THE UNIVERSITY
OF BIRMINGHAM

Literature Search on
The Frequency of Alcohol Dependency in Convicted Drivers

Aggresssive Research Intelligence Facility
West Midlands Health Technology Assessment Collaboration

October 2005

For the Drivers Medical Group
DVLA
Swansea

ARIF

About ARIF and the West Midlands Health Technology Assessment Collaboration

The West Midlands Health Technology Assessment Collaboration (WMHTAC) is an organisation involving several universities and academic groups who collaboratively produce health technology assessments and systematic reviews. The majority of staff are based in the Department of Public Health and Epidemiology at the University of Birmingham. Other collaborators are drawn from a wide field of expertise including economists and mathematical modellers from the Health Economics Facility at the University of Birmingham, pharmacists and methodologists from the Department of Medicines Management at Keele University and clinicians from hospitals and general practices across the West Midlands and wider.

WMHTAC produces systematic reviews, technology assessment reports and economic evaluations for the UK National Health Service's Health Technology Assessment (HTA) programme, the National Institute for Health and Clinical Excellence (NICE). Regional customers include Strategic Health Authorities, Primary Care Trusts and regional specialist units. WMHTAC also undertakes methodological research on evidence synthesis and provides training in systematic reviewing and health technology assessment.

The two core teams within WMHTAC are the Aggressive Research Intelligence Facility (ARIF) and the Birmingham Technology Assessment Group (BTAG).

ARIF provides a rapid on-demand evidence identification and appraisal service primarily to commissioners of health care. Its mission is to advance the use of evidence on the effects of health care and so improve public health. The rapid response is achieved by primarily relying on existing systematic reviews of research, such as those produced by the Cochrane Collaboration, the National Institute for Health and Clinical Excellence (NICE), the NHS Centre for Reviews and Dissemination, and the NHS Health Technology Assessment (HTA) programme. In some instances, longer answers to questions are required in which case mini rapid reviews of existing systematic reviews and key primary studies are compiled, typically taking 1-2 months to complete.

Occasionally a full systematic review is required and then topics are referred to BTAG who coordinate the production of systematic reviews for several customers under a number of contracts. ARIF is intrinsically involved in the production of these systematic reviews.

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1 Aims

The aims of this report were to address the following questions submitted by the Driver Medical Group (see Appendix 1 for request form submitted):

1.1 Primary Questions

(a) The recidivist behaviour to repeat drink driving offences, i.e. how many first time drink-drive offenders go on to have a second (or third offence), and how many second time offenders have further offences, over a ten-year period from date of index offence and

(b) the frequency of harmful and/or dependent drinking in convicted drink/drivers, i.e. what proportion of convicted drink-drivers meet the ICD criteria for (i) harmful and (ii) dependent drinking including if possible age/sex profiles; similarly for DSMIV equivalence

(c) the evidence of features of alcohol dependency with reference to ICD10 and DSMIV i.e. what key features of these criteria can most readily be identified.

(d) In patients with diagnosed alcohol dependency (ICD10 criteria) what proportion have drink-drive conviction(s).

1.2 Reformulation of Questions

There was no detailed additional discussion concerning the nature of the questions addressed. The questions submitted were more than adequately described. It is worth noting that many of the questions in this request flow directly from issues carried over from a previous request, “The efficacy of brief intervention in the management of drinking problems” (August 2005). Initially we had felt that the third of the questions, c) would be the main focus of our report based on the likelihood of good research being available and the central importance of the issue being addressed. In the event we were able to identify potentially useful information on all but one of the questions initially posed.

For ease of presentation and to aid explicit linkage between the searches conducted and the results, the primary questions have been grouped as follows:

- Quantification of risks associated with convicted drink driving

This covers question a), b) and d). In a) and b) the request examines risk of further offence and “problem drinking”. Question c) asks for an examination of the latter association in reverse

- Identification of alcohol dependency

This has been conceived of in the context of a slightly wider question, “What is the accuracy of different methods of identifying ICD10 and DSMIV defined alcohol dependency?” Although not explicitly stated we have assumed that the population of interest in this question are again convicted drink-drivers. Whether it would be useful for the Drivers Medical Group to consider the same question in any population, not restricted to drink-drivers, will be worth considering when this report is received. The obvious advantage would be that

there would be more research to inform decisions; the disadvantage would be relevance, given that many self-report tests e.g. CAGE questionnaire may have reduced validity where the implications of a positive diagnosis are often perceived as highly disadvantageous.

2 Background

There are approximately 85,000 drink-drive convictions each year of which 30,000 are in high-risk offenders (see below for definition).

Further background information is as given in the documentation supplied by the Drivers Medical Group, summarised in the request form in Appendix 1.

Two issues raised, will be reprised.

- Definitions

First the question of definitions of medically recognised alcohol problems are key and we adhere to the following, suggested in the background material from the DMG, in the remainder of this document:

  - Alcohol misuse

    "A state which because of consumption of alcohol, causes disturbance of behaviour, related disease or other consequences, likely to cause the patient, his/her family or society harm now, or in the future, and which may or may not be associated with dependency."

    This description cross-refers to ICD10 F10.1 [Mental and behavioural disorders due to use of alcohol; harmful use]. ICD10 F10.1 in turn maps closely to DSMIV 305.00 [Alcohol abuse]

    Persistent alcohol misuse is a further component of the definition. Persistence in general refers to evidence of more than one episode of harm. In "High Risk Offenders" (defined below) this concept is extended: "In High Risk Offenders, the otherwise unexplained evidence of persistent blood abnormalities linked to behavioural problems of drink/driving constitutes such persistent abuse. "

  - Alcohol dependency

    "A cluster of behavioural, cognitive & physiological phenomena that develop after repeated alcohol use & which include a strong desire to take alcohol, difficulties in controlling its use, persistence in its use despite harmful consequences, with evidence of increased tolerance and sometimes a physical withdrawal state."

    Indicators may include a history of withdrawal symptoms, of tolerance, of detoxification(s) and/or alcohol-related fits.

    The description cross-refers to ICD10 F10.2 to 10.7 inclusively [Mental and behavioural disorders due to use of alcohol; dependency syndrome, withdrawal state, withdrawal state with delirium, psychotic disorder, amnesic syndrome, residual and late-onset psychotic disorder].

    ICD10 F10.2 maps closely to DSMIV 303.90 [Alcohol dependency]

  - High risk offender

This is a sub-set of convicted drink-drivers deemed to be at high risk of committing a further offence by virtue of:

- Very high levels of alcohol on arrest, exceeding 2.5 times the legal limit
- Two disqualifications within the space of 10 years
- One disqualification for refusing/failing to supply a specimen for analysis

High risk offenders must be assessed to ensure they do not have persistent alcohol misuse or dependency prior to reinstatement of their driving licence.

- Purpose of request

It is helpfully stated that the underlying purpose of the literature review is to underpin the High Risk Offender workshop and review of the HRO scheme. It is further suggested that just 4.5% of the 30,000 HRO's each year appear to have alcohol misuse or dependency. Whether this figure truly represents the number who are at a level of risk where they should not have their licence returned appears to be the key underlying issue. In this there is a slight mis-match with the stated questions in a) to d), in that the most appropriate target population should be HROs rather than drink-drivers as a whole. However, in response to this where available, we have sought and presented information on drink-drivers *and* HROs (or near equivalents to this group).

A further issue concerning purpose of request is whether prevention of repeat offences and/or correct identification of alcohol misuse/dependency are the only outcomes of interest. Ideally schemes to further restrict or loosen the return of licences after drink-drive offences would be assessed on the overall balance of good/harm and costs. In such an exercise other outcomes might be relevant e.g. RTA deaths/serious injuries. These have not been considered in this literature review so far, but again it might be worth this potential extension of the scope being considered as part of the DMGs assessment of this report. This issue may have particular relevance to the implicit assumption that assessment of alcohol misuse/dependency assessed by ICD10 or DSMIV is actually the most appropriate reference standard against which to gauge the predictive power of different tests to focus continued disqualification on those in whom it is likely to have the greatest impact.

3 Methods

3.1 Searches and inclusion criteria

Searches to address each group of questions were as follows (additional detail is provided in Appendix 2). Each search was conducted by an experienced information specialist.

- Quantification of risks associated with convicted drink driving

The main search for this question focused on cohort studies of drink-drivers on the MEDLINE database from 1966 to August 2005. A cohort study prospectively following up a clearly defined group of individuals over time, collecting information on the occurrence of specific events (outcomes) is generally recognised to be among the most accurate study designs to quantify risk. In addition we recognised that the control/untreated arms of evaluations of the effectiveness of interventions to reduce recidivism in drink-drivers might also

generate useful information. To this end searches conducted for the report “The efficacy of brief intervention in the management of drinking problems” (August 2005) were revisited. Any studies identified in the searches which appeared to provide information in their abstracts relevant to any of the questions a), b) & d) were retrieved in full, and a list of such studies kept. All such studies actually containing such relevant information in the full text of the publication were effectively included and were mentioned in the results in some way. One particularly relevant article was identified. This also contributed to the question concerning identification of alcohol dependency (see below). To ensure that no similar articles had been overlooked this publication was citation tracked.

- Identification of alcohol dependency

This involved extensive searches of multiple databases, including the Cochrane Library, DARE and MEDLINE, to identify systematic reviews of the test accuracy of any method of identifying alcohol related disorders. Sifting of the output from the MEDLINE search was limited to studies since 1990 because of obvious repetition of reviews on all key test options identified in the years 1990 to 2005. It is theoretically possible that an approach to testing may have been developed and reported in the literature prior to 1990 and abandoned inappropriately so that it was never mentioned again after this date. If this were the case, limiting our scan of the MEDLINE abstracts to those since 1990 would have overlooked such a test. However it was felt that the chance of this was small relative to the size of error likely to be introduced. Any studies identified in the searches, which appeared to provide information in their abstracts relevant to question c) were initially considered for retrieval. Particular emphasis was placed on providing at least one summary of the available research on each of the new tests or approaches encountered. Where there were multiple reviews on a test, those which were most systematic in approach and most up-to-date were retrieved in preference to reviews with no statement of method or where searches were more than five years out of date. Provided the full text of a review actually contained useful information it was effectively included and mentioned in the results in some way.

3.2 Analysis

Scanning of the results of searches, ordering of full text, inclusion and analysis of the results of included studies were done by one person (CH). There was no formal quality assessment of included studies, but the reviewer was alert to the possibility of bias. Concerning the conclusions particular attention was paid to making the link between any conclusions drawn and the data on which they were based being explicit. The second reader of the report (DM) was among other things responsible for highlighting where such an explicit connection was not apparent.

3.3 General issues

It must be appreciated that although we attempt to be as explicit as possible about the method employed in the literature review underpinning this report, it cannot be regarded as a systematic review as all attempts to reduce bias have not been applied. To ensure such was beyond the scope of the time and human resources available.

4 Results

4.1 Quantification of risks associated with convicted drink driving

4.1.1 Rates of recidivism (question a)

4.1.1.1 General

At the outset we suspected that the most useful information on rates of recidivism would be provided by analysis of routinely collected data from England and Wales. We identified several publications by the Transport Research Laboratory (TRL) achieving this [1] [2]. The analyses appear to be conducted to a high standard. Results in the following paragraphs are based on the estimates provided by these publications; where available, estimates from other sources are offered to explore the validity of the estimates provided by the TRL reports. It should be emphasized that the TRL research appears to offer further useful information relevant to the general aim improving the HRO scheme, but beyond that specifically requested for this report and we would recommend that reports in question be scrutinized in full by the committee, if they have not already done so.

4.1.1.2 First drink driving offenders, who are not high risk offenders

TRL report 524 [1] provides data for repeat drink-driving convictions for “ordinary offenders”. It should be noted that these exclude first drink driving offenders who are more than 2.5 times above the legal limit, or who fail to provide a specimen, both of which groups become high risk offenders by virtue of these features. The reconviction rates for ordinary offenders in the four years following the index offence were 0.25% per annum for male ordinary offenders and 0.08% for female ordinary offenders. The rates appear reasonably constant over the four years of follow-up. 95% confidence intervals for the estimates are not given, but it seems likely that these will be narrow for men at least, as the estimates are based on reasonably large numbers of events. The report also presents data suggesting that there is a decline in reconviction rates with age for men; the observed trends for women seem highly likely to be affected by small numbers of events.

4.1.1.3 First drink driving offenders, who are also high risk offenders

TRL report 524 [1] attempts to separate out those HROs in the categories of 2.5 times the legal limit who are first offenders from those who are also re-offenders (referred to as HRO1A and HRO1B respectively). They attempt to do the same for the HRO category of failing to provide an evidential specimen (referred to HRO3A and HRO3B respectively). Because of limitations in the dataset available, re-offence is restricted to anyone with a record of a prior offence in the three years before the index offence in 1995. First time offenders may thus include people who are re-offenders but the offence is more than three years before the index offence. On this basis the reconviction rates for four years in HRO1A are 2.2% per annum for males and 1.2% per annum for females. The rates in HRO3A are higher at 3.4% per annum in males and 1.9% annum in females.

4.1.1.4 Second and over drink driving offenders, by definition also high risk offenders

TRL report 524 [1] again provides detailed estimates of reconviction rates in these groups. It subdivides these into:

- HROs categorized by the DVLA as such on the basis of two or more convictions within 10 years (referred to as HRO2). It also provides data on HRO2's where there are two or more convictions within 3 years (HRO2[3])
- HROs categorized as more than 2.5 times the legal alcohol limit, but who also have a record of a prior drink-driving offence within three years of the index offence (referred to as HRO1B)
- HROs categorized as failing to provide an evidential specimen, but who also have a record of a prior drink-driving offence within three years of the index offence (referred to as HRO3B)

The rates are reproduced in Table 1 below, alongside the rates for first time offenders. Rates in re-offenders are considerably higher than first offenders, particularly first offenders who are not also high risk offenders. It should be noted that the rates for HRO1B and HRO3B (both male and female), and the female rates for HRO2[3] are affected by small numbers of events likely to be reflected in wide 95% confidence intervals on the estimates.

Table 1

Reconviction rates as presented in TRL report 524 [1]

	N male	Reconvicted within 4 yrs	Annual rate (per 100 per year)	N Female	Reconvicted within 4 yrs	Annual rate (per 100 per year)
First offender						
Ordinary	43903	1.0%	0.25	4906	0.3%	0.08
First offender; HRO						
HRO1A	13537	8.9%	2.2	1721	4.9%	1.2
HRO3A	5919	13.6%	3.4	640	7.5%	1.9
Second offender						
HRO2	9566	13.2%	3.3	347	8.6%	2.2
HRO1B	339	19.5%	4.9	23	13%	3.3
HRO3B	312	19.2%	4.8	23	8.7%	2.2
HRO2[3]	Not given	18.4%	4.6	Not given	15.4%	3.9

4.1.1.5 Recidivism rates from other sources

We identified a number of other estimates of reconviction rates, falling into the following categories:

- Specially conducted cohort studies [3 4]
- Control arms of intervention studies [5 6 7 8]

Estimates of reconviction rates from these sources were generally higher than the estimates provided by the TRL report. Thus:

- Siskind [3] identified 5057 repeat drink-driving offences in 86,634 person years of follow-up from an index driving offence in 1988 in Queensland, Australia. This equates to a male annual rate of 5.8 per 100 per year (detailed results were not available for females).
- Marques et al, albeit in a cohort study which was mainly targeted at assessing the predictive power of Alcohol Ignition Interlock, identified 37 repeat convictions over 2 years in 1077 persons with 1 prior driving under the influence (DUI) conviction – annual rate 1.7 per 100 per year; 33 repeat convictions in 443 with 2 prior DUI convictions – annual rate 3.7 per 100 per year; and 55 repeat convictions in 633 with 3 or more prior DUI convictions – annual rate 4.3 per 100 per year [4]. A major assumption in using these data is that the effect of Interlock on reconviction rates after it has been removed is minimal which may be reasonable given the results of a systematic review examining this [5].
- Willis et al in a systematic review of the effectiveness of Interlock [5] identified reconviction rates in the control arms of studies with experimental designs in first offenders ranging from 1.5 to 8.8% and in repeat offenders from 3.8 to 12.8%. Unfortunately there is little clarity on the length of follow-up being employed in each study, which means caution must be applied in assuming the % re-convicted is equivalent to rate per 100 per year
- Wells-Parker et al in a meta-analysis of remedial interventions with drink/drive offenders quote untreated control arm reconviction rates at 2 years of 19%, ranging from 10 to 33% [6]. The data from which this statement is derived are not presented in detail, and it is thus not possible to examine how these 2 year rates relate to the number of prior convictions, which among other things may be part of the explanation for the variation observed.
- Finally the evaluation of the drink driver rehabilitation courses in England and Wales [7] [8] suggest control arm reconviction rates over 4 years of about 2.8 per 100 per annum in non-HROs and 4 per 100 per annum in HROs.

Whilst the data from other sources prompt serious consideration of whether analysis of routine data provided by report TRL 524 [1] are under-estimates, there are on balance more reasons to believe the estimates of reconviction rates from these other sources may over-estimate them, in particular because:

a) they less clearly relate rates to the number of prior convictions and/or
b) they are less precise about the duration over which the re-convictions accumulate and/or
c) they relate to countries where the criteria for conviction may be lower and/or
d) they may be more vulnerable to chance variation because sample sizes are small

Nonetheless the data from other sources provide a useful context in which to consider the re-conviction rates derived from the TRL report 524 [1] and reinforce the pattern and extent of variation in reconviction rates depending on number of prior drink-drive convictions in particular.

4.1.2 Rates of alcohol abuse and dependency (question b)

Only one study was identified directly addressing the rates of alcohol use disorder in convicted drink-drivers [9]. Korzec et al reviewed attempts to assess the prevalence of alcohol use disorder in people with drink-driving offences of various types. Korzec et al also conducted a prospective assessment of a variety of different strategies to identify the presence of alcohol use disorder in 241 consecutive male DUIs referred for medical examination between September 1996 & May 1998 in Holland. The results of this second

component of the paper are considered in more detail in relation to the question concerning identification of alcohol use disorder (question c)).

The review by Korzec et al is unfortunately not systematic, but is reported because it is the only summary encountered addressing the prevalence of alcoholism in drink-driving populations. No details of the search strategy or any aspect of the method are provided. It does however, confirm that good studies addressing this issue may be sparse, for although 17 studies are identified from the mid-80's (presumably up to near the publication date of 2001), only two of the studies use DSMIII to assess the true level of alcohol use disorder which was assessed to be 27% and 54% in 500 and 461 persons respectively. The other studies generally appeared to use a variety of biochemical markers such as carbohydrate-deficient transferring (CDT), gamma-glutamyltransferase (γGT) and mean corpuscular volume (MCV) to assess "true" level alcohol misuse or dependency. Korzec et al claim that the results from these studies support a prevalence of Alcohol Use Disorder (AUD) between 25 & 50%. In Korzec et al's own study 46% were identified as having alcohol use disorders using an extensive clinical diagnostic procedure. However even this they felt underestimated what they believed to be a true prevalence of 74% and 82% based on the measured levels of CDT or γGT interpreted in the light of known test sensitivity and specificity. Unfortunately there is circularity in the argument concerning use of sensitivity/specificity used in this way which may undermine the validity of these upper estimates. Although this approach to establishing true levels of alcohol dependency holds some merit, further investigation would be required. The accuracy of the estimates based on the clinical diagnostic procedure are less contentious. The clinical diagnostic procedure is described in detail but is summarized as "diagnosis reached through clinical judgment after evaluation of all available data, according to usual clinical practice."

4.1.3 Frequency of drink-driving in those with alcohol abuse and dependency (question d)

Unfortunately no studies were identified addressing this question. Re-scrutinising the search strategies used suggests it is possible that some studies addressing this may have been overlooked. However, the scarcity of the studies addressing the converse relationship in question b) above also indicates that there may be a true absence of studies, particularly if quality of study is taken into account. If this question is still felt to be particularly important after this report is considered as a whole, we would suggest that the searches on this issue be extended.

4.2 Identification of alcohol dependency (question c)

4.2.1 General

Ideally assessments of how good various methods of identifying alcohol use disorders are will involve independent comparison of the "diagnosis" obtained in a person with the method under investigation, with the "diagnosis" arrived at in the same person by the best available method, sometimes referred to as the gold or reference standard. In general the literature on this topic regards detailed assessment using ICD10 or DSMIV directly as the reference standards. However while this seems reasonable in populations where there is little motive to deceive an interviewer, the appropriateness of interviewer based methods in situations where there may be motivation to deceive, such as where a driving licence may continue to be withheld, can be questioned. For this reason we felt that assessment of accuracy of identification must be

assessed in the population of direct relevance to the DVLA. We do not thus present the wealth of data available on accuracy of tests to identify alcohol use disorders in general or at risk medical populations in detail. We do give an indication of its nature and extent, in case it is decided in contrast to our view that it is reasonable to apply the evidence in these populations to drink-drivers and high risk offenders.

4.2.2 Identification in general populations

Numerous reviews, many of which were systematic in approach, were identified. These provide good summaries of information on the accuracy of short self-report tools such as CAGE, MAST and AUDIT [10] [11]. Although there is not complete unanimity, such self-report instruments are felt to have acceptable sensitivity and specificity in general medical populations. The validity of such questionnaires has been examined in women [12], older persons [13] and psychiatric settings [14] and the importance of considering the context in which the tests are done is emphasised. In this respect it is therefore important that the validity of the self-report in drink-drivers and high risk offenders does not appear to have been heavily investigated.

There are systematic reviews summarising the accuracy of the frequently used biochemical tests for assessing alcohol misuse and damage stemming from it:

- MCV [15]
- AST/ALT [15]
- γGT [15] [16]
- CDT [16] [17]

In addition there are narrative reviews pointing to new potentially valuable tests such as 5-hydoxytryptophol [18] and ethyl glucuronide [19]. The reviews indicate that sensitivity and specificity of the more established tests, although imperfect and highly variable, are still at levels which make them valuable in diagnosis and monitoring. CDT is claimed by Salaspuro [17] to have better test accuracy than other tests, but a more recent systematic review by Scouller et al [16] challenges this judged against γGT and indicates that the relative accuracy may vary with different CDT assays.

Finally we identified several individual studies, not systematically reviewed, suggesting that in a clinical setting the accuracy of self-report tests, particularly CAGE, is better than biochemical tests [20] [21] [22].

4.2.3 Identification in convicted drink-drive populations, especially high risk offenders

There were no systematic reviews of evaluations of test accuracy of any of the commonly used methods of identification, either short self-report tools or biochemical measures, in drink-drive populations or high risk offenders. As has already been indicated, this is likely to be important particularly in the case the self-report instruments, but even in the case of biochemical tests it may be important to confirm that estimates of test accuracy derived in general medical populations apply in drink-drive populations.

Only one study, by Korzec at al [9] was identified which directly addressed the accuracy of identification of alcohol dependency in drink-drivers. We undertook additional specialist searching to ensure that no similar study to this had been published and checked other articles that had cited the study by Korzec et al. The study involved examination of 241 consecutive male drink drivers referred for medical examination in Holland between September 1996 and May 1998; 29 of these were not included in the final analysis because

of incomplete clinical or blood test data. The circumstances in which drivers under the influence are referred for medical examination are reported, and appear to be very similar to the criteria for high risk offenders. Thus the accuracy data is most likely to apply to this group in the context of England and Wales.

The medical examination comprised a wide range of components including a full clinical history and examination, structured clinical interview and CAGE questionnaire, and a battery of biochemical tests including MCV, γGT, AST/ALT and CDT. Decisions on whether the subject had AUD in the previous 3 months were then made using sub-sets of all the material collected in the following three ways:

- Diagnostic procedure 1: SCID. The information used in the diagnosis was restricted to information from the Structured Clinical Interview
- Diagnostic procedure 2: RDP. This was designed as a "restrictive diagnostic procedure" maximizing reliability and specificity. Described in detail in the paper, AUD was diagnosed if the SCID was positive OR there was a specified combination of elevated biochemical tests OR there were raised biochemical tests in combination with clinical signs.
- Diagnostic procedure 3: CDP. As previously stated the clinical diagnostic procedure involved using clinical judgment after evaluation of all available data

An important methodological issue is whether the decisions made under each of the procedures were independent and blind of each other; whether this was the case is not reported.

With this strong caution the test performance of each procedure was described as (+ = number identified as AUD by the particular diagnostic procedure - = number identified as <u>not</u> AUD):

- SCID: + 8; -204; prevalence of AUD 3.8%
- RDP: + 50; -162 (but includes 21 probable and 59 possible AUD); prevalence of AUD 23.6%
- CDP: +97; -115; prevalence 45.8%

This suggests that it is possible to increase the level of identification of alcohol misuse and dependency. Unfortunately the sensitivity, specificity, likelihood ratios and their 95% confidence intervals were not calculated. The abstract comments on the unacceptably low specificity of CDP, but it is not clear what the basis for this statement is. Enthusiasm at finding a directly relevant study must thus be tempered somewhat by shortcomings in the study's conduct and reporting.

4.2.4 Identification of convicted drink-drivers most likely to re-offend

If the concept of likelihood of harm is extended beyond identification of alcohol dependency to likelihood of reconviction, the follow-up studies of the Alcohol Ignition Interlock may also be of interest [4 23 24 25]. Given that high risk offenders are already in a position where they know their livelihoods depend on not drink-driving, one could make a strong case that repeat offence is of itself strong evidence of "persistence in alcohol use despite harmful consequences" and inability to control drinking, which are key components of the definition of alcohol dependency. The use and evaluation of the Alcohol Ignition Interlock as a device to stop re-offence are well known, but the studies in question relate to an extension of its use in which the data collected in the period when the Interlock is fitted can be used to predict the likelihood of re-offence. Although the ideal criteria may not yet have been optimized, there seems to be early evidence that frequency of high and borderline readings, particularly when measured at certain times of the day, may be as predictive of re-offence as number of prior DUIs [4]. What is not clear is whether Interlock identifies the same or

additional people i.e. the evidence on how prior DUIs and other risk factors interact with Interlock data is not fully investigated.

5 Conclusion

5.1 Main findings

It is disappointing that the research we have identified does not address all the questions posed, and even where present may be undermined to some degree by bias.

However, there are good data on reconviction rates which confirm that HROs, particularly those where the reconviction occurs within 3 years, are at much higher risk. Data on the association between drink-driving and alcohol misuse is sparse, but what data there is indicates high rates, certainly much higher than suggested by current rates of extension of disqualification on medical grounds. Concerning improving identification of those with alcohol dependency, a great deal of information exists on the accuracy of self-report and biochemical measures. However, debatably, this is not applicable to drink-drivers and high-risk offenders. A single directly relevant study, which does have flaws, suggests that combinations of clinical and biochemical can improve identification. It claims there is an unacceptable “cost” in terms of false-positives, but the paper does not provide the data to support this claim. Ideally an economic model would be helpful to assess whether the trade-off was acceptable in a situation where medico-legal costs are highly influential. Finally a number of studies suggest that data collected from Alcohol Ignition Interlock devices may help identify those most likely to re-offend.

5.2 Limitations of this Report

The main limitation on conclusions is the small amount of directly relevant material identified addressing the questions posed. Our inability to perform completely comprehensive searches in the time available may be partly responsible, and we are slightly concerned that this may have particularly affected the absence of research identified to answer d) concerning the proportion of those with alcohol dependency who commit drink-driving offences. We would be happy to extend our searches on this if the question was felt to be of particular importance. As already stated the fact that this is not a true systematic review may mean that bias in the conclusions has not been minimized to the greatest extent possible. However, when the main challenge is poverty of information, this problem may be less critical.

5.3 Comparison with other assessments of these issues

We are not aware of any similar attempt to ascertain information across the range of questions requested.

5.4 Implications for DVLA procedures

The limited data as presented appear to us to be insufficient to dictate any major change in policy, although these may be enacted for other legitimate reasons. Some of the information does appear potentially useful in informing discussion about future directions of the HRO scheme, and amplifications to the procedures to improve detection of those at most risk of further offences.

5.5 Implications for further research

There is a high level uncertainty about the answers to most of the questions addressed. This suggests an opportunity for further research in many areas. However the applicability of tests to identify alcohol dependency in general medical populations to drink-drivers would seem to have a special priority in the context of the underlying issue we were asked to address. The uncertainty observed also suggests that any changes that are implemented should be evaluated.

6 Appendices

6.1 Appendix 1 – Details of Request

ARIF REQUEST FORM

Date of Request	14 / 07 / 05

Lead Medical Adviser Issuing request	Name – Dr Delyth Sheppard Secretary to the Alcohol, Drugs and Substance Misuse Panel

Contact details	Drivers Medical Group DVLA Sandringham Park Swansea Vale Llansamlet Swansea SA7 OAA Email: [redacted]

1. Without worrying about the structure of the question, state in full the nature and context of the problem.

We want to know about:-

(e) The recidivist behaviour to repeat drink driving offences, i.e. how many first time drink-drive offenders go on to have a second (or third offence), and how many second time offenders have further offences, over a ten year period from date of index offence and

(f) the frequency of harmful and/or dependent drinking in convicted drink/drivers, i.e. what proportion of convicted drink-drivers meet the ICD criteria for (i) harmful and (ii) dependent drinking including if possible age/sex profiles; similarly for DSMIV equivalence

(g) the evidence of features of alcohol dependency with reference to ICD10 and DSMIV i.e. what key features of these criteria can most readily be identified.

(h) In patients with diagnosed alcohol dependency (ICD10 criteria) what proportion have drink-drive conviction(s).

2. Please give a background to the question. Why has DMG raised this problem?

To underpin the High Risk Offender (HRO) workshop and review of the HRO Scheme.

Out of approximately 30,000 offenders per annum, 45% are first time offenders over 2½ times the legal limit. 45% are offenders who have two offences in 10 years and 10% will have failed to provide a specimen.

Out of these cases only 5.7% will have their application refused for medical reasons i.e. we can identify only 4.5% with clear alcohol dependency or "alcohol misuse" using our current criteria. We are considering amending our assessments to more closely reflect ICD10 and/or DSMIV definitions.

40% of appeals are alcohol cases.

3. Giving references where appropriate, briefly detail the sources you have used to obtain background information on the *options* and *issues*, which might be important for the problems, you describe.

(a) At a Glance Guide to the current Medical Standards of Fitness to Drive February 2005. Chapter 5 Drug and Alcohol Misuse and Dependency and Appendix

(b) Legislation regarding HROs

(c) Best Practice Guidelines for Alcohol Cases, March 2002

(d) Best Practice Guidelines for High Risk Offender Cases, March 2002

(e) DSM IV

(f) Official journal of the European Communities, Second Directive Annex 3

(g) Ex-post evaluation of specific projects funded under the Transport Safety Policy Final Report – EuroBob, August 2004

ICD10 – F10.1 alcohol abuse
F10.2 alcohol dependence

4. Please give name and contact details of any expert or clinical contact e.g. relevant Panel Chairman/ expert Panel member.

Dr Bruce Ritson (Chairman)
MD Ed FRCP Ed FRCPsych
4 McLaren Road
Edinburgh EH9 2BH

[redacted]

Dr Michael Farrell (Panel Member)
LRCPI
& Lm LRCSI & Lm MRCP MRCPsych
Consultant Psychiatrist
South London & Maudsley NHS Trust
Addiction Resource Centre
63-65 Denmark Hill
Camberwell
London SE5 8RS

[redacted]

European Commission
[redacted]

5. What is the nature of the target population of the issue detailed above? E.g. age, profile, vocational drivers, young drivers, other co-morbid features.

Co-morbidity features – illicit drug misuse including cannabis

6. What are the outcomes you consider particularly important in relation to the question posed? What decisions rest on these outcomes?

To help:-

(a) Seek the right sorts of questions and information from doctors about patients in order to accurately identify harmful or dependent drinking and thus

(b) To decide when it is safe and appropriate to issue a licence

(c) The duration of that licence (this relates to the risk of further relapse or harmful drinking over a given period)

What is the latest date that an ARIF response would be of value | 1 / 10 / 05 |

Please either:

Fax this form to: 0121 414 7878 marking FAO ARIF

E-mail as a word document or pdf attachment to: d.j.moore@bham.ac.uk

Post to:- Dr David Moore
Senior Research Reviewer and Analyst
Aggressive Research Intelligence Facility
West Midlands Health Technology Assessment Collaboration
Department of Public Health
University of Birmingham
Edgbaston
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B15 2TT

Please ring 0121 414 3166 or 6767 if you have any queries, or you want to check the progress with your request.

6.2 Appendix 2 – Search strategies

6.2.1 ARIF Reviews Protocol

SEARCH PROTOCOL FOR ARIF ENQUIRIES

(Feb 2005)

In the first instance the focus of ARIF's response to requests is to identify systematic reviews of research. The following will generally be searched, with the addition of any specialist sources as appropriate to the request.

A. Cochrane Library

- Cochrane Reviews
- Database of Abstracts of Reviews of Effectiveness (DARE)
- Cochrane Central Register of Controlled Trials (CENTRAL)
- Health Technology Assessment (HTA) database

B. ARIF Database

- An in-house database of reviews compiled by scanning current journals and appropriate WWW sites. Many reviews produced by the organisations listed below are included.

C. NHSCRD (WW Web access)

- DARE
- Health Technology Assessment Database
- Completed and ongoing CRD reviews

D. Health Technology Assessments and evidence based guidelines(WW Web access)

- NICE appraisals and work plans for TARs, Interventional Procedures and Guidelines programmes (NCCHTA work pages:www.ncchta.org/nice/)
- Office of Technology Assessment
- NHS Coordinating Centre for Health Technology Assessments
- Canadian Co-ordinating Office for Health Technology Assessment
- New Zealand Health Technology Assessment
- Wessex STEER Reports
- Agency for Healthcare Research and Quality (AHRQ)
- National Horizon Scanning Centre
- SIGN (Scottish Intercollegiate Guidelines Network)

E. Clinical Evidence

F. Bandolier

G. TRIP Database

H. Bibliographic databases

- Medline - systematic reviews
- Embase - systematic reviews

- Other specialist databases.

I. Contacts

- Cochrane Collaboration (via Cochrane Library)
- Regional experts, especially Pharmacy Prescribing Unit, Keele University (&MTRAC) and West Midlands Drug Information Service (url: www.ukmicentral.nhs.uk) for any enquiry involving drug products

6.2.2 Primary studies

Ovid MEDLINE(R) 1966 to August Week 5 2005

1 exp alcohol drinking/ or drink driver$.mp. or exp automobile driving/
2 cohort study.mp. or exp cohort studies/
3 1 and 2
4 drink driv$.tw.
5 2 and 4

Ovid MEDLINE(R) 1966 to August Week 4 2005

1 (meta-analysis or review literature).sh.
2 meta-analysis.tw.
3 (systematic$ adj4 (review$ or overview)).tw.
4 meta-analysis.pt.
5 review.pt.
6 case reports.pt.
7 letter.pt.
8 historical article.pt.
9 review of reported cases.pt.
10 review multicase.pt.
11 review.ti.
12 1 or 2 or 3 or 4 or 5 or 11
13 6 or 7 or 8 or 9 or 10
14 12 not 13
15 animals/
16 human/
17 15 not (15 and 16)
18 14 not 17
19 exp alcohol induced disorders/
20 exp alcoholism/
21 exp alcohol drinking/
22 alcohol related disorders/
23 (problem drinking or alcohol dependent or alcohol dependency or alcohol misuse or alcohol abuse).mp.
24 or/19-22
25 23 or 24
26 limit 25 to "diagnosis (optimized)"
27 limit 24 to "diagnosis (optimized)"
28 18 and 26
29 18 and 27
30 28 or 29
31 limit 25 to "diagnosis (specificity)"
32 limit 24 to "diagnosis (specificity)"

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