



SUMMARY — INSIGHTS No 8

Drug use, impaired driving and traffic accidents

This literature review provides a comprehensive report on the relationship between drug use, impaired driving and traffic accidents. It covers methodological issues, presents results of prevalence surveys among drivers and provides an overview of findings from major international epidemiological surveys published since 1999. The report also gathers evidence from experimental and field studies of the relationship between drug use, driving impairment and traffic accidents.

Research in this area can be broadly separated into experimental and epidemiological studies. Each approach has its inherent advantages and disadvantages.

- Experimental studies may be set in a laboratory, in a driving simulator, or on the public road, and the drug is administered in measured doses to volunteers. They can result in an interpretation by single cause, but can only identify potential risks. The results can, in some cases, be of limited value because of the use of unrealistic doses or because of the drug use history or inter-individual differences of the volunteers.
- Epidemiological studies examine the prevalence of drugs in various populations. They include roadside surveys, studies assessing the prevalence of drugs in a subset of drivers, accident risk studies, responsibility analyses, surveys among the general population and pharmaco-epidemiological studies. Epidemiological research is, however, limited because there may be risk factors associated with drug use that do not emerge from the study findings. Another disadvantage of epidemiological research is that it is not able to distinguish between a 'real' risk factor and other factors that may be highly correlated with the risk factor. The results of different studies may be incomparable for various reasons, such as differences in the populations tested or in the samples taken.

The results of experimental studies indicate that several illicit drugs can have an influence on driving performance; some drugs, but not all, show effects that are dose-dependent.

- Cannabis can impair some cognitive and psychomotor skills that are necessary to drive.
- MDMA (ecstasy) exhibits both negative and positive effects on performance.
- Studies investigating the effects of a combination of alcohol and illicit drugs found that, in such cases, some illicit drugs (for example, cannabis) can cause additional, synergistic impairment, while others (for example, cocaine) can partially reverse the impairment. MDMA can diminish some, but not all, deleterious effects of alcohol, while other negative effects of alcohol can be reinforced.
- The chronic use of any illicit drug is associated with some cognitive and/or psychomotor impairment, and can lead to a decrease in driving performance, even when the subject is no longer intoxicated.

The results of experimental studies also show obvious impairment for some therapeutic drugs.

- Benzodiazepines generally have impairing effects, but some types (whether long-, medium- or short-acting) cause severe impairment, while others are unlikely to have residual effects the following day.
- First-generation antihistamines are generally more sedating than second-generation ones, though there are exceptions in both groups.
- Tricyclic antidepressants show more impairment than the more recent types, though the results of experimental tests after consuming second-generation selective serotonin reuptake inhibitors are not always consistent.

In every therapeutic class, some substances are associated with little or no impairment. These therapeutic drugs should preferably be prescribed to those wishing to drive.

Epidemiological studies have confirmed many of the findings from experimental studies. About 1 % to 2 % of drivers stopped during roadside surveys test positive for drugs in saliva, with a few exceptions.

- Driving under the influence of a combination of alcohol and drugs is not uncommon.
- Studies assessing the prevalence of drugs, medicines and/or alcohol in drivers who were involved in a traffic accident (fatal or non-fatal) found that alcohol is more prevalent than any other psychoactive substance, but drugs are also frequently found, and more frequently than in the general driving population.
- Of the drugs analysed, cannabis is the most prevalent after alcohol, though when samples were analysed for the presence of benzodiazepines, they were sometimes even more prevalent than cannabis.
- Statistically, increased accident risks and/or risks of being responsible for an accident were found for cannabis, benzodiazepines, amphetamines, heroin and cocaine, and many of these risks increase when the drug is combined with another psychoactive substance such as alcohol.

The results of both epidemiological and experimental studies should be combined to obtain a good estimate of the impact of certain drugs on driving performance and accident risk. To obtain more compatible methodologies, in 2006–07 a committee of international experts, including representatives from the EMCDDA and NIDA, drafted guidelines for future research into drugs and driving. These have been taken on board by the DRUID project, a large-scale EU-funded project that will conduct reference studies of the impact on fitness to drive for alcohol, illicit drugs and medicines, but also analyse the prevalence of alcohol and other psychoactive substances in drivers involved in accidents and in the general driving population and calculate analytical and risk thresholds for several illicit drugs and medicines in several European countries. DRUID will be completed in 2010.

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