



DRUG-RELATED DEATHS IN IRELAND: KEY PATTERNS AND TRENDS 2008-2017

DRUG INSIGHTS REPORT 1

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Introduction

Drug-related deaths, whether intentional or accidental represent a significant source of mortality worldwide (World Health Organisation, 2020). The risk of mortality for those who use drugs has been estimated at three to seven times that of the general population (European Monitoring Centre for Drugs and Drug Addiction (2019). To help tackle the issue of drug related deaths, it is important that patterns and trends are monitored. In Ireland, since 2004, the Health Research Board (HRB) have produced the National Drug-Related Deaths Index (NDRDI). This compiles information on drug related deaths. This insights report will examine drugs deaths with a view to informing policy and facilitating the implementation of existing strategies such as the National Drug and Alcohol Strategy (Department of Health, 2017). It will present data covering 2008-2017 for poisonings and non-poisonings (HRB, 2019a,b). Poisonings (overdose) are deaths due to the toxic effects of a drug or a combination of drugs. Non-poisoning deaths are deaths where someone has a history of drug dependency or non dependent use of drugs, whether or not drug use was directly implicated in the death. They are deaths as a result of trauma such as hanging or medical reasons such as a cardiac event (HRB, 2019a). We would like to acknowledge the assistance of the HRB in providing data for this report.

Overall Patterns

Table 1 and Figure 1 show the patterns of drug related deaths since 2008. Overall between 2008 and 2017 there has been a 24% increase in the number of deaths, with an 11% increase since 2013.

Table 1: Drug related deaths rates per 100,000 population 2008-2017

| Year | Poisonings (overdose) | | Non-poisonings | | Total | |
|-------------|-----------------------|------|----------------|------|-------|------|
| | Cases | Rate | Cases | Rate | Cases | Rate |
| 2008 | 387 | 8.6 | 243 | 5.4 | 630 | 14.0 |
| 2009 | 371 | 8.2 | 284 | 6.3 | 655 | 14.4 |
| 2010 | 339 | 7.4 | 268 | 5.9 | 607 | 13.3 |
| 2011 | 377 | 8.2 | 268 | 5.9 | 645 | 14.1 |
| 2012 | 356 | 7.7 | 305 | 6.6 | 661 | 14.4 |
| 2013 | 401 | 8.7 | 308 | 6.7 | 709 | 15.4 |
| 2014 | 370 | 8.0 | 357 | 7.7 | 727 | 15.6 |
| 2015 | 370 | 7.9 | 371 | 7.9 | 741 | 15.8 |
| 2016 | 368 | 7.8 | 404 | 8.5 | 772 | 16.3 |
| 2017 | 376 | 7.8 | 410 | 8.6 | 786 | 16.4 |

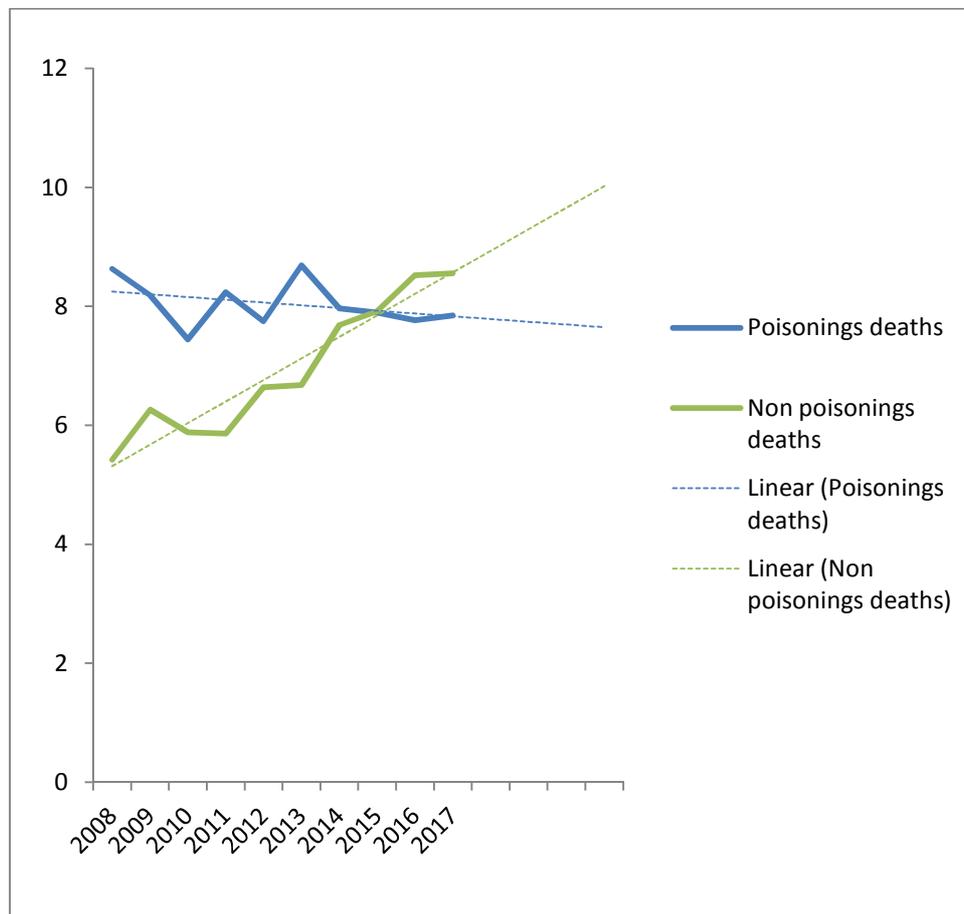
Source: data adapted from HRB

*Rate based on CSO population estimates; taken from:

<https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimatesapril2020/>

Figure 1 shows that poisonings and non-poisonings have experienced differing patterns. In 2008, the poisoning rate was 46% higher than non-poisonings. Since 2008, the number of poisoning deaths have fluctuated but the overall pattern has been relatively stable, with a 9% decline experienced in 2017 compared to 2008. Non-poisonings by contrast have increased since 2008, surpassing poisonings in 2015, with the rate for non-poisonings being 10% higher than poisonings in 2017. Overall, non-poisoning rates have increased by 37% since 2008. The trend lines shown in Figure 1 demonstrate the stable pattern for poisonings and the upward trend for non-poisonings. Based on these trends, it is forecast that the difference between poisonings and non-poisonings will exacerbate in the next five years.

Figure 1: Drug related poisoning and non-poisoning deaths per 100,000 (2008-2017) with projected trend patterns



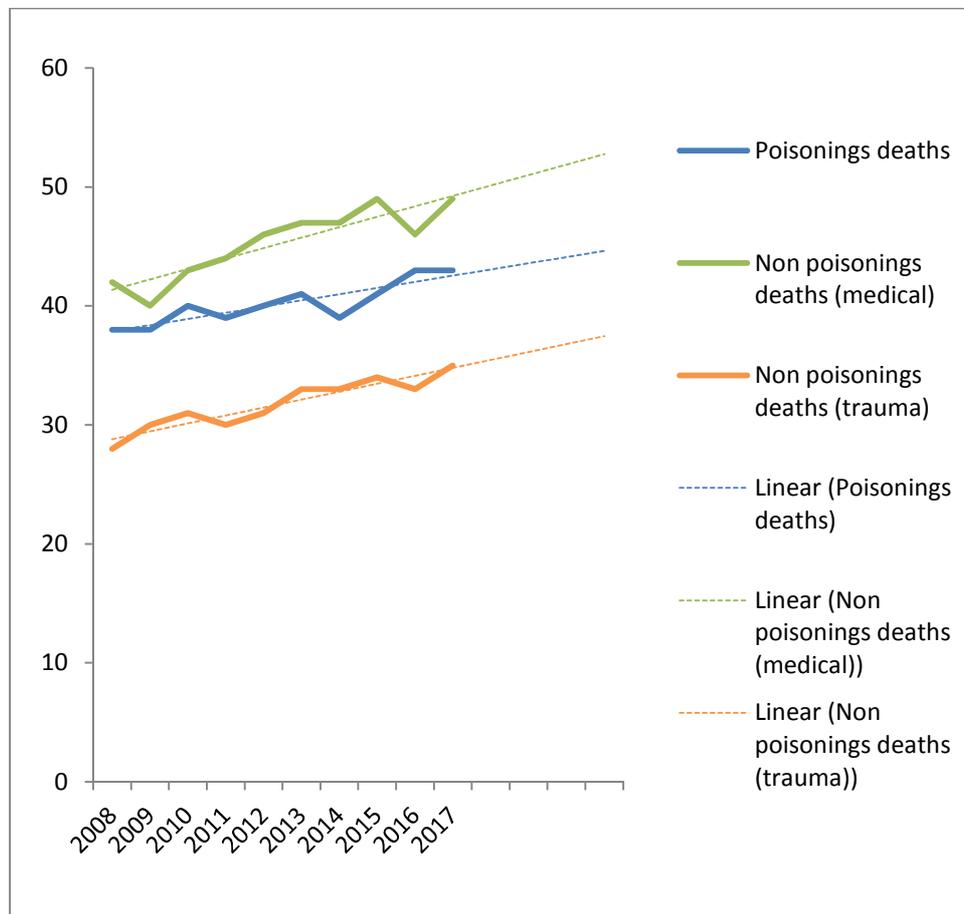
Source: data adapted from HRB

*Rate based on CSO population estimates; taken from:

<https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimatesapril2020/>

It can be seen from Figure 2 that the median age has increased for all types of drug related deaths since 2008. The median age is highest for non-poisoning medical deaths (median = 49 in 2017), followed by poisonings (median = 43 in 2017) and non-poisoning trauma deaths (median = 35 in 2017). This pattern has been consistent since 2008, with an upward trend forecast from 2017 onwards.

Figure 2: Drug related poisoning and non-poisoning deaths by median age 2008-2017 (source HRB) with projected trend patterns



Source: data adapted from HRB

Poisoning Deaths

The following summarises key patterns emerging for 2017 (Health Research Board, 2019a):

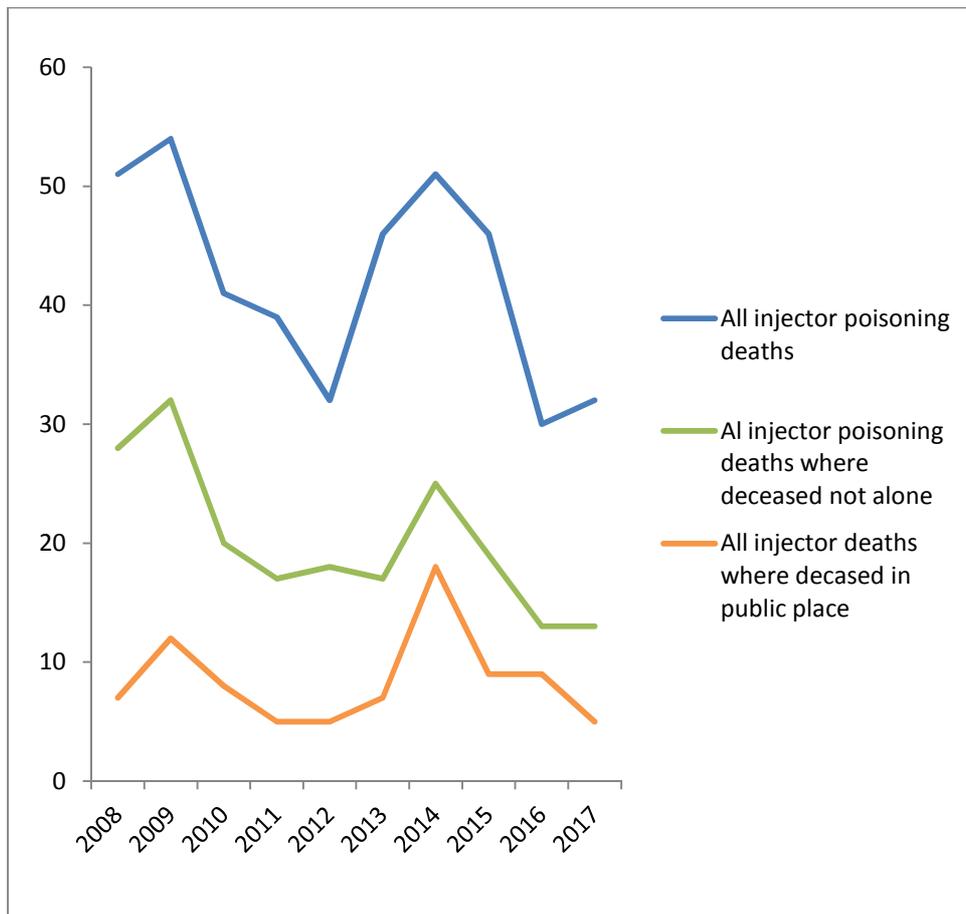
- 70% were men.
- 58% involved more than one drug (polydrug) with four drugs consumed on average.

- 33% involved alcohol; alcohol was the most common individual drug, with 16% involving alcohol alone.
- Over two thirds (67%) of deaths involved prescribable drugs, the most common being methadone (25%), diazepam (24%) and alprazolam (17%). Benzodiazepines were the most common prescribable drug group (37%).
- 38% involved illicit drugs; of these 52% were for heroin, 38% for cocaine and 10% for MDMA.
- 9% were among people known to be injecting at the time of the incident that led to their death (97% opioids with 70% in Dublin city). Of these 16% were injecting in a public place.

In examining poisoning deaths since 2008, the following patterns can be observed:

- The median age of poisoning deaths has increased from 38 in 2008 to 43 in 2017
- Gender patterns have remained relatively stable since 2008
- There has been a 14% increase in polydrug deaths
- All deaths involving benzodiazepines have increased by 35% since 2008 with a 7% decline in 2017
- All deaths involving alcohol have reduced by 20% since 2008 and 9% between 2016 and 2017
- Heroin deaths have declined by 15% since 2008
- Injector deaths involving opioids have fluctuated, following a downward pattern up to 2012, and rising between 2012-2015, declining thereafter. Overall there has been a 38% decline since 2008. The proportion where the deceased was not alone has decreased by 54%, with the proportion dying in public places declining by 29% (figure 3)
- Cocaine deaths declined by 13% since 2008 but have increased by 26% between 2016 and 2017
- MDMA deaths have doubled since 2008, increasing by 75% since 2016, with half the deaths in 2017 involving polydrug use

Figure 3: Injector Poisoning Deaths Involving Opioids (known to be injecting at time of Death)



Source: HRB

Non-Poisoning Deaths

The following summarises key patterns emerging for 2017 (Health Research Board, 2019a):

- 76% of non-poisonings were men.
- The main causes of death were hanging (28%) and cardiac events (14%). Trauma accounts for 48% of deaths with medical deaths accounting for 52%.
- Of those who died due to hanging, 63% had a history of mental health problems.

Since 2008 the following patterns for non-poisoning deaths have emerged:

- The proportion of female deaths has increased from 19% to 24%.
- Since 2008 there has been a 113% increase in female non-poisoning deaths compared to 58% for males.
- Female hangings have increased by 316% since 2008 (from 6 to 25 women), with a 56% increase since 2016 (compared to 8% for men). Other female trauma deaths have increased by 60% since 2008 and with a 46% increase between 2016 and 2017.
- The median age for medical deaths has increased from 42 in 2008 to 49 in 2017 with the median age for trauma increasing from 28 to 35.
- Medical deaths have increased by 67% and trauma deaths have increased by 70%.

Discussion

There has been a 24% increase in overall drug related deaths since 2008. Across Europe, there has also been an increase in overdose deaths, with a 3% increase between 2018 and 2019 (EMCDDA, 2021). Comparing the numbers of deaths in Ireland with other countries however is difficult due to factors such as variations in definitions, toxicology and coroner processes, under reporting and reporting delays. However, analysing trends within Ireland is valuable and this has been recognised by the EMCDDA (2015).

In Ireland, the rising pattern of drug deaths as reported in the NDRDI is being driven by non-poisoning deaths which have been experiencing an upward trend while poisonings (overdoses) have stabilised. The stabilisation in poisonings is a welcome development and has been achieved during a period of increasing drug prevalence and drug availability in Ireland. Having comprehensive drug strategies that emphasise an enhanced harm reduction approach during this period may have been a contributory factor, and it would be important that the

existing strategy is fully implemented, to help maintain and improve the progress made on reducing drug deaths.

In terms of gender, the majority of both poisoning (70%) and non-poisoning deaths (75%) are men. This is consistent with studies that show that men are more likely to use illicit drugs. In addition, European (EMCDDA, 2021) and worldwide studies (Martins et al, 2015) have found that death rates were generally higher among men. Although the vast majority of drug related deaths in Ireland are men, female non-poisoning deaths have increased by 113% since 2008 (compared to 58% for men). In particular female hangings have increased fourfold since 2008, increasing by 56% since 2016 (compared to 8% for men). Although the number of female non-poisonings is small (98 in total for 2017 with 25 hangings) this would warrant further investigation to determine the factors that may contribute to this pattern. A study in Scotland (Tweed et al, 2020) found a number of interacting causes including changing drug use patterns, physical and mental co morbidities, changing relationships and parenting roles, and changes to services. This highlights the importance of developing prevention and treatment programmes to meet the differing needs of men and women. Marsh et al (2018) for example highlight a number of evidence based treatment programmes that have been shown to be effective for women. In addition, the EMCDDA (2017) suggest that older women who use drugs may need specific support services to tackle drug use, childcare responsibilities, and the trauma of having children removed.

Although drug use can often be portrayed as an issue primarily affecting the younger population, the pattern of deaths indicate that drug use among older people is increasing. For all drug related deaths, there has been an increase in median age since 2008 (43 for poisonings in 2017, 35 for non-poisoning trauma, and 49 for non-poisoning medical, Health Research Board 2019a). Treatment services in Ireland also reflect a similar pattern of use (Health Research Board, 2019). Across Europe the median age for drug deaths is 42 (EMCDDA, 2021). In the US, substance use among older adults has been highlighted as a growing health problem (Chhatre et al, 2017). If this trend continues as is forecast, it will have implications in terms of service development to address changing

treatment needs. Little is known in Ireland about the needs of older people who use drugs (PWUD). This would need to be established to help ensure that existing and new services can be developed to meet these needs. The EMCDDA (Johnston et al, 2017) note that older PWUD have complex health and social needs such as degenerative disorders, increased risk of HCV and HIV infection inadequate pain management, isolation, loneliness, unemployment, and homelessness.

In examining poisonings (overdose), whilst the stabilisation of overall patterns is promising, 376 lives were lost in 2017 and as such it is essential that initiatives to reduce the devastating impact of drug overdoses are maintained and built upon. One key issue of concern is the significant health risks associated with poly drug culture. Polydrug use is a significant risk factor in fatal overdoses (Health research Board, 2019) with the majority of poisoning deaths (58%) involving a combination of drugs. Polydrug poisoning deaths have increased by 14% since 2008. More than one drug can be taken for a variety of reasons. For example Valente et al (2020) in a study of injecting drug users found that reasons for polydrug use included increasing the psychoactive experience, offsetting the negative effects of a drug, self medicating for physical and mental health conditions, and managing cravings and withdrawal symptoms. Polydrug use is widespread throughout Europe and is associated with increased health risks (EMCDDA, 2009). With the involvement of both prescription and illicit drugs, and the increasing availability of drugs, including new emerging drugs, tackling the issue of polydrug use is complex. In Ireland, key substances involved in polydrug deaths include alcohol (57%), methadone (24%), diazepam (41%) and heroin (35%). Studies of polydrug treatment programmes have produced mixed results. A review by Blondino et al (2020) found that for opioid treatment, co-occurring substance use was associated with poorer outcomes. They also found that combined pharmacological and behavioural interventions reported better health outcomes. The EMCDDA (2009) note that a number of treatment studies have found a reduction in polydrug use among problematic drug users. A multifaceted approach to polydrug use should be developed, including addressing factors such as availability, prevention, and treatment (e.g. assessing polydrug use when developing treatment plans, employing best practice guidelines for dual prescribing, providing targeted information on the dangers of high risk

drug combinations, combining pharmacological and behavioural interventions).

Illicit drugs comprise 38% of poisonings and include heroin, cocaine, and MDMA. Despite an increase between 2016 and 2017, deaths involving heroin have been declining, and have reduced by 8% since 2015. This pattern has contributed to a reduction in overall opioid injector deaths. These had been fluctuating and had begun to rise between 2012-2015. Since 2015 there has been a 30% decline in deaths. This reduction coincides with the introduction of the HSE Naloxone Demonstration project (Clarke and Eustace, 2016) in 2015. Naloxone reverses the effects of opioid overdoses. The increased availability of naloxone during this period may have contributed to a reduction in opioid deaths. This initiative should be maintained, the availability of naloxone should continue to be promoted by healthcare professionals and the impact of this service monitored on an ongoing basis. There has also been an overall decline in the initiation of heroin use among young populations in Ireland (Smith and McCarney, 2020).

In terms of cocaine, although a decline has been experienced since 2008, there has been a steady increase since 2010, and in 2017 deaths had increased by 26% compared to 2016. These figures may also underestimate cocaine deaths. The EMCDDA (2013) note that many cocaine deaths are unreported across Europe. These patterns warrant further investigation to determine underlying factors that may explain the trends. Corkery, et al (2017) for example, notes that patterns in the UK may be associated with factors such as changes in the purity of cocaine and price. Other studies suggest that cocaine use declines during periods of recession (Nagelhout et al, 2017; Hennessy, 2018). As such, recent increases in cocaine deaths may be associated with recent changes in economic prosperity. A study by O'Reilly et al (2019) in Ballymun demonstrates the impact the use of crack cocaine is having on PWUD, particularly in terms of physical and mental health. It highlighted the need for specific initiatives to address crack cocaine use. Since the study a number of initiatives have taken place (such as a number of training programmes for drug and alcohol workers to help them to engage more

effectively with cocaine users), and it would be important that these are reviewed.

Whilst MDMA deaths are four to five times lower than both cocaine and heroin deaths, they have doubled since 2008, and increased by 75% since 2016, with half of the reported deaths in 2017 involving polydrug use. MDMA is often be used in music venues such as dance, rave, and music festivals by young populations. MDMA deaths have been increasing throughout Europe (EMCDDA, 2021). MDMA tablets have been found to contain high risk additional substances such as PMA/PMMA which has contributed to deaths in Europe (World Health Organisation (WHO), 2015,). MDMA tablets have also increased in potency in recent years (Mounteney et al, 2018). Such market changes may increase the risk of MDMA overdose deaths. An inquest into MDMA-related deaths occurring at festivals in Australia found that young consumers were unaware of MDMA market changes such as increased potency (State Coroners Court of New South Wales, 2019). Rigg and Sharp (2017) suggest that there is a need for more forward thinking evidence based interventions including the wider dissemination of risk reduction information, expanding drug checking services, and promoting safety precautions at music venues. The HSE has been disseminating information about MDMA and new emerging drugs through a number of channels including its website <https://www.drugs.ie/>. As part of Strategic Action 1.3.11 of the National Drug Strategy (Department of Health, 2020), the HSE chaired the 'Emerging Drug Trends and Drug Checking Working Group' to review international evidence in relation to health and social responses in nightlife settings and the provision of drug analysis to inform communications and novel interventions. A report will be released shortly to inform future initiatives targeting nightlife cohorts. It is hoped that such initiatives will help reduce the number of MDMA deaths.

Two thirds of poisoning (overdose) deaths involved prescribed drugs, with methadone, and benzodiazepines such as diazepam and alprozolam being the most common. Taken as prescribed, these drugs can have a significant beneficial effect. For example, methadone has been shown to be an effective treatment against opioid dependence (Van Hout et al, 2018). However, these drugs are largely used in combination with each

other and other substances such as alcohol or heroin which can lead to devastating consequences. White et al (2020) for example highlights that there is a considerable danger associated with combining substances that suppress respiration such as opioids, alcohol, and benzodiazepines. This emphasises the importance of employing best practice guidelines when prescribing more than one drug, particularly for those with drug dependency disorders. For example, guidelines produced by the HSE Medicines Management Programme (HSE, 2021a) state that before prescribing benzodiazepines, an assessment should be made of the potential for drug and alcohol misuse and the need to refer to a specialist addiction service. In addition, the New Misuse of Drugs Regulations (Government of Ireland, 2017) sets stringent requirements for prescribing benzodiazepines. Currently the Irish Medical Council is chairing a working group examining the issue of prescribed drug misuse and hopefully robust recommendations will emerge. An emerging and growing problem is the fact that these and other drugs can also be obtained without prescription; being bought illicitly or over the internet and this trend is developing right across Europe (EMCDDA, 2021). For example, an Irish study has found Etizolam ('street benzodiazepine') in urine samples of participants receiving Opioid Substitution Treatment (OST) (Mc Namara et al, 2019). There were five overdose deaths in 2017 where Etizolam was implicated. Similarly, another Irish study (Mc Namara et al (2015) found the prescription drug Pregbalin (used for conditions such as epilepsy) in urine samples of participants receiving OST that had not been prescribed this drug. Pregbalin were implicated in 45 poisoning deaths in 2017. This again stresses the need to address the dangers of polydrug use as part of multifaceted approach. It also shows the importance of market monitoring in helping to identify potential health threats to PWUD.

Alcohol continues to be a significant cause of harm in Ireland, and this is reflected in drug death patterns. Although there has been a 9% reduction in deaths involving alcohol between 2016 and 2017, alcohol nevertheless was involved in a third of poisonings (overdoses). Hickman et al (2008) in reviewing a number of studies found evidence that when combined with alcohol, less opiates (particularly heroin) are required to induce a fatal overdose. They also point out that alcohol may impair a user's judgement of their tolerance and safe use levels. This reiterates the dangers of polydrug use, in this case the additive impact of alcohol and other drugs

on respiratory depression and the risk of death. PWUD, particularly those using opioids need to be made aware of these risks. In addition, the fact that alcohol was the single substance involved in 16% of reported drug poisonings demonstrates the importance of implementing measures to control its use. It is estimated that alcohol costs the health care system €1.2 billion (Royal College of Physicians, 2013). The Mid Term Review of the National Drugs and Alcohol Strategy Action Plan 2017-2020 (Department of Health, pending) stresses the need for a greater focus on alcohol. The Public Health Alcohol Bill (Houses of the Oireachtas, 2018) aims to target hazardous drinking with a number of measures including the introduction of minimum unit pricing. It is vital that this Bill is fully enacted.

In terms of non-poisoning, the continued upward trend is being driven by both medical (52%) and trauma (48%) related deaths. The rise in medical deaths could be attributed to the fact that the reduction in poisoning (overdose) deaths has led to an increase in long term drug users that are engaging with services to help manage their drug use. The EMCDDA (Johnston et al, 2017) for example point out that between 2006 and 2015, the average age of those entering opioid treatment across Europe has increased from 33 to 38 years. As the population of PWUD ages, they may subsequently die due to medical factors that can be associated with long term drug use (e.g. cardiac factors, liver cirrhosis etc). The EMCDDA (Johnston et al, 2017) note that those with a long history of problem substance use can exacerbate or accelerate conditions associated with aging. Scott et al (2021) for example in a review show that drug use is associated with premature cardiovascular disease. The need to investigate ways of reducing the long term impact of substance use including alcohol on health need to be explored. Issues such as the need to undertake a comprehensive health needs assessment, with referral pathways to supporting physical and mental health services warrant consideration. In addition a stronger emphasis on the development of recovery programmes by services may have the added benefit of reducing the number of people on long term treatment. The Drug and Alcohol Strategy, Reducing Harm Supporting Recovery (2017) emphasises the importance of "helping individuals build their recovery capital." Through an interagency approach it includes a number of strategic actions designed to promote recovery.

For non-poisoning trauma deaths, the continued increase is of concern, particularly as hangings are the main cause of death in 28% of non-poisoning deaths, with 63% known to have been experiencing mental health difficulties. The increased risk of suicidal behaviour among PWUD is recognised in Ireland's Suicide Prevention Strategy, Connecting for Life (Department of Health, 2015) which advocates a targeted approach for those with alcohol and drug problems. The issue of co-occurring mental health and addiction problems is well recognised and these figures highlight one of the significant risks that arise as a result of this combination. Hesse et al (2020) highlighted the benefit that integrating mental health interventions with drug treatment in routine clinical settings can provide. In addition, the Government's Mental Health Strategy, Sharing the Vision (Department of Health, 2020) recommends that a model of care with tiered levels of support needs to be developed for those with mental illness and substance misuse to ensure clear pathways of care. It also states that for complex cases, a shared case management approach may be required. The importance of dual diagnosis is also recognised in the National Drug and Alcohol Strategy and Mid Term Review of the Strategy Action Plan (Department of Health, pending). The commitment of the HSE to establish and resource a National Clinical Programme in the area of Dual Diagnosis is particularly welcome and will help to integrate services for those with a dual diagnosis (HSE National Service Plan 2021b).

Key recommendations

1. The National Drug and Alcohol Strategy should be fully implemented, to help maintain and improve the progress made on reducing drug deaths. An added emphasis on the area of Drug Related Deaths in the second half of the strategy is warranted, including the establishment of a pilot medically supervised injecting facility.
2. Prevention and treatment programmes should incorporate gendered specific responses and be designed to meet the differing needs of men and women.

3. The needs of older drug users in Ireland should be recognised and tailored interventions developed for this cohort, similar to interventions for other vulnerable cohorts.
4. Initiatives that have been developed to address crack cocaine use should be reviewed to determine their effectiveness.
5. A multifaceted evidence based approach to addressing polydrug use should be developed.
6. Naloxone availability for opioid users should be prioritised and its impact monitored on an ongoing basis.
7. Consideration should be given to undertaking a comprehensive health needs assessment of long term drug users receiving treatment, with referral pathways developed to supporting physical and mental health services.
8. Recovery programmes need to be strengthened as this may have the potential to reduce the number of people in long term treatment for substance use.
9. The HSE Clinical Programme on Dual Diagnosis needs to be supported into the future as this may have a significant impact of rates of self harm/suicide in this population. The programme will require regular monitoring and evaluation to assess impact in this area.
10. Best practice guidelines when prescribing more than one drug, particularly for those with drug dependency disorders should be employed.

11. The Public Health Alcohol Bill (2018) should be fully enacted and its implementation monitored.

References

Blondino, C. T., Gormley, M. A., Taylor, D., Lowery, E., Clifford, J. S., Burkart, B., Graves, W. C., Lu, J., & Prom-Wormley, E. C. (2020). The Influence of Co-Occurring Substance Use on the Effectiveness of Opiate Treatment Programs According to Intervention Type. *Epidemiologic reviews*, 42(1), 57–78. <https://doi.org/10.1093/epirev/mxaa005>

Chhatre S, Cook R, Mallik E, Jayadevappa R. Trends in substance use admissions among older adults. *BMC Health Serv Res*. 2017 Aug 22;17(1):584. doi: 10.1186/s12913-017-2538-z. PMID: 28830504; PMCID: PMC5568321.

<https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/s12913-017-2538-z.pdf>

Clarke, A, Eustace, A (2016) Evaluation of the HSE naloxone demonstration project. Dublin: Health Service Executive. <https://www.drugsandalcohol.ie/26037/1/Naloxonedemoproject.pdf>

Corkery, J. M., Claridge, H., Goodair, C., & Schifano, F. (2017). An exploratory study of information sources and key findings on UK cocaine-related deaths. *Journal of Psychopharmacology*, 31(8), 996-1014. <https://journals.sagepub.com/doi/abs/10.1177/0269881117711923>

Department of Health (2015). Connecting for life. Ireland's National Strategy to Reduce Suicide 2015–2020.

<https://www.gov.ie/en/publication/7dfe4c-connecting-for-life-irelands-national-strategy-to-reduce-suicide-201/>

Department of Health (2017) Reducing Harm, Supporting Recovery, A health-led response to drug and alcohol use in Ireland 2017-2025

<https://www.drugsandalcohol.ie/27603/1/Reducing-Harm-Supporting-Recovery-2017-2025.pdf>

Department of Health (2020) Sharing the Vision: A mental health policy for everyone <https://www.gov.ie/en/publication/2e46f-sharing-the-vision-a-mental-health-policy-for-everyone/>

Department of Health (pending) Report of the Review of *Reducing Harm Supporting Recovery*, Action Plan 2017-2020

European Monitoring Centre for Drugs and Drug Addiction. (2005) Differences in patterns of drug use between women and men. Lisbon: European Monitoring Centre for Drugs and Drug Addiction.

https://www.emcdda.europa.eu/attachements.cfm/att_34281_EN_TDS_gender.pdf

European Monitoring Centre for Drugs and Drug Addiction. (2009) Polydrug use: patterns and responses. Luxembourg: Publications Office of the European Union

https://www.emcdda.europa.eu/system/files/publications/534/EMCDDA_S109_polydrug_use_187893.pdf

EMCDDA (2013) Emergency Health Consequences of Cocaine Use in Europe: Perspectives on Drugs. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at:

<http://www.emcdda.europa.eu/topics/pods/cocaine-related-emergencie>

European Monitoring Centre for Drugs and Drug Addiction. (2015) European drug report 2015: trends and developments. Luxembourg: Publications Office of the European Union. <https://www.emcdda.europa.eu/system/files/publications/974/TDAT15001ENN.pdf>

European Monitoring Centre for Drugs and Drug Addiction (2019), Drug-related deaths and mortality in Europe: update from the EMCDDA expert network, Publications Office of the European Union, Luxembourg.

https://www.emcdda.europa.eu/system/files/publications/11485/20193286_TD0319444ENN_PDF.pdf

European Monitoring Centre for Drugs and Drug Addiction. (2021) European drug report 2021: trends and developments. Luxembourg: Publications Office of the European Union.

<https://www.emcdda.europa.eu/system/files/publications/13838/TDAT21001ENN.pdf>

Government of Ireland. Statutory Instrument No. 173/2017 —Misuse of Drugs Regulations, 2017. Dublin, Ireland.

<http://www.irishstatutebook.ie/eli/2017/si/173/made/en/print>

Hesse, M., Thylstrup, B., Seid, A.K. *et al.* Suicide among people treated for drug use disorders: a Danish national record-linkage study. *BMC Public Health* **20**, 146 (2020). <https://doi.org/10.1186/s12889-020-8261-4>

Health Research Board (2019a) National Drug-Related Deaths Index 2008 to 2017 data. <http://www.drugsandalcohol.ie/31275>.

Health Research Board (2019b) NDRDI non-poisoning deaths due to hanging among people with a lifetime history of drug use, NDRDI 2008 to 2017, Personal Communication: Health Research Board

Health Research Board. (2019c) Alcohol treatment in Ireland 2011 – 2017. Dublin: Health Research Board

https://www.hrb.ie/fileadmin/2.Plugin_related_files/Publications/2019_Publication_files/2019_HIE/NDTRS/Drug_Treatment_in_Ireland_2011_to_2017.pdf

Health Service Executive, (2021a) Medicines Management Programme, Guidance on appropriate prescribing of benzodiazepines and z-drugs (BZRA) for the treatment of anxiety and insomnia, Health Service Executive <https://www.hse.ie/eng/about/who/cspd/ncps/medicines-management/bzra-for-anxiety-insomnia/guidance-on-appropriate-prescribing-of-bzra-feb-2021.pdf>

Health Service Executive (2021b) National Service Plan 2021, Dublin. <https://www.hse.ie/eng/services/publications/serviceplans/national-service-plan-2021.pdf>

Hickman, M., Lingford-Hughes, A., Bailey, C., Macleod, J., Nutt, D., & Henderson, G. (2008). Does alcohol increase the risk of overdose death: the need for a translational approach. *Addiction (Abingdon, England)*, 103(7), 1060–1062. <https://doi.org/10.1111/j.1360-0443.2008.02134.x>

Houses of the Oireachtas (2018) Public Health (Alcohol) Act 2018, (Act 24 of 2018), Public Health (Alcohol) Bill 2015 (Bill 120 of 2015). <https://data.oireachtas.ie/ie/oireachtas/act/2018/24/eng/enacted/a2418.pdf>

Johnston, L., Liddell, D., Browne, K., & Priyadarshi, S. (2017). Responding to the needs of ageing drug users. *European Monitoring Centre for Drugs and Drug Addiction*.

https://www.emcdda.europa.eu/system/files/attachments/6225/EuropeanResponsesGuide2017_BackgroundPaper-Ageing-drug-users.pdf

Marsh JC, Park K, Lin YA, Bersamira C. (2018) Gender differences in trends for heroin use and nonmedical prescription opioid use, 2007-2014. *J Subst Abuse Treat*; 87:79-85. doi: 10.1016/j.jsat.2018.01.001. Epub 2018 Jan 5. PMID: 29433788.
[https://www.journalofsubstanceabusetreatment.com/article/S0740-5472\(17\)30373-2/fulltext](https://www.journalofsubstanceabusetreatment.com/article/S0740-5472(17)30373-2/fulltext)

Martins, S. S., Sampson, L., Cerdá, M., & Galea, S. (2015). Worldwide Prevalence and Trends in Unintentional Drug Overdose: A Systematic Review of the Literature. *American Journal of Public Health*, 105(11), e29–e49. <https://doi.org/10.2105/AJPH.2015.302843>

McNamara, S., Stokes, S., Kilduff, R., & Shine, A. (2015). Pregabalin Abuse amongst Opioid Substitution Treatment Patients. *Irish Medical Journal*, 108(10), 309–310.

<http://archive.imj.ie/ViewArticleDetails.aspx?ArticleID=15406>

Mc Namara, S., Stokes, S., & Nolan, J. (2019). The Emergence of New Psychoactive Substance (NPS) Benzodiazepines. A Survey of their Prevalence in Opioid Substitution Patients using LC-MS. *Irish Medical Journal*, 112(7), 970. <http://imj.ie/the-emergence-of-new-psychoactive-substance-nps-benzodiazepines-a-survey-of-their-prevalence-in-opioid-substitution-patients-using-lc-ms/>

Mounteney, J., Griffiths, P., Bo, A., Cunningham, A., Matias, J., & Pirona, A. (2018). Nine reasons why ecstasy is not quite what it used to be. *The International journal on drug policy*, 51, 36–41. <https://doi.org/10.1016/j.drugpo.2017.09.016>

Nagelhout, G. E., Hummel, K., de Goeij, M., de Vries, H., Kaner, E., & Lemmens, P. (2017). How economic recessions and unemployment affect illegal drug use: A systematic realist literature review. *The International Journal on Drug Policy*, 44, 69–83.

<https://doi.org/10.1016/j.drugpo.2017.03.013>

State Coroners Court of New South Wales. (2019). Inquest into the death of six patrons of NSW music festivals.

[https://coroners.nsw.gov.au/coroners-court/download.html/documents/findings/2019/Music Festival Redacted findings in the joint inquest into deaths arising at music festivals .pdf](https://coroners.nsw.gov.au/coroners-court/download.html/documents/findings/2019/Music%20Festival%20Redacted%20findings%20in%20the%20joint%20inquest%20into%20deaths%20arising%20at%20music%20festivals.pdf)

Tweed EJ, Miller RG, Schofield J, Barnsdale L & Matheson C (2020) Why are drug-related deaths among women increasing in Scotland? A mixed-methods analysis of possible explanations. *Drugs: Education, Prevention and Policy*. <https://doi.org/10.1080/09687637.2020.1856786>

World Health Organization (WHO) (2015) *Paromethoxymethylamphetamine (PMMA) critical review report. Agenda Item 5.6. WHO, Expert Committee on Drug Dependence Thirty-seventh Meeting, Geneva, Switzerland, Europe, 16–20 November 2015.* [https://www.who.int/medicines/access/controlled-substances/5.6 PMMA CRev.pdf?ua=1](https://www.who.int/medicines/access/controlled-substances/5.6_PMMA_CRev.pdf?ua=1)

O'Reilly, L, Mac Cionnaith, C. (2019). Crack cocaine use in Ballymun: An evidence base for interventions. Dublin: Ballymun Youth Action Project <https://byap.ie/crack-cocaine-use-in-ballymun-an-evidence-base-for-interventions-2019>

Khary K. Rigg & Amanda Sharp (2018) Deaths related to MDMA (ecstasy/molly): Prevalence, root causes, and harm reduction interventions, *Journal of Substance Use*, 23:4, 345-352, DOI: [10.1080/14659891.2018.1436607](https://www.tandfonline.com/doi/abs/10.1080/14659891.2018.1436607)
<https://www.tandfonline.com/doi/abs/10.1080/14659891.2018.1436607>

Royal College of Physicians of Ireland. RCPI Policy Group on Alcohol Reducing Alcohol Health Harm; RCPI: Dublin, Ireland, 2013. <https://rcpi-live-cdn.s3.amazonaws.com/wp-content/uploads/2016/01/Reducing-Alcohol-Health-Harm-in-Ireland.pdf>

Scott ML, Murnane KS, Orr AW, Young at heart? Drugs of abuse cause early-onset cardiovascular disease in the young, *Heart* 2021;**107**:604-606. <https://heart.bmj.com/content/heartjnl/107/8/604.full.pdf>

Smyth, B. P., & McCarney, G. (2020). Treatment of Adolescent Heroin Dependence: The End of an Era. *Irish medical journal*, 113(1), 2. <http://imj.ie/wp-content/uploads/2020/01/Irish-Med>

Valente PK, Bazzi AR, Childs E, Salhaney P, Earlywine J, Olson J, Biancarelli DL, Marshall BDL, Biello KB. Patterns, contexts, and motivations for polysubstance use among people who inject drugs in non-urban settings in the U.S. Northeast. *Int J Drug Policy*. 2020 Nov;**85**:102934. doi: 10.1016/j.drugpo.2020.102934. Epub 2020 Sep 7. PMID: 32911318; PMCID: PMC7770041. <https://pubmed.ncbi.nlm.nih.gov/32911318/>

Van Hout, Marie Claire, Crowley, Des, Collins, C, Barry, A, Lyons, Suzi, Delargy, Ide (2018) Characteristics of methadone-related overdose deaths and comparisons between those dying on and off opioid agonist

treatment (OAT): a national cohort study. *Heroin Addiction and Related Clinical Problems*, 20, (1), pp. 37-44

http://researchonline.ljmu.ac.uk/id/eprint/7750/7/Articles_340_538_VAN_HOUT-PAP.pdf

White AM, Castle IP, Hingson RW, Powell PA. Using Death Certificates to Explore Changes in Alcohol-Related Mortality in the United States, 1999 to 2017. *Alcohol Clin Exp Res*. 2020 Jan;44(1):178-187. doi: 10.1111/acer.14239. Epub 2020 Jan 7. PMID: 31912524.

https://movendi.ngo/wp-content/uploads/2020/01/White_et_al-2020-Alcoholism_Clinical_and_Experimental_Research.pdf

World Health Organization. International Programme on Chemical Safety: Poisoning Prevention and Management.

<https://www.who.int/ipcs/poisons/en/#:~:text=Poisoning%20is%20a%20significant%20global,died%20worldwide%20from%20unintentional%20poisoning.&text=For%20example%2C%20it%20is%20estimated,causes%20370%2C000%20deaths%20each%20year.>



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