INTRODUCTION

At the 8th International Conference on Alcohol, Drugs and Traffic Safety in Stockholm, prospects for enacting a package of preventive measures against drinking and driving in Great Britain were outlined, following a Government Committee of Inquiry into the problem. It is now possible to report on the activities developed over the ten years since that Committee reported, and to give some measure of the overall effectiveness in terms of accident reduction.

The law and legislative procedures have been streamlined, more effective enforcement realised, publicity and information extended, education programmes introduced into schools, and the first improvement programmes for offenders are now being set up. Development of these measures reached a climax in 1983 when new legislation was enacted, accompanied by an increase in publicity and information programmes nationwide. The impetus released at that time has been maintained over the subsequent three years.

This paper outlines the preventive measures introduced and indicates the role of research in their development. Results of the monitoring of the drink/driving problem and evaluation of trends with special reference to the pre/post-legislation periods are presented. Current researches aimed at increasing the knowledge of the characteristics and behaviour of drinking drivers related to their level of impairment and involvement in accidents is outlined.

Finally future options for more effective preventive measures are discussed.

PREVENTIVE MEASURES

In line with the recommendations of the Inquiry Committee, preventive measures have been developed on a broad front, representing a wide range of activities.

Legislation and enforcement. The essential elements of the new law introduced in Great Britain in May 1983 were:

- simplification of the law to reduce possible 'loopholes'
- simplification of procedures by allowing breath testing (with approved equipment) for evidential purposes

At the same time, associated with this was:

- introduction of a procedure for dealing with 'high risk offenders'
The legal limit prescribed for breath (BrAC) is 35 µg/100ml i.e. equivalent to the existing 80mg/100ml limit for blood (BAC). Extensive researches by Home Office scientists, including operational trials in police forces, were conducted before machines were approved for use in evidence in courts. The 'high risk offenders' procedure will be discussed later.

The effect of the law which was most immediately obvious was an initial 45 per cent increase in convictions. There were considerable regional variations across the country, from no change to nearly threefold increase, reflecting the different enforcement tactics adopted by police forces in terms of level of police presence at times when drinking and driving is most prevalent and level of application of the screening breath test. The conditions under which screening tests may be applied, i.e. following an accident, a moving traffic offence, or suspicion of alcohol, leave considerable discretion to police forces. For example, at one extreme, one force applies screening tests to all drivers/riders involved in accidents wherever practical to do so, while others will apply screening tests following accident only when there is also strong suspicion of alcohol.

A further activity which has changed enforcement levels is the gradual introduction of electronic screening test devices to replace the old chemical colour change indicators. This has resulted in a marked reduction of false positives recorded in the screening test (i.e. not leading to later substantive confirmation and hence more effective use of police resources.

Publicity and information. Publicity and information has emanated from many sources. At national level, TV Christmas campaigns to discourage people from drinking and driving have been run for 10 years. Recently, these campaigns have been extended to other media - the press, radio, and roadside posters - and this year a summer campaign has been introduced, reflecting the importance of making people aware that drink/driving is an all year round problem. For the first time an information leaflet 'The Facts about Drinking and Driving' has been made available nationally, free of charge in response to telephone calls to a 'hot-line'.

Many local initiatives have been taken up by Local Highway Authority Road Safety Officers and Police Forces, either in parallel with or in support of the national campaigns, or more importantly covering other periods of the year. It is impossible to quantify these many activities, though subjectively substantial increases have been observed since 1983.

Other road safety organisations have also played a part, such as the Royal Society for the Prevention of Accidents (RoSPA), who have produced a series of information leaflets. Alcohol agencies are increasingly paying attention to drinking and driving, recognition being given by some at last that there
exists a problem relating to drinking well before the state of alcoholism is reached. An impact has also been made by the formation of the first community group in Britain, the Campaign Against Drunk Driving (CADD).

All these activities, and others such as the greater awareness of the harsher penalties imposed by some magistrates (one bench imposed weekend jail sentences for offenders), and reporting of alcohol related fatal accidents, have led to yet more press coverage. A snowball effect has gathered momentum.

While the impacts of these various activities cannot be established individually, evaluation surveys (by interview of drivers) carried out in association with the national campaigns\(^6\) have demonstrated a number of important trends over ten years:

- A hardening of attitudes towards the drinking driver
- A greater awareness of the problem of drinking and driving
- A claimed reduction in the number of occasions of drinking and driving (based on self reporting of behaviour)

Despite the subjective nature of these surveys, there is no reason to believe there are inconsistencies in the manner of their application over time, so the trends identified are meaningful.

Education in schools. Traffic education in schools is still fragmented, especially in secondary schools - the level at which education on drinking and driving needs to be disseminated. Nevertheless there are encouraging developments. It is more and more recognised that traffic education has to be a structured process involving development of both materials and strategies for teaching and dissemination. A teaching package entitled 'One for the Road' has been developed as part of a series of education units for Teenagers and Traffic\(^7\). This is backed by three films sponsored by the Brewers Society. Together they aim to provide a basis for discussion amongst teenagers of the different influences which can affect young people's decisions about drinking and driving, the effects of alcohol on the body and performance, the relationship between the amount drunk and the likelihood of being involved in an accident, and the law and its consequences. An important aspect of this package has been the widespread dissemination through courses for teachers and road safety officers in local authorities.

Improvement programmes. Initiation of driver improvement programmes for offenders is at a very early stage in Britain. Conscious of experience in other countries, it is recognised that treatment to change behaviour must be appropriate to the individual concerned. The current population of drivers/riders may be regarded as a continuing spectrum of drinkers, illustrated as follows.
Publicity and information are likely only to influence attitudes and behaviour of the lowest level of drinkers: nevertheless this group involves a substantial number of offenders (whether caught or not). At the other extreme, alcoholics need medical treatment: this group is unlikely to make up a large proportion of drink/driving offenders. What action is required between these extremes is now being explored.

As already indicated, under present legislation the 'high risk offenders' are subject to a special procedure. These offenders are defined as having two drink/drive offences within 10 years, where either the level of alcohol in the blood was 200mg/100ml or more, or one offence of this kind and one refusal to provide a specimen, or in certain circumstances two refusals to provide specimens. The procedure requires that the high risk offender satisfies a medical examiner that he no longer has a significant drink problem before his licence is restored. A team of ten examination centres staffed by medical specialists is in process of being set up by the Department of Transport. The medical examination includes consideration of blood tests designed to discover biochemical evidence of excessive alcohol consumption, a specially designed medical questionnaire eliciting problems related to alcohol consumption during the past year is administered, and the applicants' own general practitioner responds to a questionnaire in confidence. The procedure is not yet fully operational since few repeat offenders since its introduction in 1983 have yet reached the stage of qualifying to apply for reinstatement of licence: a repeat offence carries a mandatory disqualification of at least 3 years.

Another initiative has been taken on a small scale by one probation service to set up counselling courses, primarily as an alternative to a fine (disqualification is mandatory in these cases). An eight week course has been developed which involves the participant in problem solving exercises and group discussions, the aims being to increase knowledge of the effects of alcohol, to encourage a change in attitudes, patterns of drinking and related behaviour, and to encourage increased awareness of ways of resisting pressure to drink more than desired. Only a few people have been through the course, so no
assessment of its value can be made. If such courses are to be extended, then it will be important to make suitable medical/psychological selection of candidates to ensure that they are amenable to counselling: probably only those in the lower alcohol levels (say, 80 to 150mg/100ml BAC) should even be considered.

Research aspects. Research has played a vital part in development of all the foregoing preventive measures: in standardising and validating the evidential breath testers; in identifying target groups for publicity and selecting appropriate messages for transmission; in design and testing of educational material and methods of dissemination. Most importantly, research activities have monitored the nature and size of the drink/driving problem and attempted to interpret trends, which issues will now be addressed.

MONITORING AND EVALUATION

Current state of the problem. The two main sources of data available for assessing the magnitude of the drink/driving problem are the national police reports of injury accidents, and reports of blood alcohol levels in adult fatalities made voluntarily by coroners and procurators fiscal as a special return to the Transport and Road Research Laboratory for research purposes.

In the national police reports of injury accidents a record is given of whether the driver/rider has failed the roadside screening test. In 1984 some 11 per cent of the 397,000 drivers/riders involved in injury accidents were tested, and of these tested 29 per cent failed the test. This means that on average about 3 per cent of all drivers/riders failed the test, but the percentage rises sharply in the 'drink' hours between 10pm and 4am, being well over 20 per cent at the peak.

The casualties in these accidents where at least one driver or motorcycle rider failed the roadside screening test are summarised in Table 1: the drivers involved numbered 11,167 and the riders 1,390. Single vehicle accidents accounted for 45 per cent of casualties overall, for 52 per cent of fatalities, and 86 per cent of pedestrian deaths.

Returns of blood alcohol levels are made for adult fatalities who die within 12 hours of the accident. In 1984 2,332 returns were made, representing some 63 per cent of adult deaths within 12 hours. Twenty six per cent of drivers killed and 27 per cent of riders killed were found to be over the legal limit, with some 8 per cent being over the 'high risk offenders' level of 200mg/100ml.

By computer matching of the police and coroners data, it has been possible to identify what other casualties occur in these fatal accidents. Matchings were established for 1,211 of the 1,227 drivers/riders killed for whom BAC
TABLE 1
CASUALTIES IN ACCIDENTS IN WHICH AT LEAST ONE DRIVER OR RIDER FAILED THE
ROADSIDE SCREENING TEST

<table>
<thead>
<tr>
<th></th>
<th>Fatal</th>
<th>Serious</th>
<th>Slight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers</td>
<td>51</td>
<td>1920</td>
<td>6264</td>
<td>8235</td>
</tr>
<tr>
<td>Riders</td>
<td>35</td>
<td>664</td>
<td>1106</td>
<td>1805</td>
</tr>
<tr>
<td>Passengers</td>
<td>166</td>
<td>1998</td>
<td>5616</td>
<td>7780</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>116</td>
<td>462</td>
<td>599</td>
<td>1177</td>
</tr>
<tr>
<td>Pedal cyclists</td>
<td>20</td>
<td>81</td>
<td>112</td>
<td>213</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>8</td>
<td>66</td>
<td>74</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>388</td>
<td>5133</td>
<td>13763</td>
<td>19284</td>
</tr>
</tbody>
</table>

Levels were known. Of these, 318 were over the legal limit of 80mg/100ml BAC: associated with their accidents were 89 other fatalities, 166 serious injuries and 121 slight injuries - see Table 2.

TABLE 2
CASUALTIES IN ACCIDENTS WHERE AT LEAST ONE DRIVER OR RIDER WAS IN EXCESS
OF THE LEGAL LIMIT OF BAC

<table>
<thead>
<tr>
<th></th>
<th>Fatal</th>
<th>Injury Serious</th>
<th>Slight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers</td>
<td>197</td>
<td>36</td>
<td>34</td>
<td>267</td>
</tr>
<tr>
<td>Riders</td>
<td>131</td>
<td>1</td>
<td>3</td>
<td>135</td>
</tr>
<tr>
<td>Passengers</td>
<td>69</td>
<td>129</td>
<td>82</td>
<td>280</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>407</td>
<td>166</td>
<td>121</td>
<td>694</td>
</tr>
</tbody>
</table>

Overall, 51 per cent of those killed and 31 per cent of those injured were in single vehicle accidents.

Combining results from Tables 1 and 2, and grossing up figures from the latter for the underreporting of driver/rider fatalities, it is estimated that approximately 1100 road users are killed in association with a driver or motor-
cycle rider being over the legal limit. Additionally, the BAC figures suggest that at least 300 pedestrians killed within 12 hours of the accident were in excess of this level. Pedestrians are not blameless as regards accidents, and research has shown that fatality risk increases with increase in levels of alcohol. It is significant that the numbers of pedestrians killed at the hands of drivers or riders over the limit is less than half of those killed who are themselves over the drivers' legal limit. In total, approximately 1400 road accident deaths were associated with alcohol in excess - representing nearly ONE QUARTER of all road deaths in 1984.

Evaluation of trends. In monitoring trends in drink/driving, it was recognised at the outset that it would be impossible to separate out the effects of the various preventive measures taken. Nevertheless, May 1983, when the new legislation was enacted, was seen as a turning point. Analyses have therefore compared pre- and post-law trends, though it must be emphasised that the results are seen as showing the effect of the package of measures and increased activities since that date.

The study has used both police casualty data and coroners fatality data, but for the purpose of examining trends the breath test data given in the police reports is not deemed adequate to give an overall picture: it is known that it largely reflects changes in screening equipment used and changes in police tactics. Instead, casualties reported in the period when drink/driving is known to be the greatest problem (10pm to 4am) are used as a surrogate measure of alcohol involvement. Analyses of time series for car drivers and passengers, motorcycle riders and pedestrians were carried out. It was necessary to distinguish between the effect of the May 1983 drink/driving intervention, the introduction of compulsory seat belt wearing in January 1983, and legislative changes in testing and licensing procedures for motorcyclists also introduced about the same time. In the latter case, the study was restricted to riders at least 25 years old to eliminate any effect as far as possible.

The results for car occupants differed between built-up and non-built-up areas. In built-up areas, the numbers of casualties suffered by all groups of car occupants in the 10pm to 4am period fell steadily between 1979 and 1984, but during these years the corresponding numbers for the rest of the day rose. This suggests that the numbers of car occupant casualties in alcohol related accidents have been falling, both absolutely and in relation to the rising numbers of casualties from other accidents. Against this improving trend, little evidence has been found of casualty reductions following the legislation date, and indeed there was a marked increase in front seat passenger casualties. This may have been due to changes in social behaviour in response to the new
law, but suitable traffic flow and vehicle occupancy data do not exist to study this.

A different pattern of results was found in non-built-up areas. Here car occupant casualties between 10pm and 4am have been generally stable, while corresponding numbers for the rest of the day have been rising (but at a lower rate than in built-up areas). Thus the trend in alcohol related car occupant casualties is less favourable than in built-up areas. However there is reasonably clear evidence that the legislation and associated activities effectively reduced casualties by 5 to 12 per cent in the 10pm to 4am period. Casualty reductions occurred for all groups of car occupants except seriously injured rear seat passengers.

Among motorcycle riders at least 25 years old, fatal and serious casualties between 10pm and 4am were reduced by about 13 per cent; numbers of slight casualties were virtually unchanged. Casualties among younger motorcycle riders are likely to have been similarly affected by the drink/drive legislation and associated activities.

No clear evidence has been found to show that pedestrian casualty rates were affected by the drink/drive legislation.

BEHAVIOURAL CHARACTERISTICS OF DRIVERS

As a basis for development of more effective countermeasures against drink/driving, it is important to know more about the characteristics and behaviour of drinking road users, their levels of impairment and involvement in accidents. This is an issue which each country must determine for itself, since national characteristics differ so greatly in this respect. Some evidence on a limited scale has been obtained in Britain through a study some years ago of convicted drink/drivers\(^\text{12}\). But until recently it has not been feasible to extend these studies to a more representative sample in which blood alcohol levels were available, as was suggested at T80.

While conduct of a roadside survey is still not publicly acceptable, it has now been possible to start a comprehensive study of accident involved drivers and riders (whether injured or not), regardless of blame, with the co-operation of the Nottinghamshire Police Force. Their practice of applying screening tests to all drivers or riders following accident, in all cases where practical, provides an unbiased accident sample. A representative sample of these accidents is followed up with interviews of the drivers/riders to obtain information on their demographic characteristics, driving experience, drinking patterns in the 24 hours prior to the accident and general drinking habits: details of the circumstances of the accident are available from the police, together with
details of breath screening test and (later) evidential test results. Thus it is possible to relate drink/driving patterns, drinking habits and driver/rider characteristics to levels of blood alcohol - in the bands 0 - 40mg/10ml and 40 - 80mg/100ml below the legal limit (the green and amber indicators in the Draeger Alert tester), and the actual levels above the limit.

Further information on drink/drive offenders is coming from Driver Licensing Records, to which access is now possible. An initial analysis of offences committed shows, for example, that those who had committed drink/drive offences had committed significantly more motoring offences in general. Only 1 per cent of drivers who had acquired a driving licence before 1980 were disqualified for drunken driving between 1980 and 1984, yet they accounted for about 25 per cent of disqualifications for other motoring offences. Moreover, the likelihood of a driver being disqualified for a non-drink/drive offence increases with the number of drink/driving disqualifications. Alcohol levels amongst convicted drivers are highest for the 50 - 59 age group, although it is the 20 - 29 age group that provides the most offenders. Only one offender in twenty is female.

FUTURE DIRECTIONS

Recent considerations of the drink/driving problem in Britain reinforce the view that a multi-faceted approach is likely to be the most effective, and that as far as offenders are concerned more consideration needs to be given to selecting the most appropriate treatment (whether punitive or remedial) for the individual. Preventive measures now being developed in Britain are:

- co-ordination of publicity, information and enforcement practice
- production and dissemination of better information on alcohol and its effects on driving
- broadening of traffic education in schools
- development of counselling procedures for drink/drive offenders.

Other options which might be pursued include imposing a lower legal limit of blood/breath alcohol for inexperienced drivers: results of such practice in other countries are eagerly awaited.

There is ample evidence from round the world to suggest that a collective approach has the greatest prospect of success in reducing the drink/driving problem. In this package approach, enforcement must be accompanied by publicity and information, and education of future generations: imposition of penalties must be accompanied by rehabilitation. Most importantly, future success in reducing the drink/driving problem depends on changing basic attitudes at all levels of society.
ACKNOWLEDGEMENTS

The work described in this paper forms part of the programme of the Transport and Road Research Laboratory and the paper is published by permission of the Director.

REFERENCES

1. Sabey, BE, Staughton GC (1980) The drinking road user in Great Britain. Proc 8th Inter Conf on Alcohol, drugs and traffic safety, Stockholm
5. The facts about drinking and driving (1986) Transport and Road Research Laboratory, Crowthorne, England
7. One for the road (1985) Teenagers and traffic, RoSPA, Birmingham

Crown Copyright. The views expressed in this paper are not necessarily those of the Department of Transport. Extracts from the text may be reproduced, except for commercial purposes, provided the source is acknowledged.