Alcohol etc. (Scotland) Bill

Nick Sheron on behalf of British Journal of Hospital Medicine

Why we need a national strategy for liver disease

For the last 10 years the British Association for the Study of the Liver and the British Society of Gastroenterology Liver Section have been campaigning for greater recognition of liver disease as an important priority for the NHS. Deaths from liver disease are escalating at a frightening rate (Figure 1) (British Association for the Study of the Liver, 2009). Based on current trends, the death rate from liver disease will exceed cardiac deaths by 2030. This needs to be reversed before we get to this ridiculous scenario – over 95% of all liver diseases are entirely preventable or treatable, and deaths from liver disease occur at an average age of 55 years rather than ~82 years for cardiac disease or stroke. To stop this we need to reduce the rising tide of alcoholic liver disease and fatty liver disease, and actively treat the increasing number of patients with chronic hepatitis B and C.

The Department of Health have just announced that they plan to have a National Strategy for Liver Disease, and Dr Martin Lombard of the Royal Liverpool University Hospital has been appointed as the new national Clinical Director for Liver Disease. Dr Lombard has all the credentials as an innovative clinical director locally, as well as being placed in a university liver unit that does not undertake liver transplantation, and can therefore be seen to be a fair player to all.

What is the problem?

The UK faces an increasing burden of liver deaths with decreasing budgets, so the main task will be how to improve the quality of liver services while cutting costs. These two aims seem diametrically opposed, yet both are possible. One of the over-riding priorities to achieve this must be to ensure that there is a trained hepatologist in every district general hospital in the UK. Many patients are still being managed by consultants who are relatively inexperienced in treating liver disease.

We must be innovative, and collect data that will help us determine the best patient pathways and outcomes for the future. We need to establish local databases that capture information and outcomes in primary and secondary care and are built on a standard platform so that we can analyse data nationally as well as locally. At present the NHS does not know how many patients with hepatitis C have been treated, how much it has cost or the outcomes. Given the millions of pounds spent, this is outrageous. We will come back to this, and how it might work, later.

Reducing alcohol-related deaths

The almost sixfold increase in liver deaths since 1970 is largely the result of
alcohol-related cirrhosis; if we are to reduce these deaths we must address the underlying cause. Since 1970 alcohol sales have moved away from specialist pubs and wine merchants. Now this dependence-inducing drug is just another supermarket commodity, to be piled high in as many places as possible and sold as cheaply as possible – sometimes at a loss to drive footfall. Coupled with this, the drinks industry lobby has driven down levels of taxation. Compared with 1979 a deliberate softening of taxation means that beer is 170%, wine 280% and spirits 350% more affordable.

One has to drink lot of alcohol to develop cirrhosis, around 50 000 units or an average of 100 units/week for 10 years or more. At the time of writing (November 2009) Tesco’s cider sells at £1.21 for 8.4 units (15p/unit), meaning that a cirrhotic liver costs a mere £7800 – the price of a good second-hand car. If the government took the Chief Medical Officer’s advice and brought in a minimum price of 50p/unit, this cost would rise to £25 000. Since 1980 the ‘elasticity’ of liver deaths in response to the affordability of alcohol is two-fold – a 25% increase in price would cause a 50% fall in liver deaths. According to Department of Health figures, hazardous and harmful drinkers consume more than three-quarters of all the alcohol sold; the massive supermarket profits from cheap booze have a terrible cost attached, and liver patients have been paying the price.

Despite the fact that a minimum price policy would not affect the price of a pint in a pub (because of the mark up), the power of the industry lobby means that it is still a long way off. In the meantime liver-related deaths and admissions will continue to rise. Many patients with alcoholic liver disease are not severely alcohol dependent, they just drink too much, and are responsive to medical advice and interventions. A brief intervention might include a visit from an alcohol liaison nurse to a patient admitted with alcohol intoxication or an alcohol-related injury. At this point, such an intervention has a one in eight chance of altering the patient’s life style, which makes this both effective and highly cost effective.

Once a patient presents to hospital with alcoholic cirrhosis, he or she has a 75% chance of being dead within 4 years if he or she continues to drink, and an 80% chance of being alive at 10 years if he or she stops drinking. By joining up the specialist expertise of addiction psychiatrists and hepatologists through specialist alcohol nurses it is possible to significantly improve outcomes and save the NHS money at the same time by reducing re-admission rates.

We need to alter the perception of alcohol – at present it is largely seen as fun and harmless. However, people are vain. The anti-smoking campaign succeeded partly because it emphasized the effects of smoking on how you look and how you smell. Drinking to excess regularly makes you fat, gives you a red blotchy face, makes you age quickly, lose your memory, lose your driving licence, lose your job, lose your life through liver or cardiac disease – we could go on. The government could do so much more. We hope the National Strategy for Liver Disease will focus on these issues first and foremost.
Fatty liver disease

At present fatty liver disease is not a major cause of death, but it will be unless we do something about it now. The most common reason for referral to hepatologists in the UK is for investigation of abnormal liver function tests. Some of these patients have alcoholic liver disease or chronic viral hepatitis, and some have other treatable causes of liver disease such as haemochromatosis, autoimmune hepatitis or rarely Wilson's disease, but most have fatty liver disease. Fatty liver disease can be divided into those with simple steatosis (i.e. fat in the liver but little inflammation) and those with steatohepatitis. Some of these cases are caused by alcohol, but most are caused by being overweight and taking no exercise.

How can we deal with this increase in referrals? All such patients should first be investigated in primary care, ideally by a GP experienced in such matters. We need a web-based decision support tool, similar to that developed by Fox et al (2009), which feeds and captures data into the local database held at strategic health authority level. Ideally all these databases would be identical to allow the creation of a national database.

GPs are used to calculating cardiovascular risk. These programmes would be similar except they would state what tests need to be done and what the most likely diagnosis is, with clear advice when to refer a patient. Importantly they would capture the data, link it to an NHS number and this would be linked to the Office for National Statistics, which provide data on deaths and mortality, so that we could establish in the long term the overall risk of death in patients with abnormal liver function tests or a particular diagnosis. It may be (we don't know) that we should follow the advice of some and undertake liver biopsies on all patients with abnormal liver function tests, but this could be done as a one-stop shop with hepatologists only seeing patients with significant fibrosis or inflammation rather than those with simple steatosis. Some may see such advances as dumbing down the importance of clinical medicine, but the reality is that current practice is not working.

These algorithmic approaches could link into a primary care centre that treats hepatitis C, as long as it is part of a managed clinical network that monitors all patients treated with hepatitis C so that both doctors and the Department of Health know the cost effectiveness of treatment.

Hepatitis

Finally, we need to identify patients at risk of chronic hepatitis B or C. Immigrants and prisoners need screening, and we also need to screen all who have injected drugs in the past. The authors still see ‘respectable’ patients who injected in the 1970s and are HCV positive. We need to actively seek those at risk and treat the treatable to reduce the risk of cirrhosis and liver cancer.

Conclusions

One of the most difficult aspects of liver disease to address will be the link
with deprivation. Liver mortality rates are between three and five times higher in the most deprived compared with the least deprived sections of society. The underlying reasons for these linkages are unknown, differences are to some extent independent of alcohol intake, and diet and nutrition must be very strong candidates. More research is needed, and liver services need to reach into those communities most at risk and most resistant to behaviour change. It is only when lots of measures are undertaken that we will decrease the increasing burden of liver disease in the UK. **BJHM**

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**KEY POINTS**

- The Department of Health has announced a national strategy for liver disease.
- To improve the quality of health care while cutting the rising mortality from liver disease the strategy should consider the following:
  - A trained hepatologist should be available in every district general hospital.
  - There should be national guidelines on the management of abnormal liver function tests, with a web-based decision support tool to enable the prospective collection of data, so that the risks and outcomes in patients with abnormal liver function can be assessed.
  - There needs to be a much tougher alcohol strategy that develops alcohol liaison services (as already planned) and increases the price of alcohol.
  - We need to actively seek and screen patients at risk for chronic hepatitis B and C so that they can be treated if indicated.

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An evidence based alcohol policy.

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In October 2007 the BBC performed a survey of British Society of Gastroenterology members in which they asked a number of questions about the changing patterns of alcohol related disease they were seeing in the UK. Of the 115 responses, only 9 had seen no change in alcohol-related liver disease over the last 10 years; 92% reported a rise, usually large. Recurrent themes were the increase in women presenting with alcoholic liver disease and the younger age of presentation. Nearly three quarters of responders had seen patients of 25 or under with alcoholic hepatitis or cirrhosis, and nearly a quarter had patients in their late teens. These depressing findings are in line with the report by the chief medical officer in 2001: 'In the last 30 years of the 20th Century deaths from liver cirrhosis steadily increased, in people aged 35 to 44 years the death rate went up 8-fold in men and almost 7-fold in women, in 25–34 year-olds a 4-fold increase was seen over the 30 year period'. The UK situation is in stark contrast to the decrease in liver mortality in Mediterranean countries over the same period of time (figure 1).

So why is the UK facing this increase in liver deaths when mortality elsewhere is falling? According to death certification data more than 80% of UK liver deaths are due to alcohol related cirrhosis[1]. Other causes of liver disease are also increasing - for example steatosis and viral hepatitis, but only 205 out of 6,889 reported liver deaths in 2005 were due to viral hepatitis[2]. While viruses and more importantly steatosis secondary to obesity[3] may be co-factors in some cases, the evidence suggests that it is our drinking habits that are the problem.

Since 1970 the standardised death rate (SDR) for cirrhosis increased from 1.83 to 9.49, a rise of over 400%, whereas UK alcohol consumption increased by 45% - a gearing of almost 10 fold (figure 2). If we look at alcohol consumption and cirrhosis mortality over the last 30 years in Europe there is a clear link between alcohol consumption and liver death rates[4]. The relationship differs between countries. Finland has a higher liver death rate for a given alcohol consumption than France and the UK; Spain and Italy are intermediate. A number of co-factors may influence this relationship, including genetics, diet, drinking patterns, and the relative importance of these factors remains to be determined[4]. The Loess line of best fit in figure 2 is sigmoid; this may be a consequence of the complex nature of the relationship for toxicity of alcohol on the liver. Most alcohol-induced disease increases in a linear fashion as intake increases; oral, oesophagus, breast and colon cancer fall into this pattern[5], with no ‘safe level’ of consumption. In contrast cirrhosis
rate increases slowly to a threshold of about 30 units, above which a marked increase occurs - the shape of the risk curve is sigmoid. The European data also show that as deaths increase from a low baseline (Finland, UK and Ireland) they lag behind increases in alcohol consumption. Ireland is still in this honeymoon phase with remarkably low levels of reported liver deaths despite large increases in alcohol consumption (figure 2). There is unfortunately no evidence that Irish stout has miraculous properties - at least as far as the liver is concerned – and this paradox most probably results from inaccurate death certification. Irish death certificates underestimated liver deaths by at least 3 to 1 in the past [6;7]. The same is probably true of England and Wales, although accuracy improved after changes to coroner’s rules in the late 1980’s [8], suggesting that UK liver death rates were underestimated as alcohol consumption rose in the 1960’s. The UK figures now appear to be consistent with the data from the rest of Europe – but in contrast to many parts of continental Europe, UK liver death rates are still increasing.

So what are the options for reducing mortality from liver disease? The development of liver disease is a silent process, with few signs or symptoms at an early stage. As a result, patients present with features of advanced disease, such as variceal haemorrhage or ascites, and resources are concentrated on managing these often terminal crises. It is not surprising that, despite advances in endoscopy, liver transplantation and critical care, survival figures have not improved greatly over the last 30 years and remain at around 50% overall [9]. The key to reducing liver mortality is to reduce consumption, and strategies to do this fall into two broad categories. The first option is to reduce the overall alcohol intake of the population, the second is to specifically target heavy drinkers – individuals at high risk of cirrhosis.

Reducing overall alcohol intake is generally the favoured public health approach. If done via taxation it has a targeted element, in that it affects heavy drinkers more than light ones. It is effective in reducing not only alcohol related disease but also passive damage from alcohol misuse. In the UK alcohol is implicated in around half of all homicides, and nearly three-quarters of domestic violence, sexual assault and rape[10] – the passive effects of smoking on health were important in preparing public opinion for the ban on smoking in public places but are minor when compared to the third-party damage from alcohol. An excellent example of the effectiveness of reducing population alcohol consumption is the crackdown introduced by Mikhail Gorbachov in Russia in the mid 1980’s – as a result of which deaths rates dropped dramatically. Over 1.2 million lives were saved over five years - half of them from reduced accidents, violence and poisonings. Unfortunately many of these saved lives were then lost in a rebound of deaths that followed the free market reforms of Boris Yeltsin[11;12].

Alcohol is subject to the same factors that determine sales of any other product - namely the 4P’s of marketing theory: price, product, promotion and place of sale. All these factors have changed substantially in the last thirty years. Alcohol has become increasingly affordable as a result of increases in
living standards - and by 2003 was more than fifty percent more affordable than in 1980 [13]. The consequences of this are stark (figure 3).

Alcoholic drinks have also increased in strength, 5% alcohol by volume (bv) lager has largely replaced 3.5% bv beer - a forty percent increase. Similarly most wine sold at supermarkets is no longer 10-12% but 14-15% bv, the point at which duty increases to the next threshold. Promotion includes £250 million spent on direct alcohol advertising and a greater sum spent on other forms of marketing – much of it directed towards young people. These marketing techniques include the sale of alcohol in larger measures - a large pub measure of wine contains around 3.5 units, an increase of 350%. Similarly spirits measures in many pubs have gone up from 25 to 35cl – a forty percent increase. Finally the retail outlets have changed markedly. Pubs, particularly in city centres, have become standing –only (vertical drinking) establishments with extended hours, and off-sale outlets have become dominated by supermarkets, whose purchasing power encourages heavy discounting and loss-leaders. [14;15]. Traditional pubs and independent wine and spirit merchants have struggled against this competition.

The strategies that effectively reduce overall alcohol consumption have been subject to extensive expert review by the World Health Organisation [16], the Academy of Medical Sciences [17], and on behalf of the European Commission [4]. The unanimous conclusion of these evidence reviews is that the most effective means of reducing consumption and alcohol related harm is to tackle price. If this is mediated through excise duty, it has the added benefit of increasing income to the government for other effective interventions [18]. Furthermore the burden of increased taxation is directly proportional to levels of consumption; according to the Pareto principle – another useful concept from marketing theory – 80% of sales of any product are to the 20% of heaviest consumers [19].

Restrictions on the promotion of alcohol are also effective, countering the influence of alcohol marketing on the drinking habits of children and young people[20]. The de-regulation of alcohol controls in Nordic countries has been extensively and reviewed [21;22]. Major changes include; abolition of rationing in Sweden in 1955 (25% increase in sales, 400% increase in admission for DT’s), introduction of beer sales in groceries in Finland in 1969 (248% increase in sales, and large rises in morbidity and mortality) and the introduction in 1965 then removal in 1977 of medium beer sales in groceries in Sweden (notable effects in younger drinkers). Although some of these changes were marked - on the whole the effect of changes in availability is less consistent and predictable than changes to the price of alcohol. The effect of the current UK experiment with licensing laws is yet to be determined - perhaps unsurprisingly there few signs of the promised “continental-style café culture”.

According to the model constructed by the WHO, increased taxation is the most effective tool, followed by restrictions on promotion and finally by reducing the availability of alcohol. The alcohol industry and the UK government have favoured an emphasis on education- and information-based
initiatives. There is no evidence [4] that these approaches reduce alcohol related harm although an evidence base is emerging in other areas public health areas[23], and in the longer term these measures may turn out to be effective. Information, advice and education campaigns may be important in changing attitudes and in preparing public opinion for the introduction of effective measures, but appear ineffective when used alone [24].

Young people suffer disproportionately from a high alcohol related mortality. In Europe around 25% of young male and 10% of young female deaths are alcohol related [4] and these are reduced by measures aimed at the per capita consumption. Interventions specifically targeted are disappointing in reducing young deaths, with some exceptions. For example, random breath testing [4] and plastic beer glasses [25] both have a strong evidence base.

Seeking to change the drinking behaviour of patients is a challenge to all hepatologists and gastroenterologists on a daily basis, but it is possible to make a difference. Not everyone with physical harm from alcohol is heavily dependent, and it is often easier to stop or curtail someone’s drinking than to get them to lose weight. When patients have advanced liver damage we can give stark odds of imminent death if they continue drinking and given appropriate support 30-60% of patients with cirrhosis will stop drinking[26;27]. Unfortunately for many, this advice this comes too late. Figures from ‘Alcohol Concern’ and confirmed in the BBC survey suggest woefully inadequate specialist alcohol services in most parts of the UK. ‘Brief interventions’ (BI) have been developed to change the behaviour of subjects without evidence of moderate to severe dependency alcohol dependence or alcohol related disease and have been the subject of many randomised controlled trials [28]; they are both effective and cost effective [29] but require resources to implement and these have been difficult for local services to find. For example no central funding came with the Alcohol Harm Reduction Strategy for England (AHRSE) in 2004, compared to £1.4bn attached to a national drug strategy. Early detection of physical damage would make it possible for interventions to be more targeted, timely and personalised, and hence more effective [30].

With alcohol consumption and liver deaths still increasing, in 2007 a number of Royal Colleges Learned Societies, charities, NGO's and others, including the British Society of Gastroenterology and the British Association for Study of the Liver, formed the UK Alcohol Health Alliance (UK-AHA) with the aim of promoting evidence based measures to reduce alcohol related deaths in the UK. These include: funding of improved treatment, intervention and prevention services; increasing alcohol taxation; reducing promotion and marketing of alcohol to children; and specific measures to reduce drink driving. An increase in taxation by 25% would cause a significant reduction in liver deaths, and would provide more than £4 billion in extra income to tackle the whole spectrum of alcohol related harm. The increase in alcohol duty in the 2008 budget represents a step in the right direction, although there is a concern that the increase is likely to be absorbed by producers and retailers rather than passed on to consumers. One of the turning points in the long fight against smoking related disease was the informed involvement of chest
physicians in directing health policy. If we are to turn the tide of UK liver deaths, a similar level of informed debate amongst the UK hepatology and gastroenterology community will be an important factor.

**Standardised cirrhosis death rates in Europe over 30 years**

![Graph showing standardised cirrhosis death rates in Europe over 30 years.](image)

**Figure 1**

Over the last 30 years standardised cirrhosis mortality rates (cirrhosis deaths / 100,000 under the age of 64) have increased in the UK, Finland, Denmark and Ireland, countries where traditionally tight controls on alcohol have been relaxed, and decreased in the wine drinking countries of France, Italy and Spain where the traditionally high consumption of cheap wine with meals has reduced. The biggest drop is in France where strict controls (la loi Evin) on the promotion of alcohol were also introduced. Data obtained from the WHO HFA database[31].
Figure 2

There are clear correlations between liver death rates and overall alcohol consumption (Pearson correlation R=0.83, \( p<0.001 \)) but also country-specific differences in death rates at various alcohol levels. Finland appears to have a lower tolerance to alcohol than France or Spain, the UK being intermediate. The line of best fit was calculated using the Loess function in SPSS, data is from the WHO HFA database[31].
Figure 3

UK standardised liver mortality rates (deaths / 100,000) compared with trend in affordability of alcohol relative to 2005. The close temporal nature of the link reflects the acute on chronic nature of alcoholic liver disease mortality (data from WHO HFA-DB[31] and ONS: Statistics on Alcohol 2006 table 7.2 p71).
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