Risk of injury by driving with alcohol and other drugs

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Background and objective
The objective of this presentation is to assess the risk of driving with alcohol, illicit drugs and medicines in various European countries. In total nine countries participated in the study on relative risk of serious injury/fatality while positive for psychoactive substances. Six countries contributed to the study on the relative risk of getting seriously injured: Denmark, Finland, Lithuania, Italy, Belgium and the Netherlands. Four countries contributed to the study on the relative risk of getting killed: Finland, Norway, Sweden and Portugal.

Data and method
The risk for a driver of getting seriously injured or killed in an accident while positive for a given substance was calculated as the ratio between the odds for a driver of being seriously injured/killed in an accident while positive for a given substance and the odds of being seriously injured/killed while negative. The odds ratios were calculated by logistic regression.

The case sample (injured/killed drivers with and without drugs) consisted of samples from hospital studies of seriously injured drivers and databases of killed drivers. In total, 2,490 seriously injured drivers and 1,112 killed drivers were included. The control population (non-injured drivers with and without drugs) came from roadside surveys in the same countries; in total, 15,832 drivers were included in the control sample of the seriously injured drivers and 21,917 drivers participated in the control samples of killed drivers; data were weighted for the national distribution of traffic in each of eight time periods of the week. The relative risk estimates were adjusted for age and gender.

An estimation of the overall relative risk by substance group is given. These risk estimates are based on the odds ratios estimated separately for each country, together with aggregated odds ratios estimated on the basis of all countries’ data together or a subset of countries. Estimates are given with confidence intervals.

Results
The main finding of the study is that the highest risk of getting seriously injured or killed is associated with driving with high alcohol concentrations (above 1.2 g/L) and alcohol combined with other psychoactive substances. These two groups indicate extremely high risks of about 20-200 times that of sober drivers. Other high risk groups are drivers with medium blood alcohol concentrations (between 0.8 g/L and 1.2 g/L), multiple drug use and amphetamines. The risks indicated for this group are about 5-30 times that of sober drivers. Medium increased risk was found for alcohol concentrations between 0.5 and 0.8 g/L, for cocaine, benzoylecgonine, illicit opiates and medicinal opioids. Risk for this group was estimated to about 2-10 times that of sober drivers. Medium increased risk was found for alcohol concentrations between 0.5 and 0.8 g/L, for cocaine, benzoylecgonine, illicit opiates and medicinal opioids. Risk for this group was estimated to about 2-10 times that of sober drivers. The risk associated with benzoylecgonine that is not an active agent might be caused by sleep deprivation after cocaine consumption. The risk associated with cannabis seems to be similar to the risk when driving with a low alcohol concentration (between 0.1 g/L and 0.5 g/L), which is slightly increased of about 1-3 times that of sober drivers.

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