



**National Office for Traffic Medicine**  
**Webinar:**  
***Alcohol and Drugs Driving.***

**Trinity College Dublin**  
**16th May 2025.**

Professor Denis A. Cusack,  
Forensic & Legal Medicine,  
Coroner Service

&

Director, Medical Bureau of Road Safety,  
Health Sciences Centre, University College Dublin.

# Intoxicant

- “intoxicant” includes alcohol and drugs and any combination of drugs or of drugs and alcohol
- a substance which when taken into the body by one means or another produces a condition of diminished mental and physical ability, hyperexcitability, or stupefaction

# Intoxicants and Driving

- **Depressants**

- Alcohol
- Cannabis
- Benzodiazepines
- Opiates
- Z drugs
- Pregabalin

- Impairment

- “Licit and Illicit use” and “Prescription & Prescribable”, OTC medications

- **Stimulants**

- Cocaine
- (Cocaethylene)
- Amphetamines
- Metamphetamine

# Intoxicant Driving with Other Risk-Taking

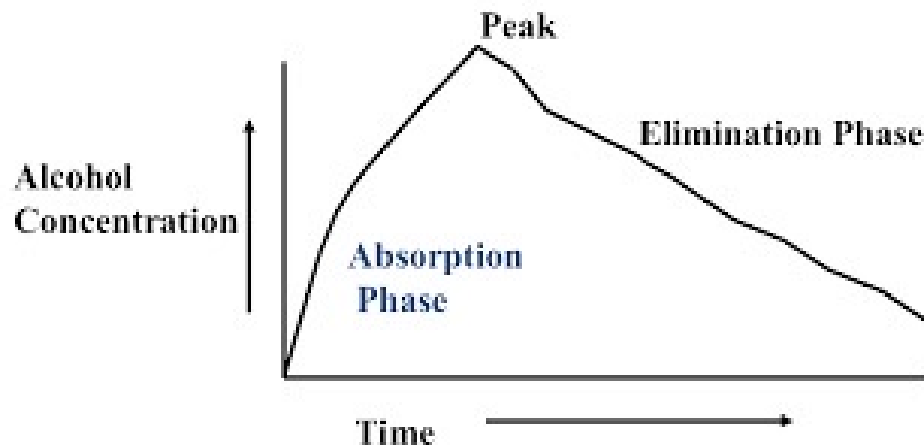
- Intoxicated driving with alcohol and drugs remains one of the major crash risks and a major problem
- Intoxicated driving causing deaths and serious injuries is often in combination with other other risk-taking behaviours:
  - Speeding
  - Careless and dangerous driving
  - Distracted driving (including mobile 'phone use)
  - Non-wearing of seat safety belts

# Physiology

- Alcohol concentrations
  - beer 4-6% v/v
  - wine 6-12% v/v
  - spirits 20-40% v/v
  - liqueurs > 40% v/v

# Physiology

- absorption
  - stomach and upper small bowel
  - optimally at 20%
  - peak blood levels at 60 - 120 minutes
  - absorption, peak and elimination phases



# Physiology

- Metabolism (most of the alcohol)
  - 95% detoxified in liver
- Excretion (smaller amounts)
  - 90% excreted by kidney, remainder through breath and sweat
  - 10 - 20 mgs% per hour
  - kidney tubular absorption of water, 1:1.3 ratio
- gender differences

# Clinical Effects of Alcohol

- Levels (100mg/100ml = 1.0 g/l) and examples
  - 0-50mg%: relaxed and more sociable
  - 50-100mgs%: mild euphoria, reduced co-ordination and reaction [crash risk increases]
  - 100-150mgs%: impaired balance, clumsiness, reduced alertness
  - 150-200mgs%: drunkenness, slurred speech, staggered gait, impaired co-ordination
  - 200-250mgs%: heavy drunkenness, grossly impaired co-ordination
  - 250-300mgs%: extreme drunkenness, stupor, impaired consciousness
  - >300mgs%: unconsciousness, coma, possible death



# Clinical Pathology

- clinical history
- physical examination
- chronic gastritis
- fatty liver
- cirrhosis
- biomarkers:
  - gammaglutamyl transpeptidase ( $\gamma$ GT)
  - carbohydrate-deficient transferrin (CDT)
  - phosphatidylethanol (PEth)

# Autopsy Findings

- Cardiac
- Hepatic
- Pancreatic
- Muscular
- Neural
- Testicular
- Vascular

2021  
161 pages

**HRB  
Overview  
Series**

**11**

**HR<sup>B</sup>**  
Health  
Research  
Board

**Alcohol  
consumption,  
alcohol-related  
harm and alcohol  
policy in Ireland**

# Policy Paper 2022

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## Global Burden of Disease Estimates of alcohol use and attributable burden in Ireland

What the data tell us and what we need  
to do to address the burden of alcohol

Dr Zubair Kabir  
School of Public Health,  
University College Cork

Dr Sheila Gilheany, Eunan McKinney, Kristina Kit  
Alcohol Action Ireland



# 2021 Drug Poisoning Deaths in Ireland

HRB Health Research Board

HRB StatLink Series 20

## Number of deaths — Sex & age

**354**  
deaths

**64%**  
male

**41 yrs**  
median age

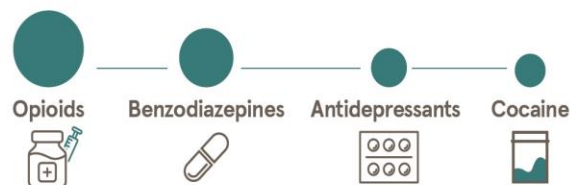


**36%**  
female

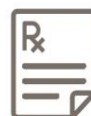
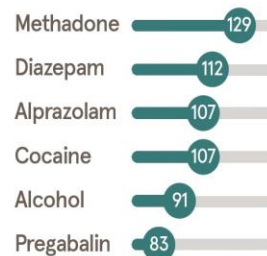
**47 yrs**  
median age

## Drugs implicated — Location

Most common drug groups



Top 6



**88%**  
had prescribable  
drugs implicated

**43%** in Dublin  
**12%** in Cork  
**45%** rest of Ireland

## Mental health

At least  
**48%**  
had a mental  
health issue



# Alcohol Effects

- Health
- Driving
- Society
  - sudden death
  - accidents
  - violence
  - family life
  - work etc.

# Effects of Alcohol on Driving

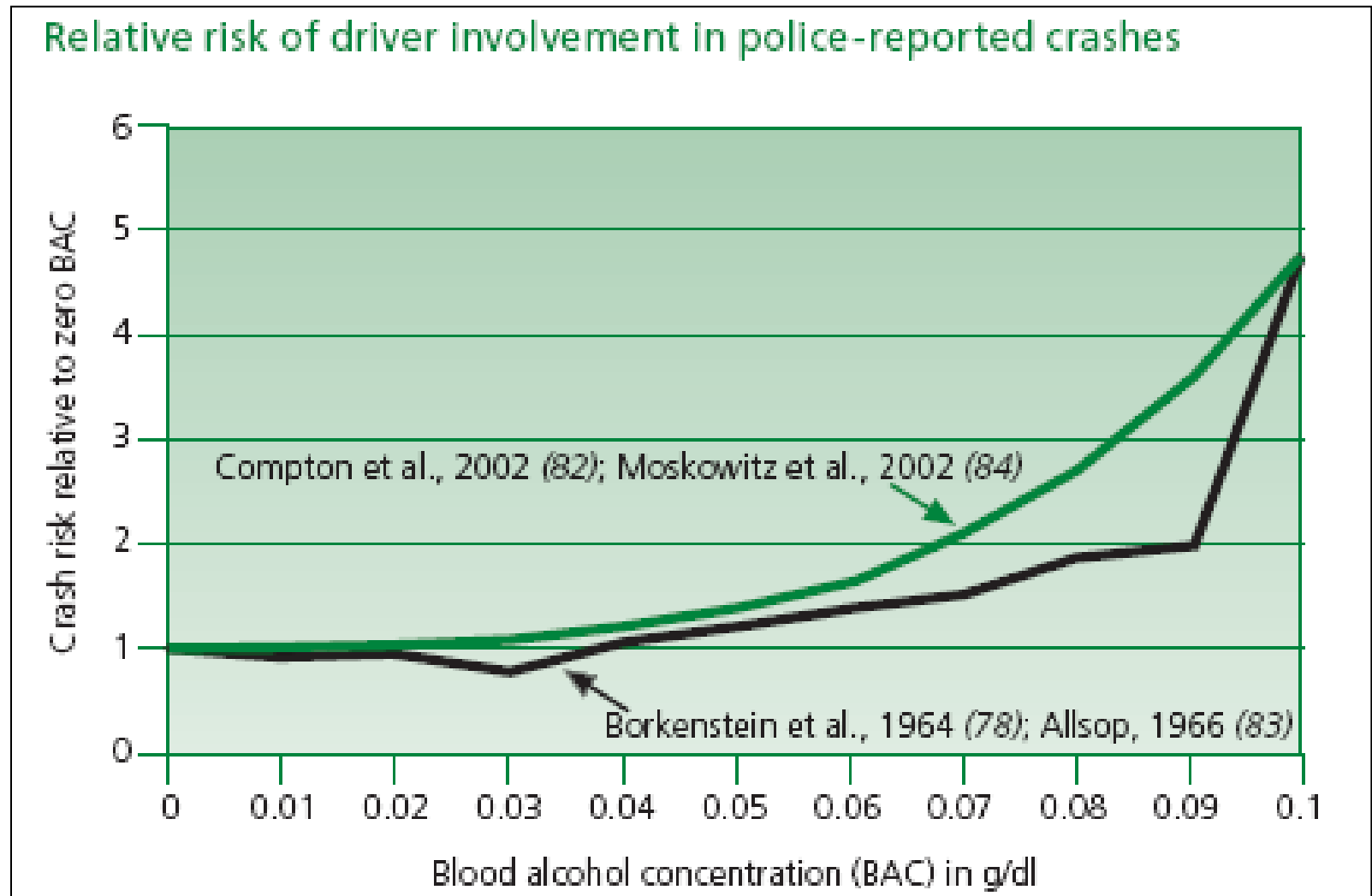
- Sensory input
- Concentration
- Reaction time
- Action response
- Risk taking behaviour

# The Morning After

- Types of drink
- Mix
- Times
- Excretion rate
- Other effects:
  - dehydration
  - hangover
  - headache
  - Fatigue
- Specified driver: BAC limit is 20 mgs%



# Crash Risk



# Levels of Alcohol in Blood and Urine Samples – MBRS 2024

- **Median Alcohol** reported Level in Blood and Urine:

The median alcohol level in blood was 142mg/100ml and in urine was 194mg/100ml for 2024, excluding specimens which had no trace of alcohol.

- **Maximum Alcohol** reported Level in Blood and Urine:

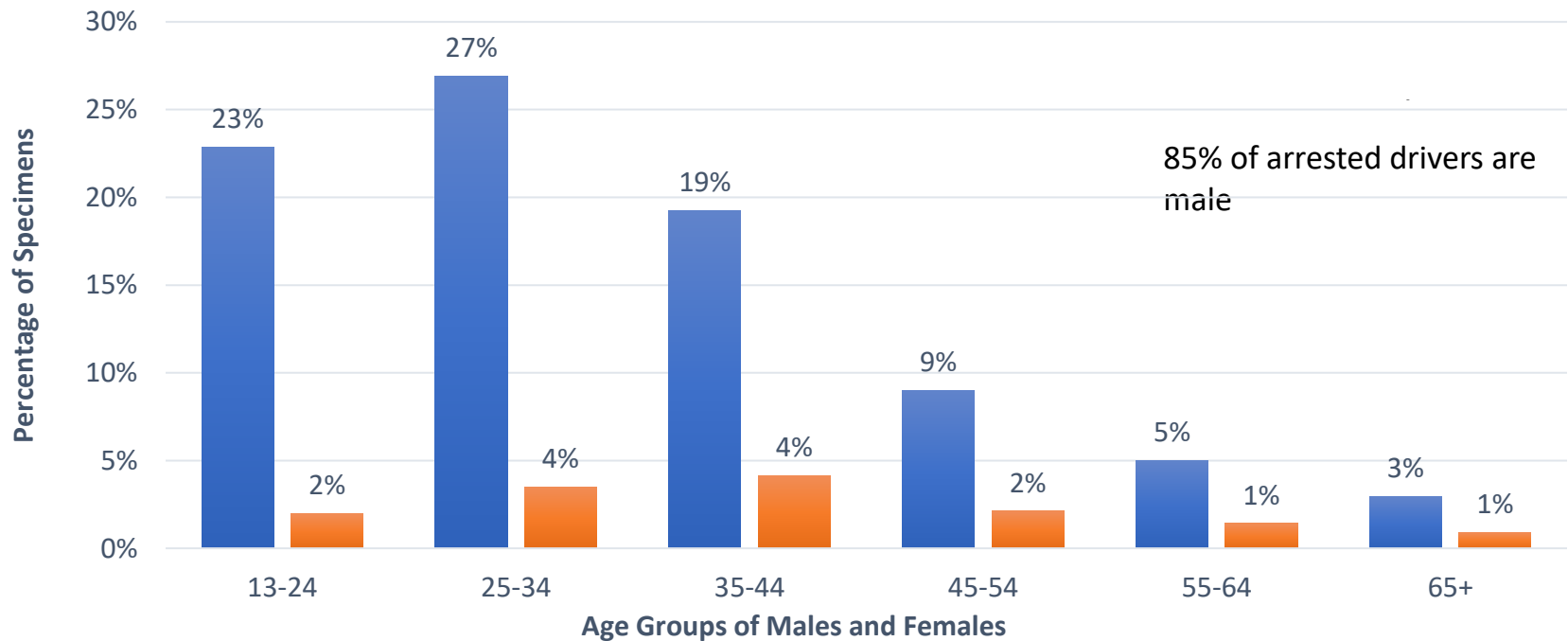
The highest alcohol level found in blood was 428mg/100ml and in urine was 525mg/100ml.

- Note: These averages indicate a very high degree of intoxication with alcohol far in excess of the legal *per se* limits for the non-specified driver (50 and 67mg/100ml blood and urine respectively) and for the specified driver (20 and 27 mg/100ml respectively).

# **Samples at MBRS for Analysis 2024**

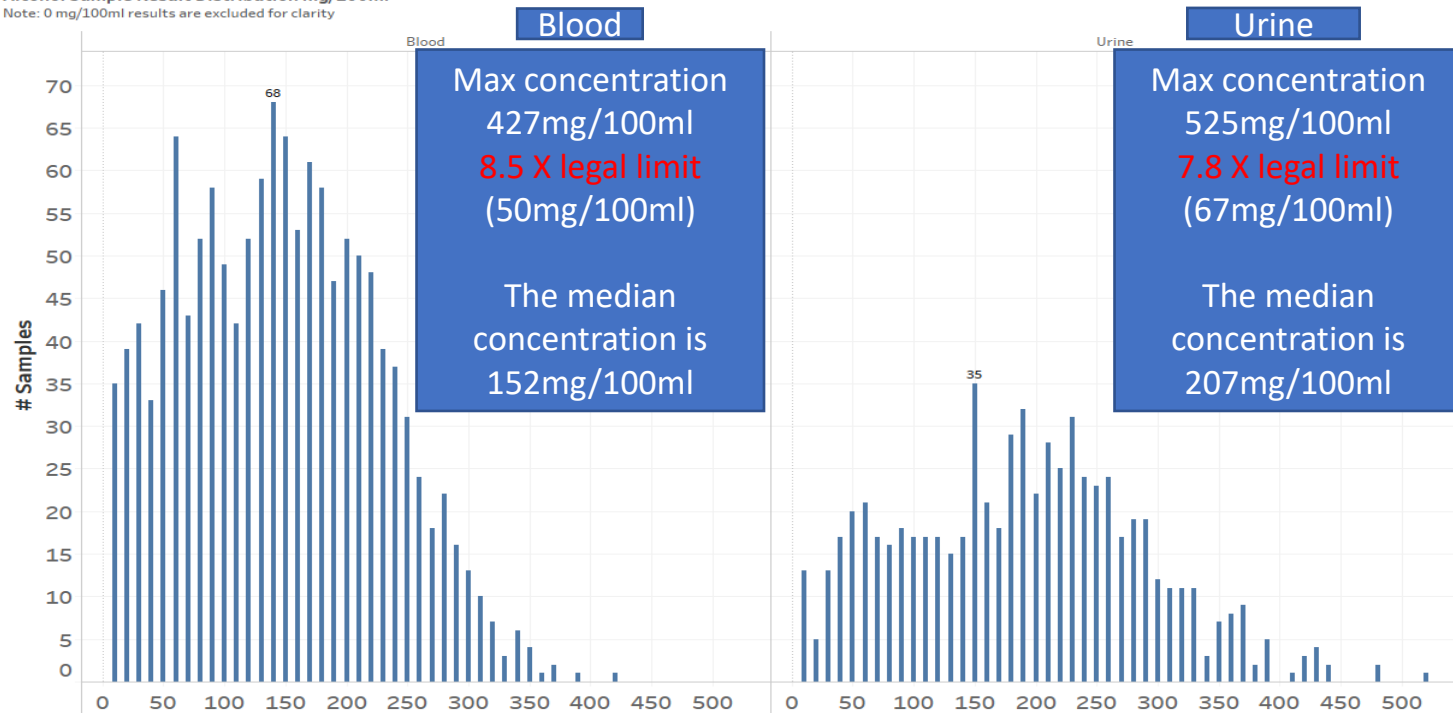
- Samples received: 5,900 and analysed for alcohol
- Samples received: 3,716 and analysed for drugs other than alcohol
- 81 types of drugs and medicines in analysis screening programme

# Age profile of Arrested Drink Drivers 2024

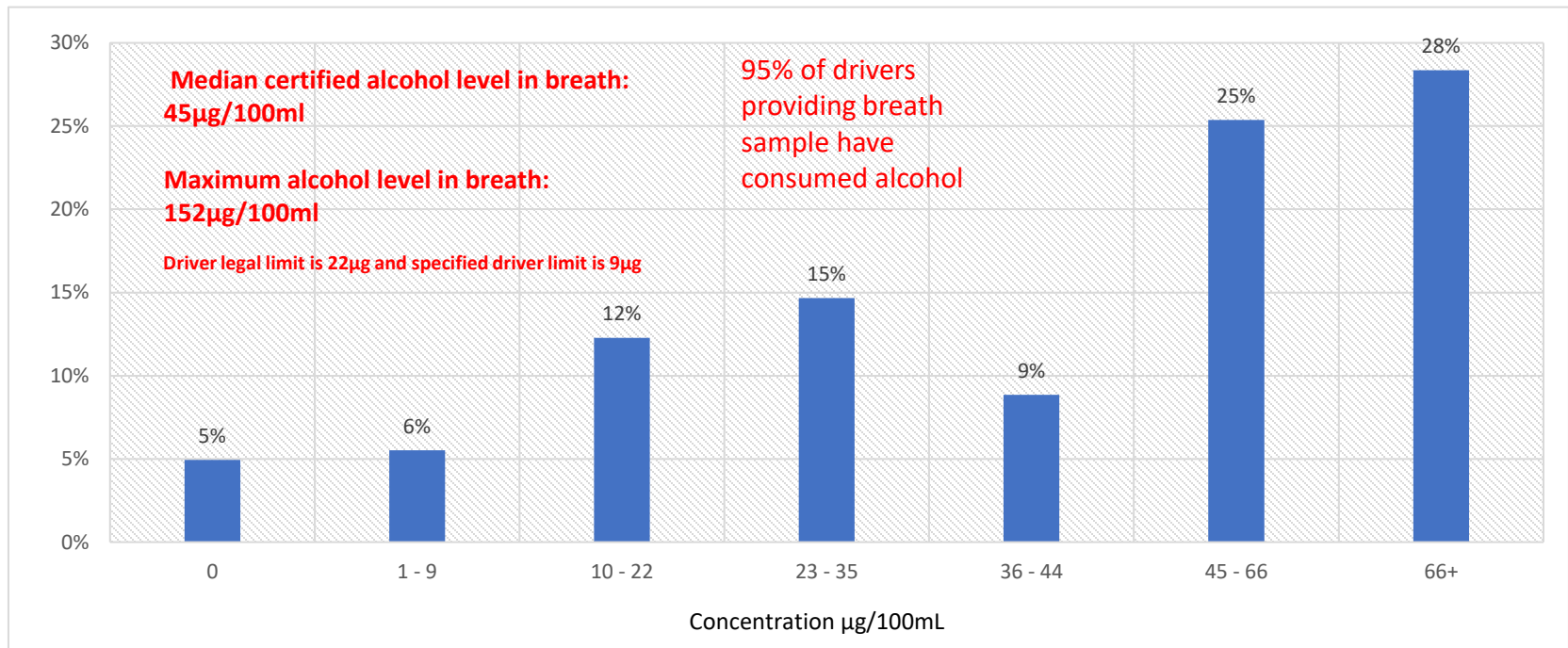


# Alcohol concentrations in Drivers: Blood and Urine 2024

Alcohol Sample Result Distribution mg/100ml  
Note: 0 mg/100ml results are excluded for clarity

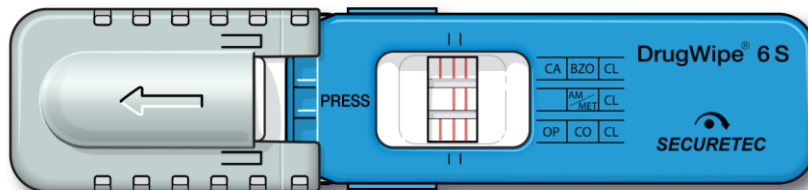
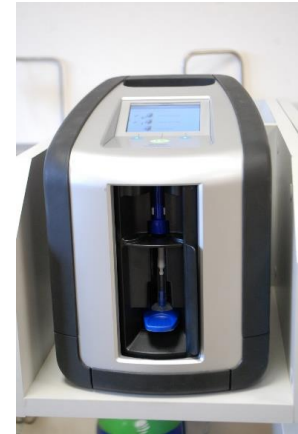


# Alcohol concentration in Drivers: Breath 2024



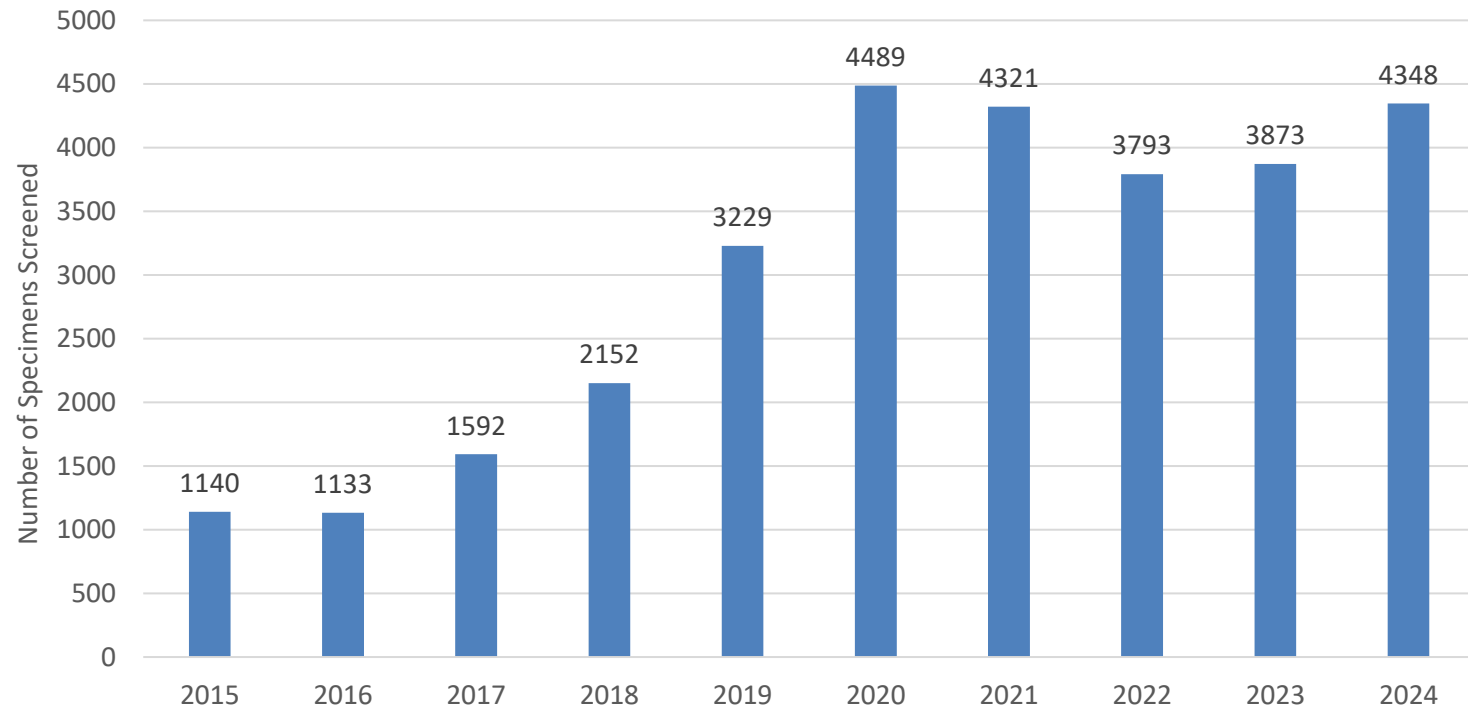
# Preliminary Drug Testing

- 2017 -2022:  
Dräger Drug Test 5000 system
- Since December 2022:  
Securetec Drugwipe 6S



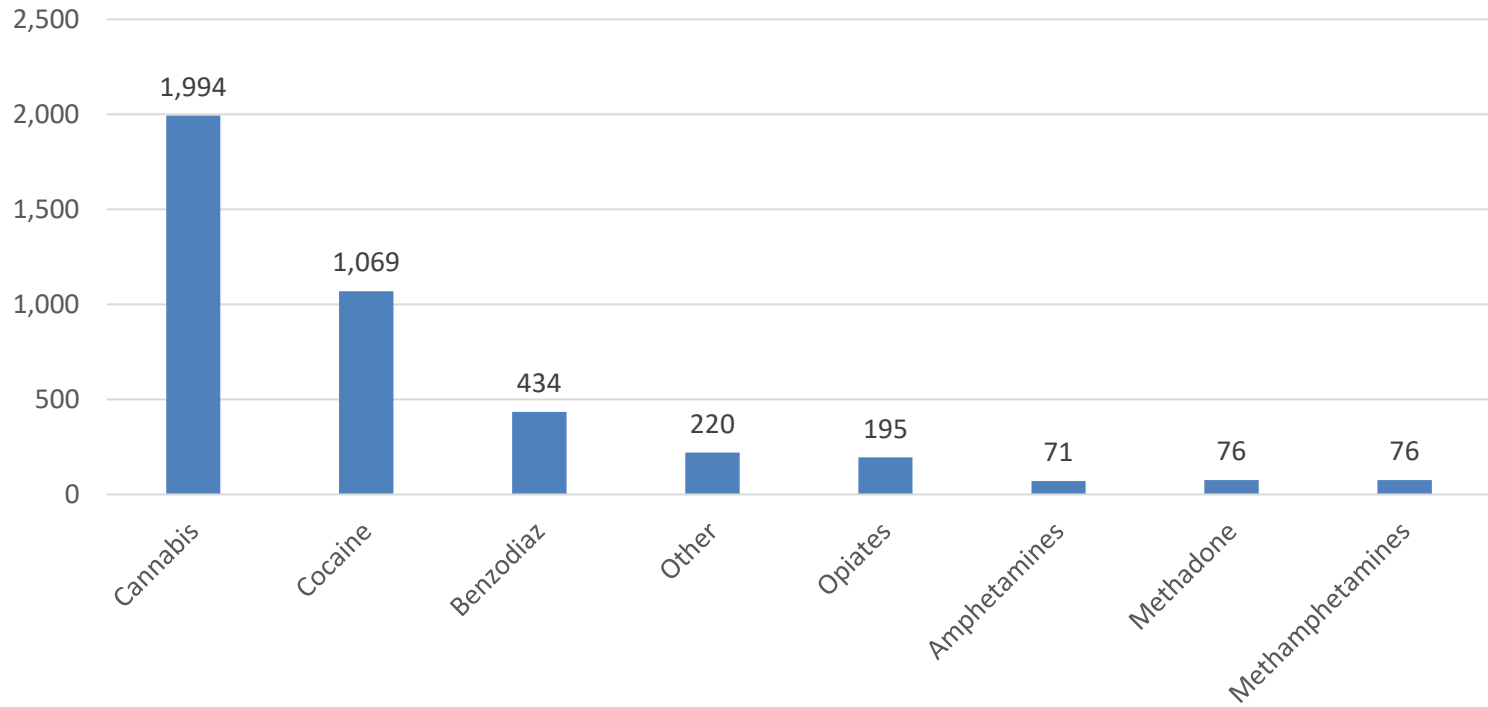
<https://www.ucd.ie/mbrs/manuals/>

## Number of Toxicology Specimens Screened at MBRS Laboratory (2015 – 2024)

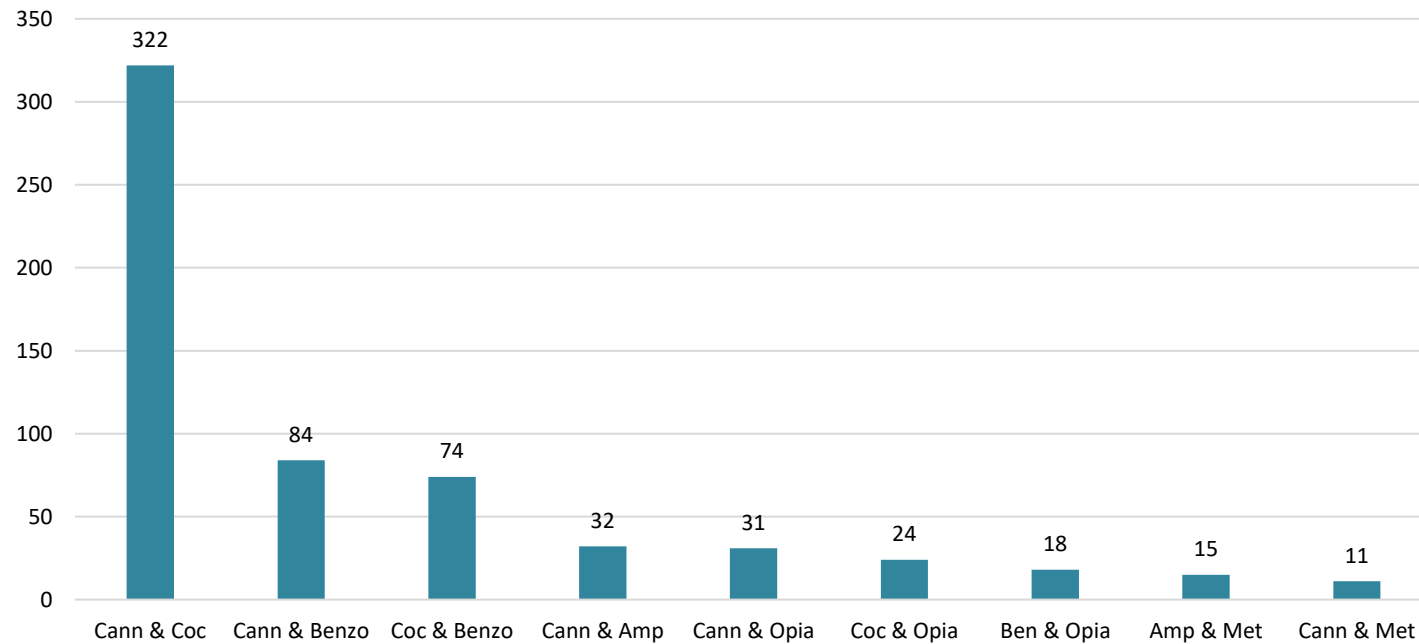




## Drug Prevalence Screening 2024



## Drug Screening – Prevalence of Combinations where two drugs were detected per specimen 2023



## Sláinte agus Tiomáint

*[National Office for Traffic  
Medicine Working Group]*

**[DUI and the link with Fitness to  
Drive]**

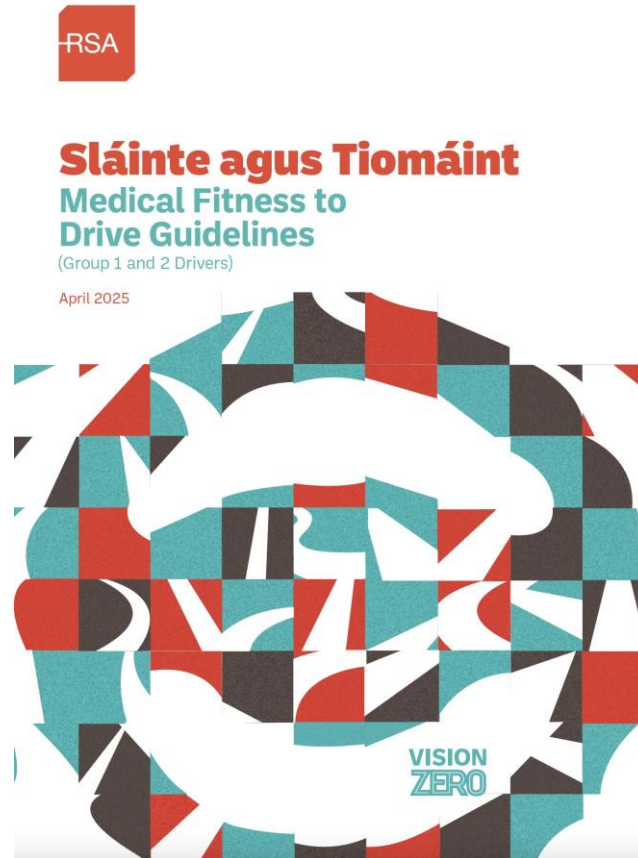
### ***Chapter 6.1 and 6.2:***

Alcohol and Drugs Misuse and  
Dependence

### ***Information Leaflets:***


Alcohol and Driving;  
Medicines and Driving;  
&

Driving Under the Influence of  
Illicit Drugs and/or the Abuse  
of Prescription Drugs



Alcohol Problems	Group 1 Entitlement ODL car, motorcycle and tractor	Group 2 Entitlement ODL
<p><b>Alcohol misuse</b></p> <p>There is no single definition which embraces all the variables in this condition but the following is offered as a guide:</p> <p>“A state which, because of consumption of alcohol, causes disturbance of behaviour, related disease or other consequences, likely to cause the patient, his/ her family or society harm now, or in the future, and which may or may not be associated with dependence<sup>[93]</sup>”</p> <p>Reference to ICD10F10.1<sup>[94]</sup> is relevant.</p>	<p><b>Persistent alcohol misuse</b>, confirmed by medical enquiry with or without evidence of otherwise unexplained abnormal blood biomarkers:</p> <p><b>Not permitted to drive</b> until a <b>minimum 3 month</b> period of controlled drinking or abstinence has been attained, with normalisation of biomarkers, if relevant.</p> <p>Driver must seek advice from medical or other sources during the period off the road.</p> <p>Driver should notify NDLS.</p>	<p><b>Persistent alcohol misuse</b>, confirmed by medical enquiry with or without evidence of otherwise unexplained abnormal blood biomarkers:</p> <p><b>Not permitted to drive</b> until a <b>minimum 1 year</b> period of abstinence or controlled drinking has been attained, with normalisation of biomarkers, if relevant.</p> <p>Driver must seek advice from medical or other sources during the period off the road.</p> <p>Driver should notify NDLS.</p>


Alcohol Problems	Group 1 Entitlement ODL car, motorcycle and tractor	Group 2 Entitlement ODL
<p><b>Alcohol dependence</b><sup>[110]</sup> “A cluster of behavioural, cognitive and physiological phenomena that develop after</p> <ul style="list-style-type: none"> <li>■ repeated alcohol use and which include a strong desire to take alcohol, difficulties in controlling its use, persistence in its use despite harmful consequences, with evidence of increased tolerance and sometimes a physical withdrawal state.”</li> </ul> <p>Indicators may include a history of withdrawal symptoms, of tolerance, of detoxification(s) and/or alcohol related fits.</p> <p>Reference to ICD10F10.2<sup>[111]</sup> is relevant.</p>	<p>Alcohol dependence, confirmed by medical enquiry: <b>Not permitted to drive</b> until a 6 month period free from alcohol has been attained with normalisation of biomarkers, if relevant.</p> <p><b>Driver should notify NDLS.</b></p> <p><b>Return to Driving</b> Will require satisfactory medical assessment from own doctor(s) and management of blood biomarkers if relevant. Consultant support/referral may be necessary.</p> <p><b>See also under “Alcohol related seizures”.</b></p>	<p>Alcohol dependence, confirmed by medical enquiry: <b>Not permitted to drive:</b> Group 2 licence will not be granted where there is a history of alcohol dependence within the past 3 years.</p> <p><b>Driver should notify NDLS.</b></p> <p><b>Return to Driving</b> Will require satisfactory medical assessment from own doctor(s) and management of blood biomarkers if relevant. Consultant support/referral may be necessary.</p> <p><b>See also under “Alcohol related seizures”.</b></p>



**NDLS**  
National Driver Licence Service  
an tSeirbhís Laiscintí agus Tíomaintí

## Alcohol and Driving

This is an overview of the driving risks for drivers who misuse alcohol and have alcohol-dependence issues. Full guidelines are published in *Sáinte agus Tíomaint: Medical Fitness to Drive (MFTD) Guidelines*.



### Why is it important I am fully fit to drive?

- The Road Safety Authority (RSA) and the National Driver Licence Service (NDLS) aim to minimise the risk caused by any medical condition you might have both to you and to the community. Indeed, for many conditions, treatment and rehabilitation may improve your safety when driving.
- Our aim is to help you be as independently mobile as possible for as long as possible. However, it is important to strike the right balance between mobility and safety for drivers, their families and other road users.
- If you drive against advice, and evidence is found of this, the NDLS and the Gardaí will take action to revoke your licence. If you are involved in a crash or stopped by a member of An Garda Síochána, you may be asked to prove you are in full control of your vehicle. A charge can be brought against you even if you don't have a crash. If you cause harm to a person or property, the charge will be more serious. In these circumstances, driving becomes a statutory offence that may lead to a prison sentence. Finally, driving against medical advice will affect your car insurance.

### Alcohol Misuse

If you misuse alcohol, you may drift into addiction. There is no clear line between misuse and addiction – one fades into the other. If you experience any of the following, then you may be misusing alcohol:

- disturbances of behaviour;
- alcohol-related diseases (liver, stomach, mental health problems, and so on);
- actions that cause you, your family or society harm, now or in the future.

### Effects of alcohol use on driving

Alcohol is a leading factor in fatal collisions. Alcohol was shown to be a factor in over 15% of fatal collisions in 2007 (Review of Pre-crash Behaviour in Fatal Road Collisions Report 1: Alcohol, RSA Research Department, 2011.).

As a driver, you should be aware that alcohol can impair your driving. For example, using alcohol can make you tired and affect your concentration, which reduces your ability to drive safely. You also need to be aware of how long it takes for alcohol to leave the body. Many people underestimate how long it takes and, as a result, their driving may be impaired and/or they may be over the legal limit.

As a general rule, you should allow at least one hour for each unit of alcohol (for example, a glass of beer) to leave the body. However, it may take longer than that, as other factors – such as body size, or how recently you've eaten – can also have an effect.

**Never ever drink and drive. Any amount of alcohol impairs your driving.**

### Why is health important for drivers?

Your health is important, as driving any motor vehicle requires:

- constant attention;
- good judgement;
- appropriate responsiveness;
- reasonable perception and physical capability; and
- good senses – for example, sight and hearing.

### Alcohol Misuse – Driver Responsibilities

**Group 1 - Driving a car, motor cycle or tractor**

**If you are a Group 1 driver, you must inform NDLS if:**

- your doctor or other health professional advises you to stop driving because of your persistent alcohol misuse. You must do so until they confirm that you have achieved a minimum period of 3 months controlled drinking or abstinence. This assessment may also include blood tests.

**Group 2 - Driving a bus or truck**

**If you are a Group 2 driver, you must inform NDLS if:**

- your doctor or other health professional advises you to stop driving because of your persistent alcohol misuse. You must do so until they confirm that you have achieved a minimum period of 1 year controlled drinking or abstinence. This assessment may also include blood tests.

### Alcohol dependence

Alcohol dependence is a condition that develops after repeated alcohol use. People who are alcohol-dependent will have experienced three or more of the following symptoms during the past year:

- have a strong desire to drink alcohol,
- have difficulty controlling their use of alcohol,
- persist in using alcohol despite the harmful consequences,
- have an increased tolerance for high levels of alcohol,
- have neglected other pleasures or interests.

Other indicators of alcohol dependence may include a history of tolerance, of detoxification(s) and/or alcohol-related fits.

Drug Misuse and Dependence Reference to ICD10 F11 – F19 inclusive and DSN-5 is relevant	Group 1 Entitlement ODL car, motorcycle and tractor	Group 2 Entitlement ODL
<p><b>Cannabis</b></p> <p>The prescribed use of medicinal cannabis at therapeutic doses (MIMS/BNF/PIL), without evidence of impairment, does not amount to misuse/dependence for licensing purposes (although clinically dependence may exist)*: Just as there are legal limits for alcohol when driving, there are also (as of April 2017) legal limits for cannabis, cocaine and heroin.</p>	<p><b>Persistent use of or dependence</b> on these substances, confirmed by medical enquiry:  <b>Not permitted to drive</b> until a <b>minimum 3 month</b> period free of such use has been attained. Independent medical assessment and drug screen may be required. There should be no evidence of continuing use of illicit substances.</p> <p>Driver should notify NDLS.</p>	<p><b>Persistent use of or dependence</b> on these substances, confirmed by medical enquiry:  <b>Not permitted to drive</b> until a <b>minimum 1 year</b> period free of such use has been attained. Specialist medical assessment (including accredited Level 2 trained GP) and drug screen may be required. There should be no evidence of continuing use of illicit substances.</p> <p>Driver should notify NDLS.</p>



<b>Drug Misuse and Dependence</b> <b>Reference to ICD10 F11 – F19</b> <b>inclusive and DSN-5 is relevant</b>	<b>Group 1 Entitlement ODL</b> <b>car, motorcycle and tractor</b>	<b>Group 2 Entitlement ODL</b>
<p><b>Cocaine, Amphetamines, Methamphetamine</b></p> <p>Ecstasy, ketamine &amp; other psychoactive substances, including LSD and hallucinogens, psychoactive substances (Head shop products): just as there are legal limits for alcohol when driving, there are also (as of April 2017) legal limits for cannabis, cocaine and heroin.</p>	<p><b>Persistent use of or dependence</b> on these substances, confirmed by medical enquiry:  <b>Not permitted to drive</b> until a <u>minimum 6 month</u> period free of such use has been attained. Independent medical assessment and drug screen may be required. There should be no evidence of continuing use of illicit substances.</p> <p>Driver should notify NDLS.</p>	<p><b>Persistent use of or dependence</b> on these substances, confirmed by medical enquiry:  <b>Not permitted to drive</b> until a <u>minimum 1 year</u> period free of such use has been attained. Specialist medical assessment (including accredited Level 2 trained GP) and drug screen may be required. There should be no evidence of continuing use of illicit substances.</p> <p>Driver should notify NDLS.</p>
<p><b>Heroin, Methadone* and other opiates including Codeine</b></p> <p>The prescribed use of these drugs at therapeutic doses (MIMS/BNF), without evidence of impairment, does not amount to misuse/dependence for licensing purposes (although clinically dependence may exist): just as there are legal limits for alcohol when driving, there are also (as of April 2017) legal limits for cannabis, cocaine and heroin.</p>	<p><b>Persistent use of, or dependence</b> on these substances, confirmed by medical enquiry:  <b>Not permitted to drive</b> until a <u>minimum 6 month</u> period free of such use has been attained. Independent medical assessment and drug screen may be required. There should be no evidence of continuing illicit use of such substances.</p> <p>*Applicants or drivers who are complying fully and are stable on a supervised oral methadone substitution programme may continue to drive, subject to favourable assessment and annual medical review.</p> <p>Applicants or drivers on an oral buprenorphine programme may be considered applying the same criteria. There should be no evidence of continuing illicit use of such substances.</p> <p>Driver should notify NDLS.</p>	<p><b>Persistent use of, or dependence</b> on these substances, confirmed by medical enquiry:  <b>Not permitted to drive</b> until a <u>minimum 3 year</u> period free of such use has been attained. Specialist medical assessment (including accredited Level 2 trained GP) and drug screen will normally be required.</p> <p>*Applicants or drivers complying fully with a consultant supervised oral methadone maintenance programme may be considered for an annual review licence once a minimum 3 year period of stability on the maintenance programme has been established, with favourable random drug tests and assessment. There should be no evidence of continuing illicit use of such substances and no evidence of disorders of cognition, attention or insight.</p> <p>Driver should notify NDLS.</p>



Drug Misuse and Dependence Reference to ICD10 F11 – F19 inclusive and DSN-5 is relevant	Group 1 Entitlement ODL car, motorcycle and tractor	Group 2 Entitlement ODL
<p><b>Benzodiazepines</b></p> <p>The non-prescribed use of these drugs and/or the use of supra-therapeutic dosage, whether in a substance withdrawal/ maintenance programme or otherwise, constitutes misuse/ dependence for licensing purposes.</p> <p>The prescribed use of these drugs at therapeutic doses (MIMS/BNF), without evidence of impairment, does not amount to misuse/dependence for licensing purposes (although clinically dependence may exist).*</p>	<p><b>Persistent misuse of, or dependence</b> on these substances, confirmed by medical enquiry:</p> <p><b>Not permitted to drive</b> until a <b>minimum 6 month</b> period free of such use has been attained. Independent medical assessment and drug screen may be required. In addition favourable consultant or specialist report may be required.</p> <p>Driver should notify NDLS.</p>	<p><b>Persistent misuse of, or dependence</b> on these substances, confirmed by medical enquiry:</p> <p><b>Not permitted to drive</b> until a <b>minimum 3 year</b> period free of such use has been attained. Specialist medical assessment (including accredited Level 2 trained GP) and drug screen may be required.</p> <p>Driver should notify NDLS.</p>

\*See also Chapter 1, S3.9.2 - The effects of specific medicine classes.

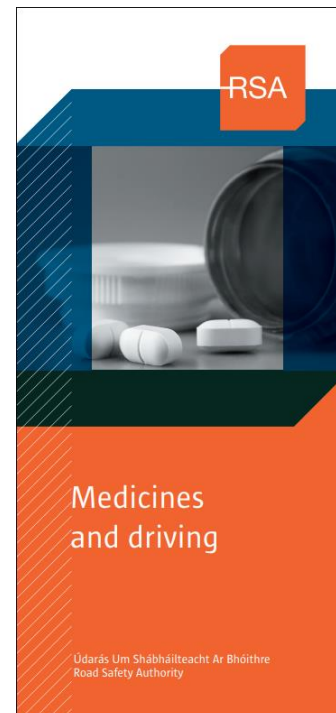
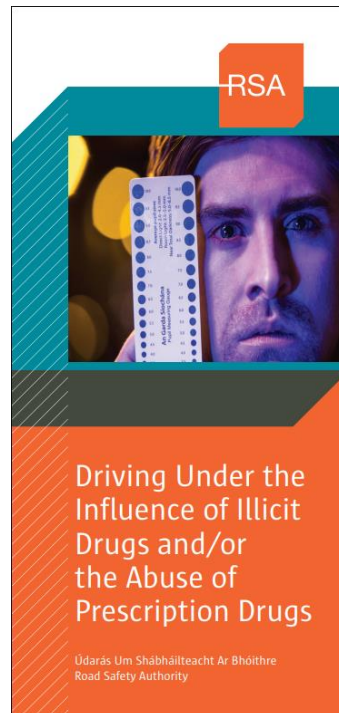
# Prescribable and Over the Counter Drugs

- Prescribable and OTC drugs are also a real problem and mirror taking of drugs and medications in Ireland
- Need for vigilance
- Examples of licit, prescribable drugs used illicitly or off-prescription which may cause driving impairment: benzodiazepines, Z-drugs, pregabalin, medicinal cannabis, morphine, oxycodone, fentanyl, codeine (OTC)

# **Prescribable and Over the Counter Drugs Summary**

- Patients should their medications as prescribed, be safe on them, read the patient information leaflet and listen to their doctor's and pharmacist's advice
- To patients: Drive safely, be aware of own impairment and don't kill or maim others or self or risk losing licence to drive

# Information on Drugs and Medicines



# The Alcohol Interlock Device

- Breath Alcohol Sensor Device: records breath alcohol concentration and prevents the vehicle from starting if the alcohol level is over a certain threshold.
- Rolling retest system – test at start up and interval periods.
- Anti-tamper/circumvention proof system for mounting to the engine.
- Data recording system: breath test results, test compliance and engine operation. Create data record to ensure that the driver is using the vehicle as expected. Real time v Data Download.


# MBRS Approved Interlocks to March 2025

## Action 119 Road Safety Strategy 2021-2030

Medical Bureau of Road Safety  
An Lia-Bhiúró um Shábháilteacht ar Bhóithre

About MBRS ▾ Programmes ▾ Publications ▾ Contact Details ▾ FAQ's Alcohol Interlock Explore UCD ▾ UCD Connect


ALCOLOCK V3 LE



Manufacturer: Alcohol Countermeasure Systems Corp (ACS)

→


Dräger Interlock® 7500



Manufacturer: Dräger

→


LifeSaver L250



Manufacturer: LifeSaver

→

SMARTSTART 20/35



<https://www.ucd.ie/mbrs/alcoholinterlock/>

Further devices to be tested in 2025

## Sectors Where Alcohol Interlocks Are Used Currently

- Professional driving fleets e.g. haulage companies
- Private and Public Transport fleets
- DUI Offender Compliance Programmes

# Messages – Facts and Actions

- Average intoxication levels in blood are very high across range of age groups and genders – role of doctors and licensing and diagnosis and treatments in alcohol use disorder
- Intoxication with alcohol and drugs leads to *inter alia*:
  - Dangerous driving
  - Speeding
  - Recklessness, bravado and poor driving decisions
  - Not using safety belts
  - Lack of attention and distraction with 'phone use etc.
- MBRS: part of the alcohol interlock device plan of action in Road Safety Strategy Phase 2 2025-27
- Broader integrated strategies in Departments of Health, Justice and Transport

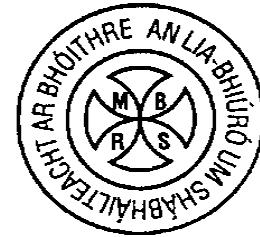


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*School of Medicine*

*Scoil an Leighis*