

# **Lancet Commission on Liver Disease in the UK IV: Increased disease burden and costs from excess alcohol consumption, obesity and viral hepatitis.**

## **Authorship**

<b>Name</b>	<b>Highest degree</b>	<b>Affiliation</b>
Roger Williams	MD	Foundation for Liver Research, UK
Graeme Alexander	MD	British Association for Study of the Liver, UK
Iain Armstrong		Public Health England
Neeraj Bhala	DPhil	Queen Elizabeth Hospital Birmingham, Birmingham, UK
Ginny Camps-Walsh	CIM	Medical Marketing Consultants, Oxford, UK
Matthew E Cramp	MD	Plymouth University Peninsula Schools of Medicine and Dentistry, Plymouth, UK
Simon de Lusignan	MD	RCGP Research and Surveillance Centre, Department of Clinical & Experimental Medicine, University of Surrey, UK
Natalie Day	MA	Foundation for Liver Research, UK
Anil Dhawan	MD	King's College Hospital, London, UK
John Dillon	MD	Medical Research Institute, University of Dundee, Dundee, UK
Colin Drummond	MD	Institute of Psychiatry, Psychology & Neuroscience, King's College London and South London and Maudsley NHS Foundation Trust
Jessica Dyson	MBBS	Freeman Hospital, Newcastle, UK
Graham Foster	FRCP	Queen Mary University of London, UK
Ian Gilmore	MD	University of Liverpool, Liverpool, UK
Mark Hudson	FRCP	Freeman Hospital, Newcastle, UK
Deirdre Kelly	MD	Birmingham Children's Hospital, Birmingham, UK
Andrew Langford	PhD	British Liver Trust, UK
Neil McDougall	MD	Belfast Health and Social Care Trust, Northern Ireland
Petra Meier	PhD	Section of Public Health, ScHARR, University of Sheffield, UK
Kieran Moriarty	FRCP	Royal Bolton Hospital, Bolton, UK
Philip Newsome	PhD	NIHR Birmingham Liver Biomedical Research Centre at University Hospitals Birmingham NHS Foundation Trust and the University of Birmingham, UK
John O'Grady	MD	King's College Hospital, London, UK
Rachel Pryke	MRCGP	Winyates Health Centre, Redditch, UK
Liz Rolfe	MPH	Public Health England, UK
Peter Rice	FRCPsych	Scottish Health Action on Alcohol Problems (SHAAP)
Harry Rutter	MB BChir	London School of Hygiene & Tropical Medicine
Nick Sheron	MD	NIHR Southampton Biomedical Research Centre, University of Southampton, Southampton, UK
Alison Taylor	BSc	Children's Liver Disease Foundation, UK
Jeremy Thompson	MB ChB	Fulcrum Practice, Middlesbrough, UK
Douglas Thorburn	MD	Royal Free Hospital, London, UK
Julia Verne	PhD	Public Health England, UK
John Wass		Oxford University, Oxford, UK
Andrew Yeoman	MB BCh	Aneurin Bevan University Health Board, Newport, UK

## Executive Summary

This report should be read as an extension to the third publication of the Lancet Commission(1), containing new and follow-up metric data relating to the eight main recommendations to reduce the current unacceptable mortality and other harmful consequences of excess alcohol consumption, obesity and viral hepatitis.

The new metrics for alcohol include depressing data on alcohol dependence, damage to families and the significant rise in alcohol consumption documented since the removal of the above inflation alcohol duty escalator. Alcoholic liver disease is likely to exceed ischaemic heart disease in terms of years of working life lost in the near future. This is despite the detailed guidance provided by Public Health England (PHE) on optimum alcohol care including brief interventions for which a CQUIN (the Commissioning for Quality and Innovation payments framework) has been brought in this year.

Similarly for obesity, the disease burden is increasing in association with rising levels of obesity, more than 60% of adult subjects being overweight or in the obese category. The number of bariatric operations being carried out remains small despite excellent outcomes in correction of diabetes as well as liver disease. Some favourable responses by industry to the Government's Soft Drinks Industry Levy, which will formally come into effect in April 2018, are being seen, with leading retailers and manufacturers already reducing the sugar content. The Commission also welcomes the recent announcement by the Department of Health and PHE of the next stage of the Childhood Obesity Plan, the aim being to reduce calories in the foods children consume most of, such as pizzas, savoury snacks and ready meals. But these initiatives alone will not reverse the obesity epidemic and Government cannot go on ignoring all the adults affected.

The one success this year follows the introduction of the new directly acting antiviral agents (DAAs) for the treatment of chronic hepatitis C virus infection (HCV). For the first time, mortality figures for the disease are reduced as well as the number of those with end-stage liver disease requiring liver transplantation. Increased detection of the presently unrecognised cases of chronic HCV in the community will be required if the 2030 elimination goal is to be achieved. Similarly, for chronic hepatitis B infection (HBV) the pool of unrecognised infections is a major problem. Universal vaccination of newborns for hepatitis B is now in place with introduction of a new hexavalent vaccine but HBV vaccination uptake amongst risk groups remains poor.

New metrics for hospital care include an analysis of survival figures for primary hepatocellular carcinoma, with only a small percentage of cases being diagnosed early enough to be offered curative therapy. Provision of care, as with other hospital services, continues to be worst in the regions of the country with the greatest socio-economic deprivation. Deficiencies in the current training programmes in hepatology for the specialist registrars (SpRs) are also highlighted. Insufficient experience is being obtained by the trainees in units which have a full range of diagnostic and treatment facilities.

For primary care and particularly for the detection of early liver disease, the appointment of a champion for liver disease by the Royal College of General Practitioners (RCGP) together with the British Liver Trust, is a step forward. New guidance will be published shortly by the British Society of Gastroenterology (BSG), on the management of abnormal liver blood tests, with an emphasis on determining potential aetiologies and in establishing severity of fibrosis. Uptake will need to be audited, as will a new disease coding system being introduced into primary care.

Finally, the report includes in the centre pages an abridged executive summary from the document prepared by the Commission entitled "*Financial case for action on liver disease: escalating costs of alcohol misuse, obesity and viral hepatitis*"(2). This brings together all the evidence available on costs to the NHS and wider society, with alcohol misuse in England and Wales costing over £21billion a year, possibly up to £52billion and with the costs of obesity in the order of £27billion a year (Treasury estimates put this as high as £46billion). In addition to this is the loss of tax revenue through the impact of lost years of working life and with further escalation anticipated, the case for major control measures becomes ever more compelling.

Concerted regulatory and fiscal action by the UK Government is essential if the scale of medical problems, with an estimated 63,000 preventable deaths over the next five years along with the costs to wider society, is to be tackled. The overall conclusion has to be that public education and voluntary restraints by the food and drinks industry will not be enough. The measures needed are set out in this report and echo those of a number of other expert reports produced during the year. Furthermore, the devolved nations - Northern Ireland, Wales and Scotland - as described in this report, are showing what can be achieved through strategic planning and selective funding.

## Introduction

This fourth report of the Lancet Commission on Liver Disease in the UK provides yet more factual evidence of the harm being done to the nation's health by excess alcohol consumption, obesity and viral hepatitis and the continuing failure to introduce effective measures of control particularly in England (1, 3, 4). Furthermore, new data came with the recent publication of *The 2nd Atlas of Variation – Public Health Profiles* by Public Health England (PHE)(5), showing that the previous steady rise in overall life expectancy has stalled and the gap between healthy and overall life expectancy is now 16.1 years for men and 19.0 years for women (Table 1). Lifestyle causes including smoking have a major influence in exacerbating poor health in the aging and have been implicated in 30% of dementia cases(6). Alcohol-related liver disease is likely to edge out heart disease as the first cause of preventable mortality in the middle age group. With ten million adults regularly drinking more than 14 units of alcohol each week - the upper limit of safe drinking for males set by the Chief Medical Officer (7), the extent of resulting morbidity and mortality is not surprising, particularly with the added influence that excess drinking has on obesity and its spectrum of disease complications.

The Atlas also reveals the poor provision of health services including deficiencies in the provision of diagnostic tests for liver disease including Fibroscan®, liver imaging and upper GI endoscopy, in certain regions of the country in association with poverty and social inequality.

**Table 1: Life expectancy data for males and females at birth, England 2013 to 2015** (Reproduced from data and with permission of Public Health England)

	Males	Females
Life expectancy	79.5	83.1
Healthy life expectancy	63.4	64.1
% of life in poor health	20.3	22.9

An important initiative of the Commission this year was the publication of the total costs of the three main lifestyle causes of excess alcohol consumption, obesity and viral hepatitis and the dramatic escalation that is anticipated on the basis of current trends. The document was entitled '*The Financial Case for Action on Liver Disease – the escalating cost of alcohol misuse, obesity and viral hepatitis*'(2). The prediction over the next five years unless trends are reversed, is that an additional £17billion to the current cost of £20billion will be incurred. The added cost from failure to take action on obesity alone could result in an additional £1.9-£2billion each year. The document, released on July 24<sup>th</sup> 2017, attracted considerable media attention(8) and the Parliamentary event planned around it, will also include the release of new factfiles on lifestyle costs developed for local authorities. Because of the importance of the findings, an abridged summary of the document has been included in this report.

A major effort has been made this year to bring together all those who continue to be involved in the lifestyle causes of disease affecting the country, so that a single, powerful voice could be put forward to Government. Of note is the involvement of the Alcohol Health Alliance, the Obesity Alliance, the Institute of Alcohol Studies and Cancer Research UK together with representatives from the London School of Hygiene and Tropical Medicine, the Sheffield Alcohol Research Group and the Royal Colleges, along with the Health Departments of the devolved nations.

Relevant to the Commission's recommendations are the Sustainability and Transformation Plans (STPs) of NHS England that are being developed to achieve a sustained improvement in health and social care, around the needs of local populations. Only six of the forty-four provisional sites have plans that mention liver disease specifically although there is mention of some action on alcohol in others. But whether this relates to the optimisation of existing services or the implementation of a new service and how closely the proposed arrangements mirror PHE's best practice guidance needs to be identified(9).

**Recommendation 1: Improving expertise and facilities in primary care to strengthen detection of early disease and its treatment, and screening of high-risk patients in the community.**

**Metrics 1-1-1-4:**

The Royal College of General Practitioners Research & Surveillance Centre (RCGP RSC) is one of Europe's oldest sentinel networks and has access to anonymised data from over two million primary care clinical records(10). The information in Table 2 comes from an analysis of adult patient records within its database. The figures are disturbing, showing in the last year only 26% of BMI and 18% of alcohol consumption being recorded. 3% of patients had an AUDIT and 0% of injecting drug users had their HCV status recorded.

**Table 2: RCGP RSC data on Primary Care Activity (patient numbers shown)**

	Numerator	Denominator	Read coded
Diagnosis of NAFLD	15,984	1,595,458	1.00%
BMI recorded in previous 12 months	421,785	1,595,458	26.44%
BMI recorded in previous 5 years	932,618	1,595,458	58.45%
Patient's alcohol units recorded 12 months	281,309	1,595,458	17.63%
Patient's alcohol units recorded 5 years	723,279	1,595,458	45.33%
Alcohol AUDIT recorded in 12 months	48,880	1,595,458	3.06%
Alcohol AUDIT recorded in previous 5 years	164,743	1,595,458	10.33%
No. injecting drug users with HCV 12 months	50	1,595,458	0.00%
Injecting drug users with HCV 5 years	118	1,595,458	0.01%

The numbers diagnosed with NAFLD and of chronic HCV infection in injecting drug users, are considerably lower than the known prevalence of these conditions in the population. Potential explanations for this include the diagnoses being recorded in ways that are not easily searchable in the RCGP RSC database. Investigation is needed urgently to identify why the systematic recording of liver disease data in primary care is so poor and mechanisms need to be put into place as a matter of urgency for monitoring three of the five recommendations in the recently published NICE Quality Standards on Liver Disease(11), namely:

1. Advice on physical activity, diet and alcohol to people with NAFLD
2. In NAFLD patients, regular testing for advanced liver fibrosis
3. Non-invasive testing of those with risk factors for cirrhosis

**Metric 1-5: Introduction of Read codes to cover liver disease**

A comprehensive list of recommended Read codes that cover investigations for liver diseases in primary care including Alcohol Related Liver Disease (ARLD), NAFLD and viral hepatitis, will be published when the British Liver Trust/RCGP Clinical Priority Programme launches a comprehensive web-based liver disease toolkit in September 2017. Starting in April 2018, however, there will be a move away from Read codes to a different clinical coding system - the Systematised Nomenclature for Medicine – Clinical Terms (SNOMED CT)(12) which will take considerable time in familiarisation. An additional development proposed for which there is also little information available currently, is the proposed use of automatically populated algorithm-based diagnostic systems such as Fib-4 (a measure of liver fibrosis) and NFS (non-alcoholic fatty liver disease score).

**Box 1: Liver disease in primary care – an example of best practice.**

*Dr Mead Mathews, GP Partner in Southampton with special interest in liver disease.*

The St Marys' surgery in Southampton took part in the LOCATE study and as a result concluded that the management of liver disease needed updating. Although Locate had defined an at risk population there was difficulty getting them to engage with only a 7% response rate to invitations to a nurse led liver clinic. This work was felt to be important as St Mary's is a large inner city practice, with much deprivation, immigration and potentially undiagnosed liver disease.

Using the Commission's proposed primary care pathway as a starting point, a clinical pathway was developed with the local hepatology department and a short term agreement made for direct fibroscan access. An at-risk population was defined and a flag added to the primary care records. On opening the notes a protocol is triggered that says "this patient is at risk of liver disease please consider a liver conversation". The aim behind this was to fully integrate the risk alert and consultation in to the primary care consultation making a "liver status check" as commonplace as discussing blood pressure.

To raise GP awareness and engage enthusiasm the surgery liaised with the British Liver Trust, who lent promotional material, and in September 2016 the practice launched its first liver campaign – the surgery was decorated, the waiting room promotional material directed patients to ask for a liver check and a new template was installed so that doctors could code and track patients along the pathway. The development of the template and recall process was the most difficult part of the project due to the lack of suitable Read codes.

The practice trained two nurses in liver disease, with anecdotal evidence of good initial changes in behaviour modification even pre-fibroscan. Of the 2700 patient at risk population 430 have been placed on the pathway to date. Early on in the data collection, it was found that patients who had failed to attend hepatology appointments in the past were re-engaging.

The project has led to more appropriate referrals and a reduction in unnecessary repeated blood/ultrasound ordering and it has now moved on with the development of a joint run practice based fibroscan clinic. A presentation of the pilot trial led to the local CCG asking to use the pathway to update local guidance.

**Recommendation 2: Establishment of acute liver services in district general hospitals linked with 30 regional specialist centres for more complex investigations and treatment, and increased provision of medical and nursing training in hepatology**

**Metrics 2-1-2-6:**

Follow-up metric data on provision of liver services in hospitals will not be available until the next survey of hospitals is carried out in 2018. Currently awaited also is information on possible hospital reconfigurations within the Sustainability and Transformation Plans of NHS England and how these will link with the recommended regional centres for more specialist work. The operational delivery networks (ODNs) that were set up by NHS England to deliver the anti-HCV drugs (see later in this report) have proved a successful way of delivering care for liver disease patients and may have application to other predominantly outpatient treatments. New metric data has also been obtained on hepatology training and on primary hepatocellular carcinoma.

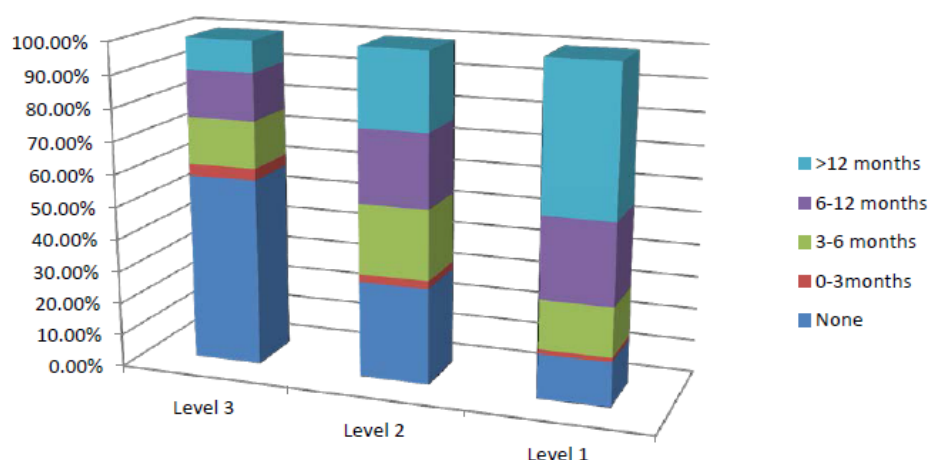
**Hepatology Training and Capacity**

The biannual surveys performed by the Trainees section of the British Society of Gastroenterology (BSG) have consistently reported low levels of confidence in managing certain aspects and conditions within Hepatology, even among senior trainees. A common theme is a lack of confidence in managing outpatient Hepatology, particularly viral hepatitis, autoimmune liver disease and liver transplants (timing of referral and indications). This is a major concern when up to 30% of trainees are reporting a desire to sub-specialise in Hepatology, with an additional 15% considering such a career move. The main barriers reported were a lack of local training opportunities and not wishing to change regions to obtain liver training.

At present, all trainees in Gastroenterology are expected to receive 6 months training in a Level 2 or Level 3 unit. Level 2 is one that provides:  $\geq 2$  Whole Time Equivalent (WTE) consultant Hepatologists, out-of-hours endoscopy (OOH), including management of varices, transjugular intrahepatic porto-systemic shunts (TIPSS), an hepatocellular carcinoma/hepatobiliary (HCC/HPB) multi-disciplinary meeting, loco-regional ablation treatments for HCC, antiviral treatment for hepatitis C as part of an Operational Delivery Network (ODN), liver histopathology, dedicated liver clinics, and a specialist nurse team including alcohol liaison. A Level 3 unit has in addition a liver transplant programme.

Figure 1 shows that most trainees spend the majority of their time in Level 1 units, with < 50% having experience of Level 2 hepatology training and just 40% gaining experience of Level 3. Furthermore, the Deanery Training Programme Directors (TPDs) consider that forty-seven units are providing Level 2 training whereas the UK Survey of Liver Services carried out in 2015-16 identified only nineteen units so that currently even fewer of the trainees are receiving adequate Level 2 training. To make up for this, it is recommended that trainees should spend a period of six months in an enhanced Level 1 unit, defined as a one that provides OOH endoscopy including care of varices, links to a major centre for HCC/HPB management, dedicated liver clinics and a specialist nurse team including alcohol liaison. Training capacity In England has also been examined. Currently there are deaneries without sufficient capacity for “Enhanced” Level 1 training, namely London NE and the North East and seven deaneries unable to accommodate enough trainees for Level 2 and 3 training.

**Figure 1 Senior Trainees (ST6/7/8 & SpR) were asked to identify duration of Level 1, 2 & 3 Hepatology training**



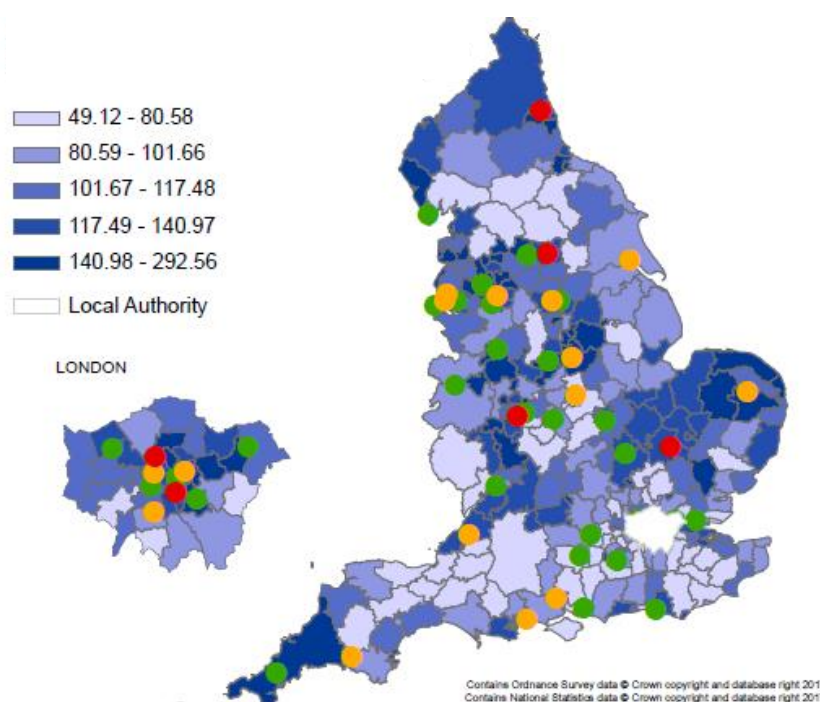
**Figure 2: Current distribution of training centres in England in relation to hospital admissions for liver disease of all ages (standardised rates per 100,000 population, 2014-15) showing poor provision in some areas of high prevalence.**

Map prepared under licence by Public Health England. © Crown copyright and database right 2017.

**Indicator source:** PHE, Liver Disease Profiles, Indicator 90892; **Numerator source:** Hospital Episode Statistics; **Denominator source:** ONS 2011 Census based mi-year population estimates.

#### Training centres

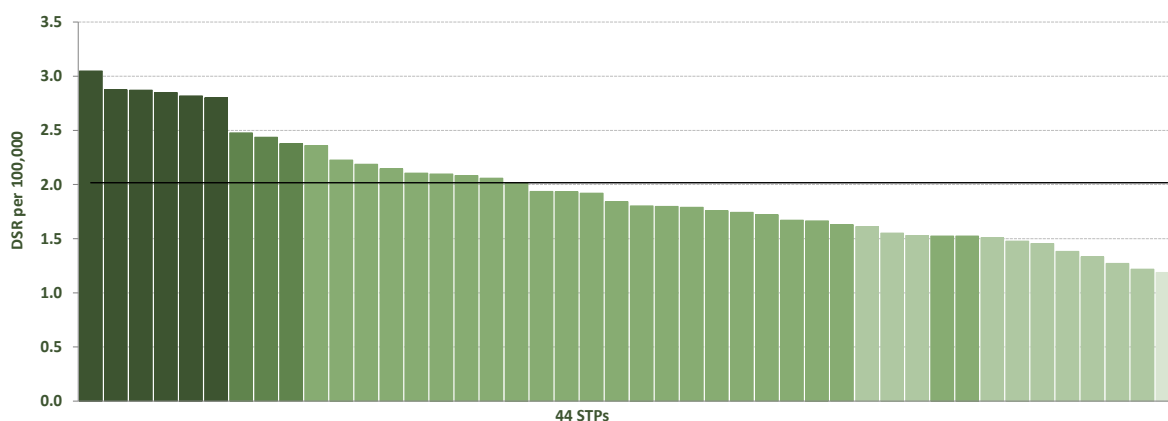
- Enhanced Level 1
- Level 2
- Level 3





### New Metric for Primary Hepatocellular Carcinoma:

Figure 3 shows the considerable variation in mortality rates for primary hepatocellular carcinoma between the regions, as mapped by the STPs, a reflection again of the greater burden of disease and lack of specialist services in the more deprived areas. For 2011-15, values ranged from 1.2 to 3.0 per 100,000 population - a 2.6-fold difference in the mortality rate between STPs. The steady rise in the number of cases in the UK developing primary HCC as described in last year's Commission report, is a reflection of the continuing two most frequent causes, namely excess alcohol consumption and obesity (often in combination).



**Figure 3: Box plot showing variation in mortality rate under 75 years due to Hepatocellular Carcinoma by Sustainability Transformation Plan (2011-2015); standardised mortality per 100,000 Population**

The percentage of persons aged 15 years and over with hepatocellular carcinoma receiving treatment with curative intent (liver transplantation or major liver resection or ablation) is depressingly low at around 16% (Table 3). There is also considerable variation between the geographical regions from 11.4 to 17.3%.

**Table 3: Percentage of cases aged 15 years and over with hepatocellular carcinoma receiving treatment with curative intent (liver transplantation, major liver resection or ablation) within 6 months of diagnosis, by region (2010-2014) (Data from PHE)**

	Diagnosed	Number treated and %	
East Midlands	710	112	15.8%
East of England	1,038	167	16.1%
London	1,323	204	15.4%
North East	676	77	11.4%
North West	1,667	270	16.2%
South East	1,342	188	14.0%
South West	1,059	173	16.3%
West Midlands	1,043	180	17.3%
Yorkshire and The Humber	1,119	193	17.2%
<b>England</b>	<b>9,977</b>	<b>1,564</b>	<b>15.7%</b>

Figure: 4 Executive Summary of the Financial Case for Action on Liver Disease(2)





! Current trends could result in added health costs to the UK of £1.9-2bn each year and £14bn to businesses annually by 2035.

## RECOMMENDATIONS

- **Implement further fiscal measures on foods high in sugar, salt and fat:** NICE forecasted savings of £576m each year by year five if sugar was reduced to 5% of total daily energy intake
- **Close the loopholes in advertising to ban adverts for junk food and sweets before 9pm:** A review of 22 studies worldwide found a link between children's exposure to junk food adverts and consumption
- **Introduce mandatory controls on supermarket price promotions for unhealthy food and drink:** Public Health England estimated that if future promotions were banned, 6.1% would be cut in overall sugar volume
- **Offer weight loss surgery to obese people with diabetes:** The initial cost of £6,000 pays for itself within 2 – 3 years by reducing the health burden



## Viral hepatitis

Progress to overcome viral hepatitis is hampered by gaps in data on the prevalence, health burden and financial costs of hepatitis B (HBV) and C (HCV).

The number of individuals chronically infected with HCV in the UK was estimated to be 216,000, although other studies have suggested the true figure could be as high as 466,000 with 86% unaware they are infected. HBV has also become a major challenge for the UK, with a similarly large pool of people affected by the disease. Marginalised populations face a greater risk, notably individuals who inject drugs, prisoners and immigrant populations.

Further efforts must be made to collate the necessary data to understand the total financial cost of viral hepatitis to society, but for HCV alone, it is thought that lost productivity is worth up to £367m per year.

Between 2010 and 2015, preliminary estimates of cases of HCV-related cirrhosis or hepatocellular carcinoma increased from 1,336 to 1,692 in England.

Whilst there is a cost associated with recent novel oral antiviral treatments for HCV into the NHS, NICE deems their use as cost-effective, mitigating even higher costs of complications of advanced liver disease. A study of five European countries found that HCV treatment resulted in savings of £435m annually due to improvements in work productivity.

! Disease detection and treatment of patients affected by viral hepatitis in the UK remains often sub-optimal.

The full paper including referencing can be found on the Foundation for Liver Research's website: [www.liver-research.org.uk](http://www.liver-research.org.uk)

The Foundation for Liver Research received an unrestricted educational grant from Norgine in support of this engagement programme. Norgine has no editorial control over this activity.

## COST CHALLENGES

NHS  
£6.1bn  
per year  
in England



SOCIAL CARE  
£352m  
per year  
in England



LOST  
PRODUCTIVITY  
£7.3bn over  
2 years in  
the UK



WELFARE  
Up to £6bn  
per year  
in the UK



## RECOMMENDATIONS

- **Immunisation for all individuals with risk factors for HBV:** Immunisation for babies born after 2018 should be extended to all individuals with risk factors
- **Improve access to testing and diagnosis of hepatitis:** Public health budgets must be boosted to offer effective diagnosis in the community, with a particular focus on high risk groups and/or not in regular contact with health services
- **Protect harm reduction services:** Funding must be protected, and access enhanced



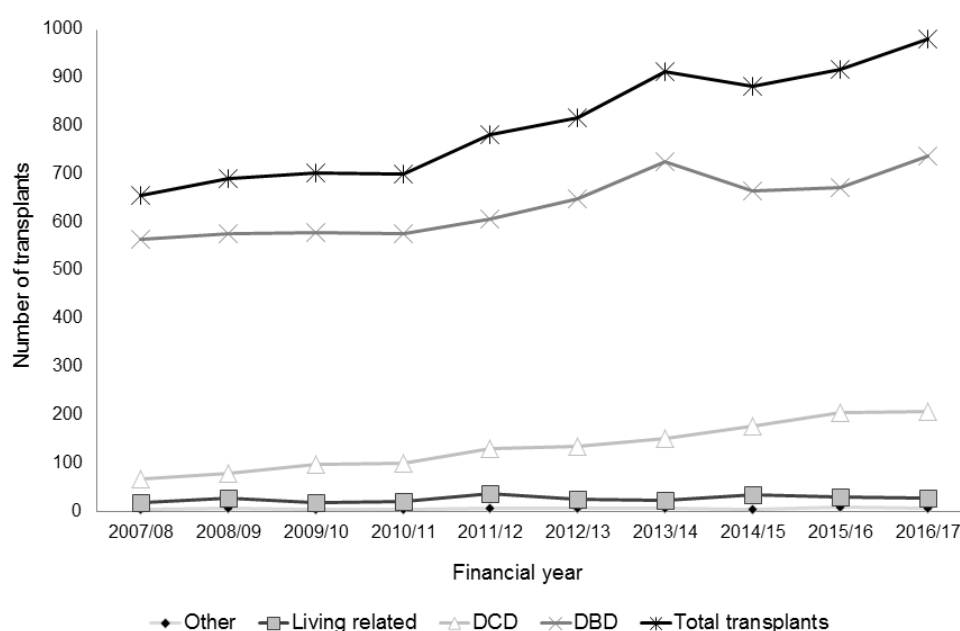
### Recommendation 3: A national review of liver transplantation to ensure better access for patients and to increase capacity

#### Metrics 3.1 – 3.5

1003 transplants were carried out in 2016 (children included) representing a significant increase over previous years as illustrated in Figure 5 which also gives the breakdown into donation from donors after brain or cardiac death and after living donation. The number of transplants carried out is still less than the number of new registrants added to the Waiting List – 1169, compared with 600 previously. Seventy-two of those on the waiting list died or were removed (168) as they had become too sick. The 30-day survival rates for elective transplantation, the traditional metric used in Qsum analyses to monitor performance, are at 95-100% but five year survival rates vary considerably across the transplant centres.

Of the new initiatives being developed to expand the donor pool, normo-thermic machine perfusion is particularly promising. This should decrease the proportion of potential grafts considered unsuitable for implantation (15% of donated organs in 2016/17) and is likely to have most impact on donation after cardiac death. A pilot study is under consideration to extend to those in urgent need of transplantation, the use of organs from Hepatitis C positive donors, this being linked to guaranteed access after surgery to the new directly acting antiviral agents.

Encouraging also is the increase in organ donation rate in Wales during the first twelve months after introduction of presumed consent, with an increase in all transplants from 120 in 2014 to 160 at year end 2016, accompanied by a rise in the family consent rate from 49 to 59%. Living donors increased by 20% compared with a 2% fall across UK. A quarter of the donations in Wales came from "presumed consent" dispelling doubts that this would discourage public goodwill towards donation and there is no reason for its introduction in England to be questioned any more.



**Figure 5: Annual number of liver transplants in the UK, 2007/8-2017/17 (data from NHS Blood and Transplant)**

The new national offering sequence for donation is scheduled to start operating from December 2017 for donors after brain death, with extension to donors after circulatory death thereafter. With the first offer of an organ no longer being directed to the centres but to the highest ranked suitable patient in the UK, equity of access for patients will be ensured and benefit maximised. The marked variation between centres currently in the acceptance of donated organs is another aspect requiring investigation.

Essential within the strategic review NHS England is due to carry out in 2018, will be an examination of increasing capacity within current centres. The setting up of new centres to provide more equitable and better access for the patients was strongly endorsed in last year's Commission report, with the South West (Plymouth) and North West (Liverpool) being the first places to be considered.

**Recommendation 4: Specialist paediatric services and continuity of care in transition arrangements for children with liver disease reaching adult life.**

**Metrics 4.1-4.3**

Data on the number of children born at term with persistent conjugated jaundice lasting longer than 14 days in term babies and 21 days in pre-term, referred to the three national paediatric liver units before 8 weeks old, is shown in Table 4 (comprising Metric 1.6 in the 2015 Lancet report). Over the five year period, although the majority of the 258 children diagnosed with extra hepatic biliary atresia (EHBA) were referred before 56 days of age, the range was wide (0-242 days) and there were 56 children referred after that time. This is too late for a benefit to be obtained from early surgery(13) and represents an unacceptable failure in the system. Further support and encouragement needs to be given to the three specialist centres in their efforts to improve early diagnosis.

**Table 4: Conjugated jaundice (aged <6 months) and diagnosis of extra hepatic biliary atresia in referrals to the three National Paediatric Liver Units 2012-2017.**

Centre	Referrals (number)	EHBA (number)	Median age and range (days)	EHBA > 56d
BCH	661	69	49 (10-104)	15 (0.7%)
KCH	902	126	50 (0-242)	31 (1.4%)
Leeds	554	63	34 (4-126)	10 (0.5%)
Total	2117	258	45 (0-242)	56 (2.6%)

BCH: Birmingham Children's Hospital, KCH: King's College Hospital

On the training front, an electronic questionnaire on transition arrangements and continuity of care for children with liver disease reaching adult life, prepared in collaboration with the British Society for Gastroenterology, will be sent to adult gastroenterology and hepatology units who have >3 WTE hepatologists or who meet Level 2 training criteria. A draft document specifying training requirements for Physicians caring for young adults with liver disease has also been submitted to the Specialist Advisory Committee in Gastroenterology(14) and metric data is urgently needed on what arrangements are currently, or are being put in place.

**Recommendation 5: Measures to reduce overall alcohol consumption in the country**

**Metric 5.1-5.2: Alcohol Policy, Alcohol Consumption and Alcohol Use Disorders**

A report by PHE on an evidence based alcohol policy was published as a peer reviewed paper in the Lancet(15) and is currently with ministers for review, having been submitted to them in late 2016. It confirms findings of previous reports, most recently by the OECD(16), that fiscal policy is by far the most effective and cost-effective policy option, with effective regulation of alcohol marketing an important step in reducing the exposure of children to marketing pressures.

The situation in Scotland is more promising with a final Supreme Court decision on Minimum Unit Pricing (MUP) expected in October 2017 and with the Scottish Government anticipating being able to action the law early in 2018, subject to the Court decision. Wales is following a similar path and the comprehensive new alcohol strategy of the Northern Irish government includes MUP and strong regulation of marketing with a variant of the French Loi Evin(17). The scenario is therefore set for the most important natural experiment on alcohol policy in decades, with England in the role of placebo control.

UK alcohol consumption, which peaked at around 5,642,000 hl (hectolitres) in 2008/9, dropped when the duty escalator was introduced to around 4,843,000 hl in 2013/4. Since the duty escalator was withdrawn, consumption has increased again to 5,126,000 hl in 2016/7. Total alcohol clearances have been estimated using an Alcohol by Volume (ABV) figure of 5% for cider and 13% for wine (data from the HMRC Alcohol Bulletin, May 2017). These changes illustrate how responsive population alcohol consumption is to small changes in

taxation and in the Commission's view cannot be overlooked in the Government's response to the many voices recommending an increase in alcohol taxation to reduce alcohol consumption in the country.

Key numbers on prevalence of alcohol use disorders in England(18) defining the extent of the problem, were as follows:-

- In 2014, 7.1million (16.6%) adults in England drank at hazardous levels (AUDIT 8-15) and a further 813,000 (1.9%) (AUDIT 16-19) were harmful or mildly dependent drinkers(19)
- There were 595,131 adults with alcohol dependence in need of specialist alcohol treatment in England, which represents 1.4% of the 18yr+ population(18)
- Of these an estimated 173,399 displayed moderate severity and 107,979 had severe dependence(18)
- 57% of alcohol dependent adults had a desire to cut down their drinking and 41% intended to do so "in the near future"(18)

The prevalence of alcohol use disorders in England has shown several changes between successive waves of the Adult Psychiatric Morbidity Survey between 2000 and 2014(19). The proportion of men drinking at hazardous levels and above reduced from 36.8% in 2000 to 27.9% in 2014, but the proportion of women drinking at this level did not change. Overall the proportion of men and women who were harmful or mildly dependent drinkers (AUDIT 16-19) did not change over this period. However, there were important changes in different age groups. The prevalence of harmful drinking or mild dependence in young adults aged 16 to 24 fell from 6.8% in 2000 to 4.2% in 2014, but in men and women aged 55 to 64 the prevalence increased from 1.3% to 2.8% over the same period(19). This latter trend mirrors the rise in alcohol-related hospital admissions over the same period.

### **Metric 5·3: Treatment Access Rates in Hospital and Community Alcohol Services**

Ensuring access to specialist alcohol treatment in the community is a key element of the WHO Global Alcohol Strategy which advocates "Individuals and families affected by the harmful use of alcohol should have access to affordable and effective prevention and care services."(20). One UK study of psychosocial treatment for alcohol dependence showed savings to the public sector of £5 for every £1 spent(21). A recent economic analysis by PHE also concluded that alcohol screening and brief interventions, together with Alcohol Care Teams and Alcohol Assertive Outreach teams proactively engaging with social care services, will return exponential savings over the cost of delivery(15).

The number of people accessing specialist alcohol treatment are recorded in England by the National Drug Treatment Monitoring System. Since 2008 this has increased slightly from 107,218 in 2008/09 to 113,222 in 2015/16 (Table 5)(22). Scotland does not have an equivalent monitoring system, but treatment access surveys on waiting times in Scotland provide estimates of the number of people accessing treatment(23) and show proportionately a greater level of access: from 16,952 in 2008/09 to 28,500 in 2015/16. This increase in alcohol treatment numbers coincided with an additional annual investment in treatment services of £28million, taking the total alcohol treatment budget from approximately £61million to £89million. There was no equivalent increase in the alcohol treatment budget in England over the same period.

The ratio of treatment access to alcohol dependence hospital admissions, which serves as a proxy indicator of the prevalence in the general population, reduced slightly from 1.56 to 1.40 between 2008/09 to 2015/16 in England, whereas in Scotland the ratio increased considerably from 1.75 to 2.69, amounting to a two-fold difference between England and Scotland. A higher ratio indicates greater access. This provides additional evidence of the need to upgrade measures to reduce the present levels of dependence and increase treatment access in England (Table 5).

**Table 5: Access to specialist alcohol treatment, hospital admissions and treatment access ratios in England and Scotland 2012/13 to 2015/16.**

	England			Scotland		
Year	Treatment access	Hospital admissions*	Access ratio	Treatment access	Hospital admissions*	Access ratio
2012/13	115,171	77,820	1.48	32,000	10,320	3.10
2013/14	120,522	79,920	1.51	30,601	10,885	2.81
2014/15	117,235	80,220	1.46	29,515	10,749	2.75
2015/16	113,222	81,080	1.40	28,500	10,581	2.69

\*ICD-10 F10.2, F10.3, F10.4

In 2017/18, a national prevention Commissioning for Quality and Innovation scheme (CQUIN) including alcohol was implemented in mental health and community trusts, with secondary care to follow in 2018/19. Hospital trusts who deliver identification and brief advice (IBA) to 80% of patients will receive financial reimbursement. To support local planning and commissioning in relation to the CQUIN, PHE published local guidance(9) which includes the following recommendations:

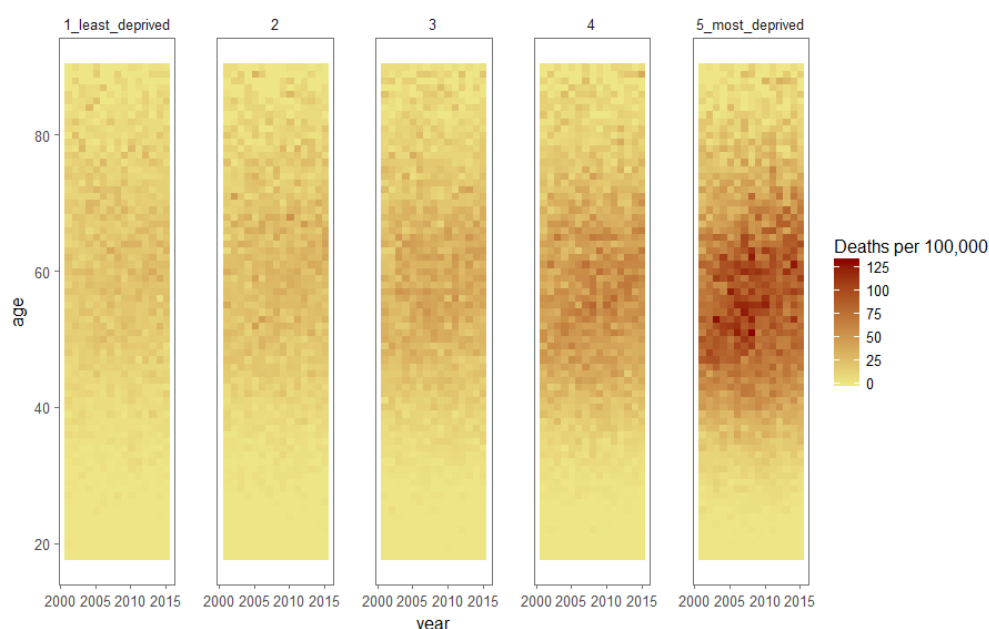
1. establish and / or optimise alcohol care teams in district hospitals
2. provide alcohol IBA in primary and secondary care settings
3. establish alcohol assertive outreach teams
4. establish clear care pathways for sustained engagement with high volume users
5. Prompt access to treatment services for parents identified as harmful/dependent drinkers with agreed pathways to reduce risks to children.

Although published plans for Sustainability and Transformation Partnerships mention some action on alcohol, it is not possible to know if this relates to the optimisation of existing services or the implementation of a new service, or how closely the proposed arrangements mirror PHE's best practice guidance alone(9).

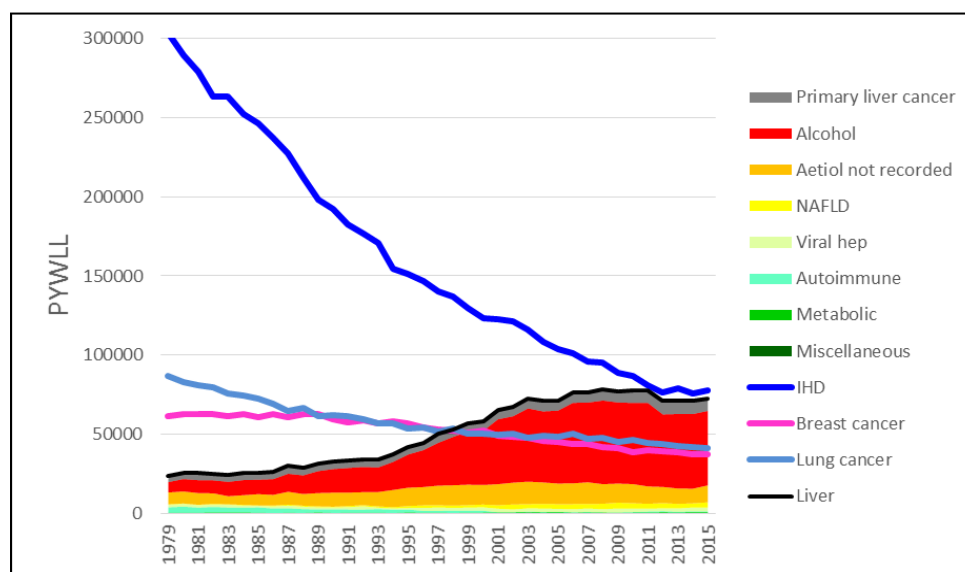
Whether the situation will be improved by the recently announced Government Drug Strategy 2017(24), which highlights the importance of preventing drug and alcohol misuse, with an emphasis on investing in a range of evidence based programmes, remains to be seen.

#### **Metric 5·4·5·5: Alcohol Related Mortality, Years of Life Lost and Hospital Admissions,**

Alcohol related deaths in England and Wales fell from a peak of 7,312 in 2008 when the alcohol duty escalator was introduced to 6,999 by 2012. The escalator was abolished in 2013 since when deaths have increased to 7,630 in 2016(25). As shown in the heat-map (Figure 6), there is close correlation between liver disease mortality and the socio-economic deprivation index. Mortality is mainly seen in the young and middle aged group. In 1979 ischaemic heart disease (IHD) resulted in 12.6 times as many years lost as liver disease, lung cancer 3.2 times and breast cancer 2.4 times. In 1999, liver disease outstripped lung cancer and breast cancer and is finally set to outstrip ischaemic heart disease as the leading cause of working years of life lost (Figure 7).

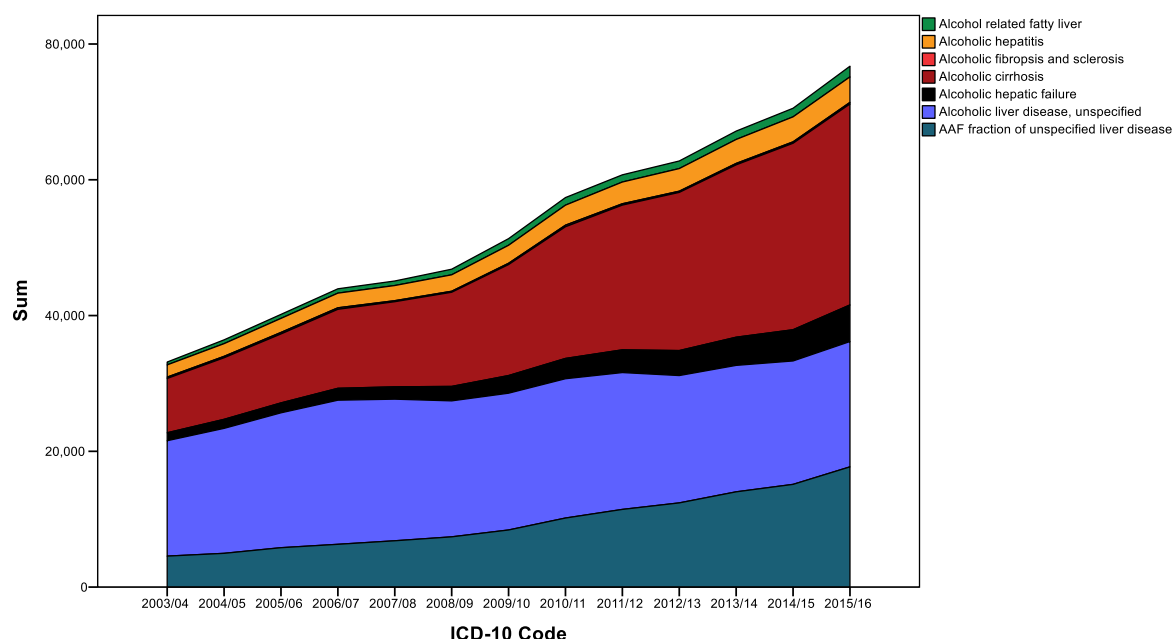


**Figure 6: Heat map showing mortality rates per 100,000 of population attributable to alcoholic liver disease by age and IMD (Index of Multiple Deprivation) quintile. Stark socioeconomic inequalities are shown, with the highest density of deaths indicated by dark colours, in the middle-aged deprived population. Data analysis Petra Meier and Colin Angus.**



**Figure 7: Potential years of working life lost (prior to age 65) estimated using ONS mortality 1979-2015(26, 27) categorised into 5 year age bands. (Analysis by Nick Sheron).**

Of the two official measures of alcohol related hospital admissions, the broad measure includes both primary and secondary diagnoses and is a more accurate reflection of the total burden of alcohol related harm. The newer, narrow measure introduced in 2014 to compensate for changes in coding includes only primary diagnoses of an alcohol related cause and is substantially lower than the broad measure(28). During 2015/6 there were 1.1 million broad measure admissions representing 7% of total hospital admissions, an increase of 4% compared with the previous year and the narrow measure increased by 3% to 339,000 admissions(29). The peak age group for admission was 45-54yrs, and 39% of patients were aged 45-64yrs. 61% were male. Blackpool had the highest number (3,540/100,000 population) and Kingston upon Thames the lowest (1,400/100,000). The broad measure of alcohol related liver admissions increased from 70,540 in 2014/5 to 76,730 admissions in 2015/6, an increase of 8.5% (Figure 8).



**Figure 8: Alcohol related liver disease hospital admissions in England (broad measures)(15)**

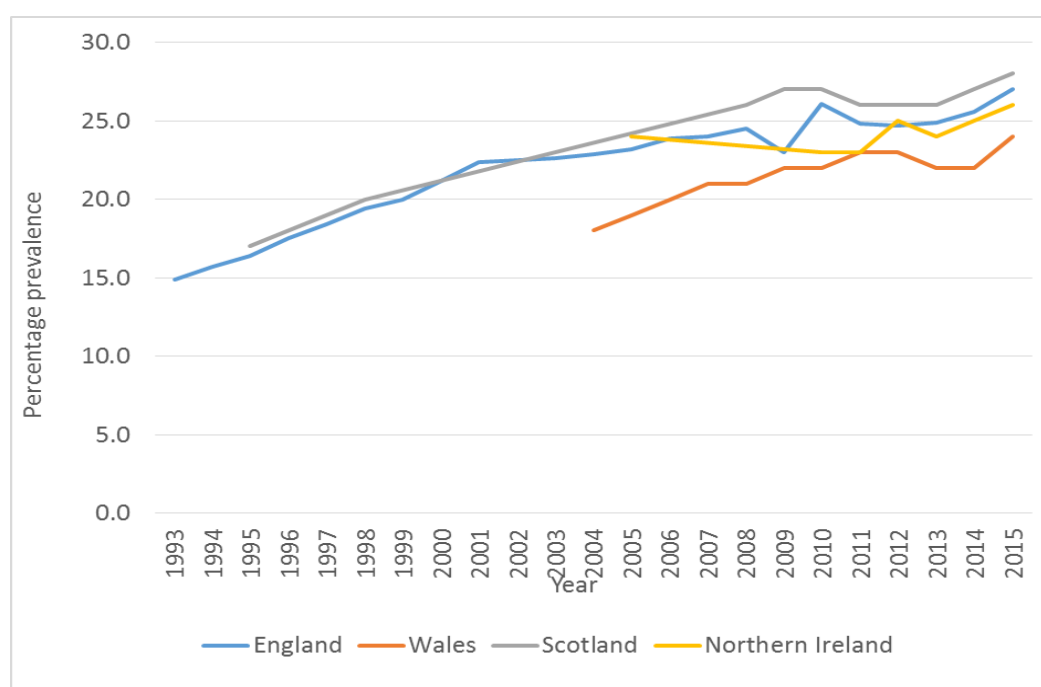


## Recommendation 6: Promotion of healthy lifestyles to reduce obesity and the burden of NAFLD

### Metrics 6-1:

New data has been added for each of the metrics in this section. The trend in prevalence of adult obesity (body mass index  $\geq 30\text{kg/m}^2$ ) in England, Wales, Scotland and Northern Ireland is shown in Figure 8 below, using data from the Health Survey for England and equivalent surveys in Wales, Scotland and Northern Ireland. All countries show a rising trend in the prevalence of obesity. The lower reported prevalence from the Welsh Health Survey may reflect the use of self-reported data which tend to understate the prevalence of obesity(30), whereas the other surveys use measured height and weight data.

Comparable data on childhood obesity from across the UK is lacking, with Wales publishing data on a different age group from England and Scotland, and Northern Ireland using a different definition (International Obesity Task Force thresholds rather than the UK90 cut-offs)(31). Data that are available appear to show a tendency towards a levelling off in the prevalence of childhood obesity, although the average figures are likely to conceal widening inequalities in socio-economic distribution, by ethnicity, and in severity(32, 33).



**Figure 9: Adult (aged 16+) obesity (body mass index  $\geq 30\text{kg/m}^2$ ) prevalence in England, Wales, Scotland and Northern Ireland 1993-2015**

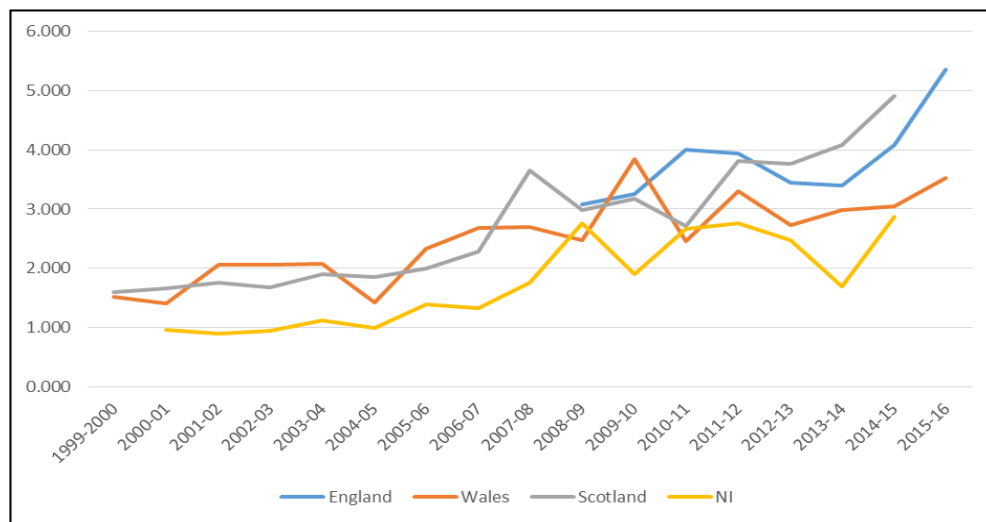
### Metric 6-2 Progress against Health Select Committee recommendations

The Government's Child Obesity Plan from 2016 remains as the primary statement of policy in this area(34) but it was updated in August 2017 with the addition of a focus on calorie reduction targeted on the kinds of food that children consume the most. Developments in terms of the industry's responses to the Government's Soft Drinks Industry Levy (SDIL) are expected to take effect from April 2018(35). Levy rates of 18p/l for drinks with an added sugar content above 5g/100ml, and 24p/l for drinks with an added sugar content above 8g/100ml, were set out in the Finance Act 2017(36) and a number of soft drinks manufacturers have already started to reformulate their products to the extent that the Treasury now anticipates reduced revenue from the levy(37). There is a growing evidence base on the effectiveness of taxing sugar sweetened drinks(38-41) but the lack of a Government obesity plan for adults is of major concern.

In addition, during 2017 Public Health England has published guidelines for industry on reducing the amount of sugar in children's diets(41), guidance for Local Authorities on commissioning adult weight management services(42) and on encouraging healthier out of home food provision(43), and guidance on healthy spatial planning(44).

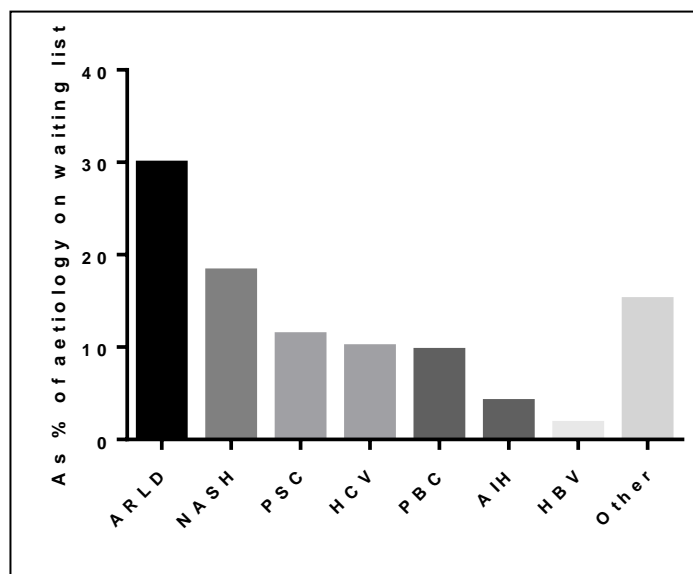
### 6.3 Prevalence of NAFLD/non-alcoholic steatohepatitis in secondary care

The annual number of finished consultant episodes for NAFLD shows steady increases in hospital activity across the four nations (Figure 10) (45).



**Figure 10: Finished Consultant Episodes (FCEs) per 100,000 population in England, Wales, Scotland and Northern Ireland 1999-2016**

The growing liver disease burden from NAFLD is also reflected by the numbers of patients being listed for transplantation, with NAFLD now the second commonest indication for liver transplantation in the UK (Figure 10).



**Figure 11: Aetiology of liver disease patients on liver transplant waiting list as of January 2017**

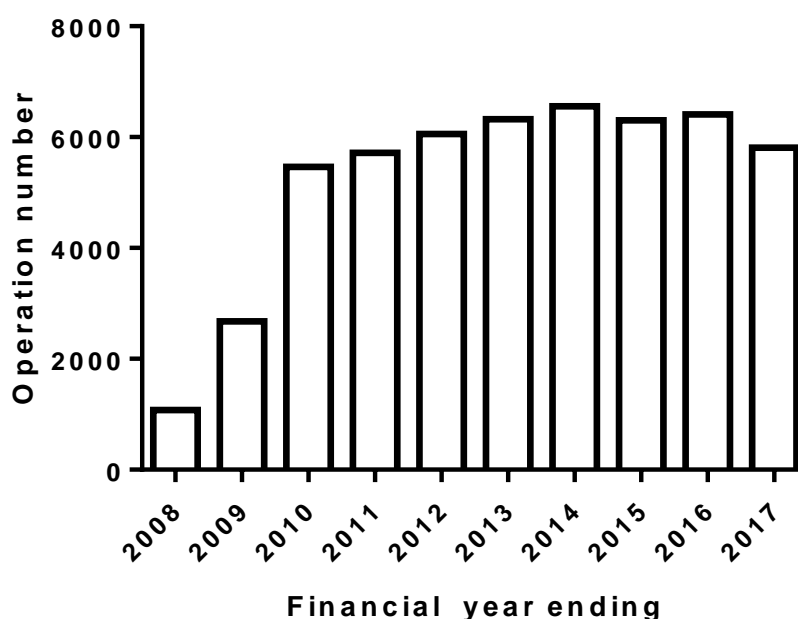
ARLD - Alcohol related liver disease;  
NASH - Non-alcoholic steatohepatitis;  
PSC - Primary sclerosing cholangitis;  
HCV - Hepatitis C infection;  
PBC - Primary biliary cirrhosis; AIH -  
Autoimmune hepatitis;  
HBV - Hepatitis B infection

### Metric 6.4: Number of primary bariatric surgery operations

Around 2 million people in the UK fulfil NICE eligibility criteria for bariatric surgery, namely a BMI  $\geq 35$  kg/m<sup>2</sup> with an obesity-associated co-morbid condition, or a BMI  $\geq 40$  kg/m<sup>2</sup>. Liver disease (NAFLD) is often either the indication for bariatric surgery or a co-morbid diagnosis. In the most recent financial year, 9% of all patients undergoing bariatric surgery had a diagnosis of liver disease.

Despite the effectiveness of the bariatric surgical procedure in terms of diabetes reversal/amelioration, co-morbid disease reversal and significant weight loss, fewer than 6,000 operations were undertaken in 2016 which

is less than 0.3% of the eligible population. The most recent data from the Health and Social Services Information Centre indicate an almost 10% fall in the number of procedures (Figure 12) since last year and it is unacceptable that there is this marked under provision of bariatric surgery.



**Figure 12: Number of primary bariatric operations performed annually in the UK**

**Recommendation 7: Elimination of chronic HCV infection from the country by 2030 and a major reduction in the burden of disease for hepatitis B**

**Metric 7·1: Number of HCV-infected patients treated with new HCV direct-acting antivirals and achieving cure or SVR12 (linked with WHO indicator 8).**

The efficiency, ease of use and overall safety of the new directly acting antiviral agents against HCV infection have enabled real progress to be made in the UK towards the goal of elimination of this infection and reduction of the associated burden of liver disease. NHS England data shows the 22 HCV Operational Delivery Networks have been able to treat 9,440 cases between April 2016 to March 2017(46), and plans are now in place to treat 12,500 in 2017/18. An interim analysis of Sustained viral response (SVR) data from the national programme in England completed in November 2016 showed that of patients who were alive three months after cessation of therapy and for whom data was available, 92.4% of patients had achieved SVR(47).

Similarly for Scotland, 1,685 patients were treated between April 2016 and March 2017 (35% with Fibrosis stage 3-4) (48) and in Wales, the 781 treated patients had a predicted/estimated SVR of 95%. In Northern Ireland, of the 105 patients treated between March 2015 and July 2016, SVR was achieved in 95%.

**Metric 7·2: Number of patients diagnosed with HCV and HBV**

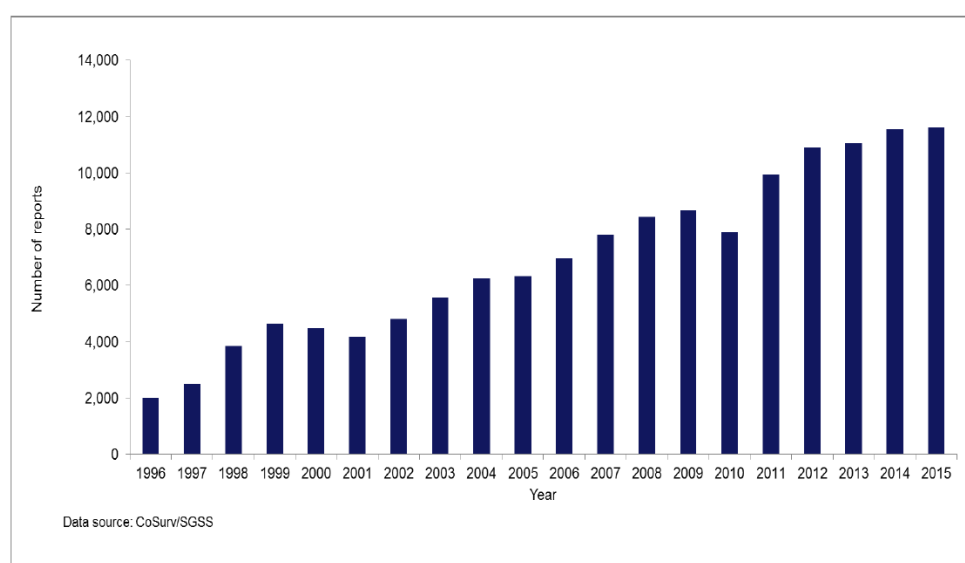
**HCV:** With a background of a steadily increasing number of laboratory confirmed reports in England since the 1990s, there were in 2015 11,605 laboratory reports of individuals testing positive for HCV. Consistent with this, testing from twenty-three sentinel laboratories showed a rise in the number of tests undertaken of 18.6% between 2011 and 2015 (Figure 12), although the proportion of positive results declined from 2.6% in 2011 to 1.5%. The inference from these figures is that the number of new diagnoses will have to be increased considerably if the proposed rise in numbers treated with the DAAs is to be sustained(49).

The situation in the drug addiction clinics where most cases of HCV infection are encountered is far from satisfactory. Only around half of patients who inject drugs (PWID) are aware of their HCV antibody status and this figure has remained relatively stable over the last 6 years. Surveys do not show any reduction in the numbers of new HCV infections and the estimated prevalence of HCV infection in recent initiates to drug use

was 27% in 2016 compared to 23% in 2006(50). Moreover the proportion of PWID reporting adequate needles/syringe provision is sub-optimal, with only about one half of those surveyed reporting adequate provision for their needs. With these findings, the WHO Global Health Sector Strategy(51) call to reduce new cases of chronic HCV by 30% by 2020 and 80% by 2030, is a significant challenge for the NHS and in England it is unlikely to be met.

Figures for the devolved nations are more encouraging in showing a significant reduction in number of new diagnoses following the introduction of the DAAs. In Scotland, the number of new cases of Hepatitis C antibody positivity fell to 1594 in 2016, compared to 1815 for 2015. In Wales, provisional data from laboratory reports showed a reduction in new HCV antibody positive cases - 531 were diagnosed in 2016 compared to 612 in 2015, and in Northern Ireland, the number of new laboratory confirmed antibody positive reports for 2016 was down 13 % on the figure for 2015.

**Figure 13: Number of laboratory reports of hepatitis C for England: 1996 to 2015**



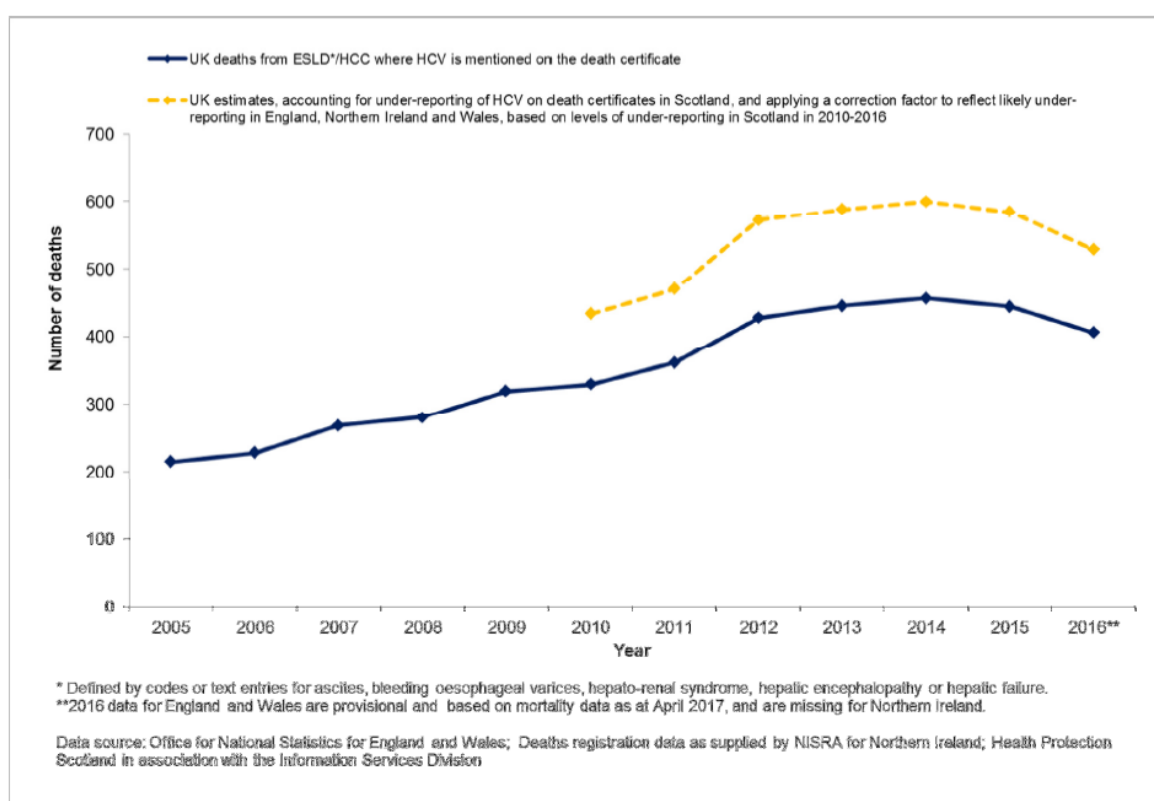
© Crown Copyright courtesy of Public Health England. We would also like to acknowledge and thank the staff who work in the laboratories who contribute to the laboratory surveillance of hepatitis C.

### **HBV infection**

No new data is available on the number of HBV diagnoses for England since the 2015 data given in the last Lancet report. Figures for Scotland are also awaited, as are those for Wales. In Northern Ireland, a total of 101 Hepatitis B infections were reported in 2016, of which 18 were new antenatal cases, compared to a total of 91 Hepatitis B infections reported in 2015 of which 11 were new antenatal cases. In people who inject drugs (PWID), the Unlinked Anonymised Monitoring Survey(52) shows the prevalence of antibodies to the hepatitis B core antigen (anti-HBc, a marker of past or current infection) across England, Wales and Northern Ireland, has declined since 2006 from 26% down to 13% in 2015 although the uptake of the hepatitis B vaccine has not increased, with at least 20% of subjects still not being protected (Figure 14).

### Metric 7-3: Mortality from HCV and HBV

A recent report(49) compiling data from different sources in England, Scotland, Wales and Northern Ireland shows that the number of new cases of HCV-related end-stage liver disease (ESLD) or hepatocellular carcinoma (HCC) remained fairly stable at around 1875 per year (range 1809-1933) from 2011-2015. Deaths in the UK from ESLD or HCC where HCV was mentioned on the death certificate rose steadily from 215 in 2005 to 456 in 2014 but dropped in 2015(49), the first year in which the new DAAs were used in advanced liver disease. Preliminary UK data initially suggested an 11% fall in deaths for 2015 but this figure was subsequently revised to 3% due to high numbers of late reports of HCV-related ESLD/HCC in 2015. The preliminary figures for 2016 suggest a further 7% fall in England, Scotland and Wales but again these figures remain provisional. The number of liver transplants had also decreased from 122 transplants in 2014 to 83 in 2015. This suggests that new drugs may already be having an impact on mortality from HCV-related ESLD and primary HCC. The World Health Organisation Global Health Sector Strategy on Viral Hepatitis 2016-2021 is aiming for a reduction in HCV related mortality of 10% by 2020(51) and this will need to be maintained to achieve the targeted reduction in mortality of 65% by 2030. Achieving this for England will be dependent, as indicated earlier, on increasing the number of positive cases being diagnosed whose infection is currently unrecognised.



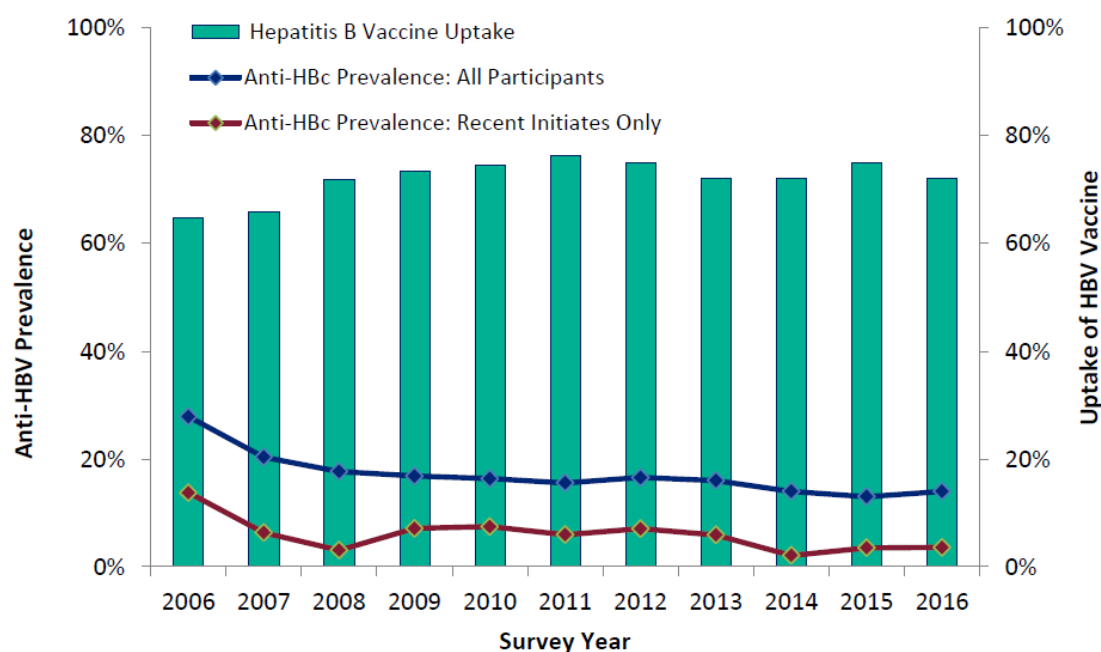
**Figure 14: Deaths from HCV-related ESLD\* or HCC in the UK: 2005 to 2016**

© Crown Copyright courtesy of Public Health England

Mortality figures from chronic HBV infection, though greatly reduced following introduction of nucleoside drugs which inhibit viral replication, are still being affected by instances of viral reactivation and the risk of primary HCC long term. With the new curative drugs for HBV under clinical trial it is strongly recommended that funding and administrative arrangements are put in place for their introduction, as has been so successful for the new anti-HCV agents. Similarly, the substantial currently unrecognised pools of chronic HBV infection in the community need to be addressed through screening procedures at general practice level.

#### Metric 7-4: numbers of infants starting and numbers completing a course of HBV vaccination

The figures for 2016-2017 in England are encouraging, with data from the COVER programme (53) showing that of a total of 2245 infants born to HBsAg positive mothers, 85% completed a course of three vaccinations by twelve months of age and 69% had completed the full course with a fourth dose by the age of two years, compared to 2010 when there was 88% at one year and 72% at two years reported in 2015-16(53). Similar data from Wales shows 94% completion of a course of three vaccinations by 12 months of age and 90% completing the full course with a fourth dose by the age of two years(54).



Note: A recent initiate is someone who first injected during the preceding three years.

**Figure 15: Prevalence of anti-HBc and uptake of the vaccine against hepatitis B among participants in the Unlinked Anonymous Monitoring Survey of PWID: England, Wales and Northern Ireland: 2006-2016**  
© Crown Copyright courtesy of Public Health England

#### Metric 7-5: Universal vaccination for HBV

At long last in place and later this year a new hexavalent vaccine will be introduced for primary baby immunisations across the UK, providing protection against diphtheria, tetanus, pertussis, polio and Hib as well as the hepatitis B virus. Starting from late September/early October 2017, all babies born on or after 1st August 2017 will become eligible for the vaccine *Infanrix hexa®* (DTaP/IPV/Hib/HepB), at the ages of eight, twelve and sixteen weeks, as part of the routine childhood immunisation schedule.

**Recommendation 8: Increasing awareness of liver disease in the general population and within the NHS; work of liver patient support groups.**

#### Metric 8-1-8-4: Public Health Campaigns and Patient Representation

There has been no lack of media involvement over the year or of health campaigns. The Children's Liver Disease Foundation (CLDF) Yellow Alert Campaign which aims to highlight the signs and symptoms of neonatal liver disease in order to prompt early diagnosis, has over the last five years distributed 14,000 yellow alert protocol packs to health care professionals with a further 35,000 being downloaded from the website. The British Liver Trust's (BLT) *Love Your Liver* campaign comprises an easy to use screener for the three main preventable causes of liver disease. More than 80% of 98,237 completions of the online screener over the last three years showed risks that could cause liver disease. 2126 of 2669 people who attended a screening event over the past five years were found to be at risk of liver disease and 496 were referred for further tests. Of note



too is the Welsh Liver Plan's implementation committee which has representation from the CLDF and BLT, and funding to run twenty screening and scanning events over the next two years. PHE have also been active with public awareness campaigns on obesity and alcohol although not one specifically directed to liver disease.

After a pilot study involving a limited number of hospitals, the Royal College of Physicians (RCP) has officially launched its new exemplar liver accreditation programme - Improving Quality in Liver Services (IQILS). Open to all liver services across the UK, it gives them access to a new online tool and up to date guidance on improving standards.

### **Progress Reports from the Devolved Nations**

Metric data relating to alcohol, obesity and viral hepatitis has been given in the relevant sections of this report and the following is more about new strategy and planning.

#### **Scotland**

The Scottish Government will be publishing a refresh of its alcohol strategy later this year in tandem with the Scottish Health Action on Alcohol Problems (SHAAP) and with the support of the Scottish Royal Colleges. This will recommend methods to improve early identification of alcohol related liver damage to focus treatment services more effectively on those at greatest risk of liver disease. The Scottish Government has also commissioned a programme of research to establish the impact of implementing minimum unit pricing subject to the decision of the Supreme Court, expected soon. With about 80% of the estimated prevalent cases of HCV diagnosed, bringing the remainder to treatment is involving innovative pathways of care, including delivery of treatment by community pharmacists. The University of Dundee is leading a regional trial of "treatment as prevention" for HCV to develop a blue print to achieve elimination of HCV, fulfilling Scotland's commitment to the WHO elimination targets. A pilot study of automated reflex aetiological screening for liver disease where screening tests are performed on the index blood sample immediately an abnormality is detected, has shown the process to be cost-effective in achieving earlier diagnosis and is currently being implemented in some of the health boards.

#### **Northern Ireland**

The NICE guidelines on NAFLD and the diagnosis of cirrhosis have been accepted but not fully implemented, partly due to the lack of resources for measurements of fibrosis and transient elastography. With respect to hospital services, the single Regional Liver Unit in Belfast, currently with four hepatologists (0.22 per 100,000 population), is planning to expand to five hepatologists in 2018. Most of the nine hospitals outside Belfast now have at least one gastroenterologist with an interest in liver health. The adult liver transplant service for Northern Ireland, which is based in Belfast and supported by Kings College Hospital, London, is delivering an appropriate number of transplants per head of population compared to rest of UK (20-24 per year) and has achieved the best one and five year survival figures amongst all UK transplant units.

An Alcohol Use Disorder care pathway was launched by the Public Health Authority in 2017 and has been adopted by all Trusts across the region, which is helping with the implementation of Recommendation 5 of the Lancet Commission. There are also plans to appoint more substance misuse liaison nurses across NI before end of 2017. A regional report on Alcohol Related Brain Damage is due to be published imminently and a specialist ARLD unit has been established in the South Eastern Health and Social Care (HSC) Trust. On the debit side, funding for an Alcohol Assertive Outreach Liaison successfully established in Belfast HSC Trust has unfortunately not been renewed and there has been no further expansion in numbers (currently 98) of alcohol specialist nurses across the five Trusts.

#### **Wales**

The Public Health (Wales) Bill, passed on the 17<sup>th</sup> May, commits the Welsh Government to produce an obesity prevention strategy. A series of round table events in the Senedd led to engagement with Assembly members over the importance of Hepatitis C as a public health concern and cross party support was achieved to commit to the WHO elimination target date of 2030. All patients with Hepatitis C known to secondary care services having now been treated, attention is now being focussed on improving testing rates, especially in hard to reach groups including a pilot project for blood born virus (BBV) testing in needle exchange pharmacy settings. The BBV module of the Wales Harm Reduction Database (used by substance misuse services) has now been introduced across the country, covering consent, screening, testing, diagnosis and referral to specialist treatment services. An opt-out has been introduced for BBV testing in prisons, leading to testing and completion of HBV vaccination rates doubling since introduction.

The ongoing commitment to enhancing alcohol care teams has led to an increase in the number of Alcohol Liaison Nurses from thirteen to twenty-one and four of six Health Boards now have an alcohol clinical lead. Following on from the pilot study of “reflex” AST testing when the ALT is abnormal, this has now been identified as a clinical priority area within the GP contract for Wales for 2017-2018. A GP Liver Disease Champion has been appointed in each Health Board for two years, supported by the National Strategy and with a specific remit to improve adherence to the BSG guideline on abnormal LFT and the development of a NAFLD pathway. A programme of work with IQILS has also been commissioned that will see all health boards go through this service improvement and accreditation process over the next three years.

The national clinical leads for diabetes, cardiac disease, stroke and cancer, along with liver disease, have identified obesity as a high priority area for collaborative working and the current utility of the National Exercise Referral Scheme (NERS) will also be evaluated as part of a wider approach to obesity management. Finally, funding has been set aside for a data officer dedicated to improve the clinical coding of liver disease which will cover GP coding methods and in the outpatient setting via the use of the Welsh Clinical Portal.

### **Contributors**

RW was responsible for planning and content for the executive summary and introduction and for writing, editing and direction of the paper as a whole. ND was responsible for coordinating content for the paper as a whole and editing. RP, JT, NS, KM, RN and SdL contributed content to the section on primary care services. GA, MH, JD and KM contributed content to the sections on hospital services and training. JOG, GA, DT and MH contributed content to the section on liver transplantation. AD, DK and AT contributed content to the section on paediatric liver services. IA, NS, KM, IG, NB, BWS, CD and PM contributed content to the section on alcohol services. PN, HR, JW and GCW contributed content to the section on obesity. GF and MC contributed content to the section on viral hepatitis. AL, AT, JV, LR and GCW contributed to the section on awareness of liver disease. AY contributed content to the section on services in Wales. JD and PR contributed content to the section on services in Scotland. NM contributed content to the section on Northern Ireland.

### **Declaration of interests**

*(to be completed by Lancet based on author declarations)*

### **Acknowledgements**

We thank all those who attended meetings of the working groups of the Commission including Colin Angus (Sheffield Alcohol Research Group), Iain Armstrong, Joanne Bosanquet, Clive Henn, (Public Health England); Richard Aspinall (Queen Alexandra Hospital, Portsmouth); Rachel Batterham, Alastair O'Brien (University College London Hospital); Ana Correa (RCGP Research and Surveillance Centre, Department of Clinical & Experimental Medicine, University of Surrey, UK); Richard Gardner (British Society of Gastroenterology); Katherine Brown (Institute of Alcohol Studies); James Ferguson (Queen Elizabeth Hospital, Birmingham); Filipa Ferreira (University of Surrey); Michael Glynn (Barts Health NHS Trust); Jonny Greenberg, Jan Maly (Incisive Health); Lynda Greenslade (Royal Free Hospital); Helen Jarvis (Royal College of General Practitioners and British Liver Trust); Stephen Liversedge (Bolton Clinical Commissioning Group); Simon de Lusignan (Royal College of General Practitioners); Mead Mathews (St Mary's Surgery, Southampton); Alastair MacGilchrist (Edinburgh Royal Infirmary); Martin McKee (London School of Hygiene and Tropical Medicine); Darius Mirza (Queen Elizabeth Hospital & Birmingham Children's Hospital); Zulfiqar Mirza (Chelsea and Westminster Hospital NHS Foundation Trust); Stephen Ryder (Nottingham University NHS Trust); Jeremy Shearman (Royal College of Physicians); Jyotsna Vohra (Cancer Research UK); Ben Windsor-Shellard (Office for National Statistics); and Ivelina Yonova (Surrey GP Practice Liaison Officer). We thank Norgine for their unrestricted grant to the Foundation for Liver Research which has enabled the Commission to work with Incisive Health in bring the work of the Commission to the attention of Parliament and in producing the report on the *Financial Costs of Liver Disease*. Colin Drummond is part funded by NIHR CLAHRC South London at King's College Hospital NHS Foundation Trust, the NIHR South London and Maudsley NHS Foundation Trust Biomedical Research Centre, and is in receipt of a NIHR Senior Investigator Award. The views expressed are those of the authors and not necessarily those of the NHS, NIHR or the Department of Health.

## References:

1. Williams R, Alexander G, Aspinall R, Bosanquet J, Camps-Walsh G, Cramp M, et al. New Metrics for the Lancet Standing Commission on Liver Disease in the UK. *The Lancet*. 2017;389(10083):2053-80.
2. Foundation for Liver Research. Financial Case for Action on Liver Disease: Escalating costs of alcohol misuse, obesity and viral hepatitis <http://www.liver-research.org.uk/liverresearch-assets/financialcaseforactiononliverdiseasepaper.pdf2017> (accessed Aug 31, 2017)
3. Williams R Aspinall R, Bellis M, et al. Addressing Liver Disease in the UK: a blueprint for attaining excellence in health care and reducing premature mortality from lifestyle issues of excess consumption of alcohol, obesity and viral hepatitis. *Lancet*. 2014;384:1953-97.
4. Williams R Ashton K, Aspinall R, et al. Implementation of the Lancet Standing Commission on Liver Disease in the UK. *Lancet*. 2015;386:2098-2111
5. Public Health England and NHS RightCare. The 2nd Atlas of Variation in NHS Diagnostic Services in England: Reducing Unwarranted Variation to Improve Health Outcomes and Value. <http://fingertips.phe.org.uk/profile/atlast-of-variation2017> (accessed Aug 31, 2017)
6. Livingstone G SA, Orgeta V, Costafreda SG, Juntley J, Ames D, et al. Dementia prevention, intervention and care. *Lancet* [Internet]. 2017. Available from: [http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(17\)31363-6.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(17)31363-6.pdf) (accessed Aug 31, 2017)
7. Department of Health. UK Chief Medical Officers' Alcohol Guidelines Review: Summary of the proposed new guidelines. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/489795/summary.pdf2016](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/489795/summary.pdf2016) (accessed Aug 31, 2017)
8. Campbell D. Heavy drinking will kill 63,000 people over next five years, doctors warn. *The Guardian*. 2017. <https://www.theguardian.com/society/2017/jul/24/heavy-drinking-will-kill-63000-people-over-next-five-years-doctors-warn> (accessed Aug 31, 2017)
9. Public Health England. Local Health and Care Planning: Menu of preventative interventions. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/565944/Local\\_health\\_and\\_care\\_planning\\_menu\\_of\\_preventative\\_interventions.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/565944/Local_health_and_care_planning_menu_of_preventative_interventions.pdf); 2016. (accessed Aug 31, 2017)
10. Correa A HW, McGovern A et al. Royal College of General Practitioners Research and Surveillance Centre (RCGP RSC) sentinel network: a cohort profile. *BMJ Open*. 2016;20(6(4)):e011092.doi.
11. National Institute for Health and Care Excellence. Liver disease: Quality standard [QS152]. <https://www.nice.org.uk/guidance/qs1522017>. (accessed Aug 31, 2017)
12. de Lusignan S. Codes, classifications, terminologies and nomenclatures: definition, development and application in practice. *Inform Private Care*. 2005;13(1):65-70.
13. Davenport M, Ong E, Sharif K, Alizai N, McClean P, Hadzic N, et al. Biliary atresia in England and Wales: results of centralization and new benchmark. *J Pediatr Surg*. 2011;46(9):1689-94.
14. Joshi D, Gupta N, Samyn M, Deheragoda M, Dobbels F, Heneghan MA. The management of childhood liver diseases in adulthood. *J Hepatol*. 2017;66(3):631-44.
15. Burton R, Henn C, Lavoie D, O'Connor R, Perkins C, Sweeney K, et al. A rapid evidence review of the effectiveness and cost-effectiveness of alcohol control policies: an English perspective. *Lancet*. 2017;389(10078):1558-80.
16. OECD. Tackling Harmful Alcohol Use <http://www.oecd.org/health/tackling-harmful-alcohol-use-9789264181069-en.htm> [updated 12/05/2015] (accessed Aug 31, 2017).
17. Department of Health I. The Public Health (Alcohol) Bill 2015 <http://health.gov.ie/blog/publications/public-health-alcohol-bill-2015/2015> (accessed Aug 31, 2017)
18. Pryce R BP, Gray L et al. Estimates of Alcohol Dependence in England based on APMS 2014, including Estimates of Children Living in a Household with an Adult with Alcohol Dependence - Prevalence, Trends, and Amenability to Treatment [http://www.nta.nhs.uk/uploads/estimates-of-alcohol-dependency-in-england\[0\].pdf2017](http://www.nta.nhs.uk/uploads/estimates-of-alcohol-dependency-in-england[0].pdf2017) (accessed Aug 31, 2017)
19. Drummond C, McBride O, Fear N, Fuller E. Alcohol Dependence. In: McManus S, Bebbington P, Jenkins R, Brugha T, editor. *Mental Health and Wellbeing in England: Adult Psychiatric Morbidity Survey 2014*. <http://content.digital.nhs.uk/catalogue/PUB21748/apms-2014-full-rpt.pdf>; NHS Digital; 2016. (accessed Aug 31, 2017)
20. World Health Organisation. Global Strategy to Reduce the Harmful Use of Alcohol [http://www.who.int/substance\\_abuse/publications/global\\_strategy\\_reduce\\_harmful\\_use\\_alcohol/en/2010](http://www.who.int/substance_abuse/publications/global_strategy_reduce_harmful_use_alcohol/en/2010) (accessed Aug 31, 2017)
21. UKATT Research Team. Cost-effectiveness of treatment for alcohol problems: Findings of the UK Alcohol Treatment Trial. *British Medical Journal*. 2005;331((7516)):544-7.
22. Public Health England. Adult Substance Misuse Statistics from the National Drug Treatment Monitoring Service (NDTMS), 1st April 2015 to 31st March 2016

- <https://www.ndtms.net/Publications/downloads/Adult%20Substance%20Misuse/adult-statistics-from-the-national-drug-treatment-monitoring-system-2015-2016.pdf>2017 (accessed Aug 31, 2017)
23. Information Services Division Scotland. National Drug and Alcohol Treatment Waiting Times Report April 2013 - March 2017 DATWT Full Year Tables <http://www.isdscotland.org/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/data-tables2017.asp?id=1931>2017 (accessed Aug 31, 2017)
  24. HM Government Home Office. Drug Strategy 2017. <https://www.gov.uk/government/publications/drug-strategy-2017>2017. (accessed Aug 31, 2017)
  25. Number of deaths caused by alcoholic liver disease and other causes associated with the misuse of alcohol, deaths registered in England and Wales [Internet]. Office for National Statistics. 2016 [cited 30th August 2017].
  26. Office for National Statistics. 20th Century Mortality 1901-2000. <http://www.ons.gov.uk/ons/rel/subnational-health1/the-20th-century-mortality-files/index.html> [updated November 2011] (accessed Aug 31, 2017)
  27. Office for National Statistics. The 21st Century Mortality Files - deaths dataset, England and Wales <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/the21stcenturymortalityfilesdeathsdataset> [updated 14/11/2016] (accessed Aug 31, 2017).
  28. Perkins C, Hennessey M. Understanding alcohol-related hospital admissions <https://publichealthmatters.blog.gov.uk/2014/01/15/understanding-alcohol-related-hospital-admissions/2014> (accessed Aug 31, 2017)
  29. NHS Digital. Statistics on Alcohol, England 2017. <https://www.gov.uk/government/statistics/statistics-on-alcohol-england-2017>2017. (accessed Aug 31, 2017)
  30. Gorber SC, Tremblay M, Moher D, Gorber B. A comparison of direct vs. self-report measures for assessing height, weight and body mass index: a systematic review. *Obesity Reviews*. 2007;8(4):307-26.
  31. Northern Ireland Executive. Health Survey (NI) 2015/16. <https://www.northernireland.gov.uk/news/health-survey-ni-201516>2016. (accessed Aug 31, 2017)
  32. NHS Digital. National Child Measurement Programme: England, 2015/16 school year <http://content.digital.nhs.uk/catalogue/PUB22269/nati-chil-meas-prog-eng-2015-2016-rep.pdf>2016 (accessed Aug 31, 2017)
  33. Ells LJ, Hancock C, Copley VR, Mead E, Dinsdale H, Kinra S, et al. Prevalence of severe childhood obesity in England: 2006-2013. *Arch Dis Child*. 2015;100(7):631-6.
  34. HM Government. Childhood obesity: a plan for action. <https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action>2016. (accessed Aug 31, 2017)
  35. HM Revenue and Customs. Policy Paper: Soft Drinks Industry Levy. <https://www.gov.uk/government/publications/soft-drinks-industry-levy/soft-drinks-industry-levy2016>. (accessed Aug 31, 2017)
  36. HM Government. Finance Act 2017. <http://www.legislation.gov.uk/ukpga/2017/10/contents/enacted>: TSO (The Stationery Office); 2017. (accessed Aug 31, 2017)
  37. Daneshkhu S. Budget 2017: Revenues from UK's incoming sugar tax to fall short. *Financial Times* [Internet]. 8 March 2017. Available from: <https://www.ft.com/content/1e9703e0-0401-11e7-aa5b-6bb07f5c8e12?mhq5j=e2>. (accessed Aug 31, 2017)
  38. Silver LD, Ng SW, Ryan-Ibarra S, Taillie LS, Induni M, Miles DR, et al. Changes in prices, sales, consumer spending, and beverage consumption one year after a tax on sugar-sweetened beverages in Berkeley, California, US: A before-and-after study. *PLOS Medicine*. 2017;14(4):e1002283.
  39. Cochero MA, Rivera-Dommarco J, Popkin BM, Ng SW. In Mexico, Evidence Of Sustained Consumer Response Two Years After Implementing A Sugar-Sweetened Beverage Tax. *Health Affairs* [Internet]. 2017 February 22, 2017.
  40. Lal A, Mantilla-Herrera AM, Veerman L, Backholer K, Sacks G, Moodie M, et al. Modelled health benefits of a sugar-sweetened beverage tax across different socioeconomic groups in Australia: A cost-effectiveness and equity analysis. *PLOS Medicine*. 2017;14(6):e1002326.
  41. Public Health England. Sugar reduction: Achieving the 20% 2017 <https://www.gov.uk/government/publications/sugar-reduction-achieving-the-20>. (accessed Aug 31, 2017)
  42. Public Health England. Adult weight management: guidance for commissioners and providers <https://www.gov.uk/government/collections/adult-weight-management-guidance-for-commissioners-and-providers2017> (accessed Aug 31, 2017)
  43. Public Health England. Encouraging healthier 'out of home' food provision <https://www.gov.uk/government/publications/encouraging-healthier-out-of-home-food-provision2017> (accessed Aug 31, 2017)
  44. Public Health England. Spatial planning for health: evidence review <https://www.gov.uk/government/publications/spatial-planning-for-health-evidence-review2017> (accessed Aug 31, 2017)
  45. Dr Harry Rutter. Personal communication. In: Professor Philip Newsome, editor. By email, August 2017.

46. Government H. Response to written question HL530: Baroness Randerson: How many people commenced treatment for hepatitis C in the financial year 2016–17 broken down by operational delivery network area? In: Health Do, editor. <http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Lords/2017-07-05/HL5302017>. (accessed Aug 31, 2017)
47. Professor Graham Foster. Personal Communication. In: Professor Matthew Cramp, editor. personal communication ed. By email, August 2017
48. Dillon J. Personal Communication. In: Cramp PM, editor. By email, August 2017.
49. Public Health England. Hepatitis C in England 2017 report: Working to eliminate hepatitis C as a major public health threat  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/632465/HCV\\_in\\_the\\_uk\\_report\\_2017.pdf2017](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/632465/HCV_in_the_uk_report_2017.pdf2017) (accessed Aug 31, 2017)
50. England PH. Unlinked anonymous HIV and viral hepatitis monitoring among PWID: 2017 report  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/633688/hpr2617\\_uam-pwid.pdf2017](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/633688/hpr2617_uam-pwid.pdf2017). (accessed Aug 31, 2017)
51. World Health Organisation. Global Health Sector Strategy on Viral Hepatitis 2016-2021.  
<http://www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/>; 2016 June. (accessed Aug 31, 2017)
52. Public Health England. Data tables of the Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in People Who Inject Drugs. Surveillance Update  
[https://fingertips.phe.org.uk/documents/DiagnosticAtlas\\_FINAL.pdf](https://fingertips.phe.org.uk/documents/DiagnosticAtlas_FINAL.pdf) [updated July 2016] (accessed Aug 31, 2017)
53. Public Health England. Cover of vaccination evaluated rapidly (COVER) programme 2016 to 2017: quarterly data. <https://www.gov.uk/government/statistics/cover-of-vaccination-evaluated-rapidly-cover-programme-2016-to-2017-quarterly-data> 2016 (accessed Aug 31, 2017)
54. Public Health Wales. National immunisation uptake data  
<http://www.wales.nhs.uk/sites3/page.cfm?orgid=457&pid=541442017> (accessed Aug 31, 2017)