Findings of Drug Driving Expert Technical Panel

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Background:
Government in its response to the North review indicated:

- Driving while impaired by drugs is as important an issue as drink-driving
- Drug driving increases the risks for other road users
- Need to address relative lack of public awareness
- Law against drink-driving relatively easy to enforce, while the equally serious issue of driving whilst under influence of drugs is currently more difficult to deal with effectively.

RESPONSE

Agreed to implement recommendations from the North review Government's 2011 Framework for Road safety

"…We will explore the case for introducing an offence of having a specified drug in the body while driving, in addition to the current offence od driving whilst impaired by drugs….."

Terms of Reference

To discern **which compounds** from the following list should form part of the statutory instrument related to a specific offence of driving whilst under the influence of drugs :

Amphetamine-type;
Benzodiazepines and hypnotics;
Cannabinoids (natural and synthetic);
Cocaine (including salt and crystalline forms);
Hallucinogens;
Opioids (natural and synthetic)
Other substances if the group considers they have a similar and significant presence in the population

TERMS OF REFERENCE

1. To consider different sources of evidence to help to establish the **degree of risk** associated with specific drugs **in relation to road safety**

2. To establish whether it is possible to identify for average members of the adult population concentrations of the drugs identified (1a – 1g above) that would have an impairment effect **broadly equivalent to a blood alcohol content (BAC) of 80mg / 100ml**

3. To establish whether in some specific circumstances different concentrations of these drugs **(broadly equivalent to a blood alcohol content (BAC) of 50mg/100ml and 20mg/100ml)** may be deemed necessary for road safety

TERMS OF REFERENCE

1. To consider in cases where such concentrations can be identified, for an average member of the adult population the **degree of variability** across the population, including for habitual users of these substances;

2. To establish the likelihood of whether these concentrations would be **exceeded through prescribed or otherwise legally obtained drugs** (as distinct from illicit drugs);

3. To consider the evidence relating to **poly-substance use**, such as the interactions between the drugs listed and alcohol in order to determine the effects of such interactions and the prevalence of impairment (risk in relation to road safety) due to such causes; and;

To report on all of the above to the Secretary of State

Kept informed about but not RESPONSIBLE for:

- **Recommendations about the device(s) to be used at roadside or in the police station**
  - ◦ **'Type-approval' - drug testing devices**
  - ◦ **Centre for Applied Science and Technology (CAST), led by Home Office**
- **Procedures related to police enforcement of legislation**
  - • **Responsibility of the Association of Chief Police Officers (ACPO) and the Home Office**
- **Implementation of the legislation and drug driving policy**
  - • **Separate policy group**

An important distinction

❑ Our work was based on the premise that the relationship between drug use and driving is different from our drug possession laws

❑ Legislation in the UK differentiates drug and traffic policy

❑ The panel is concerned with the latter

LEVEL of RISK rather than IMPAIRMENT

Our **APPROACH DID NOT** seek to define, measure or proportion a drug level to a certain degree of impairment

- Legislation already in place for driving whilst impaired

    - **Section 4 of the Road Traffic Act 1988 of driving while unfit due to drugs**

- Defining impairment for different classes of drugs too difficult
- There is no universal agreement on how to measure impairment
- Impairment differs for different classes of drugs (stimulants Vs depressants Vs hallucinogens)

Methodology 1

The approach that we have used involved several types of evidence

- **Epidemiological evidence**

  - Establish which drugs are prevalent in general population
  - Establish level of use of illicit drugs and psychoactive medicines by driving population

EPIDEMIOLOGICAL EVIDENCE

- **Prevalence of illicit drug use in general population**
    - EMCDDA which estimates numbers of users of different drugs across EU per year
    - BCS – trends drug use 16-59 year olds since 1996
    - Mixmag surveys recreational drug use in UK

- **Prevalence of illicit drug use in general driving population**
    - DRUID: Driving Under the Influence of Drugs, Alcohol and Medicines, 6th Framework Programme, Set up by EU Commission to increase road safety and DRUID consortium composed total 37 partners
    - Scottish Executive Social Research (SESR)
    - British Crime Survey driving Q for 2011

- **Yes, then we did the same for Medicinal Controlled Drugs**

Methodology 2:

- Took advice from experts in the field in UK
- Spoke to those scientists involved in DRUID
- Spoke to experts involved in similar legislation in Belgium and the Netherlands
- Considered guidance provided by different organisations
- ICADTS (International Council on Alcohol, Drugs and Traffic)
- National Clinical Guidelines for drug dependence
- DVLA 'At a Glance' document

Methodology 3:

CONSIDERATION OF THE SCIENTIFIC EVIDENCE

Drug Driving Literature

◦ Meta-analysis of the above drug driving evidence Identify the **risk estimates (Odds Ratios)** from single and combined use of psychoactive substances when driving in relation to driver safety

We considered ORs for:

◦ Roadside survey's of driving population of apprehended for suspected drug driving/impaired driving and RTCs

◦ From hospital studies (seriously injured and killed drivers)

◦ Case control studies

Scientific Evidence for RISK

We considered Odds Ratios (that estimate risk) from DRUID.

•DRUID calculated the risk of being seriously injured or killed in a RTA

•Based on control data from roadside surveys, case data from hospital studies and from studies on killed drivers.

•The OR were adjusted for age and gender and drug use vs non drug users

•Controls were weighted for traffic distribution , time of driving, road conditions, location etc.

Methodology 4:

- **Contextual evidence**
  - ◦ Blood drug concentration data (DVLA and FSS, CAST etc) from drug drivers
  - ◦ Transport Research Laboratory (DfT, Safety statistics)
  - ◦ Known PK, PD for drugs, therapeutic and toxic blood concentration data
  - ◦ If available: Blood drug concentration data equivalent to the legal limit for drivers at 80 mg of alcohol per 100 ml of blood
  - ◦ If available: Blood drug concentration data equivalent to 50 mg and/or 20 mg of alcohol per 100 ml of blood

- **There was a lot of information!**

FINDINGS: PREVALENCE OF DRUGS

Alcohol most common
Cannabis
Cocaine
Amphetamine-type
Prescribed licenced drugs
Benzodiazepines and Z-drugs
Medicinal opioids
Opiates, illicit opiates
Hallucinogens (Ketamine, LSD, GBL, GHB)

NO SURPRISES

CANNABIS

Several undisputable facts for Δ⁹- tetra hydrocannabinol (THC):

1. Cannabis was the most commonly used drug for adults (16 to 59 yrs) who reported drug-driving with illegal drugs (once or twice in last 12 months),.
2. Significant dose related decrement in driving performance (observed experimental and real-life situations (simulator, laboratory and forensic traffic data)
3. Raised blood concentrations of THC are significantly associated with increased traffic crash and death risk
4. Meta-analysis show mean blood concentrations >3.7μg/L impairs individuals to a degree comparable to blood alcohol levels 50mg/100mL blood.

CANNABIS - 2

CANNABIS USE BEHAVIOUR

1. Smoking a single cannabis cigarette infrequently (recreational use): higher conc THC (21 µg/L - 162 µg/L) causing acute intoxication

2. In chronic, daily or near daily use over a prolonged period, steady-state concentrations of THC are observed (ranging between 1 µg/L to 6.4 µg/L)

3. Blood concentrations very low in those 'passively smoking > 1 µg/L
4. Blood concentrations lower in orally consumed medicinal cannabis if taken as prescribed

CANNABIS – RISK OF RTC

1. Meta-analysis of over 120 studies: the higher the conc THC in blood, the greater the driving impairment;
2. Significant increased crash risk when THC in the blood was ≥ 5 μg/L, whether or not ingestion had occurred recently and regardless of the origin of the drug (medicinal or illicit)
3. Individuals who drive within 2 hours of using cannabis have raised rates of collision.
4. Drivers consuming cannabis 2 or 6 times more likely to be at risk RTC.
5. Indeed the risk of a driving accident was increased by 16 times when cannabis and alcohol were consumed concurrently by drivers
6. Possible need to look at alcohol in combination with cannabis
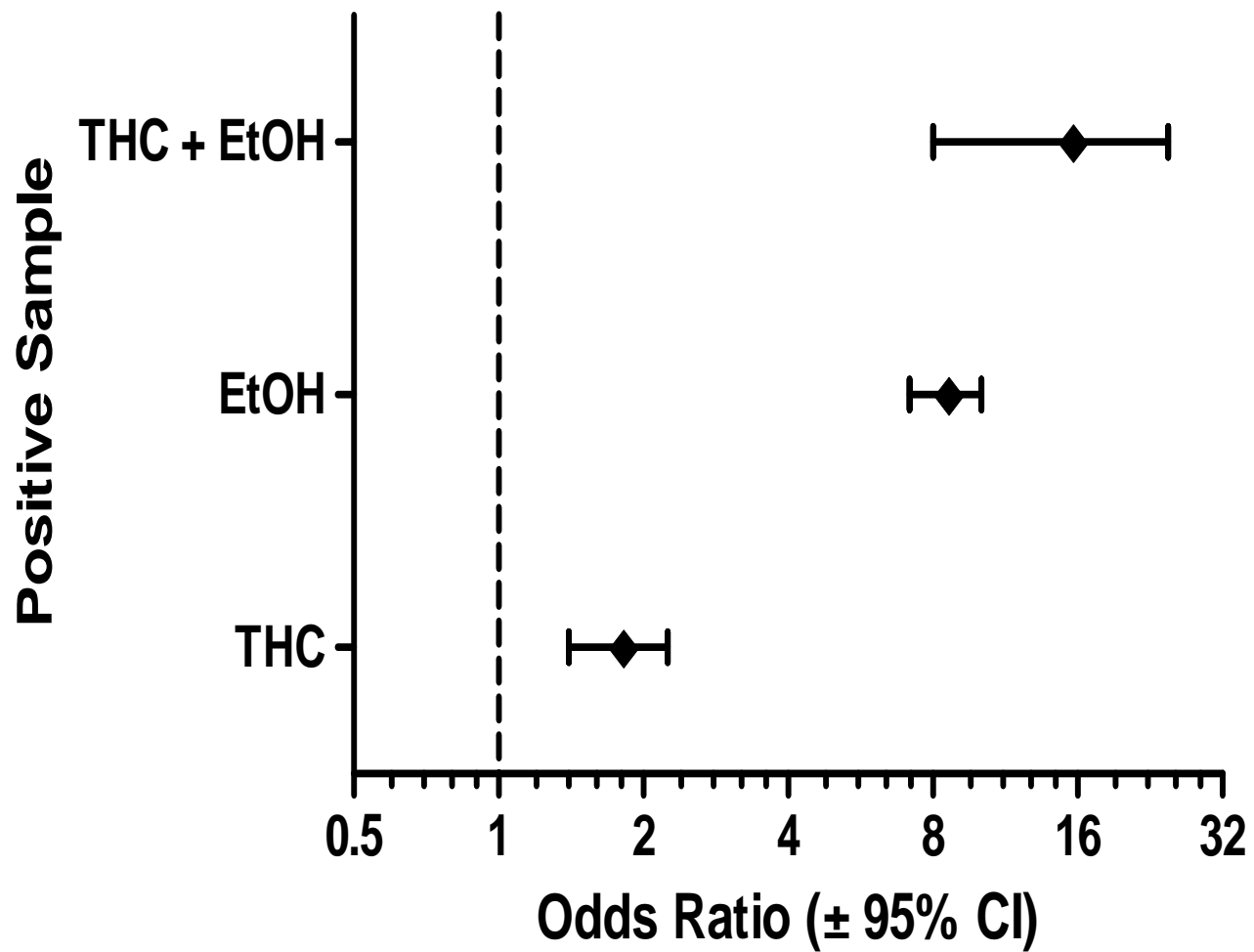
COCAINE

- **OR suggest 3 times at risk of being seriously injured if use cocaine and drive**
- **Driving whilst sleep deprived following cocaine binge also been reported as problem**
- **Analytical issues as cocaine fast acting drug**
- **Would all dangerous driving be captured by screening for cocaine alone?**
- **Should benzoylecgonine (BZE) be considered as well?**
- **Should a threshold be set for cocaine alone, Cocaine and BZE or even BZE alone**
- **Alcohol use and cocaine also a concern**

COCAINE

Substance	OR	CIs	Basis of the OR
Cocaine	2.96 (p<0.05)	1.18 - 7.38	Meta analysis of 4 studies analysing presence of cocaine in drivers fatally injured in road crashes
Cocaine	3.3	1.40 - 7.79	Analysis of blood samples collected from individuals seriously injured in RTAs in 6 European countries between 2007-2009
Cocaine	2.04	0.69 - 6.09	Dutch Case-control study comparing 110 drivers hospitalised after a RTA

We set threshold at 80 ug/L

WHICH Amphetamine?

- Scientific data largely refers to amphetamine, methamphetamine and MDMA
- Amphetamine prescribed in drug treatment settings and for Attention Deficit Hyperactivity Disorder (ADHD)
- Do not have very much evidence about whether designer type stimulants are used by drivers?
- We have little data about these substances since laboratories do not routinely measure them
- Mephedrone, BZP, herbal highs, designer drugs

The Evidence for Driving risk

- Although amphetamine less prevalent ORs are higher for risk of RTC following consumption than either cannabis or cocaine

Amphetamine 4.46 ($p<0.05$) 2.21 - 9.00

- Meta analysis of 8 laboratory studies analysing presence of amphetamines in drivers fatally injured in road crashes

Amphetamine 8.88 ($p<0.001$) 4.54 - 17.39

- Case control study (Thailand) comparing urine metamphetamine

Metamphetamine 8.35 (3.91 - 17.83) Dutch RTCs

PRESCRIBED CONTROLLED DRUGS

The Crime and Courts Bill, which was introduced into Parliament in May 2012 makes provision for a new offence of driving, attempting to drive or being in charge of a motor vehicle with a specified Controlled Drug in the body above the concentration specified for that drug.

CONTROLLED DRUGS INCLUDE:

Controlled Drug - this is a legal definition and refers to those drugs that are controlled under the 1971 Act - this regulates the import, export, possession, supply, and other aspects of activities relating to those drugs specified in the 1971 Act.

INCLUDES for example
Opioids: Morphine, Diacetylmorphine (heroin), methadone, codeine
Benzodiazepines: Diazepam, nitrazepam.

THE PANEL RECOMMENDED THRESHOLDS above therapeutic drug levels

The Medicines and Healthcare Products Regulatory Agency (MHRA)

- Panel working closely with MHRA and with Commission for Human Medicines (CHM)
  - MHRA and CHM act within Medicines Act 1968 and European Union legislation to regulate safety, quality and efficacy of medicinal products

- Noted that advice about driving whilst on medications via medical information leaflets was poor!

Medical Defence

- Drugs proscribed for driving can be used legitimately, in accordance with medical advice (morphine for chronic pain or diazepam for anxiety).

- Panel recognised may be more dangerous for a person to drive not having taken their prescribed medication than driving having taken it.

- Recommendations where evidence allowed were set above therapeutic blood concentrations.

- A statutory defence will be available for a driver who has taken a drug supplied or prescribed for medical purposes and who has taken the drug in line with directions and instructions. (This is included in Clause 27 of the Crime and Courts Bill)

HOWEVER..........

- Adherence to medical advice is sometimes variable
- Advice given tends to be only about alcohol
- Leaflets supplied with medication may not be clear enough
  - "Do not drive if feeling drowsy"
- In light of scientific evidence with regard to driving and prescribed medications advice may need to reviewed

Prescribed MEDICATION

Difficult conceptually since involves different user groups:

- Those who legitimately use licensed psychoactive medication
  - **If compliant have medical defence**
- Those prescribed psychoactive medication for treatment drug/alcohol dependence
  - **DVLA allows those on supervised maintenance to hold license pending medical assessments**
- Those who use psychoactive substances for recreational purposes
- Those who consume other psychoactive drugs with their medication
- **Any of the above with alcohol**

DRIVER RISK and PAIN RELIEF MEDICATION

Opiates, Opioids, Medicinal opioids:

- Odds individuals being seriously injured in road accidents in 6 European countries between 2007-2009 when consumed Illicit opiates   **OR   2.47 (0.50 - 12.10)**   .

- Odds individuals being killed in road accidents in 4 European countries between 2007-2009 who consumed Illicit opiates

  OR   10.04 (2.04 - 49.32)

- Odds individuals being seriously injured in road accidents in 6 European countries who consumed Medicinal opioids

  OR   9.06 (6.40 - 12.83)

- Odds individuals being killed in road accidents in 4 European countries between 2007-2009 who consumed Medicinal opioids

  OR   4.82 (2.60 - 8.93)

METHADONE

- Literature mixed about the impact of methadone on driving
- Blood concentrations between 90 ug/L and 132 ug/L drivers successfully passed driving test
- At higher concentrations reaction time and decision time decreases
- Need to report to DVLA
- 200, 000 M patients 3% known to DVLA
- Use of other drugs

- Decided to set threshold high 500 ug/L

BENZODIAZEPINES: SEDATIVES/ANXIOLYTICS

1. The pan-European DRUID studies found that among killed drivers the presence of benzodiazepines was the second most frequent toxicological finding after alcohol (DRUID, D2.2.5, 2012)
2. Benzodiazepine use may lead to deleterious driving behaviour in the older patient when longer-acting and larger quantities of benzodiazepines were consumed.
3. In RTC victims aged ≥60 years, benzodiazepines use were associated with a significantly greater risk of a crash (risk estimate, OR: 5.3, 3.6 – 7.8, p <.001):
4. Older patients were between four to six fold more likely to be hospitalised following a RTC than others in the same age group not prescribed benzodiazepines

DRIVER RISK WITH MEDICATION FOR SEDATION OR ANTI-ANXIETY

BENZODIAZEPINES AND Z-DRUGS

Impairment in apprehended drivers in Norway *Adjusted for all background variables Bramness et al, 2002

Diazepam	OR: 1.61 (n=/411;P</0.001)
Oxazepam	OR: 3.65 (n=/73; P </0.05)
Flunitrazepam	OR: 4.11 (n=/211;(P </0.05)

UK study, Tayside police 19, 386 drivers involved first RTA: Barbone et al Lancet, 1998

Zopiclone alone   OR: 4.00 (1.31 – 12.2)

Any BZ with positive breath test   OR; 8.15 (2.06-32.34)

Benzodiazepine/driving collaboration group.

BZ and Alcohol   OR: 2.00 (alcohol alone 0.2-0.8g/L)

OR: 7.00 (alcohol >0.2g/L + BZ)

PRESCRIBED MEDICATION

- Acknowledged in Europe that Opiates/opioids increases risk RTA between 2-10 times
- Medicinal opioids seem to have higher risk
- BZ used more in the UK than in Europe by driving population
- Risk 2-5 times risk
- **ANY Opiate/Opioid or BZ with any amount of alcohol significantly increases risk of RTA**

ALCOHOL and DRUG use

- Significant risk with multiple drug use
- Alcohol use multiplies risk
- How do we deal with this?

Evidence of risk for Alcohol and drugs combined DRUID

- OR seriously injured RTA **31.97** (20.76-49.25)
- OR Fatally injured RTA   **28.82** (18.41-45.11)

References

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Expert Panel on Drug Driving:

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