 8 mg. Moreover, outcomes in the treatment's maintenance phase seem to benefit from the prescription of higher doses (daily doses between 60 to 120 mg in case of methadone; 8 mg per day in average for buprenorphine) in order to reduce parallel use of drugs and promote treatment permanence (National Treatment Agency, 2004; WHO, 2009)¹⁶. In another aspect, if we weigh the use of fixed or flexible doses in agonist maintenance treatment, it seems that the last option can be preferable, with frequent dose revisions taking place (WHO, 2009).

The diversion of prescribed substances is also a concern in OST. In regards to this problem, the data available show that unsupervised methadone administration has a role in the number of overdose deaths (Shields, Hunsaker, Corey, Ward & Stewart, 2007). Deaths due to

¹⁶ In addition to methadone and buprenorphine, the combination of buprenorphine and naloxone in a 4:1 ratio is also available in several European countries. Guidelines from WHO (2009) didn't review the efficacy of this medication - taking into account the lack of clinical trials. However, some suggest that in comparison with methadone, results are very similar, except in the rate of retention in treatment that is highest for methadone (Handford et al., 2011). Also, the use of slow-release oral morphine in OST has been investigated, with no solid evidences (until this moment) that this is a suitable alternative (Ferri, Minozzi, Bo & Amato, 2013; Jegu, Gallini, Soler, Montastruc & Lapeyre-Mestre, 2011). Currently, this modality is available in eight European countries.

buprenorphine are infrequent (although, for example in Finland this happens frequently, due to its combination with other substances, mostly alcohol) but this diversion tends to result in risky injection practices (WHO, 2009). In this sense, the doses of both methadone and buprenorphine should be monitored in the early phase of the treatment (WHO, 2009), due to this practice's potential in reducing deaths related with prescribed substances (Strang, Hall, Matt Hickman & Bird, 2010). Although there is a strong support for OST's supervised practices for overdoses' reduction, these measures bring additional challenges. In fact, we face a circular problem: if supervision can reduce diversion, the control exercised on drug users can lead to higher dropout rates or resistance in entering treatment; which, in turn, prevents the access to this protective intervention. Recently, a study conducted in the UK showed that although supervised practices were accepted by OST clients, some problems were also raised concerning privacy, stigma, and unsupervised patients tend to feel more trustworthy (Notley, Holland, Maskrey, Nagar & Kouimtsidis, 2014). At the same time, it is interesting to see that, despite the fact that the practitioners involved in this study felt more confident with supervised practices, they also assume that a small group of clients still remain unnecessarily supervised (ibidem). So, it is not only important to ensure that "people do not leave because of strict monitoring" (Frischer et al., 2012, p. 28), but also to make sure that their personal rights are not compromised (e.g. right to not being discriminated, right to privacy). WHO (2009) suggests that take-home doses should be provided to people for whom the benefits of this modality surpasses the risks of diversion. In fact, it is possible that, in many cases, the advantages obtained by unsupervised practices (for example, in terms of easy job maintenance), can be highly protective for the individual, resulting in better treatment outcomes.

Besides being necessary to assure that people won't dropout treatment due to strict rules, should be also guaranteed that these rules do not begin for first sealing the access. Low-demanding treatment options, like low-threshold OST, can have a role in facilitating this access. Moreover, this harm reduction approach also proved to be effective in decreasing mortality from both natural and overdose causes (Langendam, van Brussel, Coutinho & van Ameijden, 2001). At the same time, they promote PUD referral to a wide range of healthcare services. However, when the several treatment options - ranging from the most to the less demanding - fail to reach some PUD, another approach – supervised injectable heroin-assisted (diacetylmorphine) treatment (HAT) – can be a good alternative. The group of opioid users who don't respond to typical approaches tend to be the ones who present the worst health

and social conditions, thus increasing the need to find solutions to their cases (Strang, Groshkova & Metrebian, 2012). Currently, seven European countries offer HAT, with some of them having officially approved this treatment¹⁷ and others making it available in clinical trials (see table 2).

Table 2: Heroin-assisted treatment introduced in European countries

HEROIN-ASSISTED TREATMENT (HAT)	BELGIUM	DENMARK	GERMANY	NETHER LANDS	SPAIN	SWITZER LAND	UNITED KINGDOM
OFFICIALLY APPROVED		2008	2009	2006		1999	1926
AVAILABLE IN CLINICAL TRIALS	2011				2003		
RANDOMIZED CONTROLLED TRIALS	2007	n.a.	2003	1998	2003	1994	2005

Note: According to the Luxembourg's National Drugs Action Plan for 2010-2014, it is expected that HAT will be introduced as a complementary treatment option in 2015 (Origier, 2009)

As we can see, the European distribution of this treatment is mainly present in the North Europe, with one presence in the South (Spain), while in Eastern Europe this resource is inexistent. In the last 20 years, several randomized controlled trials were conducted in various countries (beginning with the Swiss study PROVE in 1994 in different trials [Perneger, Giner, del Rio & Mino, 1998; Uchtenhagen et al., 1999] followed by the Netherlands-1998 [van den Brink, Hendriks, & van Ree, 1999], Germany-2003 [Haasen et al., 2007], Spain-2003 [March, Oviedo-Joekes, Perea-Milla & Carrasco, 2006] United Kingdom-2005 [Metrebian et al., 2006], and Belgium- 2007 [Demaret, 2013]). The research efforts on this topic allowed to gather solid evidences of HAT's efficacy (compared with controls prescribed with oral methadone) in the reduction of "street" heroin use and criminal activity (and consequent imprisonment), as well as in improving retention in treatment and physical/mental health/social functioning (Ferri, Davoli & Perucci, 2012; Strang et al., 2012). Also - and despite the high treatment costs (when compared with oral methadone), essentially due to diacetylmorphine and staff costs – it is suggested that HAT presents cost-utility, mostly associated with less spending in criminal procedures and imprisonment (Strang et al., 2012). This treatment modality also seems to have a protective effect on mortality "even though it is known that randomised controlled studies, owing to their short period of observation, are not appropriate for measuring this outcome" (Strang et al., 2012, p. 61). In addition, individuals in HAT face a higher risk of experiencing adverse events related to intervention medications which include overdose (Ferri et al., 2012; Strang et al., 2012). In some measure, the frequency of overdoses can be

¹⁷ Please note that, in some cases, the official approval date of Heroin-Assisted treatment doesn't correspond to the date of definitive legal basis establishment. For example, in Switzerland, in 1999, the Swiss federal government defined, by executive decree, heroin-assisted treatment as a regular component of treatment for heroin addiction, but only in 2008 was reviewed the Federal Narcotic Law that allowed the definitive legal bases for this treatment.

associated with the profiles of PUD who are elected to enter treatment. However, if these adverse events occur while de consumption is being done in a clinical settings, they can be more easily managed than when they occur in a street context (hidden, uncontrolled and unhygienic) (Haasen et al., 2007). This way, there is sufficient knowledge supporting the clinical utility of this approach as a second-line treatment, especially if it is long-term process and if it is combined with flexible dosages of methadone. In order to mitigate collateral damages this approach should also include well-established clinical protocols (e.g. stay for an amount of time after injection), human and material resources to respond to emergencies and overdose prevention programs aimed at drug users.

According to this information, we can conclude that increasing the availability of an enlarged range of evidence-sustained treatments for heroin users, can be a way to fulfil the idiosyncratic person's needs, attend more unattainable drug users, and benefit communities. In addition, if the therapy programs aim to be adapted to the individual, they shouldn't "only" have a protective role. They should be able to provide an optimal context for PUD training on overdose prevention, recognition and response.

Drug Consumption Rooms (DCR)

By providing healthcare to drug users while they consume in more hygienic and safer conditions, drug consumption rooms (DCR) can potentially hold a double role in overdose prevention, contributing to reduce both occurrences and deaths.

Although there is a number of facilities that provide specific areas for consumption via several routes (smoking, snorting, free-basing, and chasing the dragon)¹⁸, they traditionally target the specific group of those individuals who inject in the streets and face situations of severe marginalization: degraded health, long-term use, risky patterns of use including poly-drug consumption, detachment from drug services, poor housing and living conditions and lack of a hygienic place for consumption. Obviously, these conditions increase the individuals' personal and social risk factors for overdose occurrence, and DCR can have a role in responding to them through interventions with immediate, middle and long term outcomes (Hedrich, 2004).

¹⁸ Luxembourg - with a "blow room" functioning as a pilot project; the Netherlands, taking into account that 90% of the clients consume by this route; Spain; Switzerland, Germany and Denmark (Schatz & Nougier, 2012; Schäffer et al. 2014).

In the sphere of overdose occurrence prevention, long-term impact of these facilities can potentially be obtained by promoting access to a range of protective social, healthcare and drug treatment services. In addition, by mitigating the consumption in open scenes (which also benefits communities in healthcare and security issues), and by offering a non-judgemental and dignified space for consumption, DCR can have an effect in reducing stigma on drug use. DCR can also be an effective setting to deliver training in overdose prevention, namely in what concerns recognition and response to OD episodes, training and the provision of naloxone kits. This approach can promote the reduction of risky behaviours, not only within the facilities (where the overdose risk assessment and tailor-made advice on safer use is delivered by staff), but also outside them, where capacitated clients can assess their own risk and act in accordance.

On the other side, DCR have a role in preventing drug-induced deaths, by providing socio-medical staff supervision, particularly skilled in safe consumption and able to recognize and properly respond to an overdose emergency. If this situation occurs, professionals can offer proper intervention following the first signs, which could not only avoid deaths, but also minimize potential damages/morbidities associated with the episode (Hämmig & van Beek, 2005). If located close to open drug scenarios, they can also be key-resources when overdoses take place in the surrounding territory (Hedrich, 2004). An example of this statement comes from the DAVE's facility, located in the surroundings of Madrid, where the staff responded to 4 times more emergencies in the open drug scene than within the room (Hedrich, 2004).

Despite the fact that the benefits of DCR in reaching specific groups and reducing morbidity and mortality are largely accepted, the current classification in the EMCDDA best practice portal (updated in 2013) is "likely to be beneficial". In what concerns drug-related deaths, and although there are some favourable results, there is a lack of evidences, at the review-level, about the efficacy of DCR on this indicator (Hedrich, Kerr & Dubois-Arber, 2010). This could be particularly due to the fact that research on DCR faces methodological challenges considering its local, micro-environmental logic of intervention, which carries an interference of contextual changes and general local policies (e.g., availability of treatment and harm reduction services; police actions). Causal relationships between DCR interventions and fluctuations in drug-related/induced deaths are hard to establish, and the majority of existing studies rely on the record of overdoses occurring within the facilities (lack of conclusive studies at population level). Also, it is still difficult to comprehend to what extent DCR can really prevent the occurrence of overdoses (Hunt, 2006). Although the services discourage consumption when

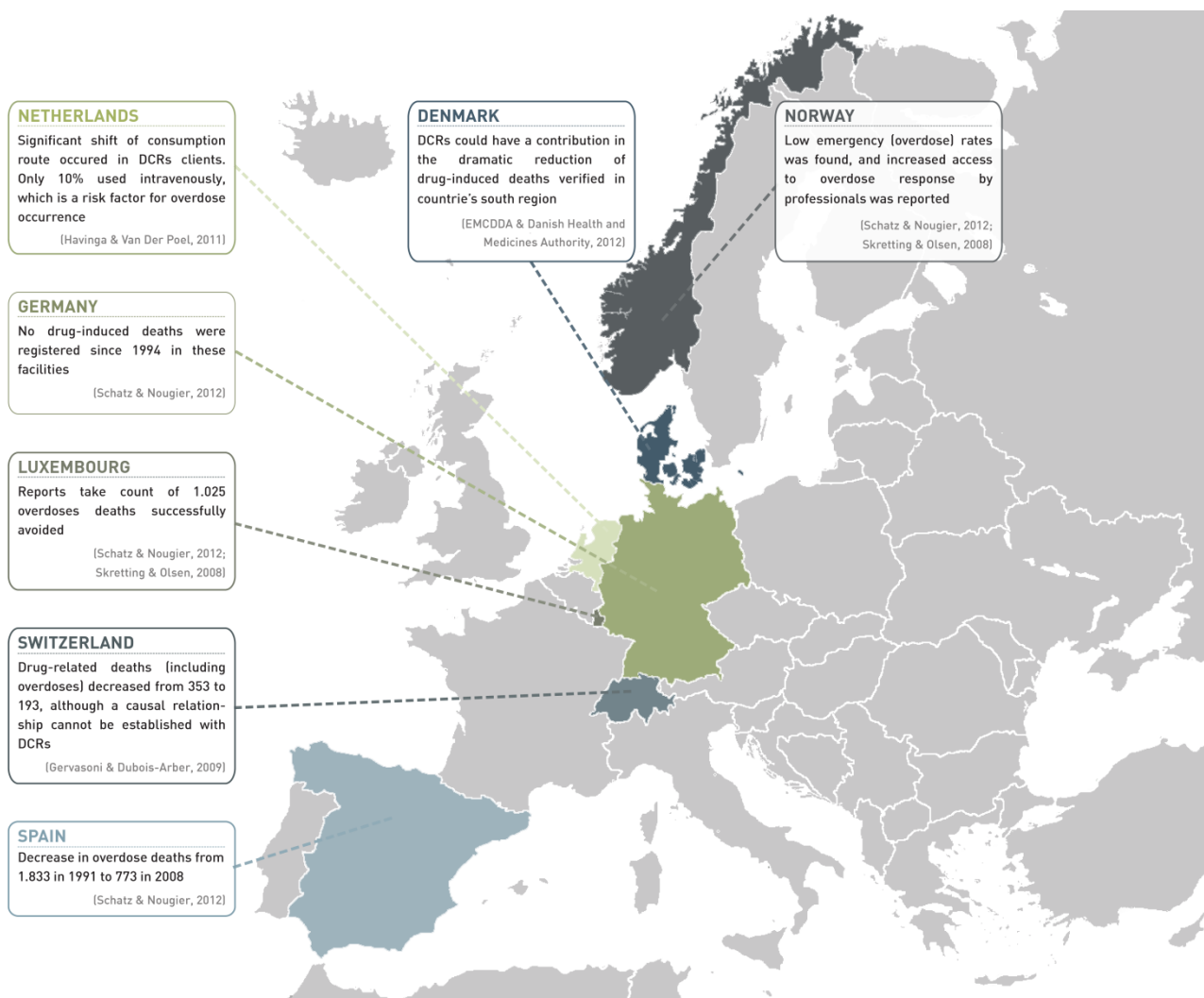
users present several risk factors (e.g. poly consumption), the extent to which PUD do that outside the facilities is not well known (ibidem). Yet, in the search for interventions based on solid evidences, we need to bear in mind that the obstacles mentioned above can hinder the gathering process of those evidences concerning DCR, at least for now. For that reason, it is important to integrate daily practice experiences when assessing DCR effectiveness in OD prevention, under penalty of having scientific gaps as reason to justify the political lack of interest in investigating these resources.

In the present, it is suggested that a circumstantial risk factor for overdose occurrence is injecting in public places, since the possibility of testing the sample's strength is constrained, and the injection is frequently rushed, due to fear of prosecution, this is more frequently noticed namely in countries with more expressive law enforcement policies (Frisher et al., 2012; Kerr, Small, Moore & Wood, 2006). Also, public injection is more frequent amongst most vulnerable drug users, namely homeless, who combine circumstantial and individual risk factors for overdose (EMCDDA, 2004). So, "those who inject in public spaces are caught in a dilemma—needing both privacy and exposure in the event of an overdose" (Dovey, Fitzgerald, & Choi, 2001, p.319). DCR can be a suitable solution to this dilemma, offering a space where users don't inject by themselves or accompanied by strangers, and have enough time and safety to use drugs in a less risky way. In fact, it has been noticed that DCR can effectively reach street users at higher risk for overdose, with self-reports and observations mentioning a reduced risk for these episodes, especially for those who regularly attend the facilities (Hedrich et al., 2010). Rates of emergency in Europe (data from Switzerland, Spain and Germany), that mostly involve heroin overdoses with intravenous consumption, have been shown to be low, ranging from 0.5 (minimum in Switzerland) to 3.5 (maximum in Germany; Hedrich, 2004). Besides the reduced number of overdoses in these facilities, reports from a German study suggest that they tend to be less severe than those occurring in the streets (Happel & Steinmetz, 2001). Also, from the thousands of overdoses occurred in DCR over time, there are no reports of deadly outcomes (Förster, Stöver 2014; Poschadel, Höger, Schnitzler & Schreckenberger, 2003 cit in Hedrich, 2004). Response to overdose occurrence is not homogeneous among the several facilities, but they all provide oxygen and naloxone, administered by trained professionals (Broadhead, Kerr, Grund & Altice, 2002).

The implementation of DCR in European countries (especially the ones dealing with intravenous consumption) is now recommended in the most recent guidelines specifically aimed at overdose prevention (Frisher et al., 2012). However, less than a dozen countries

invested in implementing them. In this territory, the creation of supervised structures of consumption, with the intent of preventing fatal and non-fatal overdoses along with other harms, started almost thirty years ago in Switzerland. There are currently 88 facilities (Woods, 2014; see table 4), mostly in Northern Europe (Denmark, Germany, Luxembourg, the Netherlands, Norway, Switzerland) and also in Spain. In Greece, the only DCR available closed recently. DCR are mostly integrated (i.e. part of a wider network of services; e.g. Madrid) and only a few of them are specialized (i.e. exclusively consumption room; e.g. Frankfurt; Hedrich, 2004). In the EMCDDA best practice portal, some of the facilities installed in these countries are highlighted due to their practices (e.g., ABRIGADO, Luxembourg). The data gathered from each one of these experiences are encouraging, suggesting a positive impact in a range of indicators, namely in drug-induced deaths (for some examples please see figure 10).

Figure 10: Drug Consumption Rooms in Europe - Some Reported Results



There are also congruencies in the positive outcomes reported, as well as in the practices and policies implemented in these facilities, that face different challenges according to the countries' policies. In Germany (except in Hamburg) and Luxembourg, clients in OST are not eligible to attend the majority of rooms, contrary to the remaining countries; residency restrictions are imposed in Switzerland, in the Netherlands, and in some rooms in Germany, but not in Spain; Norway is the only country that only allows heroin consumption; checks by Police in the DCR registration process exist only in Netherlands; user passes are delivered in some facilities in each of those countries, with the exception of Spain; in the Netherlands, not showing up for several weeks leads to the revocation of the pass; and new or occasional PWID aren't admitted in Germany facilities (Hedrich, 2004; Schatz & Nougier, 2012). In legal terms, some of the countries that introduced, or aim to do it in the future, faces the need of adjusting specific laws. Namely, they need to decriminalize drug consumption within the rooms and regulate them, especially in cases where their general drug policies criminalize drugs' purchase¹⁹. In addition to these, several other initiatives for the implementation of DCR were developed across Europe (e.g. Belgium, France, Italy, UK), with no tangible results achieved so far. Portugal, for example, established the legal basis for these facilities in 2001, but there is still no DCR open until the moment. In fact, and although some conquests have been made, DCR continue to raise some controversy among nations and public opinion, and there is a wide range of popular arguments to oppose them: DCR can "normalize" and validate the use of drugs; new consumers (with no dependence or using another routes of consumption) can be attracted by the good conditions; facilities can became drug trafficking spots; and they can dissuade people from seeking treatment. Nonetheless, none of these arguments are supported by evidences (Hedrich, 2004; Hedrich et al., 2010; Wood, Tyndall, Zhang, Montaner & Kerr, 2007).

Altogether, the spread and effectiveness of DCR across Europe will depend on the removal of numerous barriers. Among them, we can find the lack of sustained commitment by the political bodies, manifested in the absence of funding and consecutive rejection of proposals. On the contrary, in the countries where DCR are part of the national harm reduction policy, a successful evolution of those devices (as well as their outcome's optimization) is expected.

¹⁹ This is the case of Germany, Denmark, Luxembourg, Norway and Switzerland. In Germany, for example, DCR clients must possess user cards to avoid persecution, especially when the facilities are far from drug markets.

Information on Heroin Purity and Composition

“The evidence is cogent: it is concomitant drug use, not drug purity that is the primary vector of overdose.”

(Darke & Farrell, 2014, p.2)

Over the years, the topic of overdose etiology has been marked by misleading conceptions, being the most prominent the perception that heroin purity and adulteration play a vital role in drug-induced deaths (Darke, 2003). In fact, as firstly stated by Desmond and colleagues in the 70' (Desmond, Maddux & Trevino, 1978), a significant amount of evidence demonstrated that fluctuations in heroin purity hold merely a moderate relationship with the incidence of drug-induced deaths with heroin (Darke & Farrell, 2014). Firstly, toxicological studies highlight the similarity or even inferiority of blood morphine concentrations in cases of drug-induced deaths, when compared to those in living intoxicated heroin users (Darke, Hall, Weatherburn & Lind, 1998). Secondly, the demographic characteristics of overdose fatal victims - with an expressive representation of older and long-carrier (mostly injectable) drug users - are consistent with the moderate to minor impact of heroin purity levels on overdose, since a major tolerance of this users to purity fluctuations when compared with inexperienced ones should be expected (Darke & Farrell, 2014). Thirdly, if fluctuations in purity levels are having a significant impact in drug-induced deaths, a relation between those deaths and specific dates within a particular territory should be evident, which is not (Darke et al., 1998). As stressed by Darke and Farrell (2014), validating the statement regarding the previous evidences – i.e. heroin purity does not play a major role in overdose epidemiology – doesn't mean that tolerance is ignored as a factor in drug-induced incidents. Instead, this means that “most overdoses are due to combined drug toxicity, where a usually tolerated dose can kill” (Darke & Farrell, 2014, p.3). Moreover, a lack of total purity doesn't mean that the sample is filled with adulterants, since the presence of other opiate alkaloids or factors like degradation, may justify the decreasing purity (Cole et al., 2010). The presence of adulterants in “street” heroin is, in fact, another of the common concerns and myths, being among those widely disseminated by mass media. Once again, in almost half of century of toxicological research on the topic, there is no evidence on the contaminants' significant role on heroin overdose (Darke & Farrell, 2014). In spite of the insufficient data available on the percentage of heroin that is not adulterated, a recent British review on the topic concluded that when contaminants are detected, they are essentially benign substances, such as caffeine, sugars and Paracetamol (Cole et al., 2010). These substances are normally added at the time of production with the intent of enhancing the heroin effect or increase the profits (ibidem). Thus, the adulteration of

heroin with harmful substances seems to be rarely verified (Cole et al., 2010; Darke and Farrell, 2014). Nevertheless, we have to be cautious when making such conclusions, since there are limitations in toxicological data collection for legal purposes, namely when identifying the drugs involved in the death (Cole et al., 2010). Also, we'd like to highlight that there are some cases where harmful contaminants are responsible for individual deaths or serious health problems (infections, poisonings, cardiovascular problems). One of the examples was the anthrax outbreak among heroin drug users in Scotland, England and Germany in 2009/2010). Some case studies mention the presence of lead, scopolamine, bacteria (including anthrax) and clenbuterol in PUD blood after using adulterated heroin (Cole et al., 2010). Also, even when the adulterants are majorly benign, they can interfere with PUD possible health conditions and cause serious problems. If intentional adulteration is clear in some situations (e.g., using lead or clenbuterol), in many others, the adulteration can be a result of bacterial contamination occurred in the storage and transportation process, or resulting from unsafe injecting practices (ibidem).

Even if harmful adulteration practices are rare in relation to heroin, this doesn't mean that the health professionals, PUD and other relevant publics shouldn't be informed/educated about the typical adulteration procedures. Additionally, they should also know how to monitor the presence of harmful substances and provide information when a "bad batch" is identified. PUD are usually aware that illicit substances are frequently "cut", but there is a lack of knowledge about the commonly used substances and their effects (Coomber, 1997). Also, it is important that health staff (including emergency and drug treatment ones) know the typical practices of adulteration, in order to perform a good clinical assessment and provide information when suspicious cases are identified. In this context, early warning systems can have a useful role, in resemblance to what is currently on practice by EMCDDA regarding new psychoactive substances. So, the information conveyed to health professionals and drug users on the substances' purity level (as well as composition and quantity of drugs involved in fatal overdoses), could have a vital role in the reduction of fatal overdoses (Frischer et al., 2012). A starting point to this requires the improvement of the exchange of information both nationally and internationally which an articulated work between services and agencies in this field (e.g., drug services, police, health professionals).

Preventing Overdoses Deaths

Naloxone Provision

“For what other disease condition we would let the supply of the antidote collapse in the middle of an epidemic?”

Nab Dasgupta,
Project Lazarus, NC, US

As a non-selective opioid antagonist, naloxone is an effective antidote for opioid overdose that rapidly reverses the opioid effects, such as respiratory depression. The purpose of naloxone administration is the one of restoring the proper spontaneous breathing, but not the necessarily fulfil arousal (SAMHSA, 2013). Currently, there are no recent evidences of serious adverse effects caused by this substance, being its use satisfactorily safe (Busch et al., 2013). It isn't possible to overdose with naloxone and no pharmacological effect exists in the absence of opioids. Thus, the benefits of using naloxone surpass the eventual minor existing risks (e.g. allergic reactions; Bazazi et al., 2010). The naloxone efficacy and relevance is recognized by the inclusion on the World Health Organization's Model List of Essential Medicines. Since this substance has a quick effect on opioids inhibition, the event of severe withdrawal symptoms after its administration can take place. There are reports that highlight the fear of withdrawal symptoms as one of the potential obstacles to PUD use of naloxone (Worthington, Piper, Galea & Rosenthal, 2006). Also, since naloxone has a short half-life (about 30 to 90 minutes), while the majority of opioids have a longer one (ACMD, 2012), it is possible to see a return of overdose symptoms, and the administration of a second antagonist dose can be possibly required on those cases. The return to a new life-threatening overdose after naloxone wears off seems to be a rare situation, even if some degree of intoxication can occur again (Vilke, Sloane, Smith & Chan, 2003). The naloxone's profile in terms of short lasting effect was several times used as an argument against the use of this substance by bystanders (Strang, Bird & Parmar, 2013). Nonetheless, it is stressed that, similarly to what is occasionally performed by emergency personnel, the bystander should apply a second dose of naloxone if necessary (ibidem). Also, and since that are obstacles to the distribution of naloxone, it is suggested that alternative substances with longer-acting opiate antagonist such as Nalmefene, should be consider (ibidem). In fact, debates regarding the effective use of naloxone for reversing overdose, i.e. without the re-occurrence of overdose symptoms and without the induction of hard to tolerate withdrawal symptoms still continue. Among the practical concerns, there are

some difficulties to evaluate if the administration of naloxone in two separate doses can be a good option while managing an overdose situation. In fact, this is an even more pertinent question when we talk about overdoses with long-acting opioids (e.g. methadone), that are more challenging to manage and may require repeated administrations of naloxone (UNODC, 2013). In any case, the implementation of monitoring practices by medical staff after naloxone administration and overdose reversal is fundamental. It is currently suggested that there should be periods of observation after naloxone administration, which must be extended in cases where long-acting opioids were involved (SAMHSA, 2013).

Currently, in the majority of European countries, naloxone administration is still exclusively carried out by medical staff, at the same time that its access still depends on medical prescription. In the UK, naloxone was legally approved to be administered by anyone with the purpose of saving a life (2005). In spite of this, the substance remains a prescription-only drug, invalidating the distribution to anyone without a named prescription, as it happens in the majority of European countries. This is currently a great obstacle that legally hinders non-medical services, such as outreach teams, of possessing naloxone storage and using it in emergency situations. To overcome the legal constraints, in some US states (e.g. Massachusetts) a prescription model of “standing order” is being used, allowing trained non-medical staff to distribute naloxone without the provider’s presence. Current prescription practices also constrain the wider provision of naloxone to drug users and/or family/network, despite the recognition of this approach’s potential in reducing drug-induced deaths.

In the present, there are currently only few European countries with initiatives of peer to peer/take home naloxone distribution - Denmark, Germany, Italy, Romania, the UK and more recently Estonia and Norway (this last with nasal naloxone) (see table 4). Overdose prevention programmes that include the provision of naloxone date back to the 90’s, but in the majority of countries its distribution is made on a small/moderate scale. The exception comes from UK, more precisely from Scotland and Wales, where large distribution of naloxone is done by specialized drug services. In Italy, the substance is distributed over the counter in pharmacies (although, few data is available about the extent of this measure on a routine basis).

Some arguments that are frequently pointed out to restrict the naloxone administration only to medical staff include the probability of bystanders applying insufficient doses, perform non-sterile administration, cause damages associated to injection (if administered by this route), and ethical issues regarding medication administration to individuals unable to consent it (and

without professional regulation). Many of these questions can be solved through the provision of naloxone to be administered intramuscularly and emergency doses in pre-filled syringes (Strang, et al., 2013). Pre-filled syringes with naloxone are licenced in some contexts (e.g. recently approved in the UK) making possible to solve potential insufficient interventions; however, it continues to be an unlicensed medical product in another countries, even among the ones that provide take-home naloxone (e.g. Estonia). Also, and although naloxone is manufactured in several different administration methods (e.g., intramuscular, intravenous, subcutaneous, and intranasal), the intramuscular besides being easier to administer may be the more suitable for drug users, since it provides a slower onset and an extended effect, possibly minimizing withdrawal symptoms (SAMHSA, 2013). In the last years, the intranasal modality also received a lot of attention, since it can be a more user-friendly option (inclusively by non-drug users and family member to whom injection can be problematic). In some countries the intranasal option is already listed as an essential medicine, but its use (instead of the intramuscular one) is not currently consensual, considering that more studies are needed to evaluate its effectiveness. Also, if we take into account the price differences between both (being intramuscular cheaper), cost-effective comparisons are needed in order to assess the advantages of making the intranasal modality available.

Additional issues regarding the wider distribution of naloxone for drug users and their families/network are associated with the possible use of this antagonist as a “safety net” (i.e. a way to consume more or taking more risks). One study that addresses the extension of this risk, found out that only 6% of drug users reported that they would consume more if they had access to naloxone (Strang, Darke, Hall, Farrell & Ali, 1996). In addition, a small scale study showed a decrease in heroin use following overdose prevention training with naloxone distribution (Seal et al., 2005). Other arguments is that if drug users possess naloxone, they might perceive the act of calling the emergency services in an overdose situation as a second line intervention, thus contributing to unsuccessfully avoid drug-induced deaths and the drug users’ detachment from health services. Nonetheless, evidence shows that drug users perceive naloxone administration as the second action to take after calling emergency services, and do not perceive the first as a substitute of the second (Lagu, Anderson, & Stein, 2006). In fact, many of the arguments used against the naloxone administration by non-medical personnel and distribution to drug users do not find support in literature. In addition to the myths associated with this issue, some political concerns can also underlie these arguments, since supporting this harm reduction measure can be perceived as a synonym of drug use connivance, especially in countries with prohibitionist drug approaches.

What we can conclude at this point, is that although naloxone is recognized as a highly effective and safe intervention in opioid overdose, its availability continues to be strongly hindered, and community-based interventions (e.g. peer distribution, family provision) still raise resistance and face practical challenges. As a response, making naloxone available - not only to an increasing number/type of services, but also to drug users and their families/network - is now one of the main goals of the extensive advocacy movements. Also, and although we cannot attribute a price to a life, evidences show that naloxone distribution to drug users is likely to be cost-effective (Coffin & Sullivan, 2013). “In some countries, legislative reform may be needed to allow the low-threshold provision of naloxone, but the measure is regarded as a low-cost approach that can empower healthcare workers and people who use drugs to save lives” (EMCDDA, 2013b, p.5).

More about Advocating for Naloxone:

“I am the Evidence” Campaign, developed by the Eurasian Harm Reduction Network (EHRN) and supported by the European People Using Drugs (EuroPUD): Advocacy campaign developed in 6 EU states (Denmark, Estonia, France, Italy, Lithuania and UK) in the scope of the Euro HRNII project. This initiative is based on the collection and promotion of video testimonials about personal experiences with naloxone (<http://www.eurohrn.eu/index.php/overdose-campaign>).

Website www.naloxoneinfo.org, developed by the Open Society Foundations in 2013. The contents of the website, available in English and Russian language, besides offering a comprehensive analysis on the use of naloxone, available programs and steps to implement a program is also an important tool for naloxone advocacy.

In addition, naloxone market issues related with supply and demand - which can influence naloxone costs and, consequently, its access - must be discussed more seriously between governments and pharmaceuticals. Fluctuations in prices are visible through different countries around the globe, frequently influenced by the different political positioning around naloxone.

In the UN resolution 55/7 (2012), that promoted measures to prevent drug overdose, is stressed the need to “understand that opioid overdose treatment, including the provision of opioid receptor antagonists such as naloxone, is part of a comprehensive approach that can reverse the effects of opioids and prevent mortality” (p.2). As a consequence, Member states should “include effective elements for the prevention and treatment of drug overdose, in particular opioid overdose, in national drug policies (...) and to share best practices and

information on the prevention and treatment of drug overdose, in particular opioid overdose, including the use of opioid receptor antagonists such as naloxone” (UN, 2012, p. 2).

Professionals Managing Overdoses: Training and Intervention

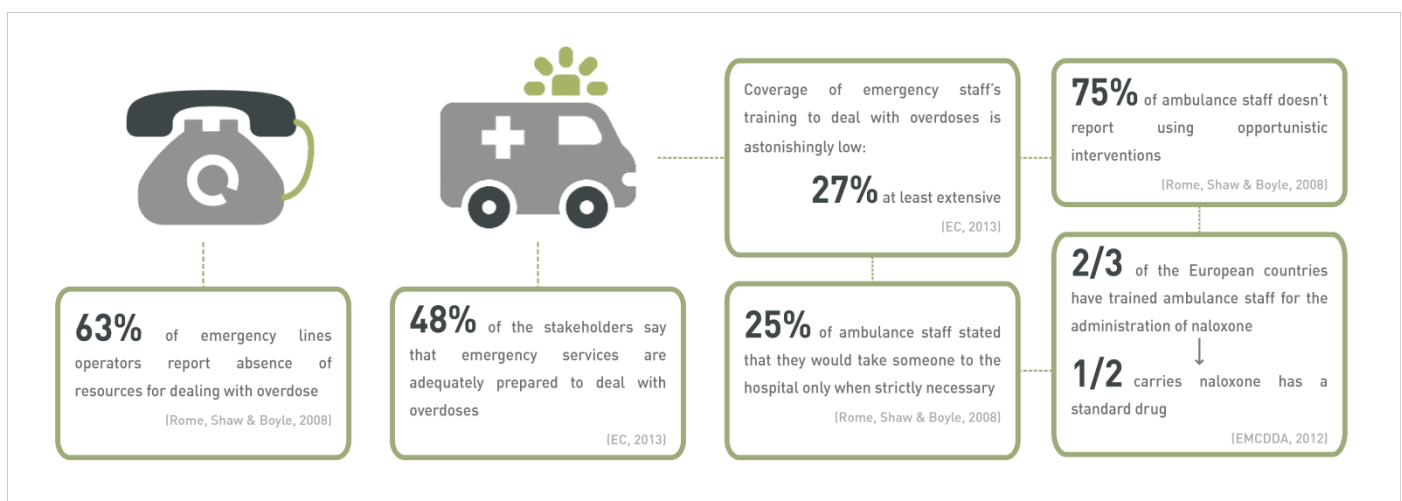
When an overdose episode occurs, there is a set of professionals that may be required to intervene as first respondents: operators from emergency lines, ambulance staff and fire-fighters, as well as police officers. In addition, the professionals from outreach teams (due to the proximal work carried out in places of consumption) are also in position to witness or be called to respond to an overdose occurrence. Similarly, professionals working in drug and general healthcare services can equally face overdose situations in their daily practice. Therefore, it is expected that these professionals should have the knowledge on how to manage overdoses, regardless of their range of intervention.

Concerning the access to emergency services in an overdose situation (see figure 11), several barriers have been reported by people who overdosed and witnesses (e.g., reluctance or minimization of the need of calling emergency services), as well as by staff from the emergency services (Davidson, Ochoa, Hahn, Evans & Moss, 2002). When an overdose episode occurs, operators from emergency lines are usually the first intervention platform, thus providing guidance to bystanders and informing them about the first actions to implement (e.g. recovering position). In the Scottish study from Rome and colleagues (2008) the role of emergency lines operators was recognized by witnesses as being very important, both regarding practical orientation and emotional support. On one hand, the support provided by those professional was more positively assessed when compared with hospital or police staff interventions (*ibidem*). On the other hand, a significant percentage of emergency lines operators (63%) reported not having sufficient resources to deal with overdose situations, namely in terms of knowledge, experience and time (Rome et al., 2008). Despite these interesting results, research is insipient in terms of the emergency line staffs’ attitudes when attending overdose situations. Although the fear of stigma is one of the well-known reasons to not call an ambulance (something pointed out by drug users and witnesses), the extent to which this actually happens is not well known (*ibidem*).

Since emergency staff is usually among the first formal responses to attend an overdose scenario (although they’re not frequently perceived by witnesses as a first line response), the guidelines implemented and the attitudes presented by the ambulance personnel should be

analysed. Reports from EUA state that after the assistance provided in the pre-hospital context, less than half of the cases are referred to hospital facilities for observation, being the transportation more frequent in cases with fatal outcomes (55% transportations for fatal versus 37% for non-fatal; Davidson et al., 2002). In Scotland, 48% of the ambulance and police staff recognized that, ideally, a person who overdosed should always be taken to the hospital for further assessment and observation, while 25% of the ambulance staff stated that they'd only take someone to hospital if it was strictly necessary (i.e. other injuries, not responding to treatment; Rome et al., 2008). Reports also highlight the shared responsibility in this reduced hospital attendance, since PUD tend to resist this procedure (Rome et al., 2008). Among the reasons for this resistance, we can find the PUD concerns about the way the services work, namely police presence and “bad treatment” in the hospital settings (ibidem). Nonetheless, it is suggested that successfully hospitalizing the person after an overdose occurrence seems to minimize the person's fears regarding medical and police interventions (Rome et al., 2008).

Figure 11: Emergency services responding to overdose: some results from research



Together, these findings seem to suggest that, many times, the severe cases are the ones referred to hospital facilities, thus contradicting the guidelines which state that further assistance should be provided, at least in the hour following overdose reversal, in order to avoid letting the individual return to a state of fatal sedation. Even though some reports point out that the probability of this situation to occur when the person is capable of moving and speaking is very low (UNODC, 2013), it is important to understand that non-fatal overdoses can result in serious morbidities associated with pulmonary problems, brain damage, immunity problems, among other conditions (Harm Reduction Coalition, 2012), thus requiring

subsequent monitoring. Also, the impact of the intervention done by emergency staff – not only in the ambulance, but in the hospital as well - surpasses the importance of instant care and subsequent monitoring (see After surviving: non-fatal overdose section), since they are also in a privileged position to develop the so-called “opportunistic interventions”. These include: providing information (written and/or oral) to those present in the overdose scene and also overdose education/referral to the most adequate services in the community. In spite of this, it is reported that 75% of ambulance personnel in Scotland (Rome et al., 2008; Scotland) fails to address these questions.

A central and quite obvious point when discussing the ambulance staff’s response to overdose occurrences is the availability of the fundamental pharmacological resources to reverse the overdose effects: the opioid antagonist naloxone. In 2012, the EMCDDA annual report stated that 2/3 of the European countries have trained ambulance staff for the administration of naloxone; also, in half of these countries, the naloxone is a standard drug carried in ambulances (EMCDDA, 2012). Despite the fact that training in naloxone administration for ambulance staff is feasible in most settings (i.e. low cost) in some European territories this is not a routine (Frischer et al., 2012). Data from the last report on the current state of the 2003 Council Recommendations on the prevention and reduction of health-related harm associated with drug dependence (in EU and candidate countries; Busch et al., 2013) show curious incongruences between policy makers and stakeholders when evaluating the coverage of emergency services adequately prepared to deal with overdoses. Policy makers reported 90% of full or extensive coverage against 48% of stakeholders. Also for 90% of policy makers there is full or extensive coverage of naloxone availability in ambulances against 51% of stakeholders rate. According to the stakeholders “ambulances are not equipped with naloxone in all countries or regions, and the coverage of emergency staff’s training to deal with overdoses is astonishingly low (27 % at least extensive)” (Busch et al., 2013, p. 124).

Recently, a number of countries has been showing some concerns in expanding naloxone administration authority from professionals to other non-medical first respondents such as fire-fighters and police officers; this procedure usually requires changes in the policies and guidelines (Davis, Ruiz, Glynn, Picariello & Walley, 2014). In some regions, fire departments are frequently required to respond to emergency situations, namely to transport the patients to the hospital. As far as we know, the exact number of times fire-fighters are called to attend overdose situations in the European territory, is not currently known. Still, recognizing the need to better understand this situation doesn’t prevent the widening of training in overdose management, as well as the naloxone provision to all relevant services in the community.

Although there aren't relevant ethical concerns regarding the fire-fighters' intervention, the police involvement has been a focus of discussion. In Europe, it is accepted that avoiding the police's intervention during an overdose episode works as a protective factor against a fatal overdose outcome (Frisher et al., 2012). This is particularly relevant in contexts in which the law enforcement approaches are more representative, since the fear of being arrested and prosecuted is one of the main reasons why overdose witnesses do not seek help. In fact, this is already a current practice in some countries/regions, except in cases where: a) fatal outcomes occur; b) there are insecure contexts surrounding the overdose scene, thus hindering the emergency personnel's work; c) there are additional concerns such as child security (Frisher et al., 2012). Simultaneously, a tendency to involve law enforcement staff in overdose situations, in order to avoid deaths, has been gaining relevance in some states of the USA. These approaches should not obstruct each other, since decreasing the police involvement in overdose scenes doesn't dismiss police officers from their role in overdose prevention. Having those professionals trained in overdose recognition and management (including naloxone administration) can prevent overdose deaths; in those countries where drug use is criminalized, the procedures and policies in force should avoid penalizing victims and witnesses (e.g. US Good Samaritan Law). Still, an additional question remains: are police officers willing to intervene in overdose situations? Once again, these can be influenced by the countries' drug policies and different concerns, awareness and readiness to intervene patterns can be found. Law enforcement staff in the US seems to have mixed feelings about its role on overdose management, being hesitant about naloxone administration, while feeling powerless, but willing to do something else when facing an overdose situation (Green et al., 2013). Some officers feel that they hold a conflicting role: reduce drugs supply and demand *versus* overdose prevention tools, thus conveying "permissive" messages (ibidem). Further discussions and research are needed to better define the role of police staff in overdose situations, always taking into account the mediating role of the country's drug policy models.

In addition to the most evident first respondents in overdose situations, other professionals working in different drug services (e.g. treatment teams, outreach teams) are also "well" positioned to deal with overdose situations. Thus, they are a quite obvious target group to receive training on overdose prevention, recognition and response. Reports concerning the effectiveness of training in overdose management and naloxone administration among healthcare professionals working in drug services concluded that this measure significantly improved the professionals' knowledge and willingness in administering naloxone (Mayet, Manning, Williams, Loaring & Strang, 2011). Among the previously identified obstacles in

terms of training, we can find the lack of resources in these services and the professionals' schedule and confidence, the same ones that were somehow replicated for the training dissemination and extension (ibidem) As concluded in the abovementioned study, "Drug policy changes and improvements to educational programmes for drug services would be important to ensure the successful implementation of overdose training internationally" (Mayet et al., 2011, p. 9). The contribution of research in this direction should also be considered and more studies on immediate (e.g. knowledge improvement, self-confidence for intervention) and long-term effectiveness (e.g. overdose situations faced and successfully managed) should be promoted.

Overdose Prevention, Recognition and Response: Training PUD, Families/Social Network and Other Bystanders

Providing PUD and their families/networks the necessary knowledge, skills and materials to prevent overdose occurrence and deaths, is currently seen as having serious potential to benefit both the individual itself and the community. The starting point of this assumption relies on the fact that overdoses frequently occur in the presence of witnesses, with studies reporting that the majority of overdose victims (85%) suffered the episode in the presence of at least one person (Baca & Grant, 2007; Powis et al., 1999). Also, according to a retrospective analysis of overdose deaths in London, 90% of the overdoses witnesses were peers, family members or friends (Hickman et al., 2007).

Among PUD, reports show that the percentage of those who have witnessed a peer overdosing in the recent past (last year) is very expressive (43%; Sporer, 2003) as the number of drug users that have seen a fatal overdose occur (14 to 19%; Davidson et al., 2002; Strang et al., 1999). Results from survey-based studies conclude that, between PUD, the prevalence of overdose witnessing ranges from 24 to 94% (Baca & Grant, 2007; Best et al., 2002; Davidson et al., 2002). Even considering the lowest percentage, this can represent a lot of lives saved, if witnesses could be empowered to manage the situation (see figure 12).

Among families, few data is available on overdose witnessing prevalence. Hickman and colleagues' (2007) study shows that 21% of overdose victims have suffered the episode at their families' home, and the great majority (75%) have established contact with family members the three days before the episode (which could be an opportunity for the informed family members to detect some kind of risk factors).

Figure 12: Overdose witnessing by peers, family members and social network



What we can conclude from the lines above is that extensive overdose witnessing exists among peers and family members/network. However, the right question is if those witnesses are willing and trying to intervene in these situations, even if they do not know exactly what to do. The fact is that the majority of witnesses are willing and try to intervene in overdose situations, but frequently perform incorrect interventions (Frischer et al., 2012; Pollini et al., 2006; Strang, Best, Man, Noble & Gossop, 2000). So, this is another reason to support training programs among peers and family/network members. Among the common incorrect interventions, by action or by inaction, there is the practice of inflicting pain; the insufficient CPR interventions (reports mention that less than half tried it); the use of stimulants, salt or sugary water injection; the use of cold water or ice; walking with the victim around the room; and not calling the emergency services (Davidson et al., 2002; Zador, 2005). In the majority of overdose cases, the witnesses do not call the emergency services or they call them with substantial delay and frequently, when help arrives, the death has already occurred (Rome et al., 2008; Zador, 2005). This scenario is associated with several reasons, such as fear of the police presence/fear of being arrested, fear of social repercussions (e.g. lose their children, being stigmatized), or the absence of material resources like a telephone (Davidson et al., 2002; Rome et al., 2008). Also, some of the witnesses believed that their (inadequate) actions

would be sufficient to reverse overdose, thus diminishing the probability of calling emergency services (Rome et al., 2008).

However, without adequate training, witnesses can function as both protective and risk factors. On the one hand, and according to the inappropriate actions described above, they can enhance the risk of fatal outcome. On the other hand, they are the first bystanders to be aware of the situation, frequently willing to intervene. Also, in those cases where the individuals have witnessed several overdoses, both protective and risky outcomes could occur. Since they've experienced the situation before, they can more easily recognize overdose symptoms and know how to respond adequately to them. Also, reports stress that having ever witnessed a fatal overdose seems to increase the probability of calling emergency services in subsequent ones (Tobin, Davey & Latkin, 2005). However, witnessing several overdoses probably means that the person is inserted in a particular group with dangerous drug use practices (e.g. drugs combination, injecting practices). Also, people who witnessed many overdoses tend to perform inadequate interventions and place themselves at risk during an overdose occurrence (Bohnert, Tracy & Galea, 2012). Furthermore, hesitation to intervene due to past negative experiences can also be seen (e.g. police involvement, experiences with emergency services), as well as the withdrawal from peers due to experienced trauma (Wagner et al., 2013). If this last mechanism takes place, witnesses can cut ties with his peers, something that could be a risk factor for the person himself (ibidem).

Therefore, overdose prevention training to drug users and families/network, must cover recognition and response of OD episodes. This includes knowing the risk factors for overdose occurrence, as well as the harm reduction measures to minimize them; recognizing overdose symptoms on their peers/family members and know how to react properly (e.g., placing the victims in the recovery position, perform CPR, call an ambulance and remain with the victim until the ambulance arrives; EMCDDA, 2004). Also, overdose management training combined with take-home naloxone/peer-distribution naloxone, is a suggested intervention to reduce deaths from opioid overdose (EMCDDA, 2011b; Lagu et al., 2006). Take-home naloxone supplies may allow peers and friends to reverse overdose in the critical period between the overdose onset and the eventual naloxone administration by emergency personnel (Strang et al., 1999). Although there are insufficient studies with control groups, representative samples and follow-up assessments on take-home/ peer-distribution naloxone programmes (also due to the small/trial scale of the majority of these programs), encouraging results are found in the

literature in terms of knowledge acquired, attitudes, and self-reported use of naloxone on peers/family members (Strang et al., 2008; Tobin, Sherman, Beilenson, Welsh & Latkin, 2009). As concluded in a recent systematic review (EMCDDA, 2015) “There is weaker, but consistent, evidence that educational and training interventions with naloxone provision for opioid dependent patients and their peers is effective in improving knowledge about and creating positive attitudes to the correct use of naloxone and management of witnessed overdoses” (p. 11). Despite the encouraging evidences and the advocacy work impact in terms of overdose prevention training and naloxone distribution for PUD and their families/network, these interventions still have rare or limited coverage in the majority of European countries (EMCDDA, 2014, May 26). Also, as mentioned before, take-home/peers distribution programs continue to exist with little expression across Europe (see table 4).

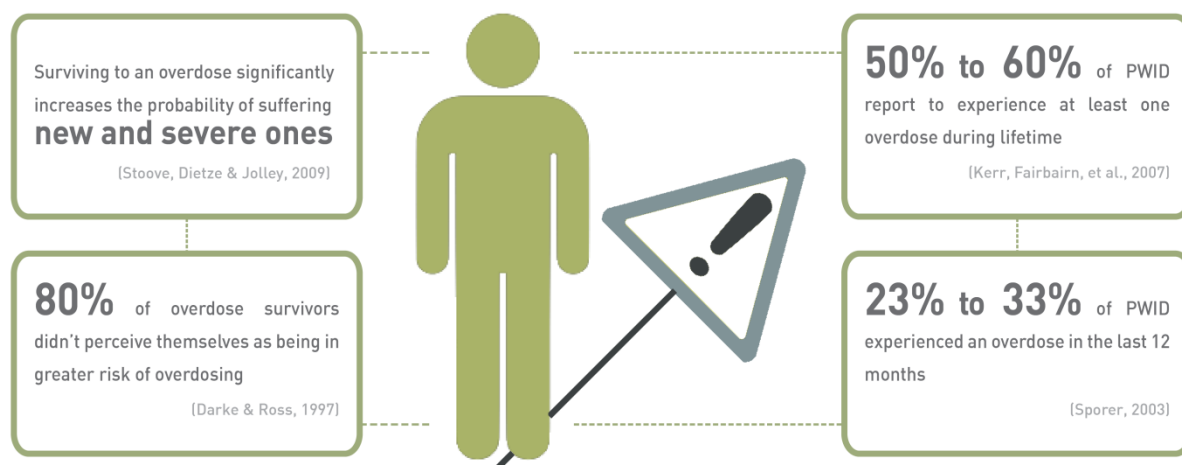
After Surviving: Non-Fatal Overdoses

In Europe, it is estimated that for each fatal overdose, 20 to 25 non-fatal occur, which in raw numbers means that about 120 000 to 175 000 non-fatal overdoses happen every year (EMCDDA, 2012). Nonetheless, the precise estimation and phenomena characterization in Europe face several limitations, due to monitoring mechanisms and, even more fundamental, to a lack of common definitions among countries (EMCDDA, 2012). The difficulties in the implementation of monitoring processes hinders our knowledge about the phenomena evolution, limits inter-country comparisons and poses obstacles to the definition of responses suitable to the existing needs. Nowadays, it would be very important to establish methods to improve the record and exchange of information, concerning not only the occurrence of fatal drug-induced deaths, but also of “near misses” (Frisher et al., 2012). The needs in terms of improved record systems go beyond the epidemiological issues of fatal and non-fatal overdoses. It would be very useful to gather information about trends and patterns related to those occurrences (e.g. risk factors) for interventional, research and political purposes. As a way to tackle this difficulty, Zador and colleagues (2005; updated version 2009) designed a questionnaire to gather information about: 1) Demographic Characteristics; 2) Life Context and Social Functioning; 3) Criminal Justice and Offending History; 4) Substance Use History; 5) Physical and Psychological Health; and 6) Service Contact. In cases where drugs are the first hypothesis to justify a death (defined by the authors as fatal overdose with controlled drugs), this tool is distributed to the agencies that knew the victim, and the data is reported to the Forth Valley Drug Death database. Although this tool was specifically created to be used in suspected cases of overdose death, its utility in non-fatal overdoses could be explored, offering a contribution to differentiate risk and protective factors for both fatal and non-fatal overdoses.

In a study conducted with PWID, 50 to 60% reported have suffered of least one OF during lifetime (Kerr, Fairbairn, et al., 2007; see figure 13). Another study showed that 23 to 33% PWID have experienced an overdose in the last 12 months (Sporer, 2003). One Scottish research shows that, on average, heroin users experience three overdoses during life (Rome et al., 2008). In fact, having previous non-fatal overdoses has been pointed out as a predictor of following non-fatal episodes. Also, surviving to an overdose episode seems to significantly increase (seven times) the probability of suffering a drug-induced death (Stoové, Dietze & Jolley, 2009).

Together, these evidences suggest that having an overdose doesn't appear to prevent a new overdose episode, but also constitutes a risk factor for the repetition of this event (Frisher et al., 2012; Harm Reduction Coalition, 2012; Stoové et al., 2009). The mechanism underlying this increased risk is thought to be related to the patterns of drug use and risky behaviours (Harm Reduction Coalition, 2012). These patterns tend to be maintained after the overdose experience, which do not seem to have any impact on consumption practices, neither in motivation to start a treatment program (Zador, 2005). Also, this phenomenon raises additional concerns, since there are evidences that 80% of overdose survivors didn't perceived themselves at risk of experiencing another overdose episode (Darke & Ross, 1997).

Figure 13: Experience of overdose among PWID and subsequent overdose risk



Several individuals who died from an overdose have their history in the hospital records and many of them had been to that same hospital several times before (Thanacoody, Jay & Sherval, 2009; Zador, 2005). Those moments should have been used to work with those individuals in terms of prevention (*ibidem*). Nevertheless, studies highlight that when people who overdosed attend the hospital's emergency services, they tend to be discharged without receiving any information about overdose prevention (Rome et al., 2008). Also, the number of individuals referred by the hospital services to drug treatment services appears to be low (Cook, Moeschler, Michaud & Yersin, 1998; Pollini et al., 2006). This contrasts with the higher probability of seeking treatment by those receiving information about it from hospital staff (Pollini, McCall, Mehta, Vlahov & Strathdee, 2006). In addition, negative attitudes by health

professionals, regarding the attendance of people who overdosed, are identified in the literature (Frisher et al., 2012).

These evidences emphasise the need to promote awareness-raising and training initiatives for hospital and emergency staff, since current “opportunistic” interventions are rare, thus having consequences in terms of overdose incidence. It is also suggested that the existence of overdose specialists in the emergency departments could have a role in decreasing drug-induced deaths and increasing access to drug treatment (Rome et al., 2008). An example of good practice concerning the role of hospital services in overdose prevention is provided by Austria, with the project CONTACT: Liaison Service for Hospitals.²⁰

Trained professionals must be able to perform a good individual risk assessment, which must consider not only the drug use patterns, the consumption circumstances, and the existence of past overdose episodes, but also the aspects of mental health and social context (including network). In a study conducted by Neale (2000), 49% of the individuals that suffered non-fatal overdose(s) present suicidal thoughts or feelings. Others studies show that among 10 to 17% of survivors, heroin overdose can be a method used to commit suicide (Darke & Ross, 2001; Heale, Dietze & Fry, 2003). Additionally, drug users that attempted suicide by causing an overdose, tend to present a very poor psychological and social structure, as well serious problems associated with consumption (Bohnert, Roeder & Ilgen, 2010). Considering this, it is fundamental that in cases of non-fatal overdoses, the hospitals’ specialized staff are prepared to screen the individual mental status, and the circumstances associated with the episode. This practice will allow a better selection of intervention strategies and contribute to better differentiate between intentional and accidental overdoses. In addition, specialized professionals should gather information about the social reality of the person who overdosed. As the evidences suggests, a risk factor for overdose occurrence is experiencing conflicts with the social network (Frisher et al., 2012; Latkin, Hua & Tobin, 2004) or having a narrow social network with another drug users (Tobin, Hua, Costenbader & Latkin, 2007). These situations affect the psychological stability of the PUD and increases the possibility of being alone (or surrounded by witnesses less motivated to intervene) during the overdose episode.

In fact, it is necessary to take into account the role of the individual’s network for the prevention of subsequent overdoses, as well as to consider the future role of the individual

²⁰ For more information about the project: EMCDDA website: http://www.emcdda.europa.eu/html.cfm/index52035EN.html?project_id=2066&tab=overview

who overdosed as a bystander. Drug users who have been through or witnessed overdose episodes are less likely to intervene (Tobin et al., 2007). For example, calling the emergency services when seeing someone having an overdose, is an intervention less adopted by individuals who survived one (Bohnert et al., 2012; Tobin et al., 2005). At the same time, individuals who have survived tend to have additional chances of witnessing more overdoses (Bohnert et al., 2012). So, targeting and recruiting these individuals to be trained on offering peer-to-peer education on overdose prevention could be an effective strategy that can begin in the hospital setting after a non-fatal overdose occurrence.

Following Fatal Overdoses

Victims' Family and Social Network: Intervention Recipients and Providers

The topic of drug-induced deaths has earned widespread attention from researchers and practitioners from different areas of expertise (e.g. epidemiology, harm reduction, mental health) in a large set of variables that shapes the phenomena. Less explored topics in the field concerns both research and intervention in the bereavement of overdose deaths.

When a drug-induced death fails to be avoided “Services must recognise that victims are parents, children, partners and friends of individuals, who may or may not be service users themselves – in any case, individuals left behind may have specific support needs and require specific resources and support to deal with their bereavement” (Neufeind et al., 2010, p.5).. Moreover, the specific nature of an overdose death can amplify the difficulties of overcoming the passing of a beloved one. Some evidences suggest that parents who lost their children in an overdose episode, experience their grieving process more negatively, when compared to those whose children died from natural or accidental causes (Feigelman, Jordan & Gormnan, 2011). Also, the development of mental health problems appears to be higher in the first group (*ibidem*). These findings are associated with an intense stigma surrounding drug use, which leads to a widespread perception of the victim’s blame for their own loss (Feigelman et al., 2011; Guy, 2004; Silva, Noto & Formigoni, 2007). As a consequence, individuals close to those who grieve, tend to show less empathy and blame the victims themselves (Feigelman et al., 2011). Moreover, the general opinion (noticeable in neighbours, work colleges and others) somehow reflects the social blame on these parents, with a Scottish study reporting that 1 in 7 people agree with the statement “Most people would not become dependent on drugs if they had good parents” (Singleton, 2011, p.33). The blameworthiness seems to be also associated with the substance involved in the overdose, being the mourning of heroin deaths harder to deal than the ones due to ecstasy use (Guy, 2004).

In short, it is currently accepted that harder mourning experiences in overdose cases “go beyond (...) the simply lack of social validation of a loss, to active processes of social stigmatization” (Feigelman et al., 2011, p. 296). In addition, mass media play an important role in this stigmatization process. There is a tendency to condemn, instead of empathise with drug use (UKDPC, 2010) and to “sensationalize the death, thus increasing the perception of the parents as faulty relatives” (Feigelman et al., 2011, p. 292).

By putting the evidences from research and observations from practice together, it is clear that, services should “routinely (with permission) refer family members and friends of the victims to family support services” (Neufeind et al., 2010, p.23) and also develop alternative ways to provide support to these individuals. Examples of good practices in this domain are presented by Scotland, with the creation of support services for families²¹ and provision of online resources for them²².

But besides the support that should be provided to these families and friends, it is important to recognize their potential to become interveners. They can have a role in overdose interventions through several actions, ranging from the support given to each other, to the exercise of advocacy for drug policy reform. However, in initiatives like these, should be guaranteed that families are not instrumentalized and made vulnerable. The message conveyed by parents and friends of people who overdosed can potentially have more impact in terms of awareness-raising: their life experience can bring them close to target groups (drug users, others families and friends); and their stories are more likely to contribute for the deconstruction of stereotypes and stigma in public opinion. Several examples of relatives that associate themselves looking for both support and advocacy concerning drug-related deaths exist in US (e.g. GRASP – Grief Recovery after a Substance Passing; Broken no More, California), while in Europe these associative movements are less visible. One good European illustration (initially not funded by parents, but mainly composed of them) is the Scottish Families Affected by Drugs (SFAD); this organization achieved, among many others landmarks, a Parliamentary consensus on PUD family support, in 2012 (SFAD, 2013). This network is important in the development of strategic partnerships (e.g. Police), and families are encouraged to challenge the stigma that is sometimes broadcasted by mass media²³.

Drug-Related and Drug-Induced Deaths Registry Systems

Registry systems are herein brought to the equation, since their role in drug-related and drug-induced deaths is, by the one hand, to accurately collect epidemiological information necessary to characterize these phenomena (e.g. incidence, prevalence, substances involved, circumstances, contributory factors) – which would allow within-country (temporal) and inter-

²¹ Scottish Network for Families Affected by Drugs –SNFAD; see <http://www.sfad.org.uk/> - watch support groups’ directory and support line.

²² Please check booklet in: www.scotland.gov.uk/Resource/Doc/259247/0076870.pdf

²³ Please see Dealing with the stigma of drugs: A guide for journalists in <http://www.ukdpc.org.uk/wp-content/uploads/dealing-with-the-stigma-of-drugs.pdf>

country comparisons – and, by the other hand, to promote this kind of information as a guideline for intervention priorities and measures, thus supporting policy making.

As a key indicator, drug-related deaths and mortality are divided by EMCDDA in two components including both deaths directly caused by illegal drugs and mortality rates among problem drug users. In the first case, an accurate register usually depends on two combined or isolated information sources: general and special mortality registries²⁴. An outstanding work in establishing common criteria and procedures for extracting and reporting drug-induced deaths was developed by EMCDDA, in order to increase the quality and precision of the information available. However, we must not forget that “the quality of key indicator information depends on the quality of its sources, and will increase with improvement of post-mortem investigations and with full use of this information for death certification and coding” (EMCDDA, 2012). In fact, one of the most evident limitations in accessing good quality information is the low capacity of some European countries to conduct toxicological tests, mostly due to financial constraints, which can lead to an underestimation of drug-induced deaths (Mather et al., 2013), or inaccuracies in the substances reported (e.g. in some countries the presence of opiates is presented without discrimination; in some of them, certain opiates are not tested - buprenorphine). Also, as we know, having a chronic infection such as HIV, HBV or HCV is a risk factor for overdose, which highlights “the masked” manner of death in cases commonly recorded as overdose and demonstrates the need to improve the record of drug-related deaths” (Rome et al., 2008). Also, stigma can influence the collection of reliable information, since this could be the reason why in certain locals the deaths are recorded as having other causes (Mather et al., 2013). In several cohort studies there are clear difficulties in accessing a reliable cause of death; in some of them, there are large unknown categories with causes insufficiently specified, like cardiac arrest (EMCDDA, 2011b). In some countries – Poland and Austria, for example - obstacles in the access to data are also associated with data protection issues (ibidem). Logistic problems, like the delays in the delivery of investigation reports, are also pointed out by some countries, and those end up by being excluded from annual reports on DRD (e.g. National focal point to the EMCDDA, Germany).

Besides the obstacles verified in the collection of quality information, the variability in data gathering is visible between (and in some cases within) the European countries. Although EMCDDA established common definitions for the extraction of sub-dataset (Selection B for

²⁴ To see which countries use both registry systems or only Special/General registry system, please check <http://www.emcdda.europa.eu/stats07/DRD/methods> in EMCDDA, 2012.

General Registries and Selection D for Special Registries), the variability in the steps preceding it, from the death scene to the forensic investigation, causes significant differences in the data collection. An example: when a person is found death surrounded by paraphernalia and there are no witnesses or more information available, the category chosen for the classification differs among countries; among the categories, we can find fatal intoxication or unknown/ill-defined cause, thus under-estimating or over-estimating drug-induced deaths (EMCDDA, 2012).

The inclusion and exclusion criteria in the special registries also change according to nationality (not included in Sweden, Austria, Malta), age groups (Spain only includes people within 15-64 age group), citizens overseas (not included in Austria, Cyprus, Denmark, France, Germany, Hungary, Latvia, Malta, Spain and UK) and others (EMCDDA, 2009a). Also, there are several differences in the information that is collected and recorded.

As can be seen on table 3, the majority of countries don't collect vital information for understanding overdose risk factors. Exceptions on the collection of data come from the UK, due to the good practices in Scotland, with the implementation of the Fife questionnaire for data collection in suspected DRD.

Table 3: Information collected in DRD cases submitted to autopsy

History of drug treatment	Croatia, Ireland, UK
Integration in OST at time of death	Austria, Croatia, Ireland, UK
Recent release from detoxification unit	Croatia, UK
Recent release from prison	Croatia, Ireland, UK
Circumstances of death	Finland, Ireland, Lithuania, UK
Route of administration of substance involved	Austria, Denmark, France, Ireland, Spain, UK
History of previous overdoses	Croatia, Malta, UK
Prescription history	Croatia, Ireland, UK
Mental health status	Croatia, UK
Recent traumatic life events	Croatia, UK

Source: EMCDDA, 2009a.

One of the major contributions from the collection of comprehensive information in DRD cases is the improved differentiation between intentional and accidental drug-induced deaths. As we know, if previous registries (e.g. mental health services) concerning mental illness or suicidal ideation don't exist, only very complete post-mortem anamneses can capture the

intentionality in the overdose episode. Some evidences show that suicidal thoughts or feelings were present before overdose occurrence in 49% of overdose survivors in Scotland (Neale, 2000) although this doesn't mean that the substances were used deliberately. Darke and Ross (2001) reported that the deliberate use of substances in suicidal attempts was present in 10% of overdose survivors. The differentiation of intentional and non-intentional overdoses is obviously relevant for the prioritization of interventions. "Even the number of overdose deaths that occur as a result of deliberate overdose can be reduced by providing easier access to treatment programmes (where issues of depression or nihilism are more likely to be recognised and addressed), good assessment of people's mental health status and better liaison between drug treatment and mental health services" (National Treatment Agency, 2004, p. 8). Although the majority of the countries in the survey collect data on the intentionality, data collection on mental health status and suicide attempts is still very limited (exceptions are presented by Croatia, Hungary and UK).

Also, in what concerns General registry systems, few countries include the contributory causes of death as an indicator that allows to know conditions that "unfavourably influences the course of the morbid process and thus contributes to the fatal outcome" (EMCDDA, 2009b, p. 18). Improvements in this kind of record could also add some insights in the drug-induced deaths phenomena.

In spite of the problems identified, progress made in the last decade concerning this indicator has to be highlighted, as well as some countries' efforts to implement these registry systems (general and special) and to invest in cohort studies. In fact, it is hard to achieve a complete standardization of the registry process, but it is possible to achieve a better quality /improved reliability of the data collected by each country, thus contributing to improve harm reduction strategies and policies.

Chapter 3

Mapping the Harm Reduction Measures to Reduce Drug-Related Deaths



Drug Consumption Rooms

Unofficial or semi-official initiatives of tolerated drug use at drug service centres were reported from the Netherlands already in the early 1970s (the Prinsenhof and the HUK Amsterdam) and from Switzerland (*'Fixerraum-experiment'* at the AJZ in Zurich) in the early 1980s, in Bremen/Germany in the end of the 1980s. These initiatives were fundamentally different from drug consumption rooms today. The supervision of drug use or distribution of hygienic equipment was not their main objective. They attracted large numbers of drug users, but also dealers, and problems with regard to the management of public nuisance and behaviour arose. These experimental initiatives were stopped – either by the agencies themselves or after police or political interventions – after a relatively short period of time.

The first drug consumption room, in modern sense, was established in Berne, Switzerland in 1986. This was at a time of growing concern about the spread of HIV/AIDS, the strong increase of drug related deaths, and the growth of public drug scenes in Berne, but also in a number of other European cities. At that time it became more and more evident that drug policy focussing exclusively on abstinence (e.g. detoxification and drug free rehabilitation or imprisonment) was supposed to be ineffective. It was during this period that 'harm reduction' approaches began to emerge, including needle and syringe exchanges, streetwork, housing projects, and opiate substitution treatment.

Until 2014 93 DCRs have been set up in Europe (Switzerland 13, Netherlands 33, Germany 24, Spain 13, Luxembourg 1, Norway 1, Denmark 5 and Greece 1, see table 3 below) and 2 rooms outside Europe in Canada (Vancouver) and Australia (Sydney). Overall there are 95 drug consumption rooms worldwide. Especially in Europe drug consumption rooms are well established in countries like Spain, Germany, Netherlands and Switzerland. As a direct result of the success of DCRs in more and more European countries like Portugal, France, Great Britain and Austria movements arose to establish these facilities in their countries (Schäffer et al. 2014).

However, despite the successes of DCRs measured by the indicators 'access to drug users' and 'overdose prevention' (Stöver 2002) the major challenge that remains is the expansion of DCR provision in Europe. Even in those countries where some regions ('cantons' in Switzerland, or 'Länder' in Germany) implemented DCRs others did not. For instance, the service providers

and some (opposition) political parties in Bavaria/Germany have repeatedly demanded the introduction of DCRs over a number of years but the state government – in charge of issuing special regulations according to the opium law - has continued to reject the idea. Thus, DCRs remain controversial issues in local and national health and drug policies.

The positive results of DCRs, from the perspective of local authorities and DCR operators, should encourage the further development of DCRs. The ultimate goal is to adopt appropriate regulations which allow the operation of DCRs in many countries of the world, in order to ensure that people who use drugs have access to effective harm reduction.

In terms of effectiveness, DCRs need to adapt their services to the local consumption patterns, including inhaling and smoking. Further, DCRs need to provide access to target groups younger than 21 who might have developed a risky consumption of new drugs (such as legal highs).

Naloxone Distribution

Naloxone, listed by the WHO as an essential medicine, is an effective opioid antagonist that is used worldwide in emergency medicine to reverse the effects of opioid overdose. The substance is available for intramuscular or intravenous injection; in some countries also as an intranasal spray²⁵²⁶

As Table 3 shows, naloxone is accessible via medical personnel in emergency departments, hospitals and ambulances in all countries, whereas a community-based distribution through pharmacies is only reported for Scotland, Croatia and the Czech Republic. Despite promising study results demonstrating positive effects of peer naloxone distribution programmes on drug-induced mortality, so far such programmes have been implemented in only five countries (Denmark, Germany, United Kingdom, Italy and Romania). Furthermore, peer naloxone

²⁵ In a study conducted by Kerr et al. (2009) concentrated intranasal spray proved to be as effective as intramuscular naloxone as a first-line treatment for heroin overdose (Kerr, D., Kelly, A.-M., Dietze, P., Jolley, D. and Barger, B. (2009), 'Randomized controlled trial comparing the effectiveness and safety of intranasal and intramuscular naloxone for the treatment of suspected heroin overdose', *Addiction* 104, pp. 2067–74. doi:10.1111/j.1360-0443.2009.02724.x

²⁶ EMCDDA (2013): *Perspective on drugs: Preventing overdose deaths in Europe*. Available online at http://www.emcdda.europa.eu/attachements.cfm/att_212359_EN EMCDDA_POD_2013_Preventing%20overdose%20deaths.pdf (accessed 23 November 2013)

programmes may be small, weakly funded and time-limited when only run as a pilot project.²⁷ The access to naloxone varies not only across Europe but also within countries. For example, while in Scotland nurses and pharmacists can prescribe and dispense naloxone kits, the substance is only available through pilot programmes in the rest of the UK.²⁸ However, in Scotland and Wales, recent successful pilots have led to national naloxone programmes for high-risk users in the community and for inmates released from prison.^{29,30}

The low-threshold provision of naloxone is regarded as a low-cost approach that can empower healthcare workers and people who use drugs to save lives.³¹ Barriers to the effective and far reaching implementation of naloxone provision include medicine laws limiting or prohibiting access to naloxone for non-medical personnel, limited funding for naloxone programmes, and political barriers.³²

N-ALIVE in England

N-ALIVE (NALoxoneINVESTigation) is a large prison-based randomised controlled trial, designed to test the effectiveness of giving naloxone-on-release to prisoners who have a history of heroin use by injection in order to prevent fatal opiate overdoses. The project is divided into two parts: first, a pilot study which aims to demonstrate feasibility by recruiting the first 10% of the total 56.000 participants planned to be recruited. Second, the subsequent main trial which will assess the number of lives that could be saved by providing naloxone-on-release. Those eligible are people aged 18 to 44 years with a history of injecting heroin who have been in prison for 7 days or longer and who are likely to be released within the next three months. Participants will be randomized to receive, on release from custody, either a pack containing a single 'rescue' injection of naloxone or a control pack containing no naloxone. The trial is 'double-blind' prior to the participant's release – neither the participant nor prison staff will know the allocation until participants open their assigned pack after release. Research questions addressed in the pilot study concern whether prisons and prisoners are willing to participate

²⁷ EMCDDA (2013): Available online at http://www.emcdda.europa.eu/attachements.cfm/att_212359_EN EMCDDA_POD_2013_Preventing%20overdose%20deaths.pdf (accessed 23 November 2013)

²⁸ Harm Reduction International (2012)

²⁹ Advisory Council on the Misuse of Drugs (ACMD) (2012): Consideration of naloxone. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/119120/consideration-of-naloxone.pdf (accessed 24 November 2013)

³⁰ EMCDDA (2013): Perspective on drugs: Preventing overdose deaths in Europe. Available online at http://www.emcdda.europa.eu/attachements.cfm/att_212359_EN EMCDDA_POD_2013_Preventing%20overdose%20deaths.pdf (accessed 23 November 2013)

³¹ EMCDDA (2013): Perspective on drugs: Preventing overdose deaths in Europe. Available online at http://www.emcdda.europa.eu/attachements.cfm/att_212359_EN EMCDDA_POD_2013_Preventing%20overdose%20deaths.pdf (accessed 23 November 2013)

³² Harm Reduction International (2012)

in the numbers expected and required in the main trial as well as field-testing the logistics of the main trial procedures, obtaining data around post-release heroin use, overdoses witnessed or experienced within 4 and 12 weeks after release, use of naloxone, and carriage of naloxone in the first 4 weeks after release. The main trial is based on the hypothesis that giving naloxone-on-release to prisoners with a history of injecting heroin will reduce heroin overdose deaths in this population by 28% in the first 12 weeks after release. Both, the pilot and main trial, will be conducted in 15 to 20 prisons in England.

33,34,35

Individual OD Risk Assessment/ and OD Response Training

Table 4 shows that individual OD risk assessment and OD response training varies throughout Europe, but mainly remains rare and limited. So targeted programmes have to be developed or applied where possible in order to raise awareness and to increase sensitivity on these issues of overdose prevention.

Table 4: Harm reduction responses to prevent and reduce drug related deaths: Drug consumption rooms, naloxone distribution and other selected responses.

Country or territory	Drug consumption rooms			Naloxone Distribution ^{4,5}			Availability and coverage of other selected responses ⁴	
	Availability ^{1,2}	Year of introduction ²	No. of facilities ^{1,2,3}	Peer to peer/take home	Pharmacies	Ambulance/ medical personnel	Individual OD risk assessment	OD response training
North Europe								
Austria	x	—	—	x	x	✓	✓ limited	✓ rare
Belgium	x	—	—	x	x	✓	✓ limited	✓ limited
Denmark	✓	2012	5,	✓	x	✓	✓ rare	✓ rare
Finland	x	—	—	x	x	✓	✓ extensive	✓ limited

³³ Advisory Council on the Misuse of Drugs (ACMD) (2012): Consideration of naloxone. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/119120/consideration-of-naloxone.pdf (accessed 24 November 2013)

³⁴ King's College London: N-ALIVE: Randomised trial of take-home Naloxone to prevent heroin overdose deaths post-prison release. Available online at <http://www.kcl.ac.uk/iop/depts/addictions/research/drugs/N-ALIVE.aspx> (accessed 24 November 2013)

³⁵ Medical Research Council (MRC): N-ALIVE: Prison-based Naloxone-on-release pilot randomised controlled trial investigating the first 10% of a larger trial to reduce drugs-related deaths soon after release. Available online at: http://www.ctu.mrc.ac.uk/research_areas/study_details.aspx?s=80 (accessed 24 November 2013)

Germany	✓	1994	24	✓ ³⁶	x	✓	*	*
Ireland	x	–	–	x	x	✓	*	*
Luxembourg	✓	2005	1	x	*	*	✓ limited	✓ limited
Netherlands	✓	1994	33	x	x	✓	✓ extensive	✓ limited
Norway	✓	2005	1	✓ (?)	x	✓	✓ rare	✓ rare
Sweden	x	–	–	x	x	✓	✓ limited	✓ limited
Switzerland	✓	1986	13	x	x ⁵	✓ ⁵	*	*
United Kingdom	x	–	–	✓	x (SCT: ✓)	✓	✓ extensive	✓ limited
South Europe								
Cyprus	x	–	–	x	x	✓	✓ extensive	✓ rare
France	x	–	–	x	x	✓	✓ rare	✓ rare
Greece	x	–	–1	x	x	✓	✓ extensive	✓ extensive
Italy	x	–	–	✓	x	✓	✓ full	✓ full
Malta	x	–	–	x	x	✓	✓ full	✓ full
Portugal	x	–	–	x	x	✓	✓ extensive	✓ extensive
Spain	✓	2000	13	x	x	✓	✓ limited	✓ limited
Eastern Europe								
Bulgaria	x	–	–	x	x	✓	x	✓ limited
Croatia	x	–	–	x	✓	✓	✓ full	*
Czech Republic	x	–	–	x	✓	✓	✓ extensive	✓ limited
Estonia	x	–	–	x	x	✓	x	x
Hungary	x	–	–	x	x	✓	x	✓ rare
Latvia	x	–	–	x	x	✓	✓ rare	✓ limited
Lithuania	x	–	–	x	x	✓	✓ full	✓

³⁶ Fixed and mobile sites in the community and in prisons: specialist drugs agencies (including outreach work and peer-distribution), vending machines and pharmacy-based NSPs.

								extensive
Poland	x	–	–	x	x	✓	✓ extensive	✓ extensive
Romania	x	–	–	✓	x	✓	✓ rare	✓ rare
Slovakia	x	–	–	x	x	✓	x	✓ rare
Slovenia	x	–	–	x	x	✓	✓ extensive	✓ rare
total			93					

* no data/information available

References:

- 1) European Monitoring Centre for Drugs and Drug Addiction (2013): Countries: Harm Reduction Overview: Responses to prevent and reduce drug-related deaths. <http://www.emcdda.europa.eu/countries/harm-reduction-overviews>, (retrieved: 11/11/2013)
- 2) Schatz, Eberhard & Nougier, Marie (2012): IDPC Briefing Paper: Drug consumption rooms. Evidence and practice. International Drug Policy Consortium: London.
- 3) Personal communication with experts
- 4) European Monitoring Centre for Drugs and Drug Addiction (2013): Countries: Harm Reduction Overview: Responses to prevent and reduce drug-related deaths. <http://www.emcdda.europa.eu/countries/harm-reduction-overviews>, (retrieved: 11/11/2013)
- 5) <http://www.emcdda.europa.eu/topics/pods/preventing-overdose-deaths> (retrieved: 10/30/2013)
- 6) Bundesamt für Gesundheit (2013): Antidote bei Vergiftungen 2013/2014. Bundesamt für Gesundheit: Bern.

Other Responses: HBV Vaccination, Safer Use and Safer Sex Programmes, Counselling, Hepatitis and HIV Testing, and Antiretroviral Treatment (ART)

Vaccination is a safe and effective way to prevent the spread of hepatitis B. Of the 30 surveyed countries, 25 have universal HBV vaccination programmes (the exception being the Scandinavian countries and United Kingdom)³⁷ and 18 have special HBV vaccination programmes for high-risk groups, including injecting drug users. It has to be noted, though that, whereas most countries in North and South Europe offer such targeted programmes (except Belgium, Luxembourg, Cyprus and Italy), only three countries in Eastern Europe (Croatia, Romania and Slovenia) do so (see Table #). Harm reduction measures to prevent or reduce the transmission of hepatitis C, for which a vaccine does not exist, comprise safer use and safer sex prevention programmes, counselling, testing and antiviral treatment.

Hepatitis C testing is available in the majority of the surveyed countries. However, among the

³⁷ European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical bulletin. Figure HSR-6: Hepatitis responses in the EU, Croatia, Turkey and Norway. Part (i) Hepatitis B immunization. EMCDDA: Lisbon.

25 countries that were able to provide information about the coverage, only nine reported a full coverage, whereas seven countries stated a limited provision of HCV testing (see table #). Despite modelling studies suggesting that antiviral treatment (ART) may also reduce the transmission of HCV, the provision of this form of treatment for infected drug users remains relatively low in Europe.³⁸ This might be due to various factors such as concerns about treatment adherence, psychiatric comorbidity and the risk of reinfection after treatment. Furthermore, until recently, being an active IDU used to be an exclusion criterion for receiving government-funded antiviral treatment in several European countries.

Drug Users in Opiate Substitution Programmes (OST)

Table 5 shows that the coverage of drug users in OST varies considerably throughout Europe from more than 50% (e.g. Austria, Finland) or even almost 100% (Spain) to countries with very low and limited coverage with less than 10% (e.g. Poland and Latvia). One key problem in OST provision is the phenomenon of interrupted treatment continuity with the risks of overdose when relapsing. In general, opioid-dependent patients report high rates of cycling in and out of opioid substitution treatment (OST), and continued on-top heroin use despite being prescribed OST. This leads to a high risk exposition for overdose.

The European Quality Audit of Opioid Treatment (EQUATOR) analysis in 10 European countries (Stöver 2012) was designed to provide an overview of the current state of opioid treatment provision in Europe from the perspective of opioid users not currently receiving OST, opioid-dependent patients currently receiving OST, and the physicians who treat opioid-dependent patients (Fischer, G., Nava, F., Stöver, H. (2012). The EQUATOR analysis revealed that the 'revolving door' phenomenon of treatment and relapse is consistent with the understanding of opioid dependence as a chronic relapsing disease, but variation in the rates of previous OST episodes between countries cannot be explained simply by the nature of the condition and supports the hypothesis that aspects of treatment delivery, rather than variations in patient characteristics, may be major contributors to this pattern. Important lessons to learn regarding the strengths and limitations of various treatment systems (e.g., primary care vs specialised centre) across Europe, and their impact on patient outcomes and, consequently, on public health can be learned (Benyamina & Stöver 2012).

³⁸ European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Perspectives on drugs: Hepatitis C treatment for injecting drug users. Available online at http://www.emcdda.europa.eu/attachements.cfm/att_212353_EN EMCDDA_POD_2013_Hep%20C%20treatment.pdf (retrieved: 11/18/2013)

The appreciation that aspects of treatment delivery, rather than differences between opioid-dependent individuals themselves, may be contributing to treatment cycling raises several questions that need to be considered in order to establish the most appropriate treatment approaches for opioid dependence.

Are current treatment systems delivering the desired outcomes? To what extent do factors related to the treatment setting and quality of care influence patient outcomes? Are there gaps in current models of care and barriers to quality of care? With the average time lag between first use of opioids and entering treatment reported to be 9 years how could opioid-dependent individuals be motivated to enter OST treatment earlier? Which, if any, aspects of current treatment systems require improvement? Can current systems deliver recovery or does the way treatment is provided need to change fundamentally?

A key task for those involved in opioid dependence treatment, therefore, is to optimise opioid treatment to reduce relapse, OD exposure and vulnerability and promote recovery. Findings of the EQUATOR study suggest that the quality of care may be improved by: ensuring patients and physicians discuss the range of available treatment options, achieving the appropriate balance between control and patient flexibility, reducing the likelihood of misuse and diversion, and providing appropriate psychosocial care in conjunction with pharmacotherapy (Dale-Perera, Goulão & Stöver 2012).

Table 5: Opioid substitution therapy (OST): Year of introduction, form of treatment available, coverage, number of clients and estimated percentage of problem opioid users receiving OST

Country or territory	Year of introduction ^{1,a}	Form of treatment available ^{1,a}	Coverage of OST ^{2,b}	No. of clients in OST ²	Estimated percentage of problem opioid users in OST ^c
North Europe					
Austria	1987 (M)	M, B, BN, SM	extensive	16,782	55.4%
Belgium	1994 (M)	M, B, H	full	17,701	* (number of problem opioid users not known)
Denmark	1970 (M)	M, B, H	full	7,600	* (number of problem opioid users not known)
Finland	1974 (M)	M, B, BN	limited	2,000	* (50.0%) ^d

Germany	1992 (M)	M, B, BN, H	extensive	76,200	41.1%-48.8%
Ireland	1992 (M)	M, B, BN	extensive	8,729	42.0%
Luxembourg	1989 (M)	M, B, SM	full	1,228	64.6%
Netherlands	1968 (M)	M, B, H, SM	extensive	10,085 ³	*(57.0%) ^d
Norway	1998 (M)	M, B	extensive	6,640	70.3% ^e
Sweden	1967 (M)	M, B	*	3,115 ³	*(50.0%) ^d
Switzerland	1975 (M) ⁴	M, B, H, SM	*	18,017 ⁵	*
United Kingdom	1920s (H), 1968 (M)	M, B, BN, H, SM	full	177,993 ³	*
South Europe					
Cyprus	2007 (B)	B, BN	extensive	188	20.1%
France	1995 (M)	M, B	No data	145,000	*(number of problem opioid users not known)
Greece	1993 (M)	M, B, BN	limited	6,783	33.1%
Italy	1995 (M)	M, B, BN	full	109,987	57.0%
Malta	1987 (M)	M, B	full	1,107	51.3%
Portugal	1977 (M)	M, B	full	26,351	*(number of problem opioid users not known)
Spain	1990 (M)	M, B, H	extensive	82,372	> 100% ^f
Eastern Europe					
Bulgaria	1996 (M)	M, BN, SM	extensive	3,452	*(number of problem opioid users not known)
Croatia	1991 (M)	M, B, BN	full	4,074	38.0%
Czech Republic	1998 (M)	M, B, BN	extensive	5,200	56.0%
Estonia	2001 (M)	M, B	limited	1,076	*(number of problem opioid users not known)
Hungary	1995 (M)	M, BN	limited	639	20.4%
Latvia	1996 (M)	M, B	extensive	277	2.7%

Lithuania	1995 (M)	M, B	extensive	798	14.6%
Poland	1993 (M)	M, BN	limited	2,200	* (7.8%) ^d
Romania	1998 (M)	M, B, BN	limited	742	* (9.0%) ^d
Slovakia	1997 (M)	M, B, BN, SM	full	500	10.2%
Slovenia	1990 (M)	M, B, BN, SM	full	3,557	* (number of problem opioid users not known)
total				740392	

- M = methadone, B = buprenorphine, BN = buprenorphine-naloxone combination, H = heroin-assisted treatment, SM = slow release morphine
- Full = nearly all persons in need can receive it, extensive= a majority but not nearly all of them can receive it, limited=more than a few but not a majority of them can receive it, rare: just a few of them can receive it
- calculation based on the estimated number of problem opioid users and the number of clients receiving OST
- estimate according to: European Centre for Disease Prevention and Control (2013): Thematic report: People who inject drugs. Monitoring implementation of the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia: 2012. Stockholm: ECDC
- based on the estimated number of problem opioid users in 2008
- according to the EMCDDA in 2010 the total number of OST clients was 82,372 and the estimated number of problem opioid users 38,500.

References:

- European Monitoring Centre for Drugs and Drug Addiction (2013): Statistical Bulletin: Table HSR-1. Year of introduction of methadone maintenance treatment (MMT), high-dosage buprenorphine treatment (HDBT), buprenorphine/naloxone combination, heroin-assisted treatment and slow-release morphine
- European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Countries: Drug Treatment Profiles. <http://www.emcdda.europa.eu/responses/treatment-overviews> (retrieved: 11/11/2013)
- European Monitoring Centre for Drugs and Drug Addiction (2013): European Drug Report 2013. Trends and Developments. Annex: Table 1. Publication Office of the European Union: Luxembourg.
- Bundesamt für Gesundheit (BAG) (2013): Substitutionsgestützte Behandlung. <http://www.bag.admin.ch/themen/drogen/00042/00629/00798/index.html?lang=de> (retrieved: 11/13/2013)
- Bundesamt für Gesundheit (BAG) (2013): Nationale Methadonstatistik. <http://www.bag.admin.ch/themen/drogen/00042/00632/06217/index.html?lang=de> (retrieved: 11/11/2013)

Needle and Syringe Exchange Programmes

According to EMCDDA's latest European drug report, in the 23 countries that provided data, a total of 46.3 million syringes were distributed through specialised programmes³⁹ (including prison settings) in 2011, indicating a 35 percent increase compared to 2005 (34.2 million syringes). Based on recent estimates of the number of IDUs, which are available for 11

³⁹ European Monitoring Centre for Drugs and Drug Addiction (2013): European Drug Report 2013. Trends and Developments. Publication Office of the European Union: Luxembourg, p. 50.

countries, it is assumed that an average of 127 syringes per IDU were distributed in 2011.⁴⁰ Data provided by the ECDC suggest a similar average rate of 129 syringes per IDU and year among the 22 reporting countries, yet revealing a wide range of distributed syringes per IDU of less than 20 (in Cyprus, Greece, Latvia and Slovakia) up to more than 200 (in Finland, Norway, Sweden, Malta, Croatia, and the Czech Republic) (see Table/Figure #)⁴¹.

The long-term experience of Fixpunkt, a nongovernmental organisation in Germany, developed the following recommendations:

- NSP programmes need to be well accepted by government officials, funders and the police as an effective strategy to prevent disease transmission, and also by the staff who manage the implementing organizations.
- A range of NSP service modalities should be utilised including primary NSPs, peer-based (secondary) NSPs, pharmacy-based services, syringe vending machines, mobile and outreach services, and distribution in prison settings.
- Supplies and equipment should be made available based upon the needs of consumers (non-injecting and injecting drug users).
- Staff of NSPs must be well informed, well trained, and prepared to take into account service issues relating to stigma, gender and cultural diversity.
- Programmes should offer expert counselling on how to use (or not use) the prevention equipment and materials provided based on individualised risk assessments and motivation.
- Additional prevention services need to be offered, including HIV/HCV rapid testing, vaccination against hepatitis A and hepatitis B, consumption control/reduction programs, overdose prevention, and interventions to promote transition to non-invasive forms of drug application (inhaling, snorting, rectal application).
- Counselling and referrals to opioid substitution treatment, addiction-related therapies and medical treatment should be provided, with an emphasis on treating hepatitis C (Leicht 2014).

⁴⁰ European Monitoring Centre for Drugs and Drug Addiction (2013): European Drug Report 2013. Trends and Developments. Publication Office of the European Union: Luxembourg, p. 50.

⁴¹ The ECDC report did not provide a recent number for Spain, the figure of 361 syringes per IDU shown in Table # was sourced from European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical bulletin. Figure HSR-3. Syringe distributed through specialised programmes per estimated IDU in 2011 or latest available year. EMCDDA: Lisbon.

Hepatitis C / HIV Testing Availability and Coverage

Table 5 shows that the Hepatitis C and HIV testing availability and coverage for drug users varies considerably throughout Europe. Whereas in some countries there is full or at least extensive coverage in others there is only a limited coverage to be observed. Testing is key to successful treatment. But despite an estimated 84,000 deaths related to hepatitis C virus (HCV) infection in Europe each year (Dalgard & Mauss 2014), from whom many patients have been infected through injecting drug use (Cornberg et al. 2011) no strategy to respond to HCV adequately is in place in the majority of European countries according to two surveys published in *BMC* (Muhlberger et al. 2009; Maticic et al. 2014; and Spina et al. 2014). Why is this so and does it matter?

The lack of public interest in this important threat to public health is striking and probably explains the lack of policy responses. Furthermore the disease carries an important stigma discouraging individuals from publicly acknowledging their infection; this stigma probably also explains why drug users are conspicuously absent (Dalgard & Mauss 2014).

Similar effects can be shown with HIV-testing among drug users, even when in opiate substitution treatment (Schäffer 2012).

HBV Vaccination

The challenge of tackling blood borne viruses in injecting drug users has been an important part of health policy and strategy consideration for the past two decades because of the high prevalence of chronic hepatitis B and C and drug dependence. One particular issue is that there is an effective vaccine for preventing Hepatitis B infection and therefore preventing the long term complications of hepatitis B infection. Indeed this is so effective that any approach to injecting drug users' needs to build the provision of such vaccination as a key outcome of contact with injecting drug users (Farrell, Strang & Stöver 2010). Countries with endemic hepatitis B will control it most effectively by universal vaccination (Gilbert et al. 2004). Many European countries have such universal programmes in place now. However, as well as universal programmes there is a need for targeted programmes for individuals at high risk, such as injecting drug users. The importance of such provision has been noted over the past two decades. In general, however, specialist services such as sexual health and drug services

have a moderately poor record for both uptake and more so for completion of three-course vaccination procedures.

The data in table 6 shows that although HBV vaccination for high risk groups is prevalent in many European countries. However, often drug users are not consequently offered this service, despite the fact that a vaccination is reducing other infectious disease problems.

Safer Use Training Programmes Availability and Coverage

The data in table 6 show that the coverage of safer use training programmes varies considerably throughout Europe. Again it remains unclear to which extent and in which intensity these training programmes are carried out.

Table 6: Harm reduction responses to prevent and reduce drug-related infectious diseases: availability and coverage of NSP, hepatitis C and HIV testing, hepatitis B vaccination for high-risk groups, and safer use training programmes

Country or territory	Needle and syringe exchange programmes					Hepatitis C testing availability and coverage ²	HIV testing coverage among IDUs ^{4,c}	Hepatitis B vaccination for high-risk groups ²	Safer use training programmes availability and coverage ²
	Availability ¹	Year of introduction ¹	No. of sites ^{1,a}	Coverage ^{2,b}	No. of syringes distribute per IDU annually ³				
North Europe									
Austria	✓	1990	32	limited	*	✓ limited	*	✓	✓ limited
Belgium	✓	Fr: 1994; Fl: 2001	70	extensive	177	✓ extensive	*	x	✓ extensive
Denmark	✓	1986	*	*	*	*	*	✓	*
Finland	✓	1997	30	extensive	202	✓ extensive	extensive	✓	✓ extensive
Germany	✓	1984	390	*	21-30	✓ ⁵	limited	✓ ⁶	*
Ireland	✓	1989	28	extensive	*	✓ extensive	*	✓	✓ limited
Luxembourg	✓	1993	8	extensive	124	✓ limited	full	x	✓ full
Netherlands	✓	1984	175	extensive	*	✓ limited	extensive	✓	✓ extensive
Norway	✓	1988	13	extensive	254	✓ full	*	✓	✓ rare

Sweden	✓	1986	3	*	214	*	limited	✓	*
Switzerland	✓	1986 ⁷	101 ⁷	*	88	*	extensive	✓ ⁷	*
United Kingdom	✓	ENG.: 1986, SCT: 1987, NIR: 2001, WLS: *	528 ^e	full	(SCT: 188) ⁸	✓ extensive	*	✓	✓ limited
South Europe									
Cyprus	✓	2007	1	limited	0.4	✓ full	*	x	✓ limited
France	✓	1989	421	extensive	170	✓ full	*	✓	✓ extensive
Greece	✓	1998	7	limited	15 (Athens: 42)	✓ extensive	*	✓	✓ extensive
Italy	✓	1990	*	full	*	✓ full	*	x	✓ full
Malta	✓	1987	7	full	302	✓ full	rare	✓	✓ rare
Portugal	✓	1993	1.195	full	84-169	✓ full	*	✓	✓ extensive
Spain	✓	1985	1.767	extensive	361 ⁸	✓ extensive	*	✓	✓ extensive
Eastern Europe									
Bulgaria	✓	1995	123	extensive	34	✓ extensive	limited	x	✓ limited
Croatia	✓	1996 ^d	6	extensive	248	✓ full	*	✓	✓ extensive
Czech Republic	✓	1986	53	full	202	✓ extensive	limited	x	✓ full
Estonia	✓	1997	13	*	153	*	limited	x	*
Hungary	✓	1994	27	limited	114	✓ extensive	rare	x	✓ limited
Latvia	✓	1997	18	limited	19	✓ limited	*	x	✓ limited
Lithuania	✓	1997	7	extensive	32	✓ limited	extensive	x	✓ extensive
Poland	✓	1989	24	extensive	78	✓ full	*	x	✓ extensive
Romania	✓	2000	4	extensive	49	✓ limited	full	✓	✓ extensive
Slovakia	✓	1994	5	extensive	17	✓ limited	*	x	✓ limited
Slovenia	✓	1992	16	extensive	*	✓ full	*	✓	✓ full

* no data/information available

a. total number of fixed sites including specialist agency sites with NSP, vending machines and pharmacy based NSPs

b. full=nearly all persons in need have access to it, extensive=a majority but not nearly all of them have access to it, limited=more than a few but not a majority of them have access to it, rare=just a few of them have access to it.

c. full= 75%-100% are tested, extensive=50-74% are tested, limited=25%-49% are tested, rare=less than 25% are tested

d. year of first publicly funded NSP programme

e. Wales: n=244, Northern Ireland: n=15, Scotland: n=269, England: no data/information available

References:

1. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical bulletin. Table HSR-4. Needle and syringe programmes (NSPs), Part (i): Year of introduction of needle and syringe programmes (NSPs), types of programmes available in 2011 and number of sites. EMCDDA: Lisbon.
2. European Monitoring Centre for Drugs and Drug Addiction (2013): Countries: Harm Reduction Overview: Responses to prevent and reduce drug-related infectious diseases. <http://www.emcdda.europa.eu/countries/harm-reduction-overviews>, (retrieved: 11/11/2013).
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8. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (2013): Statistical bulletin. Figure HSR-3. Syringe distributed through specialised programmes per estimated IDU in 2011 or latest available year. EMCDDA: Lisbon.

Harm Reduction in Prisons

Drug use, bloodborne virus infections (including HIV/AIDS and viral hepatitis) and overdose risks either during imprisonment or immediately afterwards are serious health problems in prisons and wider criminal justice systems. This makes these places important settings for the provision of effective harm reduction services to help reduce the damage that drug use does to health, prison safety and security as well as the broader community.

Despite the massive overrepresentation of injecting drug users in custodial settings worldwide, the availability of harm reduction measures in prisons lags far behind the availability of these interventions in the general community. Illustrating this gap most vividly is the provision – or lack thereof – of needle and syringe programmes. In 2007, the Commission of the European Communities found, for instance, that although 24 of the EU member states had needle and syringe programmes in the community, only three of those countries had introduced them into prisons. This disparity led the Commission to conclude that:

Harm reduction interventions in prisons within the European Union are still not in accordance with the principle of equivalence adopted by United Nations General Assembly, UNAIDS/ WHO and UNODC, which calls for equivalence between health services and care (including harm reduction) inside prison and those available to society outside prison. Therefore, it is important for the countries to adapt prison-based harm reduction activities to meet the needs of drug users and staff in prisons and improve access to services. (*European Commission 2007*)

The Commission's findings were recently confirmed, and expanded upon, in a 2008 report from the Regional Office which monitored states' progress in achieving the goals of the Dublin Declaration (*Matic et al. 2008*). This report found that, of the 53 signatory countries, condoms were available in prisons in only 18, substitution treatment in 17 and syringe exchange programmes in 6 (*ECDC 2011; Cook 2009*). A review by the International Harm Reduction Association in 2009 found the situation had only marginally improved, with 9 countries in Europe and central Asia having introduced syringe exchange in prisons and 28 with substitution treatment (*Cook 2009*).

Needle Exchange in Prisons

In the community, needle and syringe exchange programmes are widely available in many countries and have been proved to be the most effective measure available to reduce the spread of HIV and hepatitis through the sharing of contaminated injecting equipment (see chapter 1). In prisons, however, needle and syringe programmes remain rare, although they have been successfully introduced in about 70 prisons in a growing number of countries including Germany, Kyrgyzstan, Luxembourg, the Republic of Moldova, Romania, Spain, Switzerland and Tajikistan. Evaluations of existing programmes (*Lines et al. 2006*) have shown that they:

- do not endanger staff or prisoner safety, and in fact make prisons safer places to live and work;
- do not increase drug consumption or injecting;
- reduce risk behaviour and the transmission of disease, including HIV and hepatitis C virus;
- have other positive outcomes for the health of prisoners, including a drastic reduction in overdoses (reported in some prisons) and increased referral to drug treatment programmes;

- have been effective in a wide range of prisons;
- have successfully employed different methods of needle distribution to meet the needs of staff and prisoners in a range of prisons; and
- have been successfully used in prisons alongside other programmes for preventing and treating drug dependence.

When prison authorities have any evidence that injecting is occurring, they should introduce needle and syringe programmes, regardless of the current prevalence of HIV and the hepatitis infection rate.

All drug treatment services, both residential or community-based, should incorporate a distinct harm reduction element to reduce the spread of bloodborne viruses and risk of drug-related deaths, notably deaths from overdose. Specific harm reduction interventions include:

- needle exchange services, that is, the provision and disposal of needles and syringes and other clean injecting equipment (such as spoons, filters and citric acid) in a variety of settings;
- advice and (peer) support on safer injection and reducing injecting, and reducing the initiation of others into injecting;
- advice and information to prevent transmission of bloodborne viruses (particularly hepatitis A, B and C and HIV) and other infections related to drug use;
- vaccination for hepatitis B;
- access to testing and treatment for hepatitis B and C and HIV/AIDS;
- counselling related to HIV/hepatitis testing (pre-and post-test);
- advice and support on preventing the risk of overdose (including provision of a Naloxon kit);
- risk assessment and referral to other treatment services.

As shown above, many prisoners continue to use drugs in prison, and some people start using and injecting drugs while in prison. Despite often massive efforts to reduce the supply of drugs, the reality is that there is a demand and drugs can and do enter prisons.

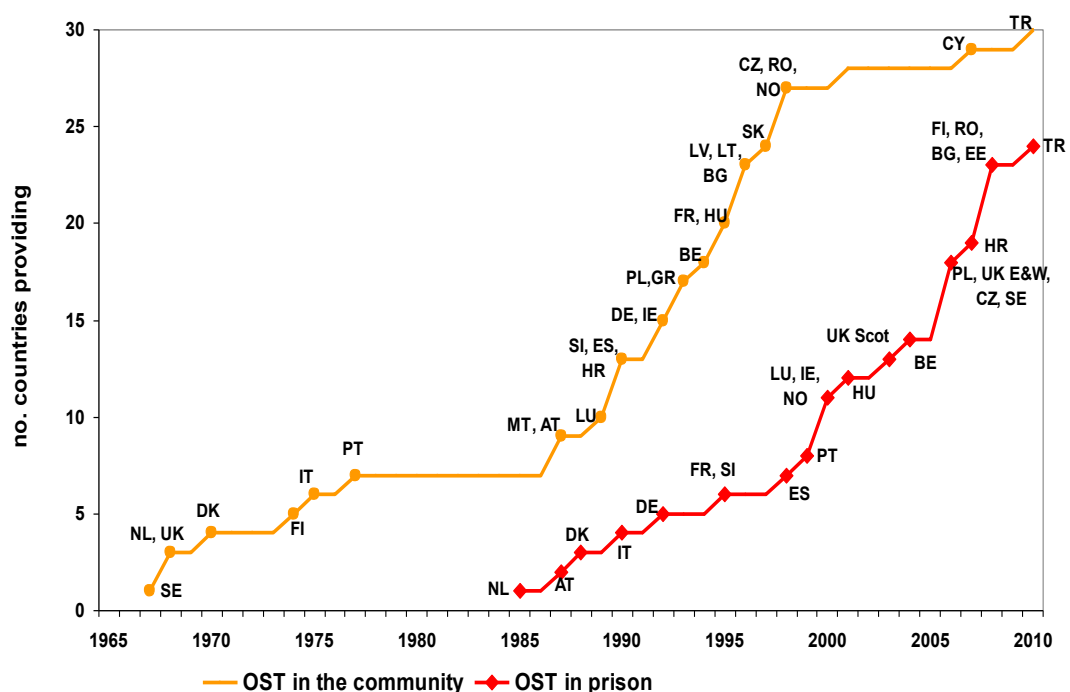
In prisons, as in the community, harm reduction measures have been successfully implemented during the past 20 years throughout Europe as a supplementary strategy to existing programmes oriented to drug-free treatment. Harm reduction does not replace the need for other interventions but adds to them, and should be seen as a complementary component of wider health promotion strategies. The following hierarchy of goals should guide drug policy, in prisons as outside:

- securing survival
- securing survival without the person contracting irreversible damage
- stabilizing the addict's physical and social condition
- supporting people dependent on drugs in their attempts to lead drug-free lives.

OST in Prisons

Generally the death rate of people with opioid dependence in OST is one third to one quarter the rate in those not in treatment (Stöver & Kastelic 2014). OST is, therefore, an effective strategy for preventing the transmission of HIV and hepatitis C. It should be implemented as soon as possible in prisons at high risk of HIV infection (Stallwitz & Stöver 2007). However, there is an enormous time lag in introducing OST in prison settings as the EMCDDA shows:

Figure 14: Percentage of prisoners receiving OST in prisons in Europe



The EMCDDA points out (see figure 14) that the percentage of prisoners receiving OST in prisons is considerably low in the majority of European prisons with approx. 3%. Only in a few countries the percentage is approx. 10% of prisoners.

Table 7. Opioid substitution treatment in prison in EU 27, Croatia, Turkey and Norway (EMCDDA, Statistical Bulletin 2012)

Country	Initiation of OST	Starting from year	Continuation of OST	Starting from year	OST availability in prison		Total number of prisoners on a given day	Number of prisoners in OST in 2010			% of prison population in OST
								Clients on a given day	Clients in the year		
Austria	Yes	1987	Yes	1987	Full		8 597	880			= 10%
Belgium	Yes	2004	Yes	2004	No information		11 382	341			3% - < 10%
Bulgaria	Yes	2008	Yes				9 379		113		< 3%
Croatia	Yes	1992	Yes	1992	Limited	(6)	5 165	392	789		3% - < 10%
Cyprus	Not available		Not available		Not available	(3)	900	0	0		not available
Czech Republic	No		Yes	2006	Limited	(1)	21 955		67		< 3%
Denmark	Yes	1988	Yes		Full		3 944		1111		3% - < 10%
Estonia	Yes	2008	Yes	2009	Full		3 470		64		< 3%
Finland	Yes	2008	Yes		Rare		3 316	50			< 3%
France	Yes	1995	Yes	1995	Extensive		66 925				3% - < 10%
Germany	Yes	1992	Yes	1992	No information		71 634		2838	(14)	3% - < 10%
Greece	Not available		Not available		Not available	(2)	11 934	0	0		not available
Hungary	(Yes)	2001	(Yes)	2001		(4)	16 459	0	0		< 3%
Ireland	Yes	2000	Yes	2000	Full		4 352	539			= 10%
Italy	Yes	1990	Yes	1990	Limited		68 345		5357	(9)	3% - < 10%
Latvia	No		Yes	2012			6 778	0	0		< 3%
Lithuania	Not available		Not available		Not available		8 887	0	0		not available
Luxembourg	Yes	2000	Yes		Full		680	75	235		= 10%
Malta	Yes	1995	Yes		Limited	(5)	583		102		= 10%
Netherlands	Yes	1985	Yes		Extensive		11 737		1409		3% - < 10%
Norway	Yes	2000	Yes	2000	Extensive	(7)	3 636	167		(12) (13)	3% - < 10%
Poland	No		Yes	2006	Extensive		80 728		144		< 3%
Portugal	Yes	1999	Yes		Extensive		11 613	1102			3% - < 10%
Romania	Yes	2008	Yes		Limited		28 191		13		< 3%
Slovakia	Not available		Not available		Not available		10 068	0	0		not available
Slovenia	Yes	1995	Yes	1995	Full		1 351		538		= 10%
Spain	Yes	1998	Yes		Full		75 859		20055	(8)	= 10%
Sweden	Yes	2006	Yes				6 922		72	(10)	< 3%
Turkey	(Yes)	2010	(Yes)	2010	Not available		120 391	0	0		not available
UK England & Wales	Yes	2006	Yes	2006			118 015		30650	(11)	= 10%
UK N Ireland	No		Yes		(UK) Full		1 475				
UK Scotland	Yes	2003	Yes				7 890	1639			= 10%

Notes:

Where data are not available for a country, the table entry is left empty.

(...) indicates that substitution treatment is legally available in the country but there are no reported clients.

Reitox NFPs's expert rating

Full: nearly all prisoners in need would obtain it

Extensive: a majority of prisoners but not nearly all of them would obtain it

Limited: more than a few but not a majority of prisoners would obtain it

Rare: just a few of prisoners would obtain it

(1) OST can be initiated only in rare individual cases.

(2) According to Ministerial Decree, (Y5 69750/ 2003) substitution substances (methadone or buprenorphine) can be administrated for 12 days to drug addicts who are under arrest by police or prosecution agencies and are being taken into custody in correctional institutions, with the precondition that they are already under such treatment, in order to prevent withdrawal symptoms when due to the imprisonment the continuation of the programme is not possible.

(3) Foreseen in Cyprus Action Plan by 2012.

(4) Methadone treatment has to be provided daily at external treatment centres, while Buprenorphine-naloxone treatment can be provided in prisons.

(5) When a person is admitted to prison, an initial medical assessment is done immediately and if the inmate requires methadone, s/he is admitted to the Forensic Unit at Mount Carmel Hospital (psychiatric hospital) for the start of the treatment. Eventually, when the inmate is stabilised and the process of weaning off from methadone is clear, s/he is re-admitted to the prison, where s/he can continue the treatment until the treatment finally ends. Initiation of an OST (mainly methadone) is thus not precisely from the prison system but from the Forensic Unit.

(6) Methadone treatment in prison was introduced in 1992, while Buprenorphine treatment was introduced in 2007.

(7) Initiation of OST has to be carried out by an external regional maintenance treatment provider.

(8) 2009 data.

(9) The number of prisoners in Italy "with drug-related health and social problems", including people in need of opioid substitution treatment, is 24 008.

(10) Number of prisoners treated in just one project (ITOK, Stockholm). Personal communication, Swedish NFP, 08 June 2012.

(11) The total number of prisoners on a given day is the number of new receptions (118,015) between April 2010 and March 11.

(12) 2008 data.

(13) Personal communication Odd Hordvin, Norwegian NFP 1 March 2010.

(14) Personal communication Lisa Jakob, German NFP 17 October 2011. The data represents 5 Länder (Sachsen-Anhalt, Baden-Württemberg, Berlin, Hessen & Nordrhein-Westfalen) where a total of 2 838 cases of OST reported in the years 2009-2011 were recorded. The total number of prisoners in these 5 countries is 31 865. The resulting OST rate for the figure is thus 8,90.

For further information on the calculations of the rates please see [Figure HSR-4](#).

See also 'General notes for interpreting data' on the [Explanatory notes and help page](#).

Sources:

Standard Table 24 (ST24) on 'treatment availability' submitted by NFPs in 2011.

Structured Questionnaire on 'Prevention and reduction of health-related harm associated with drug use' (SQ23/29), submitted by NFPs in 2011.

Reitox National Reports 2011.

Data on number of prisoners: CoE SPACE I Survey 2010, Table 1: Total number of prisoners including pre-trial detainees on 1.9.2010.

[Download spreadsheet version \(.xls\)](#)

Table 8: Drug use, drug related harms and provision of harm reduction interventions (NSPs and OST) in prisons

Country or territory	Prevalence (%) of lifetime injecting drug use among prisoners ¹	Prevalence (%) of drug use (any illicit drug) within prison among prisoners (%) ²	Prevalence (%) of injecting within prison among prisoners (%) ³	Hepatitis C prevalence (%) among IDUs in prisons ⁴	HIV prevalence (%) among IDUs in prisons (%) ⁵	Provision of NSPs ^{6,7} (year of introduction)	Provision of OST (year of introduction) ⁸	% of prisoners in OST ⁸
North Europe								
Austria	*	*	*	*	*	x	✓ (1987)	3-<10
Belgium	15	33	2.3	17.4 (Fl., 1999), 27.7 (Fr., 2001) (S)	0.3 (1999, Fl.), 1.1 (2001, Fr.) (S)	x	✓ (2004)	3-<10
Denmark	*	*	*	85.0 (1996) (S)	0.0 (1996) (S)	x	✓ (1988)	<3
Finland	*	17	*	21.4 (2007)	0.1 (2007)	x	✓ (2008)	<3
Germany	31	37.2 (Cannabis) 22.7 (Heroin) 21.2 (other illicit drugs) ⁸	22.2	50.6 ⁹	2.0% ⁹	✓	✓ (1992)	3-<10
Ireland	*	*	*	71.7 (1999)	5.8 (1999)	x	✓	x

							(2000)	
Luxembourg	*	56	31	90.7 (2005)	4.3 (1998)	✓	✓ (2000)	>10%
Netherlands	*	*	*	*	*	x	✓ (1985)	3-<10%
Norway	*	26-38	*	*	*	x	✓ (2000)	3-<10
Sweden	*	*	*	80.3 (2008) (S)	7.7. (2008) (S)	x	✓ (2006)	<3
Switzerland	39.9 (S)	Up to 60% ¹⁰	*	*	1.0 ¹¹	✓ ¹² (1992)	✓ ¹² (1989)	*
United Kingdom	*	21	7	29.8 (ENG & Wales, 1998) 42.) (Scotland, mainly Glasgow, 1999)	0.5 (1998) (ENG & WLS)	✓/x ^a	✓ ^b (2003: SCT, 2006: ENG, WLS)	>10 ^c
South Europe								
Cyprus	*	*	*	*	*	x	x	x
France	7	*	*	80.1 (1996) (S), 53.2 (1997) (S),	13.3 (1997) (S)	x	✓ (1995)	3-<10
Greece	*	46	*	63.1 (1999)	*	x	x	x
Italy	30	25	*	64.2 (1999 (S)	*	x	✓ (1990)	3-<10
Malta	*	*	*	*	*	x	✓ (1995)	3-<10
Portugal	12 (Cocaine) 13 (Heroin)	36	11	61.9 (1997) (S)	28.1 (1997) (S)	✓	✓ (1999)	<3

Spain	26	28 (Cannabis), 3 (Cocaine or Crack) 5 (Heroin) 0.3 (Amphetamin es or Ecstasy)	3	89.0-91.7 (1994) (S)	39.7 (2006)	✓	✓ (1998)	>10
Eastern Europe								
Bulgaria	19	4	3	17.9 (2006)	2.7 (2005), 0.0 (2006)	x	✓ (2008)	<3
Croatia	5	*	*	44.0 (2007)	0.0 (2007)	x	✓ (1992)	3-<10
Czech Republic	22	22	8	52.0 (2002)	0.4 (2002)	x	✓	<3
Estonia	*	*	*	*	*	x	✓ (2008)	<3
Hungary	10	14	0.7	11.5 (2008) (S)	*	x	✓ (2001)	<3
Latvia	20	32	10	*	*	x	✓	<3
Lithuania	48	30	*	*	*	x	x	x
Poland	6	20	3	*	*	x	✓	<3
Romania	6	5	*	*	*	✓	✓ (2008)	<3
Slovakia	*	*	*	*	*	x	x	x
Slovenia	*	*	*	*	*	x	✓ (1995)	>10

* no data/information available

(S) estimate(s) is/are based on sub-national data

a. NSPs in prisons only available in Scotland

b. OST in prisons not available in Northern Ireland

c. refers to the percentage of prisoners in OST in Engl

Chapter 4

Recommendations on Good Policies and Practices to Prevent Drug-Related Deaths: Focusing on Drug-Induced Deaths



Recommendations for Practice, Research and Policies on Overdose Prevention

This chapter presents a set of recommendations aimed to decrease drug users' risk of overdose. They are supported by the comprehensive literature review synthesized on Chapter 2, as well as on the mapping of harm reduction measures presented in chapter 3. This set of recommendations was discussed among researchers, field professionals with a vast experience and PUD. After collecting these contributions, the document was submitted to the scrutiny of a European group of experts⁴², composed of researchers and practitioners from Finland, Germany, Italy, Portugal, Spain, and the United Kingdom.

The recommendations on good policies and practices organized according to the scheme used in the Chapter 2 (for the literature review), preceded by the organization's recommendations. In order to adapt the recommendations to key actors, they are organized according to Practice, Research and Policies. All topics were subject of an independent experts validation (on criteria like feasibility, efficiency, barriers to implementation, degree of priority). We'd like to stress that, since the expert group is geographically specific, other groups could possibly present distinct conclusions.

⁴² The members were selected according to previously established criteria: i) possess recognized work experience in the field of Drugs and Addiction; ii) hold significant scientific production on the topic of drug-related, and more specifically, drug-induced deaths. The scientific production suitability was considered by taking into account the following dimensions: overall quality, adequacy to the topic, number and topicality; and/or iii) hold a vast practical experience in the field of overdose prevention; and finally iv) host the scientific work/intervention work in one of countries abovementioned. The countries represented in this group were selected according to some of their interesting experiences on measures to prevent drug-related deaths. The group of experts was created with a double purpose: to offer an external and highly specialized analysis of the recommendations and rationale; and to constitute a European critical mass on the issue of drug-related deaths, with the potential to be expanded and self-sustained in the future. In those cases where the chosen expert was unavailable to collaborate, a suitable researcher/experienced practitioner was pointed by themselves on their behalf.

General Recommendations

The existence of a suitable and updated conceptual definition of drug-induced deaths is a necessary groundwork on this topic. Similarly, the operationalization (in guidelines for practice) of scientific and intervention data about overdose prevention is a fundamental action to establish a commitment towards the reduction of the issue.

Rethinking the Concept of Drug-Induced Deaths

As presented in chapter one, the most commonly used definition of drug-induced deaths considers cases of “people who die directly due to the use of illegal substances, although these often occur in combination with other substances, such as alcohol or psychoactive medicines. These deaths occur (generally) shortly after the consumption of the substance” (EMCDDA, 2009a, p. 6). Considering the complexity underlying the phenomena, the work dedicated to produce this definition was a great achievement on the topic. However, and since the definition of drug-induced deaths should not be immune to changes in drug trends and policies, we’d like to initiate a debate to redesign the concept. The involvement of legal pharmaceutical opioid or non-opioid drugs in drug-induced deaths has become more noticeable nowadays. If we consider this trend, with considerable expression in some European countries or regions, we can detect some limitations in the abovementioned definition, since it only considers the deaths caused by illicit substances (used alone or combined with others). Although it is true that, in the majority of cases these substances seem to be illegally obtained and used, this doesn’t change its status to ‘illegal’. Also, considering that poly drug use is the major contributor to the amount of opioid fatal/non-fatal overdoses, the distinction between legal/illegal could be artificial. The current definition of overdoses as episodes that occur generally shortly after the consumption of the substance seems to exclude slow onset incidents which involve opioids with longer effects than heroin.

- Considering the previous arguments, we propose that the definition of drug-induced deaths should be brought into discussion, in order to adapt it to existing and emerging trends. It is not “only” a conceptual issue, but also something vital to guide the practices in the design and implementation of the most suitable interventions.

Operationalizing Guidelines

In Europe, only a small number of countries hold national harm reduction guidelines specifically designed to provide practical orientation to professionals on the prevention of drug-related and more precisely drug-induced deaths (EMCDDA, 2014). The exceptions are present in Spain (Sáez, 2005) and the United Kingdom (National Treatment Agency, 2004; guidelines for helplines). In addition, some countries report the existence of general guidelines for the prevention of drug related harms (e.g. Italy, Lithuania, Hungary, and Portugal).

- Nationally-adapted guidelines for the development and strengthening of overdose prevention interventions should be created, ideally under the concerted responsibility of policy-makers, researchers and practitioners, and with consultancy of PUD.

Environmental Prevention

Recommendation for Practice

- Intervention programs should stress environmental strategies in order to delineate upstream preventative measures.
-

Recommendation for Research

- Socioeconomic determinants in problematic drug use should be studied more deeply, using comparative measures within and between countries with different socioeconomic indicators.
 - Research on the mediating and moderating role of social and psychological dimensions (e.g., coping strategies, network support, stigma, social cohesion, and socioeconomic stress) in social inequalities and problematic drug use and drug related mortality.
-

Recommendation for Policy

- Drug prevention policies should include socioeconomic dimensions, such as resources developed to decrease economic inequalities, poverty and unemployment rates.
-

Drug Policy Models Contributing to Prevention

Recommendation for Practice

- The organizations of civil society working with PUD, including peer educators, in articulation with research centres, should involve themselves in the discussion and monitoring of national drug policies, especially those regarding overdose prevention.⁴³
-

Recommendation for Research

- Researchers must invest in the communication of findings on overdose prevention interventions - in a policy-friendly format, in order to successfully inform decision-making actors.
 - Research on overdose responses must be action-oriented, in order to provide strategic, meaningful, applicable and timely information for policy making.
-

Recommendation for Policy

- Install a ground-breaking, and evidence-based global debate targeting the establishment of Drug Models and Policies characterized by enclosing a comprehensive approach that respects human rights and aims to avoid collateral damages.
 - The gap frequently found between drug policies design and implementation should be reduced through continuous investments and funding, according to systematic assessment procedures.
-

⁴³ This articulation civil society-academy has a major role in the production of dispassionate advocacy discourses that can be seen with discredit by policy-makers. This doesn't mean that activist discourses, sometimes lacking the support of evidences from research, are neither valid nor crucial (even considering the limitations faced by evidences). Alternatively, this means that an articulated effort can provide more meaning to the research produced with inputs from practice and vice versa.

- Legal solutions allowing the provision of overdose prevention responses (e.g. naloxone legislation, persecution following emergency responses) should be designed. Legal alternatives for harm reduction provision should be privileged, even if a major reform in national drug policies isn't currently in discussion.
 - PUD, civil society and researchers should be key actors in the design of national drug strategies for overdose prevention.
-

Preventing Overdose Occurrence

Recommendation for Practice

Overdose prevention campaigns

- In order to be effective, information and communication strategies used for overdose preventions should be part of more comprehensive interventions and services close to PUD (e.g. outreach teams, treatment services, HIV-testing services). Campaigns materials should be co-constructed.
- Information and communication devices must be designed for specific groups of PUD (addressing people that reunite risk factors for opioid overdose) instead of being designed for several groups of drug users.
- Campaigns aimed at the general public should demonstrate the impact of the stigma surrounding drug use and drug-related deaths.
- PUD, their families and friends should be involved as key-actors in overdose prevention mass media campaigns, both as consultants and as protagonists. They are crucial in attributing meaningfulness to messages conveyed⁴⁴.

Overdose risk assessment

- It is fundamental that the professionals who work in drug services (including outreach teams) as well as other professionals that have closer contact with PUD (e.g., pharmacists, prison staff, police officers that work in drug scenes) receive training in OD risk assessment. These professionals must be included in the existing networks, partnerships and protocols, in order to adequately orient PUD when risk is detected.
- Overdose risk assessment and tailored education should be provided to PUD by trained professional from drug/health services on a routine basis.

⁴⁴ A good example came from the Overdose Awareness day, in Portugal, where the Project In-Mouraria, in Lisbon, gathered technicians and PUD to explore materials on overdose prevention and adapt them according to their reality. Another good example coming from Portugal is CASO, acronym of “Consumidores Associados Sobrevivem Organizados” [PUD Survive Organized] - they elaborated a flyer concerning Overdose, PWID and sexual prevention.

-
- Drug services must routinely evaluate the mental health status and life events, by taking into account both structural and circumstantial issues, as integrated part of an overdose risk assessment. PUD identified as being at high risk for overdose occurrence, improved care must be provided.
 - Mental health status must also be routinely assessed in prison settings, since intentional overdoses seem to be frequent among this group.⁴⁵
 - A model of case management should be adopted by services, in order to avoid miscommunication among them (e.g. drug services, outreach team, psychiatric services, and infectious disease services, first-aid ambulances) and decrease the personal risk for overdose. The person elected for the position of case manager should be present in one of the services used by the individuals; should be able to capture resources; and have a trust relationship with them.
 - In countries where both general practitioners and specialized doctors are able to prescribe OST, additional efforts in establishing good links between both have to be done, in order to address issues on over prescription.

Drug Treatment

- Free access to quality treatment should be provided to any person who freely decides to enter treatment. In order to offer a personalized treatment adapted to each PUD needs, when necessary, drug treatments should work in collaboration with hospitals, mental health services, and NGO's and outreach teams.
- Timely responses to new PUD requesting treatment should be provided, in order to prevent dropouts during waiting. In OST settings, namely in teams where the physician isn't always available the substance's induction through delayed/indirect medical's prescription should be considered. This solution (already carried out, for example, in the UK) relies on a clinical protocol that allows trained nurses to

⁴⁵ Havis and Best (2003) conclude that deliberate overdose due to mental health issues is among the common causes for overdose deaths of individuals in custody.

administer the substance immediately, without the physicians' presence.

- Coercive treatments can violate human rights. Moreover, externally imposed treatments could produce more iatrogenic effects than the contrary, namely in OD occurrences.
- Clients entering a drug treatment program should receive complete information and have access to the different treatment modalities and, in the OST case, about the substitution substances available. Clients should be actively involved in the decision making process concerning their own treatment in order to increase its effectiveness.⁴⁶
- Risk assessment on OD should be one of the criteria for treatment selection. Information on overdose prevention should routinely make part of the treatment initiation process. Particular attention should be given to groups that are more vulnerable to fatal OD (e.g., older users, users with a history of non-fatal OD, users with mental and health problems). Gender-specificities must be also considered. Also, the treatment modalities specificities (e.g., Drug-free treatment, OST), and particular treatment moments (e.g., induction, transition treatment phases and discharge) should be considered.
- Holistic approaches that combine the pharmacological component of drug treatment with psychological and social interventions must be adopted, since this is the most effective method in what concerns rate of retention in treatment and health outcomes).⁴⁷
- Services should be flexible about the functioning hours, adapted to the public's needs, taking into account that this may favour the clients' occupational life dimension (e.g. employment, family, hobbies).
- Interventions that require abstinence base treatments should only be implemented

⁴⁷ Although offering psychosocial treatment (that includes "structured counselling, motivational enhancement, case management, care-coordination, psychotherapy and relapse prevention"; EMCDDA, 2009) is a widespread practice among European countries, some countries still present limited coverage in terms of outpatients (Bulgaria, Estonia, Romania) and inpatients (Bulgaria, Cyprus, Denmark, Estonia, Finland, Hungary and Romania).

when PUD freely chooses this one among other options of treatment and is informed about the risks underlying on top use of substances.

- The decision for conducting supervised interventions should be evaluated according to each individual case and should only be implemented when the risks of on top use surpasses the benefits of a trust relationship between the drug services and the PUD.
- Sanctions relying on interdiction from the treatment program should be avoided, under penalty of putting clients in serious risk for overdose.
- Family and other relatives should be engaged in monitoring treatment, as well as overdose risks; they should be encouraged to escort the client, if he/she agrees so, to occasional sessions.
- The length of treatment should be adapted to each PUD needs and shouldn't be established as a rule of thumb. PUD who withdraw from treatment should be monitored, namely by the outreach teams.
- Heroin-assisted treatments, alongside with psychosocial interventions, should be prescribed as a second-line treatment targeted to high-risk heroin users that do not benefit from more orthodox treatment modalities.
- Staff from treatment services delivering heroin-assisted treatment should receive training on overdose prevention and transfer that knowledge to their clients. Since, in some cases, overdoses occurring in this setting seem hard to predict (even with a good risk assessment protocol), treatment centres must hold effective emergency protocols, and proper equipment (including naloxone).

Drug Consumption Rooms (DCR)

DCRs must be established within or in the vicinities of open drug scenes and in territories where the prevalence of overdoses is more significant.

- DCRs should have a multidisciplinary team, including peer educators, with specific
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training on overdose prevention. Staff should also have training to respond to overdose episodes. Appropriate equipment for responding to emergency situations (e.g., naloxone, oxygen tanks, masks for CPR or resuscitation bags) should be available.

- The PUD registration on DCR should guarantee their anonymity and confidentiality.
- In territories where possession and/or consumption are criminalized, the user card modality should be adopted. This option is already implemented in some European contexts. This prevents the person of being prosecuted or giving up searching the rooms, due to their fear of prosecution.
- DCRs' opening hours should be established locally, according to the specific needs of the majority of facility users.
- DCRs should adopt a pragmatic view of harm reduction, by giving open access to its services to all persons who use drugs (e.g., poly-consumptions users, OST users, non-documented migrants, users with different routes of consumption, NPS users).

Information on heroin purity and composition

- Health professionals should receive training about the adulteration practices and effects. Also, they should be able to respond in cases where adulterated substances are present (be able to differentiate typical and atypical effects of several drugs drug consumption).
 - PUD must be informed by the services that support them (e.g. outreach teams; drug treatment) about the usual adulteration practices (including the ones related with route of consumption) and possible effects linked to common adulterants.
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Recommendation for Research

Overdose prevention campaigns

- Media campaigns on overdose prevention should be delivered in association with well-designed studies of effectiveness (during and after the campaign broadcasting).
- Messages conveyed by information and communication campaigns, as well as the communication formats used, must be based on existing evidences, and must be meaningful to target groups.

Overdose risk assessment

- The organizations responsible for the coordination of drug and health services in each country should investigate the staff's training, knowledge and the needs in overdose risk assessment and response, through national surveys.
- A group of European researchers should be established and collaborate for the development of an assessment tool (e.g., checklist), designed to assist professionals in overdose risk assessment. This tool should be periodically updated with the most recent research findings concerning overdose risk factors.
- It is necessary to develop study trials about the efficacy of decision support systems, including checklists designed to improve practice in overdose risk assessment.

Drug Treatment

- A better comprehension about the extent and quality in which overdose prevention is implemented in drug treatment services should be achieved through investments in this research area.
- Research investments should be made in assessing the health literacy of individuals in drug treatment, concerning their treatment's characteristics, namely in terms of overdose risks carried.

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- Studies focusing the decision making process in OST, namely in terms of the patients' involvement should be developed, associating the level of involvement with the quality of health outcomes. Among them, the accumulation of risk factors for overdose and the number of overdose episodes should be important indicators.
 - Research should invest in longitudinal studies on the long-term results of heroin-assisted treatment. Applied research concerning methods and strategies that guarantee long-term outcomes in this treatment modality should also be analysed.
 - Additional studies on alternative administration routes of diacetylmorphine (smoking, oral, intranasal) should be conducted.
 - Additional studies regarding the use of injectable methadone in treatment programs should be conducted.

Drug Consumption Rooms

- Research departments in each country must map risk territories considering also the ones with major incidence of overdoses, in order to inform political bodies about the most suitable places to install these facilities. Data should be gathered through ambulance registries, outreach teams information, and PUD interviews.
- Additional studies should be conducted in order to understand the efficacy of DCR for PUD with different drug careers as well as for communities.

Information on heroin purity and composition

- Research on the most effective strategies to disseminate information on drug contaminants (strategies that benefit PUD and professionals, and promote behaviour changing) must be developed.
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Recommendation for Policy

Overdose prevention campaigns

- Governments should analyse (for funding purposes) the available evidences on efficacy and cost efficacy of social marketing campaigns associated with drug use and risks. In some contexts and campaigns' configurations (e.g. the isolated use of advertising), the investment made can be disproportional in comparison with results achieved (e.g. inexistent, incapable to reach target group, or short-term). In that case, funds are better applied in other programs.

Drug Treatment

- Drug policies should provide both harm reduction and abstinence-based treatments. The choice for the modality of treatment should be based in clinical criteria and in the PUD characteristics and preferences and not be morally constrained.
 - Equal and free access to all kind of drug treatment services should be available to all citizens including non-documented ones.
 - Governments should officially introduce, in treatment responses, the different substitution substances available/proved to be effective (methadone, buprenorphine, buprenorphine+ naloxone), in order to fulfil the needs of opiate users with different profiles. The access to different treatments should not be constrained by the PUD economic deprivation exists.
 - Welfare state, in particular social services, should guarantee that PUD do not fail in initiating or do not leave drug treatment due to economic constraints. When this happens, social services should guarantee the support to overcome these limitations.
 - Country policies should allow undocumented PUD migrants to access drug treatment for humanitarian (health for "all") and pragmatic (public health) reasons. This group
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holds a double vulnerability status and tends to present a range of risk factors; this way, the services shouldn't deny their access to therapy services.⁴⁸ Also, governments should not force health services to inform on the migrants.

- Full coverage and free access to drug treatment should be provided in prison settings, including OST. Articulation between drug services inside and outside prison should be promoted namely for preparing and monitoring the release.
- Governments should be responsible to promote the development of guidelines regarding OST, properly adapted to the specific country's context. The actors involved in their elaboration should include health authorities, NGO's and other entities that work directly in the field. Organizations of PUD and their families should integrate discussion groups for guidelines' design.⁴⁹

Drug Consumption Rooms

- Governments should consider the implementation of DCRs, at least in trial modality, taking into account the evidences favourable to those devices.
- Integrated DCRs, i.e. in coordination with drug services structures, should be preferred to other modalities, once the pre-existence of networks in these structures should allow a better approximation of DCRs clients to other services.
- Policies concerning access criteria should not exclude undocumented migrants. Special services for this public can be developed as an alternative (as done in the Netherlands), so the geographical lack of access to facilities doesn't constrain this group.
- Residence limitations in accessing DCRs must be carefully analysed. Fear of stigma by neighbours, employees, and acquaintances can lead PUD to search DCRs far from their

⁴⁸ In 2011, a study demonstrated that in some Member States, undocumented migrants have less than minimum rights in accessing general health care. Those were: Finland, Ireland, Sweden, Malta, Austria, Bulgaria, Czech Republic, Latvia, Luxemburg and Romania. Portugal, Spain, Italy, France and Netherland were the countries that provided more than the minimum rights care (Cuadra, 2011). Also, an explicit obligation to denounce undocumented migrants was found in Lithuania and Sweden (ibid).

⁴⁹ According to EMCDDA information (retrieved in June, 2014), three countries have no information about guidelines on OST (Greece, Italy and Malta), one has no guidelines developed (Romania), and four don't have guidelines about OST (only about other interventions; Finland, Poland, Slovenia, and Norway).

residential areas. According to the Spanish case, not imposing residence constraints can benefit DCRs clients.⁵⁰

Information on heroin purity and composition

- Implement or improve existing surveillance devices for the detection of adulterated substances and timely intervention. This includes the routinely collection of random samples of drugs in street settings.
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⁵⁰ The Netherlands is an example of residence limitation, in an attempt to prevent “drug tourism”. Regarding the measures that address residential limitations, an analogous example comes from the Portuguese infectious diseases services. In the past, persons with HIV were referred to receive treatment in their residential area and the fear of stigma led some of them to abandon treatment. A large amount of them tried, without success, to be treated in services far from their residential area. Today, this protocol has changed and people with HIV can be followed in services out of their residential area.

Preventing Overdose Deaths

Recommendation for Practice

Naloxone Provision

- Professionals should mobilize themselves and be key-advocators for the naloxone availability in each emergency response device (ambulances, fire-fighters, outreach teams).

Professionals managing overdoses: training and intervention

- Training on overdose prevention, recognition and response, including overdose management with naloxone, should be provided to emergency staff, professionals working in the drugs field, and general healthcare professionals. The same is valid for pharmacists in regions where OST, NEP and naloxone provision exists on those facilities (e.g. Italy for naloxone provision).
- Provide training in overdose prevention, recognition and response, including training in overdose management with naloxone to prison staff.
- Protocols for police attendance at overdose scenes should ensure that police action does not dissuade overdose witnesses of calling emergency services. In countries where drug use is criminalized, witnesses who call for help in overdose situations should have immunity from prosecution for drug possession (e.g., “Good Samaritan overdose law”).
- By routine, the ambulance should take the person who overdosed to medical facilities, not only with the intent of monitoring him/her in the following hours, but also to provide opportunistic interventions. These include: deliver overdose information and promote approximation to health services.
- In those cases where the overdose victim refuses to attend the hospital, protocols with outreach teams and other services within the community must be activated, to offer the necessary support and monitoring.

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- Emergency devices should carry written information about overdose prevention and response, ready to be delivered to overdose witnesses.

Overdose Prevention, Recognition and Response: training PUD, families/social network and other bystanders

- Overdose prevention programs aimed at PUD and their families must be implemented and extended. Naloxone provision is an important resource, but its absence should not hinder the implementation of these programs.
 - Network approaches that take into account the group dynamics and the ties between PUD, should be increasingly considered, in order to optimize the training outputs. Instead of selecting “random” PUD to participate in training programs, a “snow-ball” selection based on the users’ relationships can be useful to promote motivation and increase the chances of trained users being with each-other.
 - Harm reduction services should be perceived as suitable devices to host take-home naloxone programs, since they have already established a proximal relationship with PUD and have frequent access to hard-to-reach PUD.
 - The dissemination of messages on overdose prevention and response should be a vital part of the outreach teams’ routine work. This should include information about how to call emergency services, providing the right information.
 - Implement overdose prevention training to inmates, as well as take-home naloxone programs. They should be provided not only in the release moment, but also within the sentence period (i.e. distribution of naloxone kits among inmates).
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Recommendation for Research

Naloxone Provision

- Additional studies on the efficacy and cost-effectiveness of intranasal naloxone should be conducted.

Professionals managing overdoses: training and intervention

- Investigate the knowledge on overdose recognition and response of medical and non-medical personnel who frequently work alongside PUD, due to the scarce literature on this field.
- Additional research on the efficacy of OD prevention programs in prison settings should be conducted.
- Since few is known about the role of emergency lines operators in managing overdose situations (instructions, security, quickness), studies on this topic must be promoted.

Overdose Prevention, Recognition and Response: training PUD, families/social network and other bystanders

- More research to differentiate risk and protective factors for both slow and immediate onset overdose should be encouraged. In this case, the contextual factors (like the witnesses role) are crucial, since not consuming alone is a limited strategy in cases of slow onset.

Recommendation for Policy

Naloxone Provision

- Governments should assume a more expressive role in the negotiation with naloxone manufacturers, in order to promote the prices' dropping and avoid the increasing demand.
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Professionals managing overdoses: training and intervention

- The professionalization of technicians working in the drugs field must be presented as a way to establish a learning curriculum and a way to standardize training, with mandatory contents on overdose prevention.

Overdose Prevention, Recognition and Response: training PUD, families/social network and other bystanders

- Activities concerning overdose prevention and response training should be included in the contracts with services that work with drug users.
- Governments should find solutions to unlock the positive impact of naloxone administration and provision by bystanders. Models of “standing order” prescription or prescription free (as in Italy) for naloxone provision should be considered.
- Naloxone provision should be implemented in pharmacies, in resemblance to what is done in Italy, and to what is done in some countries regarding OST and NEP. These countries can capitalize the already existing network, with pharmacies providing other harm reduction measures.

Preventing Overdose Re-Occurrence After Non-Fatal Episode(s)

Recommendation for Practice

- A necessary number of emergency staff (capable of covering the functioning hours) in hospital settings should receive training in overdose prevention, in order to provide information and refer PUD to the most suitable intervention services. Counselling opportunities should also be provided by partnerships established with drug services.
 - People hospitalized as a consequence of a non-fatal overdose should be further referred to other services before medical discharge in accordance to their needs (e.g., drug services, mental health services).
 - People that experienced and survived an overdose should be the main targets to receive overdose prevention training. They should receive it as a direct beneficiary - considering their major vulnerability to subsequent overdoses -, but also as a potential bystander – considering their decreasing tendency to intervene when witnessing one. Individuals in this situation should be elected to deliver peer-to-peer information and education and also provide assistance in case of witnessing overdoses, since they're more likely to be in this situation.
 - Emergency services should try to convince the person who overdosed to call a family member or a friend and alert the person who witnessed the episode; the individual should provide information about overdose prevention to this potential bystander.
 - Emergency services that responded to the overdose occurrence should refer the individuals and advise them to make a basic health check-up in a few days after the episode, in order to screen the presence of consequent morbidities.
 - Drug services must continue to monitor the person who overdosed, namely concerning the emergence of morbidities, the occurrence of significant negative life events, and changes in the person's social network.
 - Emergency services and outreach teams should collaborate in order to provide
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overdose prevention information and education to the person who overdosed, and promote the PUD approximation to drug services. In cases where the person is already being followed by an outreach team, this collaboration can facilitate a better information exchange and increase the overdose prevention opportunities in the daily contact between the team and the drug user.

- Assessing the psychiatric/psychological health status, the occurrence of recent significant/triggering life events, as well as the quality of person's social network, should be a procedure routinely implemented in cases of hospital admission caused by a non-fatal overdose.

A framework with clear criteria to distinguish intentional from non-intentional overdoses should be established and systematically used by the health professionals who deal with these situations.

- Synergies between mental health and drug services must be developed, in order to: 1) better establish a differential detection of intentional and unintentional overdoses; 2) more effectively refer people who are in need of a psychological/psychiatric intervention; and 3) prevent overdose risks related to substances' misuse (substitution opioid and antidepressants).
- Toxicological samples should be routinely collected in hospital settings and examined, even when the person survives to the overdose. In order to do that, is necessary to improve the hospital's laboratorial capacity.

Recommendation for Research

- An evidence-based and pragmatic register instrument should be designed, in order to collect data on overdose occurrence (causal and contributing factors). This tool should include information on use patterns, PUD characterisation (social and psychological dimensions) access to services, risk and protective factors.
 - A European Group of experts should be created, in order to discuss a transnational
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version of this register instrument, thus allowing inter-countries comparisons.

- The register tool (with anonymous data) should be systematically implemented in cases of non-fatal (information collected with the PUD) and fatal overdoses (post-mortem anamnesis collected with the PUD relatives and friends). Ideally, the tool should be distributed to the agencies that know/knew the victim. At least, it should be used by the hospital's medical staff who dealt with the situation.
- Despite the fact that (as previously recommended) individuals who overdosed should always attend hospital services, in the cases where this can't happen, a database of non-fatal overdoses used by emergency (ambulance) professionals should be developed and routinely employed.
- Research investments should be made in order to identify differentiated risk and protective factors for fatal and non-fatal overdoses. The existence of a national database on non-fatal overdoses, together with the use of register tools, should provide important contributions on this topic.
- Since there are literature gaps and inconsistencies regarding morbidities resulting from non-fatal overdoses, further research investments on this topic is required.
- The research processes should focus on a way to better understand the impact of overdose education interventions provided by hospital-based services in the effort to decrease the number of subsequent overdose deaths (longitudinal studies).

Recommendation for Policy

- Efforts towards the development of an anonymous database to register non-fatal overdoses should be made by European Governments. Databases with similar variables should be discussed in order to allow inter-country comparisons.
 - Health ministries must grant the hospital services with the formal paperwork for the proper record of information regarding non-fatal overdoses (i.e. standardization of
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register process). Governmental (Health ministries) guidelines should be released, recommending the extensive use of an anonymous database and record instruments for non-fatal overdoses.

- Training on awareness-raising and practical issues of register tools for non-fatal overdoses (designed by Health ministries) should be provided to hospitals' staff.
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Actions Following Fatal Overdose

Recommendation for Practice

Victims' family and social network

- Mental health staff intervening with overdose witnesses or the victims' family/social network members should narrowly collaborate with drug services, in order to combine an effective grief intervention with an accurate information provision about the risk and protective factors for overdose.
- Support groups should be presented to families that grieve due to an overdose death, preferably by drug services. The homogeneity of these groups in terms of cause of death should be guaranteed, in order to avoid the stigmatization of those individuals within the group. These groups should be available in several country regions, in order to facilitate people's access.
- Online services concerning support to families should be provided as a suitable way to facilitate the first contact. A governmental website with this purpose should be created (in resemblance to the Scottish site; see chapter 2), containing information about drug use, overdose prevention, overdose fatality, and support resources.
- In resemblance to Scotland, a national helpline with people specialized in drugs and grief management should be available to the families/social network and witnesses.
- Families should be elected by drug services to participate in overdose prevention interventions. They should be involved in the provision of training to families (peer-to-peers), as well as in training and awareness-raising near first respondents (e.g. police and fireman). The elected family members should be able to conciliate these activities with an adapted grieving process.
- Professionals (from State drug/mental health services; NGO's in the drugs field) working with families of people who experienced overdose (fatal or non-fatal), should promote advocacy competences in the families, if they are willing to do so, and

ensuring that families are not instrumentalized. Associative movements for overdose prevention among families should be promoted.

- Drug services should promote the families' involvement in overdose prevention campaigns, including the ones conveyed through the media. Campaigns against stigma should be designed in straight collaboration with families, deconstructing the stereotypes associated to them and their relatives that use(d) drugs.

Drug-related and Drug-induced Deaths Registry Systems

- Data protection issues (especially in cases when the results come from different sources) must be discussed, in order to find an ethically/adjustable solution that doesn't block the access to data or the exchange of information.
- Systems that contemplate the collection of a complete set of relevant information about the DRD cases, in resemblance to the one implemented in Scotland, must be designed. Solid networks between services responsible for the forensic investigation and health services used by PUD are necessary to implement them.

Recommendation for Research

Victims' family and social network

- National studies on the needs of the victims' family should be developed in European countries.
 - Research findings should be converted into guidelines for both policies and practices concerning the support provided to the victims' relatives.
 - Additional studies about the public opinion on overdoses, as well as on the messages conveyed by mass media, should be made. The findings can contribute to the design
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of awareness campaigns (with the relatives' involvement) that directly address public representations.

Drug-related and Drug-induced Deaths Registry Systems

- Increase the number and quality of cohort studies (e.g. using a sufficient number of participants) through registries data and by capitalizing on Special Mortality registries that, in some countries, (virtually) include all deaths occurring among PUD (e.g., Croatia).

Recommendation for Policy

Victims' family and social network

- Family members of PUD, including the ones grieving after an overdose related death, should be selected by parliamentary work groups to be present in debates on the topic. State drug services and NGO's can mediate this "voice-giving" process.

Drug-related and Drug-induced Deaths Registry Systems

- Countries have to discuss solutions to reinforce their ability to develop toxicological analyses, namely concerning the detection of different substances involved.
 - Additional work should be conducted on the standardization of data collection and report proceedings at a European level.
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