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## Knowledge Exchange Seminar Series (KESS)

***Title: Alcohol, Drugs and Suicide – interactions between misuse in the life course and at the time of death.***

***Dr Karen Galway PhD***

### **Key Points:**

1. Although a history of substance misuse increases the risk of suicide, we know very little about the relationship between misuse in life and misuse immediately preceding death
2. In Northern Ireland individuals who die by suicide are tested for the presence of alcohol, but only half are tested for prescription or illicit drug misuse at the time of death
3. Those who are tested tend to be younger people with a known history of substance misuse
4. As expected, some individuals with a history of substance misuse were misusing at the time of death, and some of those with no history of substance misuse were found to be misusing at the time of death
5. The blood results of a proportion of those individuals who had a history of substance misuse indicate that they had not misused substances immediately preceding their death
6. If we change our approach to testing for illicit and prescription drug misuse in suicide, we could increase our understanding of the issue and develop more effective prevention strategies

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### 1. Introduction

Effective suicide prevention initiatives rely on the identification of factors involved in vulnerability and risk and identify appropriate opportunities for intervention. Although addiction and misuse of alcohol, prescription medication and illicit drugs have been identified as key risk factors for suicide,<sup>1-3</sup> the interaction between lifetime substance misuse and it's misuse immediately preceding death is poorly documented. To develop and implement successful interventions for suicide prevention, it is important to understand the role substance misuse and impaired reasoning and perception play, throughout the life of an individual, and at the point at which they act upon suicidal thoughts.<sup>4,5</sup> Illicit substance misuse is strongly associated with suicidal acts, even when the method does not involve drug overdose.<sup>6</sup> Moreover, when compared to the general population dependent substance misusers record a higher prevalence of many of the major risk factors for suicide,<sup>6</sup> these include psychopathology, family dysfunction, social isolation, and lower socioeconomic status.<sup>7-9</sup> Further to existing evidence on illicit drug misuse, in recent years combined alcohol and polydrug use in recreational settings has become a cause for concern.

### 2. The Northern Ireland Context

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Substance misuse (of alcohol, prescription and illicit drugs) is a significant public health issue in Northern Ireland. The Adult Drinking Pattern survey reports that 23% of the Northern Ireland population drink more than the weekly drinking limits (with 18% described as hazardous drinking and 5% as harmful – the latter equating to alcohol dependence). Of those adults who drink alcohol (74%), 30% engage in at least one binge-drinking episode per week.<sup>10</sup>

It is much more difficult to estimate the prevalence of drug misuse. In the Northern Ireland Crime Survey 2008/2009 survey respondents were asked whether they had ever taken diazepam/Valium which was not prescribed by a doctor, the results reported a 3.8% prevalence.<sup>11</sup> Identifying those at higher risk of misuse is also difficult. For example, findings from the NI Drug Prevalence Survey, indicate higher use of sedatives and tranquillisers in women and older adults, however, these contrast with the National Advisory Committee on Drugs (NACD) and Public Health Information and Research Branch (PHIRB) who reported that non-prescribed tranquilliser use is more common in men and younger age groups.<sup>12</sup> The Drug Misuse Database collects information on those presenting for treatment for their drug misuse and shows that 61% of drug users took two or more drugs (referred to as polydrug use). This proportion has been increasing again in recent years, up from 51% in 2009/2010.<sup>13</sup> The UK-based Association for Young People's Health recently reported an increase in young people help-seeking for polydrug misuse.<sup>13</sup>

Alcohol and drug misuse (both prescription and illicit) play a significant part in death by suicide in Ireland. A recent study detected drugs in 48% of cases of death by hanging with alcohol featuring in 55% of all suicides.<sup>14</sup> However, this analysis failed to consider how misuse over the individual's lifetime was linked to drug and alcohol misuse prior to the suicide event.

Therefore, although the existing knowledge base provides a clear picture of the relevance of substance misuse to suicide deaths, there remains a lack of appropriate data linkage for closer examination of the relationship between drug and alcohol misuse in life and at time of death.

### 3. How we carried out the study

We examined all deaths in Northern Ireland (NI) determined to be suicide by the Coroner Service for Northern Ireland (CSNI) between 1<sup>st</sup> March 2007 and 28<sup>th</sup> February 2009. Data collection was carried out between January and November 2011, initially from the CSNI, and then linked to associated data from General Practitioner (GP) records. This allowed us to match information about

substance misuse across the lifespan and information about substance misuse at the time of death by suicide.

By matching general practitioner (GP) record data with standardised toxicology screening in the Coroner's records, the analyses presented here support the steps required to improve our ability to develop interventions to prevent suicide.

#### 4. How we defined substance misuse

Both the alcohol and drug misuse data were (separately) summarised into two variables (help-seeking for alcohol misuse and for drug misuse indicated by either a yes or a no) noting any form of help-seeking for either alcohol misuse or substance misuse (including prescription or illicit drugs). Due to a lack of standardised reporting in GP records, the term substance misuse refers to any help-seeking and therefore includes individuals who had substance dependence. For alcohol, a level of 80mg per ml was used to indicate 'misuse' at the time of death. This is a standard amount of alcohol detected in the blood, which equates to the drink-driving limit. Drug misuse at the time of death was defined as; any illicit substances detected and/or any levels of prescription medication that were deemed by the pathologist to be over the therapeutic threshold.

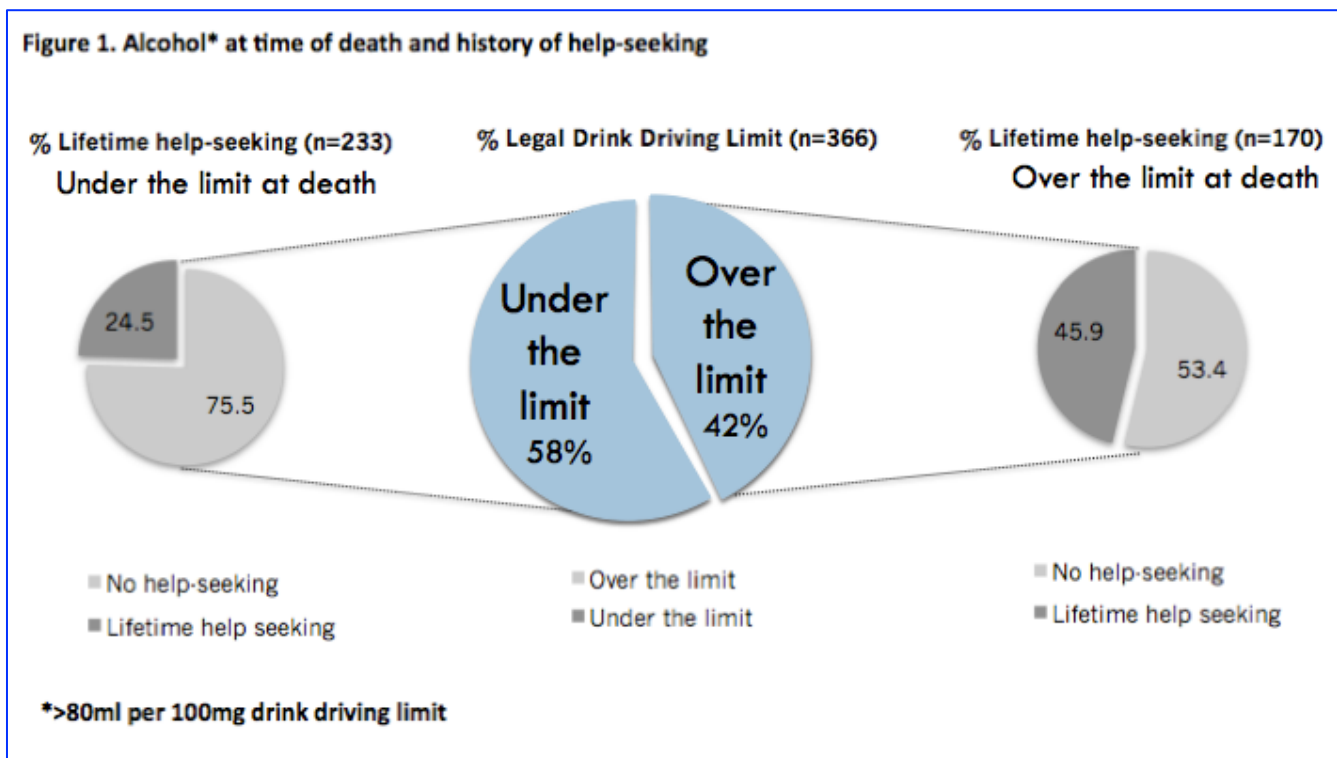
#### 5. Characteristics of individuals who died by suicide

In total, 403 deaths were confirmed suicides over the two-year period. Males comprised 81% (325/403). Ages ranged from 11 to 83 years (with a mean of 39); 49% (196/403) were either married or cohabiting; 38% (155/403) were in paid employment; and 40% (161/403), 28% (111) and 32% (129) lived in urban, rural and intermediate areas respectively.

GP records were not available for everyone; therefore help-seeking data is based on 361 matched Coroner and GP records. In relation to health service access, 41% (148/361) had not been diagnosed with a mental health problem and 46% (167/361) were not in receipt of any secondary or tertiary health service treatment at the time of death. However, 82% (296/361) had consulted with the GP in the twelve months prior to the suicide, and of these 71% (209/296) had presented with mental health concerns. Overall, 50.4% (182/361) were in receipt of mental health related prescriptions and 50% (181/361) recorded more than six consultations, with a mean of 5.7 for the *help-seeking* group (296/361).

## 6. Misuse of alcohol and drugs amongst those who died by suicide

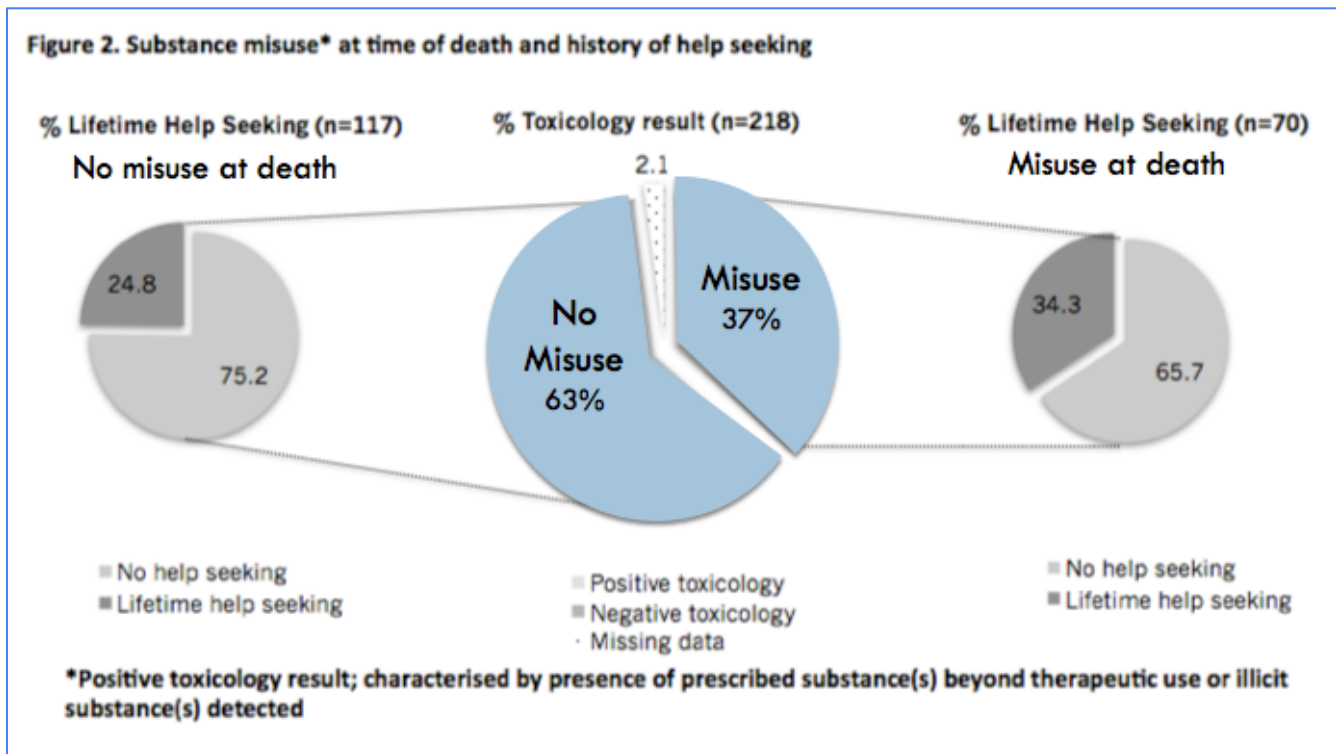
The levels of help-seeking for alcohol and drug misuse problems in the cohort were recorded for (a) the twelve months prior to the suicide (alcohol: 23.6%, 84/356: drugs: 12.8%, 46/360) respectively, and (b) over the lifespan (alcohol: 33.4%, 120/359: drugs: 22.2%, 80/360) respectively. The levels of substance misuse at the time of death, were recorded for (a) alcohol at >80mg per ml of, 38.5% (n=152 out of 395 tested) and (b) any illicit drug use and/or prescription drug levels above the therapeutic threshold indicating misuse, of 35% (n=76 out of 218 tested)



## 7. Relationship between help-seeking in life and misuse at time of death

Almost every individual who died was tested for blood alcohol levels (n=395). Overall, 51.6% (204/395) of the cohort tested positive for blood alcohol. Four in ten of those who died (39.2%, n=155 out of 395) were over the UK drink-driving limit (80mg per 100ml); with 27.1% (107 out of 395) at more than twice the UK limit (>160mg per 100ml). Of those *over the limit*, 36.1% (56 out of 155) had sought help for an alcohol related problem in the twelve months

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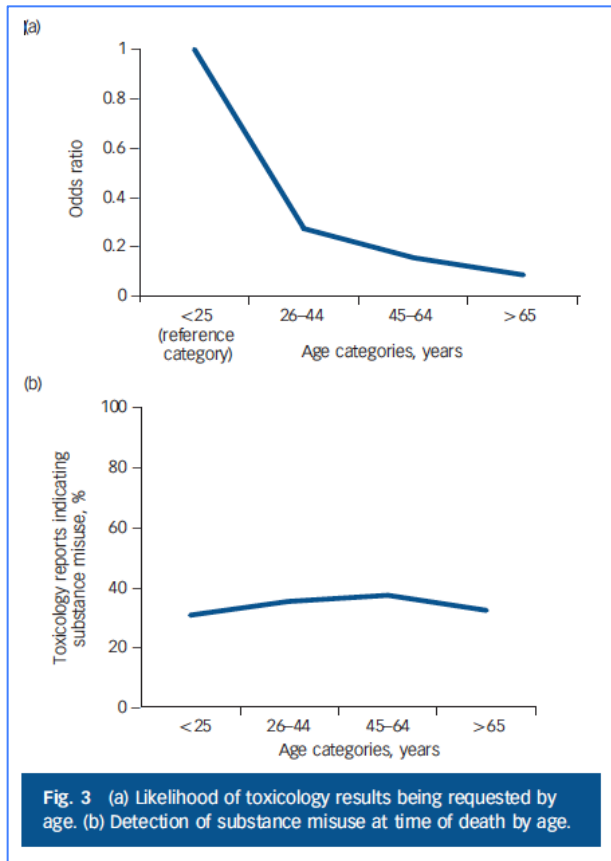


prior to death. It could be argued that an end point of suicide indicates that these 56 individuals failed to find an effective resolution to their distress, despite seeking help for the alcohol misuse.

An unexpected result is that a proportion of people with a lifetime history (any time previous to the death) of alcohol misuse were found to be under the limit at the time of death (See figure 1). We also examined the relationship between lifetime help seeking for drug misuse and misuse of drugs at the time of death. When considering this analysis it is important to note that only 54% (n=218) of the cohort was tested for drug misuse. This is of critical importance because if we are only analysing half of the deaths, we cannot tell whether our conclusions are representative of all those who died by suicide.

Due to only half of the drug misuse data being available, we examined the process that determined whether an individual's blood was tested for drug misuse. We spoke to the CSNI and Pathologists responsible for post mortems about procedures that determined what tests h performed. We discovered that because the remit of the CSNI is primarily to determine the cause of death, in those cases where misuse of substances is not considered to be a primary factor in the medical cause of death, such tests are generally not carried out. In those cases where professionals at the scene of

the death have been made aware of a history of drug misuse, or there are clear signs of drug misuse at the scene, the tests will be ordered.



The available data (for the 54% of individuals who were subject to blood toxicology testing), demonstrated a similar pattern to that observed in alcohol test results in the relationship between misuse over the lifetime and misuse at the time of death. (See Figure 2.) Our analyses further revealed that although younger people are much more likely to be tested for drug misuse, the number of individuals with drug misuse detected at the time of suicide is equal across all age groups. (See Figure 3.) This may imply that drug misuse at the time of suicide is much more widespread than our results suggest, because the testing is currently biased towards younger people. However, with only half the data (54%), we cannot confidently estimate the true prevalence of drug misuse

immediately preceding suicide.

Figure 3 Reproduced with permission from British Journal of Psychiatry, November 2015.

The negative blood results (both for alcohol and drug misuse) at the time of death amongst those individuals with a history of help-seeking for substance misuse have implications for the commonly accepted view on reduced inhibitions and impulsivity as mechanisms associated with substance misuse as a risk factor for suicide.<sup>8,15-17</sup> Some of the reasons why substance misuse is a risk factor for suicide may remain even in periods of abstinence. Mediating factors such as personality traits, life events and comorbid (potentially undiagnosed) mental health problems are relevant, particularly where the substance misuse may have provided emotional regulation.<sup>17</sup> This requires further investigation.

## 8. Conclusions and policy implications

A number of important points emerge from this study. First, to capitalise on prevention programmes that address the role of alcohol and substance misuse in suicide, it is important to understand the

mediating factors involved in substance misuse and suicide, such as impaired reasoning and perception. Second we need to consider this in the context of existing concerns about prescription, alcohol and illicit drug misuse over a person's lifetime.

A third point is that we need to consider the role of polypharmacy in suicide particularly in relation to the psycho-active chemicals used in psychiatry, which affect the state of a person's emotional faculties at the time of a suicide attempt.<sup>18</sup> In this cohort high levels of psychiatric polypharmacy were observed and this requires further analyses. Such analyses would be enhanced by the availability of blood toxicology results for ALL suicide deaths.

However, there are notable contextual challenges that result in these limitations on the data that is available. For example, in Ireland professional guidelines for Pathologists state that every death by suicide should be subject to toxicology screening.<sup>19</sup> There are no similar guidelines in the UK. Importantly, the Irish guidelines suggest that such analyses should be mandatory where the cause of death cannot be clearly established from the post mortem. Herein lies a fundamental difficulty in the use of coroners' data as a tool for developing interventions for the prevention of suicide.

The task of the Coroner along with the Pathologist, is to determine cause of death. This role is reflected in the increased frequency with which toxicology screening is ordered in the case of suspected overdose. In cases involving hangings (the method used in 76% of suicides in this cohort) the biological cause of death is asphyxiation, and within a framework which takes an exclusively biomedical approach to the cause of death, the associated socio-psychological context, including the use of substances and their impact on behaviour associated with suicide may be diminished.<sup>18</sup> As a result of this procedural convention, the full extent of substance misuse in the psychosocial sequela of suicide remains unknown.

To make best use of the information collected when a suicide occurs, a sea change in medical forensics may be required, to re-align the process towards gaining a deeper understanding of the wider social and psychological risks and determinants of suicide. In doing so we have the opportunity to enhance prevention efforts.

NB: The results presented here will be available for early online viewing in the *British Journal of Psychiatry*, from 5<sup>th</sup> November 2015.



## References

1. Brady J. The association between alcohol misuse and suicidal behaviour. *Alcohol* 2006; 41: 473–8.
2. Pitman A, Krysinska K, Osborn D, King M. Suicide in young men. *Lancet* 2012; 379: 2383–92.
3. Walsh B. Suicide in Ireland: the influence of alcohol and unemployment. *Econ Soc Rev (Irel)* 2011; 42: 27–47.
4. Cherpitel CJ, Borges GLG, Wilcox HC. Acute alcohol use and suicidal behavior: a review of the literature. *Alcohol Clin Exp Res* 2004; 28: 18S–28S.
5. Hufford MR. Alcohol and suicidal behavior. *Clin Psychol Rev* 2001; 21: 797–811.
6. Darke S, Dufrou J, Torok M. Drugs and violent death: comparative toxicology of homicide and non-substance toxicity suicide victims. *Addiction* 2009; 104: 1000–5.
7. Conner KR, Houston RJ, Swogger MT, Conwell Y, You S, He H, et al. Stressful life events and suicidal behavior in adults with alcohol use disorders: role of event severity, timing, and type. *Drug Alcohol Depend* 2012; 120: 155–61.
8. Lamis DA, Malone PS. Alcohol use and suicidal behaviors among adults: a synthesis and theoretical model. *Suicidol Online* 2012; 3: 4–23.
9. O'Reilly D, Rosato M, Connolly S, Cardwell C. Area factors and suicide: 5-year follow-up of the Northern Ireland population. *Br J Psychiatry* 2008; 192: 106–11.
10. Central Survey Unit. Adult Drinking Patterns in Northern Ireland. Northern Ireland Statistics and Research Agency, 2011.
11. Toner S, Freil R. Experience of Drug Misuse?: Findings from the 2008/09 Northern Ireland Crime Survey. Statistics and Research Branch, Department of Justice, 2010.
12. National Advisory Committee on Drugs and Public Health Information & Research Branch. Drug Use in Ireland and Northern Ireland. Regional Drug Task Force (Ireland) and Health & Social Care Trust (Northern Ireland), 2012.
13. Hagell A. Adolescent Substance Use: AYPH Research Summary No 15, November 2013. Association for Young People's Health, 2013  
(<http://www.ayph.org.uk/publications/520.RU15%20substance%20use%20summary.pdf>).
14. Tormey WP, Srinivasan R, Moore T. Biochemical toxicology and suicide in Ireland: a laboratory study. *Ir J Med Sci* 2013; 182: 277–81.
15. Conner KR, Duberstein PR. Predisposing and precipitating factors for suicide among alcoholics: empirical review and conceptual integration. *Alcohol Clin Exp Res* 2004; 28: 6S–17S.
16. Sinyor M, Howlett A, Cheung A, Schaffer A. Substances used in completed suicide by overdose in Toronto: an observational study of coroner's data. *Can J Psychiatry* 2012; 57: 184–91.
17. Bunting BP, Murphy SD, O'Neill SM, Ferry FR. Lifetime prevalence of mental health disorders and delay in treatment following initial onset: evidence from the Northern Ireland study of health and stress. *Psychol Med* 2012; 42: 1727–39.
18. Tormey WP. Accuracy of death certification. *Br J Psychiatry* 2011; 199: 432–3.
19. Mallon S, Rosato M, Galway K, Hughes L, Rondon-Sulbaran J, McConkey S, et al. Patterns of presentation for attempted suicide: analysis of a cohort of individuals who subsequently died by suicide. *Suicide Life Threat Behav* 2015; 45: 335–44.