



Road Safety Authority Road Safety Seminar: *Safe and Sober.*

University College Dublin
19th January 2024.

*Drink Driving - the Road Safety challenge persists:
understanding and tackling the Alcohol Intoxicant Enigma.*

Professor Denis A. Cusack,
Director, Medical Bureau of Road Safety,
Health Sciences Centre, University College Dublin.

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Driving in Ireland

- High driving population - Full Irish driving licence is held by 93.7% of persons aged 18 years and over, 2.9% have Irish provisional licences
- Road network 5,306km long
- Extensive rural areas and roads coupled with less extensive public transport
- One police force - An Garda Síochána
- One forensic intoxicant laboratory - Medical Bureau of Road Safety



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Intoxicant

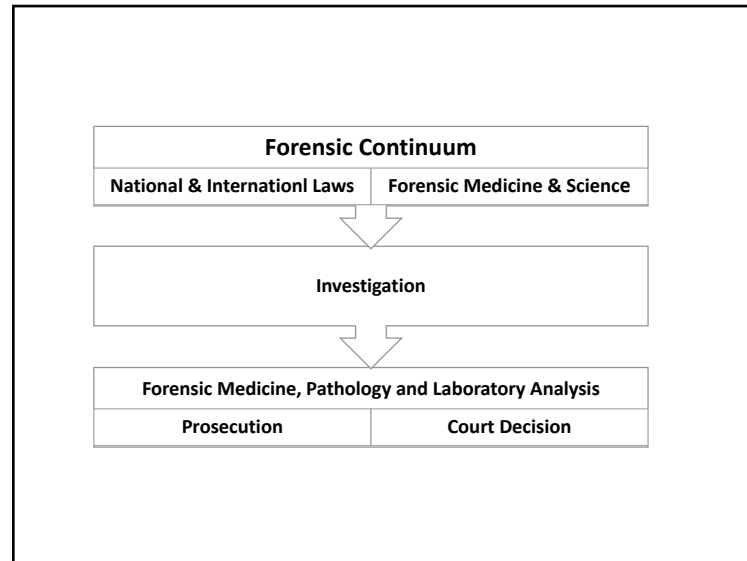
- “intoxicant” includes alcohol and drugs and any combination of drugs or of drugs and alcohol
- a substance which when taken into the body by one means or another produces a condition of diminished mental and physical ability, hyperexcitability, or stupefaction

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Integrated Intoxicant Testing

- Preliminary alcohol test - roadside
- Preliminary drug test – roadside or Garda station
- Standardised Impairment Test - roadside
- Evidential alcohol test – Garda station
- Forensic Laboratory screening and confirmatory testing for alcohol and other drugs - MBRS

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Medical Bureau of Road Safety Functions

- Provide equipment to an Garda Síochána
- Test blood and urine for alcohol and/or drugs



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MBRS Functions - Alcohol

- Provide blood and urine sample kits
- Provide Preliminary Breath testing Devices



- Provide Evidential Breath Testing Instruments



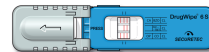
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MBRS Functions – Intoxicants Update

- 2018 – Current Preliminary Breath Testing devices with enhanced features for operational uses



- 2022 – Current Preliminary drug testing devices (DrugWipe 6S)



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Alcohol – Physiology and Health Aspects

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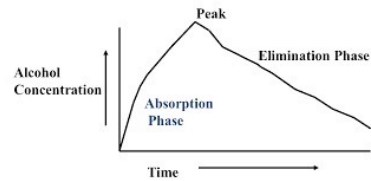
Physiology

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

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Physiology

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



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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

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Clinical Pathology

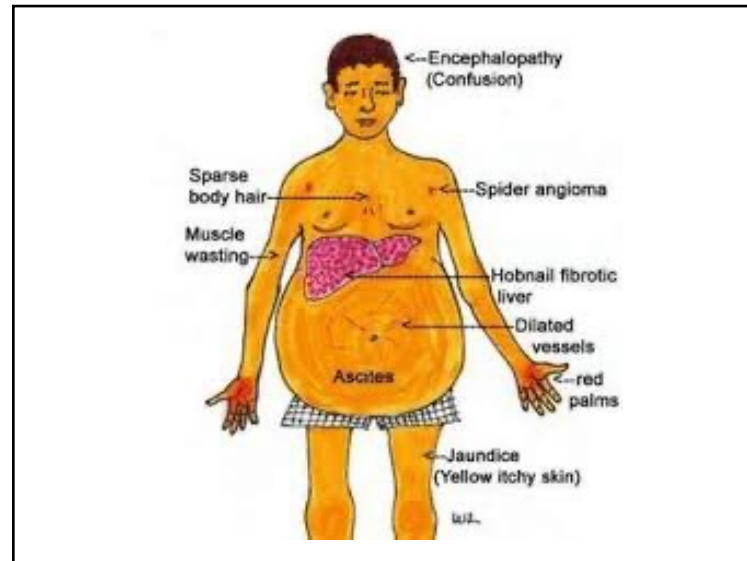
- clinical history
- physical examination
- chronic gastritis
- fatty liver
- cirrhosis
- gammaglutamyl transpeptidase
- carbohydrate-deficient transferrin

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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

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Autopsy Findings

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

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HRB Study Facts

- Alcohol is the seventh leading risk factor for deaths and disability-adjusted life years globally
- In 2019, on average, Irish people aged 15 and over drank 10.8 litres of pure alcohol
- 52.3% of Irish drinkers are classified as hazardous drinkers
- Two in five people report monthly binge drinking (Heavy Episodic Drinking, HED)

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AlcoholAction Ireland   School of Public Health

Policy Paper
2022

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 Kadir
School of Public Health,
University College Cork

Dr Sheila Gilheaney, Susan McElveney, Kristina Kiri
Alcohol Action Ireland



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Alcohol and Driving – Not
Sober

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Effects of Alcohol on Driving

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

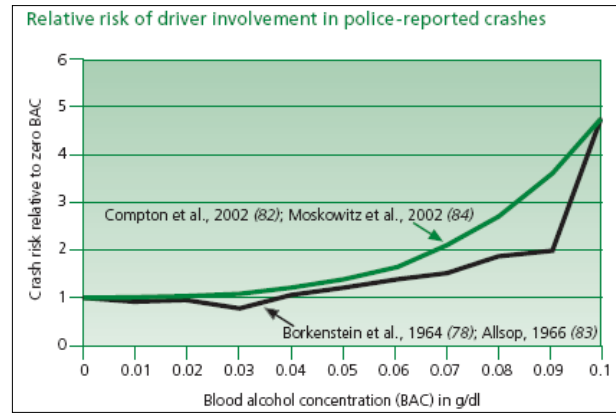
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The Morning After

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

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Crash Risk



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Sláinte agus Tiomáint

[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

Sláinte agus Tiomáint
Medical Fitness to Drive Guidelines
(Group 1 and 2 Drivers)
April 2022



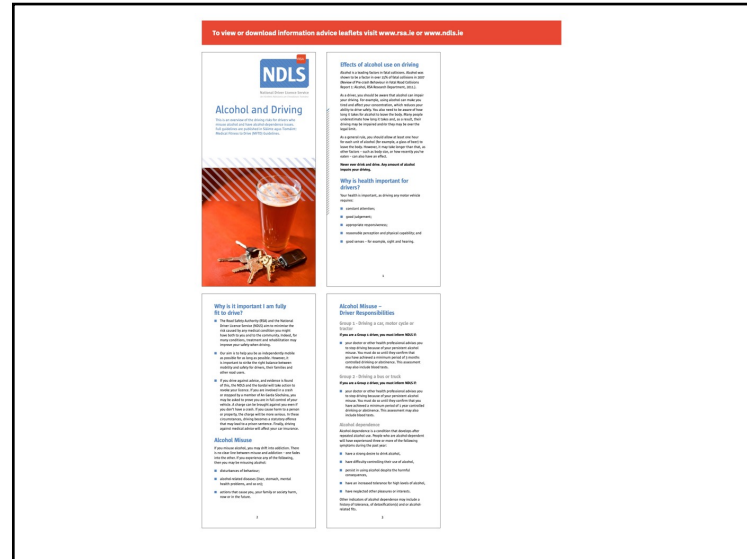
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Alcohol Problems	Group 1 Entitlement ODL car, motorcycle and tractor	Group 2 Entitlement ODL
<p>Alcohol misuse There is no single definition which embraces all the variables in this condition but the following is offered as a guide: "A state which, 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"^{93P} Reference to ICD10F10.1^{94H} is relevant.</p>	<p>Persistent alcohol misuse, confirmed by medical enquiry with or without evidence of otherwise unexplained abnormal blood biomarkers: Not permitted to drive until a minimum 3 month period of controlled drinking or abstinence has been attained, with normalisation of biomarkers, if relevant. Driver must seek advice from medical or other sources during the period off the road. Driver should notify NDLS.</p>	<p>Persistent alcohol misuse, confirmed by medical enquiry with or without evidence of otherwise unexplained abnormal blood biomarkers: Not permitted to drive until a minimum 1 year period of abstinence or controlled drinking has been attained, with normalisation of biomarkers, if relevant. Driver must seek advice from medical or other sources during the period off the road. Driver should notify NDLS.</p>

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Alcohol Problems	Group 1 Entitlement ODL car, motorcycle and tractor	Group 2 Entitlement ODL
<p>Alcohol dependence^{114H} "A cluster of behavioural, cognitive and physiological phenomena that develop after ■ 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." Indicators may include a history of withdrawal symptoms, of tolerance, of detoxification(s) and/or alcohol related fits. Reference to ICD10F10.2^{111H} is relevant.</p>	<p>Alcohol dependence, confirmed by medical enquiry: Not permitted to drive until a 6 month period free from alcohol has been attained with normalisation of biomarkers, if relevant. Driver should notify NDLS. Return to Driving Will require satisfactory medical assessment from own doctor(s) and management of blood biomarkers if relevant. Consultant support/referral may be necessary. See also under "Alcohol related seizures".</p>	<p>Alcohol dependence, confirmed by medical enquiry: Not permitted to drive: Group 2 licence will not be granted where there is a history of alcohol dependence within the past 3 years. Driver should notify NDLS. Return to Driving Will require satisfactory medical assessment from own doctor(s) and management of blood biomarkers if relevant. Consultant support/referral may be necessary. See also under "Alcohol related seizures".</p>

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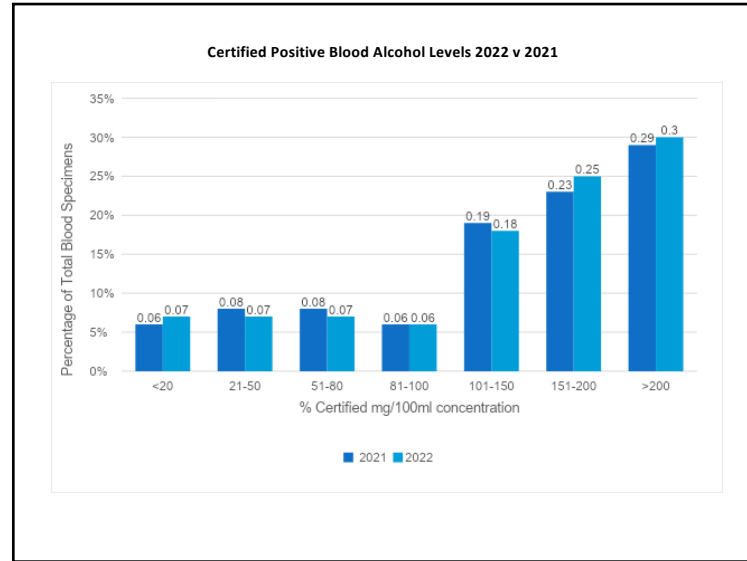


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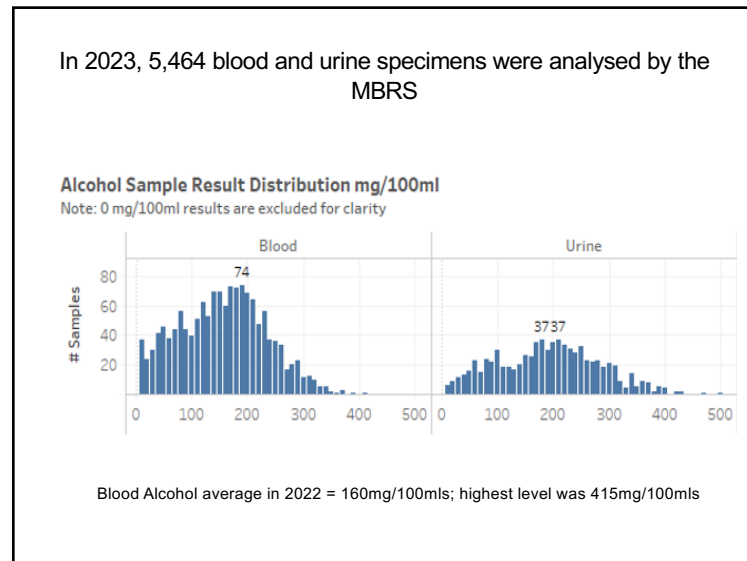
Levels of Alcohol in Blood and Urine Samples – MBRS

- Median Alcohol reported Level in Blood and Urine:**
 The median alcohol level in blood was 160mg/100ml and in urine was 198mg/100ml for 2022, excluding specimens which had no trace of alcohol.
- Maximum Alcohol reported Level in Blood and Urine:**
 The highest alcohol level found in blood was 415mg/100ml and in urine was 479mg/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).

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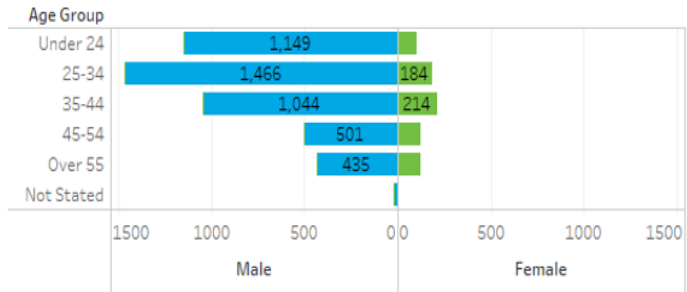
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Age Distribution – for all Blood & Urine levels

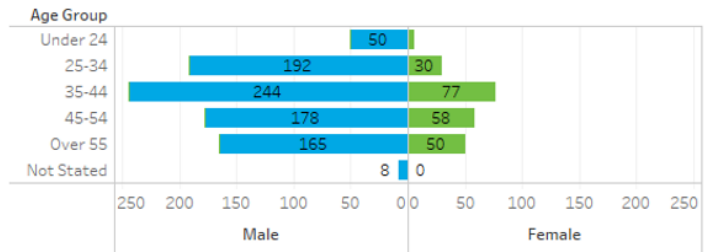
Alcohol Sample Age Distribution



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Age Distribution – for Blood & Urine > 160 & 213

Alcohol Sample Age Distribution



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Alcohol and Driving – Anything we can do (that is new*)?

*(But keep doing what we are already doing successfully)

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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.

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Sectors Where Alcohol Interlocks Are Used Currently

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

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Advantages of Compliance Programmes

- Prevent individuals from drinking and driving.
- Monitors the behaviour of driver that have been convicted of drinking and driving.
- Protects the public.
- Drivers remains in the driving licensing system.
- Difficult for drivers to circumvent the system with new technologies.
- Customised devices available.

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EU Regulation 2021

- The future – standard fitting in all motor vehicles?
- Article 6 of Regulation (EU) 2019/2144 of Regulation (EU) 2019/2144 of the European Parliament and of the Council by laying down detailed rules concerning the alcohol interlock installation facilitation in motor vehicles.
- EU Commission Delegated Regulation: (EU) 2021/1243 of 19 April 2021 supplementing Regulation (EU) 2019/2144 of the European Parliament and of the Council by laying down detailed rules concerning the alcohol interlock installation facilitation in motor vehicles and amending Annex II to that Regulation.
- Applied from 6th July 2022.

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Role of MBRS



- Advise Government / Agency on Scientific Aspects of Alcohol testing
- Review International Standards
- Create Irish specifications
- Call for submissions of interlocks for approval
- Assess devices against scientific specifications
- Type Approval
- Training
- Designing device periodic testing scheme
- Using existing expertise in other devices and analytical instruments

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**Factors to consider:
Interlock Programme Management**

Programme Responsibility

Judicial Model: Courts responsibility for compliance monitoring and administrative oversight e.g. probation services

or

Administrative Model: Government Agency responsibility e.g. the driver licensing authority NDLS / RSA, NCT Centre

Monitoring

Data – Download, Management, Storage, - GDPR
Violations and Sanctions

Device Maintenance

Installation & removal of devices- manufacturers or approved agents
Calibration & service of devices
24 hour support

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Other Factors to Consider

- Eligible Offenders – all convictions; first time; twice above limit; repeat offence
- Costings
- Alcohol Levels assigned; Specified driver (Zero Tolerance); Ordinary driver.
- Device Technology additional to alcohol measurement(e.g. WiFi; camera; GPS)
- Drivers who car share
- Violations – Software design & management
- Sanctions – agency to be alerted and/or court system
- Car Insurance
- The future – standard fitting in all motor vehicles?

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Road Safety Strategy 2021-2024

- Action 23: Establish a working group to consider and make recommendations for the implementation of an alcohol interlock programme, supported by a drink drive rehabilitation course in Ireland, for high-risk drink drive offenders
- Medical and rehabilitation aspects
- Ministerial Road Safety Priority 5 of 2023
- MBRS in process of testing and approving devices
- Working Group Report in preparation

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Messages For Today – Facts and Actions

- **Average intoxication levels** in blood are **very high across range of age groups and genders**
- **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.
- **Deep Investigation** of causes of fatal RTCs
- **Enforcement** – give the Gardaí the means to do this
- Not necessarily more legislation but **focused legislation**
- **Courts and prosecution** outcome **information**
- From the **MBRS**: part of the **alcohol interlock device** plan of **action**
- **Broader integrated strategies** in Health and Justice as well as Transport

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Continuing Our Seminar – Expert Presentations

- *An Garda Síochána* - Enforcement data
- *Road Safety Authority* - Research evidence-based data on RTC collision fatalities and injuries
- *Prof. Desmond O'Neill* - health screening and treatment
- *European Safety Transport Council* - European perspective and figures and Interlocks
- *Alcohol Interlock Devices* - Experiences and Practical Demonstration
 - *Experts from Belgium, Sweden and Canada.*
 - *Matthews Coaches* Ltd. Winners of the RSA Leading Lights Award 2023 Business Category

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Alcohol and Driving - Safe and Sober 2024



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School of Medicine and Medical
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Scoil an Leighis agus Eolaíocht
an Leighis

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