

Reducing injuries and death from alcohol-related road crashes

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Introduction

Road traffic injuries are a leading cause of death and a major public health problem in Europe as in the rest of the world. They decimate the lives of young people and result in enormous costs for families, emergency and health services and society at large (Peden et al., 2004; WHO Regional Office for Europe, 2009a). In the whole WHO European Region, road traffic injuries are the leading cause of death in children and young adults aged 5–29 years (WHO Regional Office for Europe, 2007). Alcohol use has been identified as one of the most important risk factors in the causation and severity of road traffic crashes. The consumption of alcohol, even in small doses, increases the risk of being involved in a road crash for all road users, whether motorists or pedestrians. This is because alcohol interferes with road users' skills by impairing cognition, vision and reaction time (Peden et al., 2004). It also increases the likelihood of adopting other risky forms of behaviour, such as speeding and not using safety equipment such as seat-belts and helmets.

At any blood alcohol concentration (BAC) greater than zero the risk of being involved in a crash rises. For the general driving population this risk rises significantly at levels higher than 0.4 g/litre (Peden et al., 2004). For motorcyclists with a BAC over 0.5 g/litre, the risk of having a crash is up to 40 times higher than with a zero BAC (WHO, 2007).

For inexperienced young adults and teenagers, the risks are even higher (Peden et al., 2004) and rise rapidly with an increasing BAC (WHO, 2007). At any BAC, drivers aged 16–20 years are three times more likely to crash than drivers who are older than 30 years (Peden et al., 2004). In the countries of the WHO European Region, road traffic injuries are the leading cause of death in children and young adults aged 5–29 years (Peden et al., 2004). However, although young people are at the greatest relative risk of having a drink–driving crash, in absolute terms drink–driving and related crashes and fatalities are more common among middle-aged people.

Summary of current evidence

There is wide evidence supporting the effectiveness of preventive interventions (Peden et al., 2004; WHO, 2007). Evidence indicates that for each euro invested in prevention carried out through random breath-testing, €36 could be saved (Racioppi et al., 2005).

The main conclusions from a recent comprehensive review (WHO Regional Office for Europe, 2009b) confirm and complement earlier findings.

There is consistent evidence that:

- the introduction (Mann et al., 2001) and/or reduction (Bernhoft & Behrendorff, 2003; Bartl & Esberger, 2000; Shults et al., 2001) of legal BAC levels for driving, when these are enforced, reduce motor vehicle crashes and fatalities (Albalade, 2006);
- the introduction of sobriety checkpoints and random breath-testing reduces motor vehicle crashes and fatalities (Shults et al., 2001).

There is some evidence that motor vehicle crashes and fatalities can be reduced by:

- lower legal BAC levels for novice drivers ([Shults et al., 2001](#); [Hartling et al., 2004](#));
- licence suspension ([Zobeck & Williams, 1994](#));
- brief advice and mandatory treatment of drivers with alcohol dependency;
- alcohol locks ([Willis, Lybrand & Bellamy, 2004](#); [Bjerre, 2005](#); [Bjerre & Kostela, 2008](#); [Bjerre & Thorsson, 2008](#));

and that mass media campaigns can be used to enhance the effectiveness of drink-driving policies ([Elder et al., 2004](#)).

There is no evidence that designated driver and safe ride programmes reduce motor vehicle crashes and fatalities ([Ditter et al., 2005](#)).

It is not known which are the most effective ways to ensure the existence of adequate and sustained resources to enforce legal BAC levels ([WHO Regional Office for Europe, 2009b](#)).

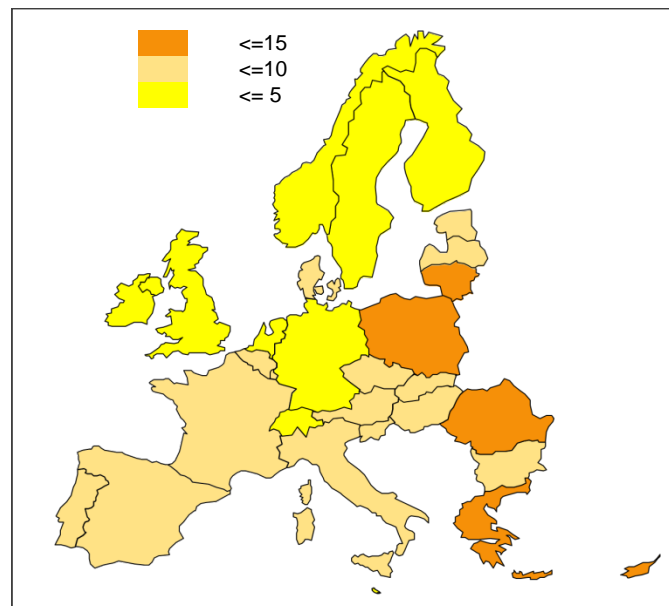
Deaths and injuries from road traffic crashes with alcohol a risk factor

Every year, approximately 43 500 people die on the roads in the EU ([WHO Regional Office for Europe, 2009a](#)) and many more are injured, with younger males more at risk. Vulnerable road users such as pedestrians, cyclists and users of motorized two-wheelers constitute 41% of all deaths. The burden is unevenly distributed: with few exceptions, it is more concentrated in the Baltic countries and in the central and eastern parts of the EU (Fig. 1) ([WHO Regional Office for Europe, 2012b](#)). Differences are, however, observed within countries too, with the poorest part of the population more at risk ([WHO Regional Office for Europe, 2009a](#)). The cost to countries has been estimated to be 2–3% of their GDP ([WHO Regional Office for Europe, 2009a](#)).

Attributable fractions of the mortality from road traffic injuries due to alcohol have been derived from several studies and summarized in a 2004 WHO publication which estimated the burden of disease attributable to selected major risk factors ([Rehm et al., 2004](#)). Based on a review of the literature globally, it is estimated that 33% of motor vehicle traffic injuries to males and 11% to females are due to alcohol ([Ridolfo & Stevenson, 2001](#)). For pedestrians, 40% of male and 17% of female deaths resulting from road traffic injuries are estimated to be due to alcohol ([Ridolfo & Stevenson, 2001](#)) while, for cyclists, the figures range from 20% for males ([Single et al. 1999](#); [Stinson et al., 1993](#)) to 18% for females ([English et al., 1995](#)). The risk of road traffic deaths attributable to alcohol varies with age; in western European countries it has been estimated as 50% for males aged 30–44 years and 46% for those aged 15–29 years, and for females, 25% and 18%, respectively. In the Baltic and the central European countries these proportions are considerably higher ([Rehm et al., 2004](#)).

Estimates vary widely from country to country on the percentage of road traffic deaths attributable to alcohol. According to the data available, nine countries in the EU report that 20% or more (up to 48%) of road traffic deaths are attributable to alcohol, and a further six countries indicate that alcohol consumption causes 10–20% of fatalities. The information available is, however, incomplete, with only 85% of countries providing data ([WHO Regional Office for Europe, 2009a](#)), and its reliability will be influenced by the completeness and practice of BAC-testing in the event of a road crash. Information on crashes associated with raised BAC (Fig.2)

Fig. 1. Standardized mortality rates per 100 000 population from road traffic injuries in EU countries, Norway and Switzerland, 2010 (or most recently available)



Source: European Health for All database, January 2012 (WHO Regional Office for Europe, 2012b).

is available in 93% of the countries belonging to the EU (WHO Regional Office for Europe, 2012b). These data need to be interpreted with caution because the completeness and frequency of testing for BAC levels in the event of a crash, enforcement levels of drink-driving laws and permissible BAC vary across countries. They are likely to underestimate the true prevalence of alcohol-related crashes.

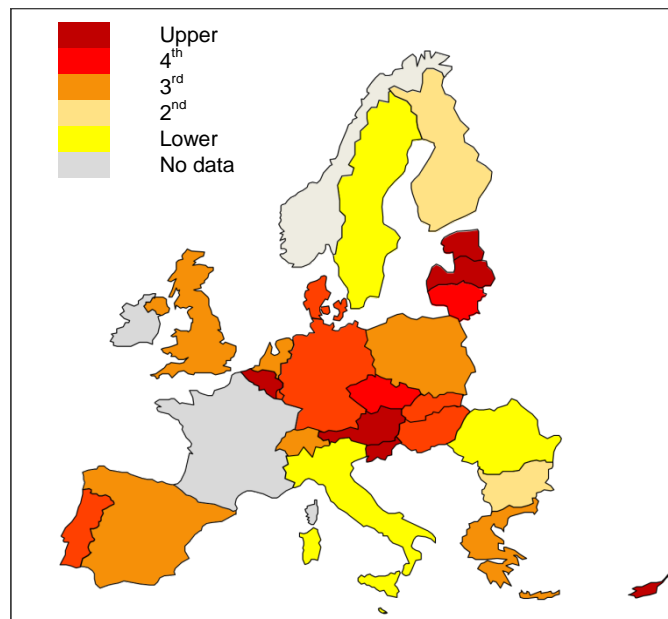
Conclusions for policy and practice

All EU countries have legislation that prohibits driving under the influence of alcohol. Four countries have set a limit of zero (WHO Regional Office for Europe, 2012a), but two countries have a legal BAC limit of 0.8 g/litre, above the level recommended by WHO and the EC of 0.5 g/litre. Despite the susceptibility of young drivers to crashing under the influence of alcohol, only half of the countries (14 out of 27) in the EU have set a BAC limit for young and novice drivers of 0.2 g/litre or below (WHO Regional Office for Europe, 2009a).

The range of countermeasures to reduce drink-driving implemented in EU countries was surveyed for a report on the implementation of the European Council recommendation on the prevention of injury and the promotion of safety and the Regional Committee resolution on prevention of injuries in the WHO European Region (WHO Regional Office for Europe, 2010a).

In 88% of the 25 EU countries that responded to the questionnaire, alcohol was identified as a risk factor for unintentional injuries in national policies. The vast majority had a national policy for road safety (96%) and were implementing (nationally or locally) interventions to prevent road traffic injuries (81%). For example, 87% had sobriety checkpoints but only seven countries

Fig. 2. Road traffic crashes involving alcohol per 100 000 population in EU countries, Norway and Switzerland, quintiles, 2010



Source: European Health for All database, January 2012 (WHO Regional Office for Europe, 2012b).

applied restrictions on the sale of alcoholic beverages at petrol stations (WHO Regional Office for Europe, 2010b).

Although all countries have national policies on drink-driving, the lack of enforcement remains a critical issue. Of 23 EU country respondents, 16 (70%) indicated that the enforcement of drink-driving legislation was suboptimal. The importance of enforcement, notably through random breath-testing, has been highlighted by the EC (European Commission, 2004) and WHO alike (WHO Regional Office for Europe, 2010b; 2011b). Other countries have also reported that the penalties for drink-driving are insufficiently severe to act as a deterrent (WHO Regional Office for Europe, 2009a).

In order to reduce the mortality, morbidity and economic loss due to drink-driving, the following main points for action are proposed (WHO Regional Office for Europe, 2010b):

- for any country with a BAC limit above 0.5 g/litre, it would be beneficial to reduce the level to 0.5 g/litre;
- in those countries with a BAC limit of 0.5 g/litre, additional benefit could be gained by reducing it to 0.2 g/litre;
- the legal BAC level for novice and professional drivers should be reduced to 0.2 g/litre or less;
- coverage of testing for BAC levels should be improved; and
- enforcement can be enhanced by increasing the use of random breath-testing and by increasing the fear of being caught; evidence shows that drivers need to know that there is a real risk of being stopped and breath-tested at any time.

As with many of the other alcohol policy issues discussed in this report, the key issue comes down to ensuring adequate implementation of what is known. Some countries have up-to-date alcohol-in-traffic laws and enforcement systems, and among countries with adequate measurement of BAC involvement, these countries do much better in holding down the number of crashes where alcohol is involved.

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