



Unacceptable failures: the final report of the *Lancet* Commission into liver disease in the UK

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This final report of the *Lancet* Commission into liver disease in the UK stresses the continuing increase in burden of liver disease from excess alcohol consumption and obesity, with high levels of hospital admissions which are worsening in deprived areas. Only with comprehensive food and alcohol strategies based on fiscal and regulatory measures (including a minimum unit price for alcohol, the alcohol duty escalator, and an extension of the sugar levy on food content) can the disease burden be curtailed. Following introduction of minimum unit pricing in Scotland, alcohol sales fell by 3%, with the greatest effect on heavy drinkers of low-cost alcohol products. We also discuss the major contribution of obesity and alcohol to the ten most common cancers as well as measures outlined by the departing Chief Medical Officer to combat rising levels of obesity—the highest of any country in the west. Mortality of severely ill patients with liver disease in district general hospitals is unacceptably high, indicating the need to develop a masterplan for improving hospital care. We propose a plan based around specialist hospital centres that are linked to district general hospitals by operational delivery networks. This plan has received strong backing from the British Association for Study of the Liver and British Society of Gastroenterology, but is held up at NHS England. The value of so-called day-case care bundles to reduce high hospital readmission rates with greater care in the community is described, along with examples of locally derived schemes for the early detection of disease and, in particular, schemes to allow general practitioners to refer patients directly for elastography assessment. New funding arrangements for general practitioners will be required if these proposals are to be taken up more widely around the country. Understanding of the harm to health from lifestyle causes among the general population is low, with a poor knowledge of alcohol consumption and dietary guidelines. The *Lancet* Commission has serious doubts about whether the initiatives described in the Prevention Green Paper, with the onus placed on the individual based on the use of information technology and the latest in behavioural science, will be effective. We call for greater coordination between official and non-official bodies that have highlighted the unacceptable disease burden from liver disease in England in order to present a single, strong voice to the higher echelons of government.

Introduction

In 2018's report, we wrote optimistically of a gathering momentum to address liver disease in the UK, and to some extent this has continued. However, this final report of the *Lancet* Commission is mainly concerned with a series of ongoing failures in terms of the continuing harmful effects on health resulting from lifestyle causes. The broadcaster Adrian Chiles, who had learnt of the dangers of heavy drinking before it was too late for him personally, has been powerful in advocacy and was instrumental in the BBC Panorama programme in June, 2019, directed at the lobbying power of the drinks industry and its influence on UK Government policy. Sadly, the past 12 months have seen no progress in institution of the regulatory and fiscal measures that are the only proven way of controlling overall alcohol consumption. The government's published Prevention Green Paper, entitled "Advancing our health: prevention in the 2020s",¹ while acknowledging the extraordinarily high numbers of people who are overweight or obese in the population, focuses mainly on tackling childhood obesity. Furthermore, for adults with obesity, the main funding commitment is for diabetes. The UK has the highest rate of obesity of any major nation in western Europe, and according to the latest report² by the

Organisation for Economic Cooperation and Development, conditions fuelled by excess bodyweight soak up more than 8% of health expenditure in the UK, while cutting life expectancy by an average of 2.7 years.

National Health Service England (NHSE) has announced new funding for alcohol care teams in hospitals³ that have the highest levels of admissions due to alcohol dependency, but with one in five patients in UK hospitals consuming alcohol at a harmful level and one in ten alcohol dependent,¹ many more hospitals will need to be included in the scheme.

Provision of adequate care and facilities continues to lag behind the continuing rise in hospital admissions of severely ill patients with liver disease, and mortality figures can only be described as unacceptable. Further work in 2019 has gone into developing a hospital masterplan based on networks of district general hospitals linked to specialist liver centres. But, as indicated in this section of our report, the proposals are held up awaiting endorsement by NHSE. Screening for early liver disease with transient elastography by general practitioners is worthwhile for detection of previously undiagnosed cases of cirrhosis at a stage when treatment measures can be effective. However, severe cuts in community alcohol and addiction services, as a result of the

reductions in public health spending, are likely to add to the difficulties.

A worrying new finding relates to the occurrence of neurocognitive impairment in infants and children with liver disease, raising issues over meaningful life outcomes. Also new to the Commission's work this year, and described in detail in this report, is a ComRes poll on public awareness of liver disease. The one encouraging event in recent months was a National Institute for Health Research broad call for research projects of a translational nature in liver disease, encompassing many of the recommendations made by the Commission.

Low public awareness of liver disease

Polling by ComRes between May 24–27, 2019, of 1616 British adults aged over 18 years, exposed a low level of knowledge about liver disease (panel 1). Participants were asked a series of factual statements that assessed their

knowledge of the causes of liver diseases and other elements of it. Questions were reviewed by ComRes consultants, who ensured validity of the facts and a balance of questions. 646 (32%) respondents, almost a third, wrongly believed that the burden and number of deaths caused by liver disease in the UK are falling year-on-year. Only 11% (218 respondents) correctly identified all three main causes of liver disease, while 26% (515 respondents) mistakenly thought that smoking was a main cause.

1793 (89%) respondents correctly identified harmful levels of alcohol drinking as part of the official drinking guidelines, but wrongly identified the weekly limit for men and women as over 14 units, as advised by the UK's Chief Medical Officers. In addition, 1228 (61%) respondents considered it possible to drink higher than the recommended levels of alcohol for years without noticing any apparent harm to health. 57% of alcohol

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Panel 1: Summary of key findings of the ComRes survey

ComRes interviewed 2016 British adults aged >18 years online between May 24–27, 2019. Data were weighted by key demographics, including age, gender, region, and social grade in order to be representative of all British adults. ComRes is a member of the British Polling Council and abides by its rules.

Burden of liver disease

In the UK, the disease burden and deaths caused by liver disease are falling year-on-year:

- True: 646 (32%) respondents
- False: 1370 (68%) respondents

Main causes of liver disease

*Which are the three main causes of liver disease?**

- Alcohol misuse: 1793 (89%) respondents
- Obesity: 813 (40%) respondents
- Viral hepatitis: 703 (35%) respondents
- All three above correctly selected: 218 (11%) respondents
- Smoking: 515 (26%) respondents

Misconceptions about alcohol misuse

You can drink higher than recommended levels of alcohol for years without noticing any apparent harm to your health:

- True: 1228 (61%) respondents (correct answer)
- False: 788 (39%) respondents

Estimated number of units per week as the official level for low-risk drinking according to the UK Chief Medical Officer's guidance:

- 14 units: 313 (16%) respondents (correct answer)
- More than 14 units: 259 (13%) respondents
- Less than 14 units: 786 (39%) respondents
- Do not know: 658 (33%) respondents

How, if at all, do you consider your current level of alcohol consumption to impact your health? Of those who drink alcohol (n=1660)

- No impact: 593 (57%) respondents
- Negative impact: 432 (26%) respondents

- Positive impact: 230 (14%) respondents
- Do not know: 50 (3%) respondents

Steps to combat alcohol misuse and obesity

To what extent, if at all, do you support or oppose each of the following measures aimed at reducing obesity?

Reducing the sugar content in foods:

- Net support: 1548 (77%) respondents
- Net oppose: 161 (8%) respondents
- Neither support or oppose: 218 (11%) respondents
- Do not know: 88 (4%) respondents

Making healthy food and drinks cheaper than healthier ones:

- Net support: 1632 (81%) respondents
- Net oppose: 82 (4%) respondents
- Neither support or oppose: 211 (10%) respondents
- Do not know: 91 (5%) respondents

To what extent, if at all, do you agree or disagree with each of the following?

Labels on alcoholic drinks contain enough information on health risks for the public to make informed choices:

- Net agree: 860 (43%) respondents
- Net disagree: 567 (28%) respondents
- Neither agree nor disagree: 434 (22%) respondents
- Do not know: 156 (8%) respondents

More calorie information on labels of alcoholic drinks would help consumers make more informed choices:

- Net agree: 1051 (52%) respondents
- Net disagree: 393 (20%) respondents
- Neither agree nor disagree: 472 (23%) respondents
- Do not know: 100 (5%) respondents

*Based on prompted responses, including a range of other options included in the survey (not listed: inherited genetic factors, blockages to the gallbladder, lack of iron in the diet, and sleep deprivation).

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For more on the ComRes survey see <https://www.comresglobal.com/polls/foundation-for-liver-research-public-polling/>

drinkers claimed that their current level of consumption had no effect on their health, while only a quarter (26%) recognised it had a negative effect. Only 860 (43%) respondents agreed that labels on alcoholic drinks contain enough information on the health risks for the public to make informed choices, emphasising the need for more accurate and comprehensive labelling of alcoholic beverages.

Two in five (40%) UK adults rightly identified obesity as one of the three main causes of liver disease, which was lower than the level of knowledge about alcohol misuse as a key risk factor (89%). To combat obesity, there is overwhelming public support for reducing the sugar content in foods (77%) and making healthy food and drinks cheaper than unhealthier ones (81%). These findings, showing a low level of public appreciation of health information, should be viewed in the context of other similar reports.

Continuing high alcohol consumption and disease burden

Data from the Office for National Statistics showed that, in 2017, 57% of adults aged 16 years and over drank alcohol in the week before being interviewed, which equates to 29.2 million people in the UK (figure 1). Minimum unit pricing, which sets the lowest price that alcohol can be sold at 50 pence per unit, was introduced in Scotland on May 1, 2018. The 2019 Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) report⁷ found that alcohol sales in Scotland decreased by 3% in 2018 compared with a 2% overall increase in alcohol sales in England, and a recently published⁶ modelling exercise found that the introduction of minimum unit pricing was associated with a reduction in weekly alcohol purchases of 9.5 g per adult per household. The purchase price of alcohol increased by 0.64 pence per g, which was

higher in lower income households, targeting heavy drinkers of cheap alcohol. The results of the first 12 months of minimum unit pricing on disease severity and mortality are likely to be confirmatory and the policy is estimated to result in 2036 fewer deaths during the first 20 years.⁶

Roberts and colleagues' study⁷ across England and Wales from 2004 to 2012 reported mortality rates of 23.4% following acute admission for alcohol-related liver disease and 35.4% for those with hepatic failure at 60 days after admission, seven times higher than for acute admissions with stroke and eight times higher than for acute myocardial infarction. The early deaths were directly related to complications of liver disease. Mortality was significantly lower for patients seen by consultant hepatologists and gastroenterologists and for patients admitted to transplant centres or larger hospitals. At 5 years following admission, mortality was 61.8% for patients with alcohol-related liver disease and 57.1% for patients with hepatic failure. Using the same methods to extend the analysis to 2017, Public Health England showed that for England the very high 60-day mortality is unchanged (figure 2).

A recent meta-analysis⁸ showed that the true prevalence of alcohol-related conditions in UK NHS hospitals is about 20–30 times higher than the official government statistics (ie, 24–36 million cases per annum), most likely due to insufficient training of staff in the NHS to identify, diagnose, treat, and record the number of people with alcohol-related conditions.

Analysis of data from a large teaching hospital in the south of England showed no evidence of improvement in long-term survival of patients admitted for cirrhosis over the past 15 years (figure 3), echoing the results of an older study⁹ that showed no improvement for patients between 1959 and 1976. In previous reports, we presented data showing that in-hospital mortality for liver disease has consistently fallen year-on-year. But the fact that improvements in hospital care have not translated into improvements in the long-term survival of patients with cirrhosis is a sad reflection of overall current UK practice. Most patients with cirrhosis are not picked up in primary care but remain undiagnosed until the first admission to hospital with complications of cirrhosis. Around one third of these patients die within months of first presentation. The legacy system of arranging cirrhosis follow-up in secondary care is also not fit for purpose. An audit of follow-up in the cirrhosis cohort in Southampton (figure 3), where the hospital policy was to review every patient with cirrhosis at 6-monthly intervals to arrange endoscopy and ultrasound surveillance (in compliance with National Institute for Clinical Excellence [NICE] guidelines),¹⁰ found that, of 2126 patients with cirrhosis alive at the time of analysis, 494 (23.2%) had been seen in a clinic within the past 6 months, 1262 (23.2%) had not been seen for 3 years, and 859 (40.4%) had not been seen at all. Only 685 (32.2%) patients had a record of

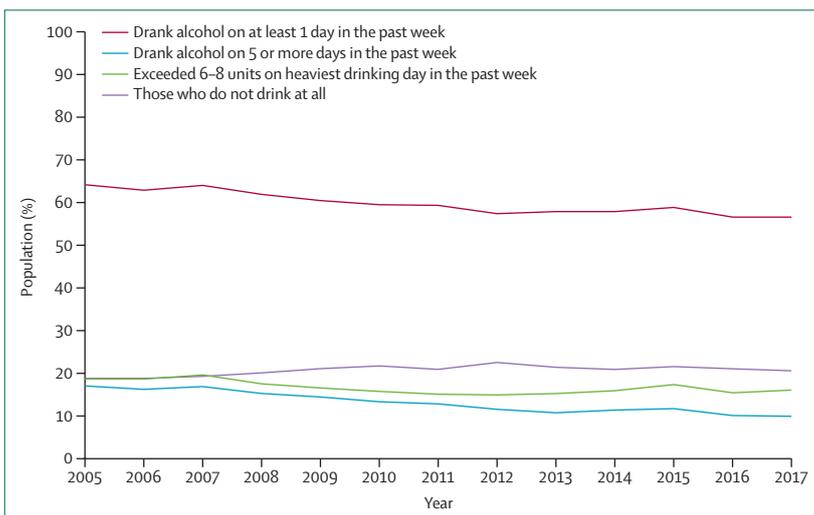


Figure 1: Self-reported drinking habits in the week before the interview in the UK from 2005 to 2017. Data from the Office for National Statistics for adults aged 16 years and over.⁴

ultrasound within the past year, and 624 (29.4%) had an endoscopy within the past 3 years. Overall 1775 (83.5%) patients diagnosed with cirrhosis were missing either a follow-up ultrasound within 1 year or endoscopy within 3 years; an essentially identical finding to a similar audit done 5 years earlier.

Using research funding from the British Liver Trust LOCATE project, a virtual liver clinic has been piloted over the past year; preliminary findings suggest that by using data-based recall, sharing care with general practitioners, and establishing virtual clinics care can be substantially improved.¹¹ Liver centres must urgently put into place a regular audit of the efficiency of their follow-up procedures and make the appropriate changes to ensure equality of access. This requirement is particularly important for patients with alcohol-related liver disease who are still drinking and who are not likely to attend appointments if they have been dealt with insensitively by medical staff in the past. This situation can potentially be avoided when combined liver and alcohol follow-up is arranged through an alcohol care team. Over the past year in a pilot project as part of the LOCATE study, hepatoma and varices screening for a subset of patients were arranged using a data system via a virtual clinic.¹¹ Preliminary indications are that this system is successful and cost-effective.

Alcohol care teams and community alcohol services

The NHS Long-Term Plan,³ published in January, 2019, includes a commitment to establish and optimise alcohol care teams in district general hospitals over the next 5 years. NHSE and NHS Improvement will be targeting the worst affected hospitals with additional monies.³ Funding will come from the clinical commissioning groups' health inequalities funding supplement, working in partnership with local authority commissioners of drug and alcohol services from 2020 and 2021. In addition, a £4.5 million innovation fund was launched in 2018 by the Department of Health and Social Care for local projects that work with children and families affected by alcohol.¹² NHSE will apparently be providing guidance on implementation which, in the Commission's view, will take considerable and detailed effort. 11 key components are essential in alcohol care teams (panel 2)¹³ and, in a 2009 survey of alcohol care teams in London hospitals, only 42% had an alcohol support nurse and 10% a lead clinician;¹⁴ in 2016, 83% of UK hospitals had alcohol support nurses,¹⁵ and in 2019, around 60% have a clinician lead although many hospitals are still not staffed to provide a 7 day alcohol support nurse service.

The 9% of people in England with alcohol dependence account for 59% of all alcohol-attributable hospital admissions.¹⁶ Implementation of alcohol assertive outreach treatment for the estimated 54369 patients in England with alcohol-attributable hospital admissions would cost £161 million, with cost savings of around £575 million—a return on investment of £3.42 for every

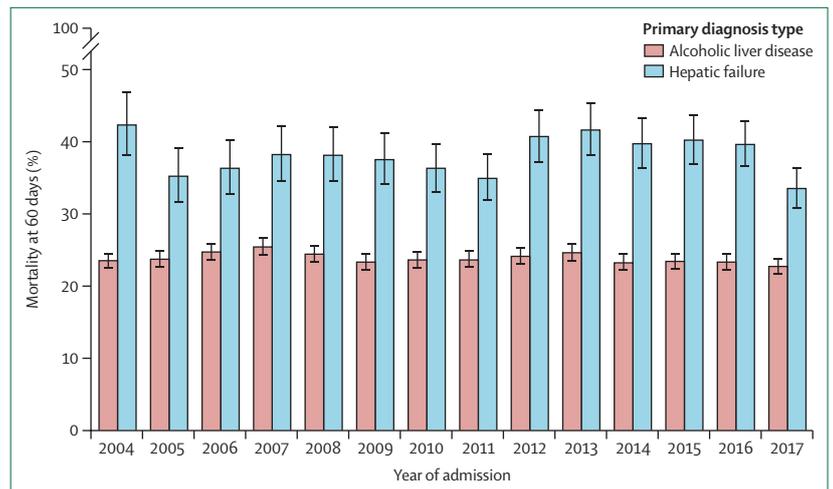


Figure 2: Mortality following hospital admission with alcohol-related liver disease and hepatic failure from 2004 to 2017

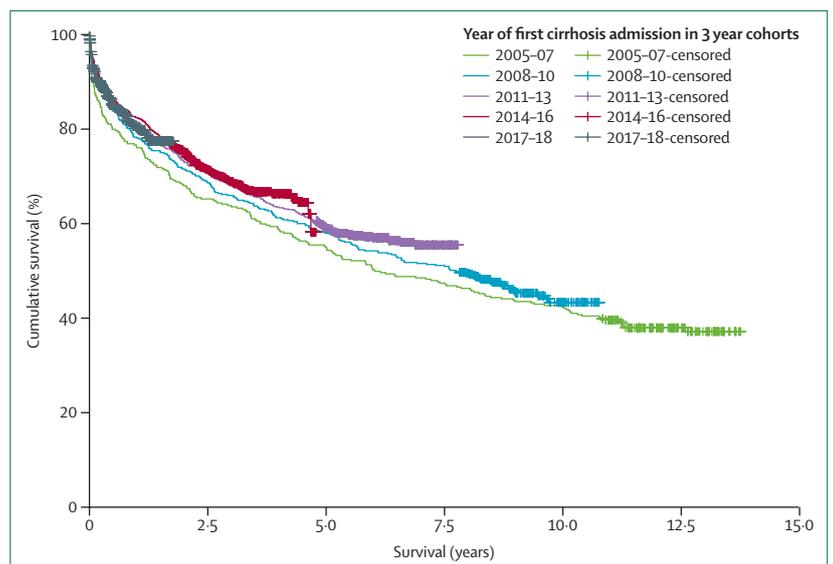


Figure 3: Survival of consecutive cirrhosis admissions from the time of the first admission to University Hospital Southampton (2005–18)

Survival of consecutive cirrhosis admissions following first admission with a cirrhosis International Classification of Diseases 10 code to University Hospital Southampton categorised into 3-year cohorts. There has been no sustained significant improvement in survival over the time period, with long-term survival only around 40%. Data analysed by NS for the Lancet Commission (unpublished).

£1 spent¹⁷—and also strongly correlates with the index of multiple deprivation ($r=0.74$).¹⁷ With the emphasis of the Prevention Green Paper on reducing health inequalities, the Commission's view is that alcohol care teams and alcohol assertive outreach treatment should be rolled out to all district general hospitals with a proven patient burden of alcohol-related illness. This plan would help to achieve the UN Sustainable Development Goals, especially goal 10, which aims to reduce global health inequalities and provide a more equitable and sustainable future for all people by 2030.

The alcohol and tobacco commissioning for quality and innovation scheme was introduced in 2017 and is being implemented across all inpatients in mental health, community, and secondary care NHS trusts.¹⁸ The latest data show that, overall, 25·2% of screened inpatients are drinking at increasing, higher risk, or possible dependent levels in mental health trusts, 14·2% in acute trusts, and 6·4% in community trusts (Robyn Burton, Public Health England, personal communication). These figures are to be compared with 25% of the general population who are drinking at increasing and higher risk levels and dependence.

Reduction in community treatment and addiction services

Since the introduction of the Health and Social Care Act, combined with cuts to the UK Government's public health grant to local authorities, there has been an 18% (£162 million) reduction in funding to community addiction treatment services in England, with ten local authorities reducing by as much as 40%, resulting in a 22% reduction in the number of people entering

specialist alcohol treatment, and a 52% reduction in access to specialist inpatient alcohol detoxification.¹⁹ England now has less than half the level of access to specialist alcohol treatment compared with Scotland and Wales (table 1). 82% of people with alcohol dependence do not access specialist treatment.¹⁹

Another consequence of the cuts has been a 48% reduction in the number of NHS specialist addiction consultants in England and a 60% reduction in the number of specialist addiction trainees.²¹ Public Health England announced in March, 2019, a £6 million capital fund to enable local authorities to invest in improving access to alcohol treatment services and, of the 23 projects commissioned, seven comprised purchase of elastography machines to enable rapid identification of liver disease.²²

Need for a comprehensive strategy to reduce alcohol consumption

Not only are alcohol-related deaths rising²³ but, according to a Public Health England report published in 2019, an estimated one in five people are harmed by someone else's drinking.²⁴ Much evidence is available about the effective solutions that could be adopted, with action on price, availability, and marketing at the top of the list of interventions.²⁵ The 50 pence minimum unit price of alcohol is estimated to reduce alcohol-attributable deaths in England by 4·3% and associated health-care costs by 2·3%.²⁶ Furthermore, a strong consensus exists among health, social care, justice, and civil society groups that such measures are urgently needed to tackle alcohol-related harm.²⁷ A comprehensive alcohol strategy by the government should follow WHO recommendations and tackle the affordability, availability, and promotion of alcohol, aiming for a 10% reduction in harmful use of alcohol by 2020.²⁸

The UK Government has repeatedly failed to grasp opportunities to take meaningful action to prevent alcohol-related harm. Plans for a UK alcohol strategy announced in May, 2018,²⁹ have been put on hold; meanwhile, the Chancellor of the Exchequer has made alcohol more affordable by cutting duty in the October, 2018, budget.³⁰ This decision resulted in a loss of £1 billion to the HM Revenue and Customs treasury, equivalent to the annual salaries of 40 000 nurses.³¹ A 2% above inflation increase in alcohol duty would result in 4710 fewer alcohol-related deaths and 160 760 fewer hospital admissions between 2020 and 2035, according to the latest modelling report,³² and would also raise substantial funds to support overstretched local public health budgets.

The government's Prevention Green Paper,¹ while acknowledging that alcohol harm is rising, made no commitment to address the major drivers of ill-health and inequality linked to alcohol,¹ devoting only one and a half pages of the 78-page document to alcohol consumption. No actions were proposed to target the 4% of the adult

Panel 2: Key components of alcohol care teams¹³

- A clinician-led, multidisciplinary alcohol care team with integrated alcohol treatment pathways across primary, secondary, and community care
- Coordinated alcohol policies for emergency departments and acute medical units
- A 7-day alcohol specialist nurse service
- Addiction and liaison psychiatry services
- An alcohol assertive outreach team for frequent hospital attenders
- Specialist consultant hepatologists and gastroenterologists with expertise in liver disease
- Collaborative, multidisciplinary, person-centred care
- Quality metrics, national indicators, and audit
- Workforce planning, training, and accreditation
- Research, education, and health promotion for the public and health-care professionals
- Formal links with local authority, public health, clinical commissioning groups, patient groups, and other key stakeholders

	Number of patients accessing treatment for alcohol only*	Number of F10 alcohol hospital admissions†	Rate of F10 admissions per 100 000 population (>18 years of age)	Treatment access ratio (F10 admissions or treatment access) 2017–18‡	Treatment access ratio 2016–17 ²⁰
Scotland	26 107	27 025	614·9	1·0	1·1
Wales	7678	8804	307·5	1·1	1·2
England	75 787	197 460	451·3	2·6	2·4
Northern Ireland	2577	9963	694·6	3·9	3·9
UK	112 149	243 252	467·0	2·2	2·1

*Excludes concurrent drug misuse as a reason for treatment. †Primary or secondary diagnosis of F10 mental and behavioural disorders due to use of alcohol as defined in the tenth revision of the International Classification of Diseases. This value is a proxy measure of the prevalence of alcohol dependence in the general population. ‡Note, the treatment access ratio (ie, the number of F10 admissions to National Health Service hospitals divided by the number of people accessing specialist alcohol treatment) worsened in England and the UK as a whole between 2017–18 compared with 2016–17.

Table 1: Alcohol treatment access ratios across the UK in 2017–18 compared with 2016–17

population who are the heaviest drinkers and who account for 30% of all alcohol consumed. The Department of Health and Social Care is to review the evidence for increasing the alcohol-free descriptor threshold from 0·05% alcohol by volume to 0·5%.¹ Such a move, however, will have no effect on the high-risk drinkers who are most in need of specialist treatment and support services.

The comments of two members of the Commission are quoted in full in panel 3 as a reflection of the view of the Commission as a whole and of many comments by professional bodies and agencies beyond the scope of this report.

Another missed opportunity for the government to act in the interests of public health was the failure to enforce the deadline on Sept 1, 2019, given to alcohol companies to display up-to-date and accurate information on product labels about the health risks associated with alcohol.³⁸ Most drinks sold do not carry the latest Chief Medical Officer's low risk drinking guidelines, leaving consumers uninformed about the latest health advice.³⁹ In August, 2019, a month before the government's deadline to display the guidelines on labels, the alcohol industry's Portman Group announced it was encouraging its members to display the Chief Medical Officer's advice on product labels⁴⁰ but no timelines were offered for implementation.

Disease consequences of high obesity prevalence

In 2017, the prevalence of obesity in adults was 29%, representing a 3% annual increase, while for children in year 6 (age 10–11 years) and reception (age 4–5 years), the figures were 20·1% and 9·5%, respectively. Of particular concern is the widening gap in obesity prevalence between the least and most deprived deciles: between 2006–07 and 2017–18, the gap in prevalence between the most deprived and least deprived areas increased by five percentage points for year 6 children.⁴¹ Obesity-related disorders are a major contributor to hospital workload, with 10660 admissions directly attributable to obesity and over 700000 admissions in which obesity is a primary or secondary diagnosis (a 15% annual increase in 2019 from 2018). The 6627 admissions for bariatric surgery in 2017–18 are an increase of 2% over the previous year⁴¹ but represent treatment of less than 2% of eligible individuals.

The National Cardiovascular Intelligence Network estimates that there are 4 million people with type 2 diabetes in England, of whom 2·9 million have been diagnosed.⁴² Obesity is estimated to be responsible for 80–85% of an individual's risk of developing type 2 diabetes, and the condition is responsible for more than 3000 amputations, over 19000 strokes, and almost

Panel 3: View of Commission members on the government Green Paper

In July, 2019, the Department of Health and Social Care finally, and very reluctantly, published its Green Paper on prevention. Accounts from Whitehall insiders report how the Health Secretary sought to withhold it and then when Theresa May, Prime Minister at the time, decided it should be published, sought to have the department's name removed. Unusually, when it did appear, it was not accompanied by a press release. The widespread scepticism with which it was greeted³³ has been encouraged by news that the new Prime Minister has appointed advisers linked to lobby groups funded by manufacturers of harmful products.³⁴

The section on alcohol begins by saying that "Most people who drink, do so responsibly". A study done in 2017 examined how the concept of responsible drinking is almost exclusively used by the alcohol industry and groups it funds.³⁵ Until now, this term very rarely appeared in government documents. That study also found that it was often used in a context where government guidelines were being undermined and where the alcohol industry was portrayed as pursuing corporate social responsibility.

"The government's proposals are extremely weak and ignore the evidence favouring population-based measures, such as taxation, reductions in availability, and restrictions on marketing which, as shown in the previous *Lancet* Commission on Liver Disease, are all strongly opposed by the alcohol industry.²⁰ There are three main proposals. The first is to make people more aware of alcohol-induced harms through Public

Health England's One You campaign.³⁶ The second is to stress the value of an alcohol risk assessment in the National Health Service Health Check, another initiative criticised for lacking evidence of effectiveness.³⁷ The third is the support children with alcohol dependent parents although, surprisingly for a consultation document, this has already been launched, in April 2018. A final section discusses collaboration with the alcohol industry to promote low alcohol products, without reference to the experience of the heavily criticised industry partnership in the Responsibility Deals, and in a major concession to the industry, promises to review the potential to redefine 'alcohol free' to allow up to ten times the current level of alcohol. In summary, this is a document that could easily have been written by the alcohol industry and is almost wholly devoid of a public health perspective."

Martin McKee, Professor of European Public Health, London School of Hygiene & Tropical Medicine

"The Government's recent Prevention Green Paper is framed in terms of individual responsibility and personalised approaches, diverting focus away from the commercial and structural drivers of ill health in the population that so urgently need to be tackled. However, there are some positives including proposed actions on obesity which represent solid work by the Department of Health and Social Care and Public Health England obesity teams but it goes nowhere near far enough."

Harry Rutter, Professor of Global Public Health, University of Bath

15 000 myocardial infarctions every year.⁴³ At least 10 000 people in the UK have end-stage renal failure as a consequence of their diabetes and more than 1700 have their sight seriously affected by their diabetes each year. Type 2 diabetes incurs almost £9 billion of costs to the NHS annually, around 9% of the total NHS budget.⁴⁴ Of particular concern is the marked increase in prevalence in children and young adults, with 745 people under age 25 years reported as having type 2 diabetes in England and Wales in 2017–18.⁴⁵ End-stage non-alcoholic fatty liver disease is a growing clinical problem in the UK, placing major challenges on the NHS. In particular, cases of non-alcoholic fatty liver disease with decompensated cirrhosis are rising such that they are now also posing an increasing burden on transplant services.⁴⁶

The outgoing Chief Medical Officer's final report, published in October, 2019, made clear the magnitude of the challenge faced to achieve the government's ambition to halve child obesity by 2030. The report provided 49 wide-ranging recommendations designed to drive fundamental changes in the environments that shape our dietary and physical activity behaviours.⁴⁷ Achieving the child obesity target will involve a much greater regulation of the food industry, major restrictions on advertising and marketing of unhealthy products, and transforming our towns and cities to create safe, appealing environments in which children can walk, cycle, and play.⁴⁷ The Department of Health and Social Care has proposed several actions^{48,49} in Chapter 2 of the 2018 Child Obesity Plan,⁵⁰ including policies to reduce both total calorie consumption and sugar intake, and to restrict advertising and marketing of unhealthy food to children. However, at the time of publication, these were still under consultation and had not yet been implemented. The 2019 Green Paper on Prevention¹ contains a range of proposals, including labelling, food reformulation, weight management services, and physical activity promotion, but gives little guidance on how these will be translated into effective policies, which will require much more intensive policy action than has been seen to date.⁵¹ The only new regulatory commitment was to consult on ending the sale of energy drinks to children younger than 16 years of age.

The persistent framing of obesity as merely the result of individual choice needs to be challenged. Because decisions about both diet and physical activity are ultimately made by individuals, the choices available to people depend on many factors. Those behavioural decisions are primarily driven by environments that promote the overconsumption of food and underexpenditure of energy. Equitable reductions in prevalence and consequent health benefits will only be achieved and sustained by tackling obesogenic environments.

Marketing of unhealthy food and alcohol

Unequivocal evidence shows that the marketing of unhealthy food to children leads to childhood obesity,⁵²

and that marketing of alcohol leads to an uptake of drinking and increased consumption in young people.⁵³ Similar evidence for the marketing of cigarettes and smoking in young people led to comprehensive and effective global bans on tobacco as part of the International Framework Convention on Tobacco Control.⁵⁴ By contrast, the food and alcohol industries have been allowed to self-regulate despite evidence that this does not effectively reduce childhood exposure to adverts.⁵⁵ In an increasingly digital age—children aged 12–15 years are online for an average of 21 h each week in the UK⁵⁶—teenagers are exposed to promotional activities, which include paid-for advertisements, product placement, content sharing by peers, or the activities of social media influencers. These targeted messages are then narrowcast to mobile devices without parental control or oversight. Young people cannot always recognise these marketing tactics as having a commercial goal or distinguish them from non-commercial content.⁵⁷ The spend on digital marketing has increased year-on-year, with 2016 receiving the largest share of advertising spending in the UK.⁵⁸

Social media and other operators have created sophisticated datasets to target consumers. However, between the commercial operators with products to sell and their young target audience, marketing messages disappear into a black box marketplace in which individual messages are sold on by a myriad of intermediate agencies—supply-side platforms, data exchanges, and demand-side platforms—which bid for advert impressions.⁵⁹ Though advertising messages could be tagged and traced, there is no facility to do this within the marketplace. Effective forms of age verification do exist but these are not used to filter marketing traffic, with the result that no-one knows if a marketing message is seen by a child or an adult.

Earlier in 2019, WHO published an outstanding report⁵⁹ including a pragmatic solution—the CLICK tool, which provides the conceptual framework needed to understand and monitor exposure of children to digital messages.⁵² Along with estimating exposure, WHO states there should be effective age verification and message tagging, coupled with effective regulation. Policy makers need to be made aware that the digital marketplace in the UK is almost entirely unregulated and mandatory government measures to reflect this unique environment are urgently needed.

Obesity as a cause of common cancers

Most cancer types have multiple risk factors, with nearly four in ten (37.7%) cases of cancer in 2015 in the UK attributable to known risk factors.⁶⁰ Moreover, 49% of primary liver cancers (around 2800 cases) are preventable. Being overweight (body-mass index 25–29.9) or obese (body-mass index 30+) contributes the highest proportion of liver cancers (around 1300 cases annually) and is second only to smoking as the leading preventable cause of cancer in the UK, with alcohol consumption ranking

sixth.⁶⁰ Furthermore, being overweight or obese has a definite causal link with 13 cancer types—namely, breast, bowel, oesophagus, kidney, liver, pancreas, uterus, oral, ovary, myeloma, and thyroid. Alcohol consumption is linked to seven cancer types,^{61,62} with obesity having a synergistic effect and adding to the risk of breast, bowel, liver, and oesophageal cancer.^{63,64} The other three cancer types—mouth, upper throat, and larynx—have a specific and distinct association with excess drinking.

Planned proposals to improve hospital-based care

The Hepatobiliary Clinical Reference Group, which advises NHSE on the management of patients with advanced liver disease, has made several recommendations for major changes in response to the increasing volume of patients with cirrhosis and the variation in outcomes between providers. The complexity of managing patients with acute or chronic liver failure and decompensated cirrhosis requires an experienced, diverse clinical team with 24 h care, provided by specialist hepatologists who are supported by appropriately trained intensivists, radiologists, dieticians, nurses, and pharmacists. Ready access to liver transplantation services is also required. However, such services cannot be provided in every hospital that admits patients with cirrhosis. Therefore, to ensure that all patients have equal access to high quality of care, the Hepatobiliary Clinical Reference Group recommended that regional networks should be established with each hospital linked to a centrally supported specialist centre. The establishment of a comprehensive series of networks with appropriate funding and support is strongly recommended by the Commission but the proposals continue to await endorsement by NHSE, with no date for implementation.

To facilitate development of the networks, the Hepatobiliary Clinical Reference Group recommended a new service specification for specialist providers of liver services that should lead to the development of more targeted referral pathways. Patients with advanced liver disease admitted to any hospital in the country would receive early, algorithm-based review (including use of the well established so-called cirrhosis care bundle) followed by a discussion with the local liver lead and, if appropriate, with the regional liver centre. An example of this pathway working is in east London where a hepatology consultant from Barts Health NHS Trust is based at Queens Hospital in Romford and provides outpatient and inpatient advice on specialist liver care for the region. To improve provision of care for patients with decompensated cirrhosis, NHSE has offered a new incentive scheme (commissioning for quality and innovation), which rewards trusts that introduce network-based approaches to the management of patients with cirrhosis.⁶⁵ Monitoring and evaluation of the changes will be through a new so-called cirrhosis dashboard,⁶⁶ which provides information on a range of metrics relating to the quality of care for patients with liver disease and will be sent to trust chief executives every

quarter. An analysis of data from the NHSE cirrhosis dashboard from June, 2018, to April, 2019, showed that, although only 40 trusts are currently commissioned to provide specialist liver services, a large number (over 120) continue to manage patients with cirrhosis; many report small numbers of patients—20 trusts admitted fewer than ten patients per quarter to high dependency units or intensive care units and 76 trusts admitted fewer than 20 such patients. 7·5% of the patients with decompensated liver disease admitted as an emergency died in hospital with a mortality of 8% in non-specialist trusts, compared with 6·6% in commissioned, specialist centres. Emerging therapeutics (eg, next generation anti-inflammatories for alcoholic hepatitis) and technologies (including the long-awaited development of so-called liver assist devices that deliver meaningful benefits) are likely to further enhance the differences in outcomes between high volume and low volume centres.

Opportunities to improve post-hospital discharge care

Patients with cirrhosis who survive an emergency admission to hospital with ascites are frequently readmitted within a month of discharge and, although some readmissions are inevitable because of continued disease progression, many are potentially avoidable. An analysis of 120 000 cirrhosis admissions showed that ascites and hepatic encephalopathy were the major predictors of unplanned readmission at 30 or 90 days.⁶⁷ Readmissions are often attributable to patients' insufficient understanding of their medications or early recognition of symptoms, and both the American Association for the Study of Liver Diseases and the European Association for the Study of the Liver guidelines emphasise the importance of education.⁶⁸ In one study,⁶⁹ only 6% of patients with hepatic encephalopathy and their carers understood the purpose of drug therapy or its side-effects, and a survey⁷⁰ of 150 patients with cirrhosis found awareness of hepatic encephalopathy and its treatment was lower than for any other complication. The simple intervention of providing educational booklets on structured care after discharge needs to be more widely promoted by NHSE and adopted by hospital trusts.

Excellent results can be obtained by trained nurse specialists for large volume paracentesis in patients with diuretic refractory ascites as elective day-case procedures. In Cambridge, this procedure has saved over 500 bed days per year and is more convenient for patients. Nurse-led paracentesis is also offered in other locations, including Brighton, Bristol, Cardiff, Gloucester, London, Newcastle, Plymouth, Portsmouth, Southampton, and Truro, and should be included in planned care strategies for all hospitals treating patients with liver conditions. The value of this procedure is further shown by an analysis done in 2018 of over 13 000 people with cirrhosis in their last year of life, with day-case services giving lower costs and a lower probability of patients dying in hospital.⁷¹ The use of paper-based or electronic decision

support tools that prompt hospital staff to follow guidelines has the potential to increase the proportion of patients discharged on appropriate medications, leading to fewer readmissions.⁶⁷ Moreover, the comprehensive cirrhosis discharge care bundle now being piloted is another approach meriting wider scale implementation.

Failure to increase number of liver transplants

The number of liver transplants done in 2018–19 ($n=1003$)⁷² was lower than the 2017–18 total of 1043. Disappointing also, given the potential for machine perfusion to increase the number of organs used, only 8% ($n=63$) of adult deceased donor first liver transplants involved normothermic or hypothermic machine perfusion, and machine perfusion was not used in two centres. At the end of 2018–19, the waiting list had risen from 359 to 432 (an increase of 20%) and, during 2016–17, 10% of new elective patients listed for liver transplantation had died or had to be removed from the list.

The 3-monthly reviews of the National Liver Offering Scheme introduced in March, 2018, for brain death donor organs (on the basis of a possible transplant benefit score at 5 years) showed a fall in the median waiting time for transplantation to 39 days (from 72 days) over the timeframe of a year (Douglas Thorburn, Sheila Sherlock Liver Centre, personal communication; National Liaison Officers Monitoring Committee report, unpublished). However, the acceptance rate of offers made through the scheme to specific matched recipients was lower than predicted, at 30%. Furthermore, the proportion of brain death donor livers not accepted for named recipients increased from 8% to 28% over the timeframe of a year. New patients added to the waiting list since the inception of the scheme in 2018 are more likely to be transplanted and, as predicted by the modelling exercise, there is a trend towards older patients undergoing transplantation and a reduction in patients with hepatocellular carcinoma receiving transplants.⁷³

Results of the soft opt-out legislation introduced in Wales in 2018 are also disappointing, with no increase in the number of donor organs, though there has been an increase in donor consent rates by families which now exceed those in England. The implementation of opt-out in England in spring, 2020, together with a wider uptake of organ perfusion strategies to increase organ use, presents an opportunity to tackle unmet needs for liver transplantation (eg, service evaluations on chronic liver failure, hilar cholangiocarcinoma, and neuroendocrine tumours) but, as yet, no definite proposals have been agreed.

There is no approval for additional liver transplant centres to increase transplant capacity. NHSE is considering applications from aspirant market entrants to replace or add to the existing providers. Several new centres, including Plymouth, Oxford, and Liverpool, are working towards this goal but none are as yet in place. Although overall results of transplant procedures show

1-year survival rates of 96–97%, the demand for transplantation is not being met as well as it could be.

Major vacancies in workforce of consultant hepatologists and specialist nurses

The goal for an effective specialist hepatobiliary service is to have two hepatologists serving 250 000 people or 0·8 whole time equivalent per 100 000 population. Based on estimates from 2017, 221 hepatologists (or 306 gastroenterologists with an interest in hepatology) are leading these specialist services, although the number of hepatologists per 100 000 population is variable across Scotland (0·39), England (0·35), Northern Ireland (0·22), and Wales (0·08). Optimising levels of consultant hepatologists requires an increase to 528 whole time positions per 100 000 population, equivalent to 222 more posts. For this target, liver appointments (and funding) will need to be prioritised and the rate of consultant expansion improved beyond 1·6–4·9% annually for gastroenterology, as seen since 2009. Concerns also exist about the number of transplant surgeons that will be needed to expand the capacity of existing and new programmes, with availability of a greater number of donor organs.

For more than a decade, speciality training and accreditation in hepatology has lagged behind that for gastroenterology. The ratio of specialist trainees in hepatology to luminal gastroenterology trainees should, it is recommended, be increased from the current one in three ratio, thereby enabling NHS trusts to prioritise the filling of vacant posts. Even wider variation exists across the UK in the number of liver nurse specialists whose remit needs to be expanded to include day-case paracentesis and transient elastography services at the interface of primary and secondary care.

Detection of early disease by screening in primary and community care

The online toolkit for general practitioners,⁷⁴ coordinated by the Royal College of General Practitioners and funded by the British Liver Trust, continues to evolve with the 2019 addition of detailed general practitioner commissioning recommendations for decision makers. The online toolkit also includes, as highlighted in a national general practitioner practice mailout, easily accessible information on the latest national guidelines for interpretation of liver blood tests⁷⁵ and for use of transient elastography (Fibroscan) or Enhanced Liver Fibrosis measurement of fibrosis based on alcohol use disorders identification test scores. The updated toolkit also includes so-called quick link buttons for easy access to guidelines or tools during general practitioner consultations. Incentivising evidence-based care as well as working with newly formed general practitioner primary care networks, which can access central funding for social and lifestyle prescribing, represent further strong recommendations by the Commission.

Inclusion of the early detection programme in an updated NHS Health Check, in line with NICE guideline NG50,¹⁰ will add substantially to the value of these health checks. Exemplar proven models of care include the prize-winning Scarred Liver Project (panel 4) in Nottingham and the Southampton primary care liver pathway (figure 4),⁷⁷ which has also led to a reduction in hepatology referrals. These models need to be rolled out more widely in an effective context across the country, as does the Tayside programme of Intelligent Liver Blood Tests which, when increased serum transaminase or other abnormalities are found, also tests for a raft of likely causes and the most likely diagnosis is fed back directly to the requesting general practitioner.⁷⁸ Each of the successful local schemes for earlier diagnosis have led to a reduction in unnecessary referrals to hospital-based consultant clinics with consequent cost savings. Showing the effects on survival and state of health will require larger cohorts and longer periods of follow-up.

Combination of potential risk factors for liver disease in a primary care sample

Given the evidence supporting an additive, synergistic interaction between raised body-mass index and alcohol consumption in the development of liver disease,⁷⁹ knowledge of the co-occurrence of both factors is of considerable relevance to health screening and public health policies. The Health Improvement Network, a large, representative database containing anonymised, electronic medical records from over 700 general practices, was used to identify the occurrence of higher risk (operationalised as 35 and 50 units for women and men) drinking, raised body-mass index, and both risks combined in an adult sample attending a general practitioner appointment in the financial year 2017–18 (Clive Henn, Public Health England, personal communication). Over 50000 patients were identified who could benefit from a brief alcohol use disorder identification test and 1500 patients were both obese and drinking at high risk levels. True levels were thought to be substantially higher because there was a large amount of missing data referring to levels of alcohol consumption. Such individuals, with their substantially increased risk of liver disease, should be prioritised for screening and management measures.

Outcomes in children with liver disease

Death from liver disease in children is a rare outcome with mortality as low as 5% in the UK and mainly for patients who were not candidates for liver transplantation, or as a result of untreatable complications developing in later years after transplantation. An audit of all deaths occurring within the three UK paediatric liver centres between 2014–18 identified 137 deaths, 28 (20%) of which had undergone liver transplantation. Only four (3%) had died of conditions unrelated to their liver disease. 76 (55%) of the 137 deaths were unexpected and these

Panel 4: The Scarred Liver Project

The Nottingham pathway (also called The Scarred Liver Project) continues to attract a substantial number of referrals (>3000 since inception in 2016) with diagnosis of clinically significant liver disease (>20% with a liver stiffness as measured by transient elastography >8kPa, approximately 10% cirrhosis). The pathway has evolved to allow general practitioners and patients greater access to transient elastography based on risk factors alone. Any patient with type 2 diabetes, obesity, incidental fatty liver on ultrasound, and a BARD* score >1, or alcohol excess can now have transient elastography without the need for previous liver blood tests. Supported by the local Academic Health Sciences Network, the pathway has been adapted for trials in other areas included within community drug and alcohol services in Chesterfield and within a regional primary care super-practice (that serves a population of 200 000 people). The forward focus is on developing the brief lifestyle advice provided to all patients into a more supportive and sustainable behaviour change intervention.⁷⁶

*The BARD score is based on various elements (body-mass index $\geq 28=1$ point, AAR (AST to ALT ratio) of $\geq 0.8=2$ points, diabetes mellitus=1 point) to form an easily calculated composite score for predicting advanced fibrosis.

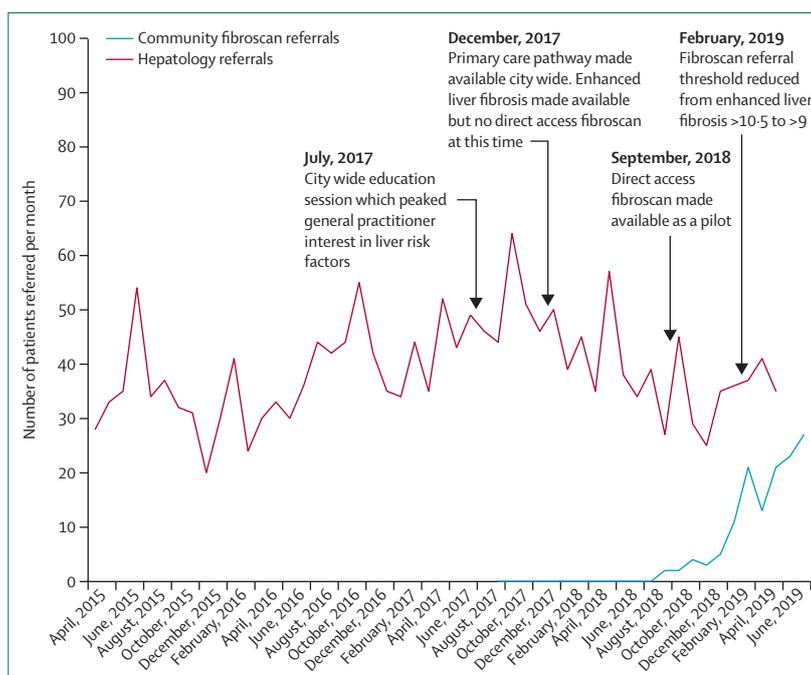


Figure 4: Hepatology-based referrals versus community-based referrals in Southampton Primary Liver Care Pathway from 2015 to 2019

deaths indicate an important organisational issue, with 54% of deaths occurring outside the centres. We recommend that all patients attending the three specialist centres should be reviewed for risk of death in childhood, allowing more focused treatment measures and to aid the planning of palliative care.

Although patient survival and graft survival continue to be excellent, these patients have poorer cognitive ability, inferior educational achievement, and employment outcomes following transplantation, which is a major, emerging concern. In a systematic review,⁸⁰ 67% of children with liver disease and 82% of children who

For more on the Scarred Liver Project see <https://www.scarredliverproject.org.uk/>

	In education (%)	Unemployed (%)	Employed (%)
Paediatric liver transplant recipients (n=92)	39	25	36
Paediatric liver transplant recipients >21 years of age (n=72)	32	26	42

*Data from Kings College Hospital (London, UK). (Median age 23.2 years, range 18.9–28.7.)

Table 2: Employment outcome in paediatric liver transplant recipients*

Panel 5: The Commission’s key messages and priorities for 2019–20

Key messages

- There is a further increase in the disease burden from excess alcohol consumption and being overweight or obese
- The mortality for acutely sick patients with liver conditions admitted to district general hospitals is unacceptably high
- An early detection programme in general practice based on elastography is a feasible and logical proposition
- The public awareness of liver health hazards is extraordinarily poor, as shown in the 2019 ComRes poll

Key priorities

- Convincing upper echelons of government of the need for fiscal regulatory measures, including minimum unit pricing, tax duty escalators, and a levy on food content
- Implementation by the National Health Service of a masterplan for hospitals and day-care treatments based on specific guideline bundles
- Further investigation into the causes of cognitive impairment and consideration of meaningful survival in paediatric liver disease
- Widening the effect of expert opinion on the present burden of liver disease through greater coordination with the Academy of Medical Sciences, the Royal Colleges, and the Royal Society of London

underwent liver transplantation showed low average or abnormal scores on specific subscales of cognitive and behavioural measures. Whereas neurodevelopment is negatively affected by longer duration of the disease and waitlist time, liver transplantation might not correct the impairment.^{81,82} In addition, overall health-related quality of life is inferior and prevalence of mental health problems, particularly in adolescents and young adults, is higher compared with the general population.^{83,84} Lower educational attainment and special educational needs, present in 42% of paediatric liver transplantation survivors, are likely to affect the development of self-management skills, including adherence to treatment, typically expected in an adult health-care setting. Employment figures, regarded as a health outcome, are inferior compared with the general population (table 2). The Commission recommends that more attention should be given to the concept of so-called meaningful survival—a state of complete physical, mental, and social wellbeing and not merely the absence of disease.

Latest situation in other UK nations

Following introduction of minimum unit pricing in Scotland in 2018, annual sales per adult, at 9.9 L of pure

alcohol,⁵ are now at the lowest level since the data series began in 1994. In 2016, sales per adult in Scotland were 17% higher than in England and Wales whereas, in 2018, this gap had narrowed to 9%. A continuing issue is that sales data for Scotland, as with the rest of the UK, are not comprehensive and some retailers—including the discount supermarkets—do not submit data to market research firms. Scottish Health Action on Alcohol Problems has called for a system in which there is a legal requirement for sales data to be provided. In 2018, which included 8 months of minimum unit pricing, there was a 4% fall on alcohol-related liver disease deaths, although the overall alcohol specific deaths showed a rise of 1%.⁸⁵ There was a 3% reduction in alcohol sales in Scotland in 2018. The 2019 mortality data, which will become available by mid-2020, would be expected to have fallen. Zhao and colleagues,⁸⁶ working with data from Canada, estimated that the full effect of price increases on mortality will only be seen after 3 years.⁸⁴

With the early identification of liver fibrosis fundamental to reducing progression of cirrhosis, the Scottish Government has adopted the Tayside piloted intelligent Liver Function Test system referred to in the detection of early disease by screening in primary and community care, which is now being rolled out across Scotland.

In Wales, the implementation of legislation for a minimum unit price has been delayed because of an objection made to the European Commission by Portugal and the plan is to introduce it in early 2020. New legislation in Northern Ireland is not expected until the devolved government is re-established.

Conclusions

The underlying aim of this report is to emphasise again the important areas that need to be tackled because of the continuing rise in health burden from liver disease as a consequence of lifestyle issues of excess alcohol consumption and obesity (panel 5). The report again stresses the present need for fiscal regulatory measures by government if excessive consumption of alcohol and food is to be reduced and lives saved. The first results of the introduction of a minimum unit pricing in Scotland confirmed how specifically targeted the minimum unit pricing is on heavy drinkers, with a substantial decrease in sales of high strength, low cost alcohol products (in particular cider and beer), whereby the value of the alcohol duty escalator was shown previously over a 5-year period. The latest report of Russia’s alcohol policy, with improvements in survival expectations, is evidence of the effectiveness of fiscal measures targeting price, availability, and marketing to reduce alcohol consumption.⁸⁷ The finding that the levy on the sugar content of drinks is giving less than half the anticipated revenue to the exchequer because of reformulation of products by the industry also shows what is achievable by fiscal initiatives.

In the Commission's view, without fiscal and regulatory measures, the chances of achieving 5 extra years of healthy living, as targeted by the Secretary of State for Health and Social Care, is very unlikely. Furthermore, given the extraordinarily poor awareness of liver disease by the public highlighted by the 2019 ComRes survey, putting the entire responsibility on the individual to control lifestyle excesses, as recommended in the government's Prevention Green paper, is unlikely to be successful in comparison with population-directed regulatory initiatives described in the Commission.

The latest unacceptably high mortality figures given in the report for severely ill patients with liver conditions admitted to district general hospitals is an urgent reminder of the need for NHSE to implement the masterplan for hospital services based on regional specialist centres, each linked to networks of district general hospitals through operational delivery networks. Along with this requirement is the need for a wider use of discharge care bundles for guiding further treatment on an outpatient basis and for reducing the high rates of hospital readmission. The effectiveness of several locally driven schemes based on the availability of elastography also shows a way forward for the earlier detection of liver disease in general practice. The introduction of appropriate financial incentives for inclusion of elastography as part of the health check would ensure wider uptake and is strongly endorsed by the Commission.

Finally, the financial appraisals by the Commission show how costly the health burden is to the country, and highlight the savings that would be obtained from the fiscal measures suggested. These additional factors should also be a powerful influence for getting recommendations accepted by the higher echelons of government.

Contributors

RW was responsible for planning and providing content for the overview, introduction, and conclusion, and writing, editing, and overall direction of the paper. ND was responsible for coordinating content and editing. GA contributed content to the section on hospital workforce planning. MA, GJA, MEC, JF, and GF contributed to the section on a masterplan for hospital services. RA contributed to the section on post-discharge care. AB, AD, DK, and MS contributed to the section on paediatric liver care. KB and JV contributed to the section on obesity and common cancers. RBa, PN, and HR contributed to the section on obesity. CD, KM, and AMc contributed to the sections on addiction treatment and alcohol care teams. JG contributed to the section on the data from the ComRes poll. HJ, JM, and MMa contributed to the section on primary care. IA, IG, MMk, KS, NS, HR, and JV contributed to the sections on government policy initiatives. JD, AMg, PR, and AY contributed to the section on the devolved nations. RBu, CH, and NS contributed to the section on digital marketing. DT contributed to the section on liver transplantation. JW and SR contributed to the section on disease burden.

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MA reports personal fees from MedImmune/AstraZeneca, personal fees from E3Bio, personal fees from Intercept, grants from GlaxoSmithKline/Takeda, outside the submitted work. RA reports personal fees from Gore Medical, personal fees from Falk Pharma, personal fees from Norgine UK, outside the submitted work. RBa reports other from Novo Nordisk, other from Novo Nordisk, other from International Medical Press, Medscape, Fractyl, and Nestle, outside the submitted work. MEC reports grants and personal fees from Gilead, grants and personal fees from Merck, grants and personal fees from AbbVie, outside the submitted

work. He also reports roles as President of the British Association for the Study of the Liver, membership of the Hepato-Pancreato-Biliary Clinical Reference Group advising NHS England and specialist commissioners about organisation and delivery of specialist liver services, and is clinical lead for the Peninsula Hepatitis C Virus Operational Delivery Network. GF reports grants and personal fees from AbbVie, Gilead, MSD, Springbank, Shinogi, GSK, during the conduct of the study. JG reports other from Norgine via the Foundation for Liver Research during the conduct of the study, outside the submitted work. JM reports grants from the Medical Research Council, during the conduct of the study. PR reports personal fees from World Health Organisation, non-financial support from Scottish Health Action on Alcohol Problems, non-financial support from European Alcohol Policy Alliance, outside the submitted work. NS reports personal fees from Gilead outside the submitted work. All other authors declare no competing interests.

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