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Driving Under The Influence Of Drugs In Ireland: A Growing And Significant Danger

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Abstract

Driving under the influence of drugs (DU1D) has been a statutory offence in Ireland since the 1961 Road Traffic Act. The Medical Bureau of Road Safety (MBRS) is the independent forensic body responsible for chemical testing of intoxicants under that Act. There are graded penalties for driving under the influence of alcohol, dependant on concentration. The law does not set prohibited concentrations for drugs nor does it distinguish between legal and illegal drugs. In recent years there has been an increase in the requests by Gardai (police) for analyses for the presence of a drug or drugs. As part of the Irish Governments Strategy for Road Safety 1998 - 2002, the MBRS was commissioned to carry out a nation-wide survey on the current trends and epidemiology in DU1D in Ireland. Two thousand blood and urine samples sent to the MBRS under the Road Traffic Act 1994 were analysed. 1000 of the specimens were over the limit for alcohol and 1000 specimens were under the limit. Specimens were initially analysed for alcoho1 concentration by HS Gas Chromatography. They were then analysed for the presence of the following drugs or drug classes: amphetamines, methamphetamine, benzodiazepines, cannabis, cocaine, opiates and methadone using an enzyme immunoassay technique. Specimens found positive were sent to the State laboratory for confirmatory analysis by GC-MS or LC-MS for all drug types found. Up to October 2001, over 1800 specimens were analysed and the preliminary results indicate 46% under the legal alcohol limit and 26% over the legal limit contain drugs. Polydrug use was observed at a level of 31 % in the over the legal alcohol limit and 62% under the legal limit. The most common class found was cannabis and the least common drug was cocaine. These results indicate an increase in DU1D -since a previous survey in 1991. Confirmation of the findings will be presented and the distribution of drug types wilt be outlined, The high percentage drug positives found in the specimens tested indicates the need for analysis for the presence of drugs of all DU1D specimens. The high number of polydrug use detected gives rise for concern. The legislation with regard to drugs/driving will be reviewed in light of the findings, both analytical and epidemic logical. The importance of these findings from one of the larger European studies in relation to road safety is clear.

Introduction

Driving under the influence of drugs (DUID) has been a statutory offence in Ireland since the 1961 Road Traffic Act. The Medical Bureau of Road Safety (MBRS) is the independent forensic body responsible for chemical testing of intoxicants under the Act. There are graded penalties for driving under the influence of alcohol, dependent on concentration. The law docs not set prohibited concentrations for drugs nor does it distinguish between legal and illegal drugs. In recent years there has been an increase in the requests by Gardai (Irish Police) for analysis for the presence of drug or drugs to the MBRS. Table 1 outlines the increases over the past seven years. The true incidence of drug use combined with driving is not known in Ireland. This is part explained by the absence of random breath alcohol testing or roadside drug screening provisions in the legislation.

Table 1

The number of specimens analysed for alcohol and drugs in Ireland in recent years

Year	Specimen Type	Alcohol Analysis	Drug Analysis
1995	B&U	4766	8
1996	B&U	5514	16
1997	B&U	6591	24
1998	B&U	7S12	32
1999	B&U	8476	50
2000	B&U&BR*	10,134	78
2001	B&U&BR*	12,503	130

** Evidential breath testing/or alcohol introduced late 1999.*

Studies have been carried out in other European countries, some on road traffic fatalities or accidents (1-4). Other studies have been carried out on impaired drivers (5-6). An attempt to co-ordinate a direct comparison between countries was carried out for five Nordic countries (7). That study examined all blood specimens received by Nordic Forensic Institutes for one week in 1996.

De Gier in his work for The Pompidou Group of the Council of Europe, on illicit drug and traffic safety in Europe, identified that prevalence data from different countries are not comparable due to differences in the set-up of the studies (8). This lack of standardised selection outlines the need for each country to assess the DUID situation in its own jurisdiction.

Objectives

It was decided as part of the Irish Governments Strategy for Road Safety 1998-2002, to commission the MBRS to carry out a nationwide survey on the current trends and epidemiology in DUID in Ireland in 2000-2001. This study outlines the preliminary analytical findings of the survey.

Method

Sample Selection

Two thousand blood and urine samples sent to the MBRS under the Road Traffic Act 1994 were selected. 1000 specimens were over the legal limit for alcohol and 1000 were under the limit. The 1994 RTA set the alcohol limits of 80mg/100ml in blood 107mg/100ml in urine and 35ug/100ml m breath.

In December 1999, the MBRS installed 4 Evidential Breath Testing (EBT) instruments m Garda Stations. In 2000 the MBRS installed 21 EBT instruments throughout the country. The first 500 over the limit specimens were provided when only the 4 instruments had been installed and the second 500 over the limit specimens were provided by end of year 2000 when 25 instruments were installed. The 1000 blood or urine under the limit specimens were collected over a longer time period from late 1999 to end of 2001.

The blood or urine samples were taken from Irish drivers apprehended by the Gardai and suspected of driving under the influence of an intoxicant. The law defines an intoxicant as including alcohol and drugs and any combination of drugs or of drugs and alcohol.

MBRS Analyses

All specimens were analysed for alcohol on receipt or shortly afterwards by Headspace Gas Chromatography. Specimens were stored at 4°C until analysed for the presence of a drug or drugs using an Elisa system. The microplate enzyme immunoassay kits were purchased from COZART, UK (sec Table 2 List of Analytes Detected).

Table 2

Cozart kits used by the MBRS to analyse for the presence of a drug or drugs in blood and urine specimens

Kit	Analyte
Amphetamine	Amphetamine Methylenedioxy amphetamine (MDA)
Methamphetamine	Methylenedioxy meth amphetamine (MDMA)
Benzodiazepine	Diazepam, Flunitrazepam, Flurazepam Nitrazepam, Nordiazepam, Tcmazcpam
Cannabinoids	11 nor-delta - 9 carboxy - tetrahydrocannabinol
Cocaine	Cocaine, Benzolyecgonine, Ecgonine methyl ester
Opiates	Codeine, Dihydrocodeine, Morphine 6 Monoacctylmorphine (MAM)
Mcthadone	Methadone, 2-ethyhdene – l,5-dimethyl – 3,3 – diphenylpyrrolidine (EDDP)

All specimens were analysed for the presence of the following drug or drug classes: amphetamines, memamphetamines, benzodiazepines, cannabinoids, cocaine, opiates and methadone.

Screening Cut-Off concentrations are outlined in Table 3.

Specimens found positive were forwarded to the State Laboratory for confirmatory analysis.

State Laboratory Analyses

All specimens were frozen on receipt in the State Laboratory and analysed by either GC-MS or LC-MS over the period of the survey and to date. The specimens were confirmed positive using drug limits of detection (LCD) as outlined in Table 3.

Table 3

Screening cut-off concentrations and confirmation LOD levels

Drug/Drug Classes	Screening Cut Off (ng/ml)		Confirmation Cut Off (ng/ml) at LOD	
Amphetamines	50 (B)	300 (U)	50 (B)	50 (U)
Mcthamphetamines	50 (B)	300 (U)	20 (B)	50 (U)
Bcnzudiazepines	*50 (B)	50 (U)	20 (B)	20 (U)
Cannabinoids	*10(B)	10 (U)	5 (B)	5 (U)
Cocaine	100(B)	100(U)	50 (B)	50 (U)
Opiates	*25 (B)	25 (U)	50 (B)	50 (U)
Methadone	25 (B)	25 (U)	30 (B)	30 (U)

* After consultation with State Laboratory, the following cut-off levels were adjusted upward; Benzodiazepines and Opiates to 100ng/ml and Cannabinoids to 20ng/ml.

Results

The number of specimens forwarded to the St ate Laboratory for confirmatory analysis was 722 (36% of the 2000) based on Elisa results. 46% of the under the legal alcohol limit specimens and 26% of over the legal limit specimens indicated the presence of drugs. The number of results confirmed to date is 391 (19.6% of the 2000) with 74 specimen results outstanding. The number of drug positive specimens with alcohol levels below the limit was 263 (26% of that 1000) with 113(11%) specimens positive for drugs only. The number of drug positive specimens with alcohol levels above the limit was 128 (13% of that 1000). The frequencies of individual drug/drugs classes found are shown in Table 4.

Table 4

The frequencies of individual drug/drugs classes found

Drug/Drug Classes	Specimens >alcohol limit	Specimens <alcohol limit
Amphetamines	14	73
Methamphetamines	14	72
Benzodiazepines	33	79
Cannabinoids	79	156
Cocaine	9	17
Opiates	6	57
Methadone	6	56

Table 5 outlines the drugs found in the blood and urine specimens for both over and under the alcohol limit.

Table 5

Frequency of drugs found in blood and urine specimens

	Blood > alcohol limit	**Blood < alcohol limit**	**Urine > alcohol limit**	**Urine < alcohol limit**
Total	61	112	67	151
Cannabis	27	49	52	107
Amphetamines	3	24	11	49
M eth	5	31	9	41
Opiates	2	10	4	47
Cocaine	2	3	7	14
Methadone	1	15	5	41
Benzodiazepines	27	45	6	34

The frequency of polydrug use was found to be 139 (36% of 391 confirmed). Again the frequencies are given for the different categories in Table 6.

Table 6

Drug Survey - Polydrug Frequency

Drug Classes Positive	**Over Limits**	**Drug Classes Positive**	**Under Limits**
1 Drug	113	1 Drug	139
2 Drug	8	2 Drug	58
3 Drug	6	3 Drug	49
4 Drug	1	4 Drug	14
5 Drug	0	5 Drug	3
6 Drug	0	6 Drug	0
7 Drug	0	7 Drug	0

Discussion

The results of this large study indicated that 36% of all specimens screened positive for the presence of a drug or drugs excluding alcohol, A more reliable figure of 20% were confirmed positive by GC-M.S or LC-MS. Initial identification or cut off values for the Elisa analysis were chosen based on the low control values issued with the Elisa assay kits. These values were increased during the study to give greater concordance in specimen selection between screening and confirmatory analysis. The figure of 20% positives is in close agreement with the results reported by Denmark, Finland and Iceland using a smaller sample size (7). It has been suggested that the higher levels of detection in Norway and Sweden may be attributed to the different selection criteria made by the police in the different countries. The most common drug encountered apart from alcohol was cannabis. Similar findings have been reported in other European countries such as France (3) and Switzerland (5).

In the study of the five Nordic countries only Denmark found cannabis to be the most common drug (7). Recently in Scotland morphine has surpassed cannabis as the most common illegal drug detected in DUID drivers (6).

The high percentage of drug positives found in the specimens tested indicates the need for analysis for the presence of drugs in all DUID specimens. Since the beginning of this year 2002 the MBPS analyse all the under the limit for alcohol specimens for the presence of drugs.

The high number of poly drug and alcohol and drug use detected gives rise for concern. The legislation with regard to DUID will be review ed in light of the findings both analytical and epidemiological. The importance of these findings from one of the larger European studies in relation to road safety is clear.

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