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978-1-107-40641-4 - Mortality amongst Illicit Drug Users: Epidemiology, Causes and Intervention
Shane Darke, Louisa Degenhardt and Richard Mattick

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Why illicit drug-related deaths matter

1.1 Introduction

Over the course of the past 40 years, the use of illicit drugs has increased dramatically in developed nations. Over this period there have been substantial increases in the use of cannabis, opioids, cocaine, amphetamine, and, more recently, amphetamine-like substances such as MDMA (“ecstasy”) (cf. Chapter 2). While the initial increase in illicit drug use occurred within developed nations, recent years have seen large increases in illicit drug use in the developing world. In particular, since the 1990s there have been substantial increases in rates of drug use and drug-related problems in countries such as China, India, and the Republics of the former Soviet Union (Degenhardt et al., 2004a; United Nations Office for Drug Control, 2005).

Clearly, the use of illicit drugs has become an issue worldwide, although the nature of the problem may well vary from nation to nation. In some nations cocaine may be the primary focus, whilst in others opiates may dominate clinical concern. A natural corollary of any increase in the use of illicit substances of any sort, however, is an increase in rates of illicit drug-related death. The use of illicit drugs carries risks for morbidity and mortality, either directly related to the drug itself (e.g. overdose) or as a consequence of such use (e.g. intoxicated driving). As will be seen repeatedly throughout this book, rates of death amongst illicit drug users are substantially higher than those seen amongst the non-drug using population (cf. Chapter 3).

It is undeniable that both drug use and drug-related mortality have increased. The question posed in this chapter, however, is does this matter? Are there ethical reasons why this should be a concern to society or, indeed, for devoting a book to examining these deaths? It could be argued, for example, that such deaths are by nature self-inflicted, and that the deaths of illicit drug users may well be beneficial to society. After all, it could be said that nobody forces illicit

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drug users to expose themselves to risk by taking drugs, and the reduction in crime and disease represented by their deaths may constitute a net gain to society. Whilst the authors of this book may not concur with this view, the issue of why such deaths are a matter for public concern is one that does require addressing, before embarking upon a detailed exploration of these deaths and the means to reduce them. There are a number of ethical and utilitarian arguments that emphasise the importance of drug-related death to society. Broadly speaking, these fall into the following areas: (i) ethical responsibility to prevent avoidable death, (ii) the costs of such deaths to society, (iii) the natural history of drug use, and (iv) the impact of such deaths on the families of drug users.

1.2 Why illicit drug-related deaths matter

1.2.1 *Ethical responsibility to prevent avoidable death*

The first thing to note in any discussion of whether illicit drug-related mortality matters is the extent of the problem. As will be more fully discussed in Chapter 3, it was estimated that in 2000 alone there were approximately 200,000 deaths worldwide attributable to illicit drug use (Degenhardt et al., 2004a). This figure is undoubtedly a conservative underestimate of the true level of mortality (cf. Chapter 3). As would be expected, given the epidemiology of illicit drug use (cf. Chapter 2), the majority of deaths occur amongst younger people, with the average age at death being approximately 30 years.

As a general rule, the prevention of premature death is uncontroversial. Few would argue that premature death due to leukaemia, for example, does not matter, or that the victims in some way deserved to die. Drug use, however, raises passions that are rarely seen when discussing death due to other causes. Unlike a disease brought on by some external factors, death due to drug use is essentially self-inflicted. The ethical responsibility thus falls upon the user, who has taken the decision to use and, typically, to continue to use illicit drugs. The distinction between drug use mortality and other forms of mortality is thus between what could be termed a “lifestyle choice” compared to death due to extraneous causes beyond the control of the individual.

As with so many appealing dichotomies, however, a simple contrast between a self-chosen pathway to death and other forms of mortality does not withstand close scrutiny. There is a clear implicit assumption of unrestricted free will in the assertion that drug-use behaviours are self-determined. Leaving the issue of free will versus determinism aside, the literature demonstrates clear precursors

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for increased risk of illicit drug use and substance dependence (cf. Chapter 2). In particular, the development of problematic illicit drug use has been strongly associated with what has been referred to as a “shattered childhood” (Rossow & Lauritzen, 2001). This term includes a general clinical picture of parental psychopathology, parental drug and alcohol problems, early loss of parents, and, most importantly, childhood sexual and physical abuse (Rossow & Lauritzen, 2001). The development of drug-dependence problems is thus not a random occurrence, but is strongly associated with a set of factors likely to increase psychological distress and, not surprisingly, problematic drug use. Consistent with this picture of a “shattered childhood”, levels of serious psychopathology such as major depression are extremely high amongst dependent illicit drug users (Darke & Ross, 1997a; Dinwiddie et al., 1992; Lynskey et al., 2004; Teesson et al., 2005). The majority of problematic drug users thus come from backgrounds that increase their risk of serious psychopathology and of dependent drug use. Much of this drug use may, in fact, be seen as attempts to self-medicate distressing effect.

The second point to raise concerning the “choice” of a drug using lifestyle is that, as will be seen in later chapters, the majority of drug-related fatalities occur amongst dependent drug users. Substance dependence is, of course, a well-recognised psychiatric diagnosis, defined in both the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 2000) and the International Classification of Diseases (ICD-10) (World Health Organization, 1993). The syndrome includes both physical (e.g. withdrawal) and psychological (e.g. salience of the substance in the person’s life) symptoms. Like many other psychiatric disorders (e.g. major depression, anxiety disorders, schizophrenia) drug dependence is strongly associated with substantially increased risk of premature death (Harris & Barraclough, 1998). Broadly speaking, the core feature of substance dependence is a loss of control over use of the substance in question. The person may be physically dependent on the drug, experiencing drug tolerance and withdrawal symptoms, and continue to use despite repeated efforts at abstinence. The point here is that, by definition, to invoke drug use as a choice when the person had been diagnosed as having lost control over their drug use is absurd. There are clear psychosocial factors that heighten the risk of illicit drug use and, once dependence has developed, to speak of choice makes little sense.

Moreover, the typical onset of illicit drug use, and of drug dependence, occurs in the teenage years (Chen & Kandel, 1995; Degenhardt et al., 2000; Kandel et al., 1992), *prior* to the person becoming an adult deemed ethically or legally responsible for their own behaviours. Legally, societies do not hold

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children to be sufficiently developed cognitively or ethically to make informed, free choices of great magnitude. The use of illicit drugs, clearly, is a behaviour that carries enormous implications for health and welfare. To hold children or adolescents ethically responsible for a self-chosen pathway to death, particularly when adverse events in childhood so strongly predict such behaviours, is inconsistent and absurd. While the person may die an adult, the dependence that leads to this death, typically, was acquired as a minor.

Even if we assume that drug-related deaths are self-inflicted, however, it is unclear how they could be distinguished from other fatalities that *are* universally deemed worthy of clinical interest and intervention. The self-inflicted death *par excellence*, clearly, is death by suicide. Even if it is assumed that drug use, and dependent drug use, is a freely chosen pathway to mortality, drawing a distinction between death due to drug use and death due to suicide is difficult. If killing oneself, or attempting to kill oneself, is a matter for clinical and societal concern, then death from drug use is surely a similar matter for concern. No logical distinction can be drawn. Of course, problematic drug use might well be seen as a form of prolonged self-destruction, further blurring distinctions between drug-related mortality and suicide. Certainly as noted previously, there are high rates of depression and suicidal ideation amongst dependent drug users. In fact, suicide itself is a major cause of death amongst illicit drug users, as will be discussed at length in Chapter 7.

The problem of distinguishing self-inflicted deaths from other deaths that are worthy of intervention, however, extends far beyond the prime example of suicide. Let us take the cases of licit drug-related death, due to tobacco- or alcohol-related disease. To be consistent, these too would have to be deemed unworthy of intervention, as the use of these drugs was also a freely chosen lifestyle choice. So too would deaths resulting from motor vehicle accidents attributable to excessive speed (a freely chosen behaviour) or obesity-related illness due to excessive eating. The argument is never consistently applied, yet no logical or ethical distinction can be drawn between mortality due to illicit drug use and other deaths that *are* deemed worthy of concern.

1.2.2 Costs to society

The second broad issue to consider is the cost to society of drug-related mortality. As noted above, it could be argued that drug users constitute a substantial cost to society primarily through crime and disease. Given these costs, the attrition through death of illicit drug users may well be seen as a reduction of the burden that drugs impose upon society.

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There is no doubt that drug use, and dependent drug use in particular, does place a substantial cost burden upon societies. In particular, there is a strong association between dependent drug use and crime (Flynn et al., 2003; Gossop et al., 1998; Kaye et al., 1998). It is important to note that this association, specifically, is between drug use crimes committed by dependent drug users to acquire money to purchase drugs, such as robbery or drug dealing. Importantly, however, the frequency of acquisitive crime has been demonstrated to co-vary with the frequency of illicit drug use. As the frequency of drug use declines, so also does the rate of acquisitive crime (Flynn et al., 2003; Gossop et al., 1999; Hser et al., 1998; Simpson et al., 1997). In fact, one of the major societal benefits of drug-treatment programmes is that criminal behaviours decline markedly as a result of such treatment.

In addition to crime, illicit drug use, and injecting drug use in particular, is strongly associated with disease and disease transmission. The sharing of used injecting equipment is a major transmission factor for human immunodeficiency virus (HIV), hepatitis C virus (HCV), and hepatitis B virus (HBV) (Karch, 2002). There are a range of other pathologies associated with drug use, including cardiovascular disease, pulmonary disease, renal complications, and neuropathology (Cherubin & Sapira, 1993; Karch, 2002). It is beyond question that regular illicit drug users are in poorer health than the non-drug using population, due to the complications of drug use. As with crime, however, the health of illicit drug users improves substantially after entering drug-treatment programmes (Gossop et al., 2002a).

While there are clearly substantial costs associated with illicit drug use, the deaths of large numbers of drug users also impose a substantial cost upon society. As noted above, the average age of illicit drug user deaths is around 30 years (Chapter 3). Given the relatively young age of such deaths, there is considerable lost productivity due to the truncated lifespan. It was recently calculated that in the year 2000 alone, nearly 7 million Disability Adjusted Life Years (DALYs), a measure of lost life and lost productive life, were attributable to death from illicit drug use (Degenhardt et al., 2004a). As will be discussed in Chapter 3, this is in all probability a substantial underestimate of the lost life and productivity incurred by illicit drug use.

The view that illicit drug users place a continuous burden upon society is predicated upon an assumption that problematic drug users always commit crime, and place burdens upon the health system. As noted above, however, sharp declines in criminality and improvement in both physical and psychological health are associated with drug-treatment programmes. Naturally, then, the burden imposed by criminal behaviours and poor health will decline, while

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levels of social functioning improve. Problematic drug users may be a burden whilst using drugs, but this burden is ameliorated by treatment and declines with their drug use.

The above discussion primarily relates to dependent drug users. Typically, the picture of high levels of crime and extremely poor health presented above primarily pertains to a long-term heroin or cocaine user (Cherubin & Sapira, 1993; Karch, 2002). Whilst many deaths occur among unemployed, long-term opioid or cocaine users, as will be seen in subsequent chapters, a proportion of illicit drug use deaths occur amongst recreational users of cannabis or designer amphetamine-like drugs (e.g. MDMA “ecstasy”) (Chapter 4). Cannabis, for example, is strongly associated with motor vehicle accidents (cf. Chapter 7), whilst deaths occurring from the use of drugs such as MDMA may result from hyperthermia or cardiac arrest (cf. Chapter 4). The psychosocial profile of such users is completely different from that of the regular, dependent opioid or cocaine user. These are typically employed, recreational users who are at low risk of serious diseases such as HIV or HCV. These are, in effect, typical young members of society. To characterise such productive young persons as a societal burden clearly would be absurd.

1.2.3 Natural history of drug use

The next point to consider, the natural history of drug use, follows on from the previous discussion on costs to society. As discussed above, illicit drug use typically commences in the mid-teenage years. Importantly, it peaks in the 20–30-year age group, and declines sharply in older age groups (Chen & Kandel, 1995; Degenhardt et al., 2000; Kandel et al., 1992). The natural history of illicit drug use is thus skewed towards the younger years. The point here is that the label “illicit drug user” is not an immutable lifetime description, but may refer to a relatively brief period. A person may well use illicit drugs during their 20s, but most will cease to do so in later years. The highest risk of illicit drug use, and of thus of mortality, is focussed over a relatively brief period in the person’s life. If this high-risk period can be navigated safely, then the person may well cease to be an illicit drug user and cease to impose any illicit drug-related costs upon society. Even if we accept a view that illicit drug users are in some sense unworthy of concern, these same people may well cease to be illicit drug users after a relatively short period.

Dependent drug use, and opioid dependence in particular, may of course persist for substantially longer than the patterns described above (Hser et al., 2001). Even dependent opioid use, however, is cyclical in nature. Opioid users go through periods of use, followed by periods of treatment and abstinence (Darke

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et al., 2005c; Flynn et al., 2003; Hser et al., 2001). Many dependent users may be seen to mature out of drug use, although this may take considerable time. As noted above, it is incontrovertible that drug-treatment programmes produce substantial improvements in the psychosocial profile of dependent drug users. As is the case with recreational drug users, there is a natural history associated with dependent drug use. A dependent drug user may be a high-risk person who imposes a societal burden. They may not, however, remain a dependent drug user, or continue to impose such a burden.

1.2.4 Families of drug users

Finally, we must consider the impact of illicit drug use deaths upon the families of these users. It is beyond question that the loss of loved ones through drug use matters greatly to the families of drug users. In considering whether drug use mortality is a legitimate matter for concern, the drug user must not be seen in isolation. The death of a drug user does not only affect the user themselves, but also those surrounding them. While it could be argued that the death was self-inflicted, this in no way applies to the anguish of relatives, partners, and friends of the deceased drug user. The effects upon the loved ones of deceased drug users are something that clearly must be considered when examining the impact of drug-related death. Apart from the lost societal productivity of the decedents themselves, drug deaths impose large burdens upon the families, and partners of deceased drug users.

Even if we were to restrict the argument to a strict utilitarian approach, and confine our analyses to the impacts upon broader society, there are good reasons to be concerned about familial loss through drug use. The most salient issue here clearly concerns the children of drug users. Early parental loss is associated with increased risk of the development of subsequent psychopathology, as well as increased risk of drug dependence and of suicide (Fergusson & Lynskey, 1995; Rossow & Lauritzen, 2001). One major advantage in keeping illicit drug users alive is that such actions may well reduce the costs to society of illicit drug use and drug-related death among the next generation. As noted above, most illicit drug use occurs over a relatively brief period in a person's life. If this period can be lived through, this may have substantial benefits for the families of drug users, both currently and in the future.

1.3 What do we need to know about illicit drug-related mortality?

Ultimately, whether illicit drug user deaths matter or not is a question that must be decided by the reader. If they do not matter, then there is nothing further to

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say. If we do accept that high rates mortality amongst illicit drug users is a matter of concern, however, then what do we need to know about such deaths? First, we clearly need to understand the epidemiology of illicit drug use (Chapter 2). What are the drugs being used, and by whom? Second, what are the mortality rates associated with illicit drug use, and amongst whom are such deaths occurring (Chapter 3)? Third, what is causing such deaths, and how do these causes differ by substance (Chapters 4–7)? Finally, how can the rates of illicit drug user mortality be reduced (Chapter 8)? The ensuing chapters of this book will examine the epidemiology of illicit drug use, the epidemiology of drug-related death, the causes and factors associated with such deaths, and the efficacy of attempts to reduce drug-related mortality.

1.4 Summary

In summary, there are good reasons, apart from compassion for the victims, to regard illicit drug user mortality as a serious matter of public concern. Rates of illicit drug-related death have dramatically increased worldwide since the 1960s, and represent a major cause of death amongst younger people. Arguments that death due to illicit drug use is essentially self-inflicted and therefore not a matter for societal concern do not stand up to close scrutiny. There are well-delineated psychosocial factors that engender regular illicit drug use, and most drug-related fatalities occur amongst drug dependent individuals who have lost control of their drug use.

Whilst the use of illicit drugs imposes substantial costs upon societies, there are also substantial costs incurred through lost years of productivity from what are primarily deaths among young people. It is also the case that drug users do not necessarily remain drug users, and may move beyond drug use to make substantial contributions to society. Finally, drug users do not live in isolation. Drug-related mortality impacts upon the families of decedents, and increases the risks of serious psychopathology, drug dependence, and suicide amongst the children of deceased users.

Key points: Summary of why illicit drug use deaths matter

- Rates of illicit drug use and drug-related deaths have dramatically increased in the developed world since the 1960s, and in developing nations since the 1990s.
- Deaths due to illicit drug use are not due to a self-inflicted, freely chosen lifestyle. There are well-delineated psychosocial factors that engender regular illicit drug use.
- Most drug-related fatalities occur amongst drug dependent individuals who have lost control of their drug use. Moreover, drug use and dependence typically commences prior to the person having become an adult.
- The use of illicit drugs imposes substantial costs upon societies. There are also substantial costs to society, however, incurred through lost years of productivity from deaths among young people.
- Drug users do not necessarily remain drug users, and may move beyond drug use to make substantial contributions to society.
- Drug users do not live in isolation. Drug-related mortality impacts upon the families of decedents.

2

The global epidemiology of illicit drug use

2.1 Introduction

In this chapter, we outline the global epidemiology of illicit drug use. Illicit drug use includes the non-medical use of a variety of drugs that are prohibited by international law. These drugs include methamphetamine, amphetamine, MDMA (ecstasy), cannabis, cocaine, heroin, and other opioids. Table 2.1 briefly outlines the major drug classes. In order to estimate mortality attributable to illicit drug use, we need to define which drugs we are speaking about, and consider the relative prevalence of their use.

2.2 Drug use or drug use problems?

Most people who use psychoactive substances do so without experiencing any problems related to their use, but some do develop problems (Anthony et al.,

Table 2.1. Selected drugs and their actions

Drug type	Actions
Amphetamine type stimulants (ATS)	A class of sympathomimetic amines with powerful stimulant action on the central nervous system (CNS).
Cannabis	Generic term for psychoactive preparations derived from the <i>Cannabis sativa</i> plant (e.g. marijuana, hashish, hash oil).
Cocaine	An alkaloid CNS-stimulant drug derived from the coca plant.
MDMA	3,4-Methylenedioxymethamphetamine. Synthetic drug used as a (ecstasy) stimulant.
Opioids	Generic term applied to derivatives from the opium poppy, their synthetic analogues, and compounds synthesised in the body, which act upon the opioid receptors in the brain (e.g. heroin, opium, methadone). They have the capacity to relieve pain and produce a sense of euphoria, as well as to cause stupor, coma, and respiratory depression.