Public Health England

Protecting and improving the nation's health

Liver Disease in the South West:
A health needs assessment

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Foreword

In March 2014 the All Party Parliamentary Hepatology Group published their findings on the state of liver disease in England. David Amess MP, Chair of this group, said, 'The launch of today's Inquiry Report is a wakeup call for the nation. Liver disease is the only one of the UK's top five causes of death where death rates continue to rise and there is no national strategy to tackle this. Unless urgent and co-ordinated action is taken now, in less than a generation, liver disease has the potential to be the UK's biggest killer.'

The way we lead our lives affects the chance that we will develop liver disease. Alcohol, hepatitis and obesity are the biggest causes of liver disease in the South West. As these main causes of liver disease can be prevented, we embarked on a project to raise awareness of the issues around liver disease in the South West and to build on current good practice to promote liver health and improve outcomes for all patients with liver disease.

In the South West:

- there has been a 23% increase in liver deaths from 2001 to 2012. Liver disease affects younger people; in the South West in 2010-12 71% of the 2,534 people who died from liver disease were under 75 years old
- there were 24,303 alcohol specific admissions in 2012/13 and 922 alcohol related liver disease deaths in 2010-2012. People in the most deprived quintile of the population are 4.9 times more likely to die from alcohol-related liver disease than those in the least deprived quintile. There are well evidenced cost-effective interventions available to reduce alcohol-related liver disease
- 75% of people infected with hepatitis C are still unrecognised, with an estimated14,635 people infected with hepatitis C in South West. There is also an under diagnosis of hepatitis B
- 62.7% of the population is either overweight or obese, with a large proportion at risk of non-alcoholic fatty liver disease (NAFLD)

To achieve better lifestyle choices and outcomes for patients in the South West:

- there needs to be an increased awareness of liver disease to support behaviour change, improve detection and reduce stigma
- implementing strategies for early diagnosis of liver disease to reduce morbidity and mortality from liver disease is required
- as a priority, all commissioners in the local health economy must work together to address health inequalities and ensure evidence-based prevention and care are in place across the whole patient liver pathway

To support these efforts, PHE has committed to work with a wide range of partners to develop a national liver disease framework, which will be published later on in the year.

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General Practitioners across the South West
South West hepatobiliary networks
Police and Crime Commissioners
Patient focus groups
South West Commissioning Support Unit

South West Academic Health Science Network
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NHS England
Public Health England

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Executive summary

Liver disease is largely preventable, most liver disease is due to three main risk factors: alcohol, viral hepatitis and obesity. However, most people at risk of developing serious liver disease, or who show early signs of liver damage, are not aware of the fact. Diagnosing liver disease early and treating the cause can prevent the progress of liver disease reducing liver cancer, liver transplants and liver mortality, as well as improving quality of life. In addition reducing alcohol misuse and injecting drug misuse can lead to wider societal cost savings.
In the South West there has been a 23% increase in liver deaths from 2001 to 2012. Liver disease affects younger people; in the South West in 2010-12 71% of the 2,534 people who died from liver disease were under 75 years old. People in the most deprived quintile of the population are 2.7 times more likely to die from liver disease than those in the least deprived quintile.

Alcohol and alcohol-related liver disease

Alcohol problems are widespread in England; consumption per head of population more than doubled between the mid-1950s and the late 1990s. In 2012/13 in the South West there were 24,303 alcohol specific hospital admissions (535.4 per 100,000). It is estimated that alcohol related harm costs society at least £21 billion per year. This comprises of alcohol-related health conditions, crime and antisocial behaviour, loss of productivity in the workplace, and problems for those who misuse alcohol and their families, including domestic abuse.

Alcohol-related liver disease (ARLD) deaths in Britain have increased more than four fold since 1970. In 2010-12 the age-standardised premature mortality rate for ARLD was 7.5 per 100,000 (10.4 per 100,000 for males, 4.7 per 100,000 for females), equating to 922 deaths. People in the most deprived quintile of the population are 4.9 times more likely to die from alcohol-related liver disease than those in the least deprived quintile.

There are well evidenced cost-effective interventions available to reduce alcohol-related liver disease.

Hepatitis B and C

There has been an increase in positive laboratory reports for both hepatitis B and hepatitis C in England. However there remains a large under-diagnosis of both hepatitis B and hepatitis C.

Modelled estimates suggest that there are 14,635 people infected with hepatitis C in the South West, with 809 laboratory reports positive for hepatitis C in 2013. One of the main risk factors for hepatitis C is injecting drug use, therefore preventing the use of drugs and sharing needles is crucial and cost-effective.
In the UK, the majority (95%) of newly identified chronic hepatitis B infections have been acquired overseas at birth or at a young age. This is a potential cause of inequalities due to

under-detection. In 2013, there were 263 laboratory reports for acute and chronic hepatitis B in the South West. Immunisation and case-finding are cost-effective interventions for reducing the burden of hepatitis B.

Obesity and Non-alcoholic fatty liver disease

Obesity prevalence has increased dramatically since the 1990s. In the South West (includes data from Dorset, Bournemouth and Poole) in 2012 62.7% of adults were overweight or obese. It is estimated that 17-33% of the population may have non-alcoholic fatty liver disease (NAFLD), with the highest prevalence in people who are obese. The best way for an individual to prevent becoming overweight or obese is by eating healthily and exercising regularly.

Key recommendations for commissioners to consider include:

- 95% of liver disease is due to preventable causes and therefore prevention strategies are crucial to reduce the increase in liver disease. The most important prevention strategies in the South West should be:
    - identification and brief advice for alcohol misuse
    - needle and syringe programmes
    - immunisation for hepatitis B prevention
    - healthy lifestyles to reduce obesity and its impact on health

  These prevention strategies have also shown to be cost-effective.

- implementing strategies for early diagnosis of liver disease will to reduce morbidity and mortality from liver disease. In the South West this can be achieved through:
    - improving expertise in primary care
    - case finding for hepatitis B and C
    - screening of high-risk patients

- pathways for all three of the main risk factors have been identified as unclear. This is a potential area for improvement in the South West. Pathways for diagnosis and treatment should be reviewed through the hepatobiliary networks. To enable this, the governance and accountability of the South West hepatobiliary networks need to be strengthened. This can be achieved through inclusion of a wider membership, terms of reference and clearer leadership, work plan and outcomes

- there needs to be an increased awareness of liver disease to improve detection and reduce stigma. This can be achieved through a number of processes:
    - inclusion within JSNA
    - increasing Health and Well-Being Board awareness
    - education for health-care professionals
    - public awareness campaigns including social marketing and health promotion

- there is a need for all commissioners to work together to ensure prevention and care are in place across the whole patient liver pathway

In addition to the above there is clear public health evidence to support the benefits of minimum unit price for alcohol. Local Authority Public Health should consider how to best facilitate a local understanding of the benefits of minimum unit price and its appropriate place as the most cost effective response to alcohol related harm and an understanding of the necessary steps for implementation.

1. Background

Deaths from liver disease are increasing in England. This is in contrast to most EU countries where liver disease death rates are falling. The UK has a higher mortality rate from liver disease than many other Western European countries. Between 2001 and 2012 the number of people who died with an underlying cause of liver disease in England rose from 7,841 to 10,948. This represents a 40% increase in liver deaths during this period and is in contrast to other major causes of disease which have been declining.(1) Locally in the South West there has been a 23% increase in liver deaths during the same period, with the number of people who died with an underlying cause of liver disease in the South West rising from 1,855 to 2,534 (figure 1).

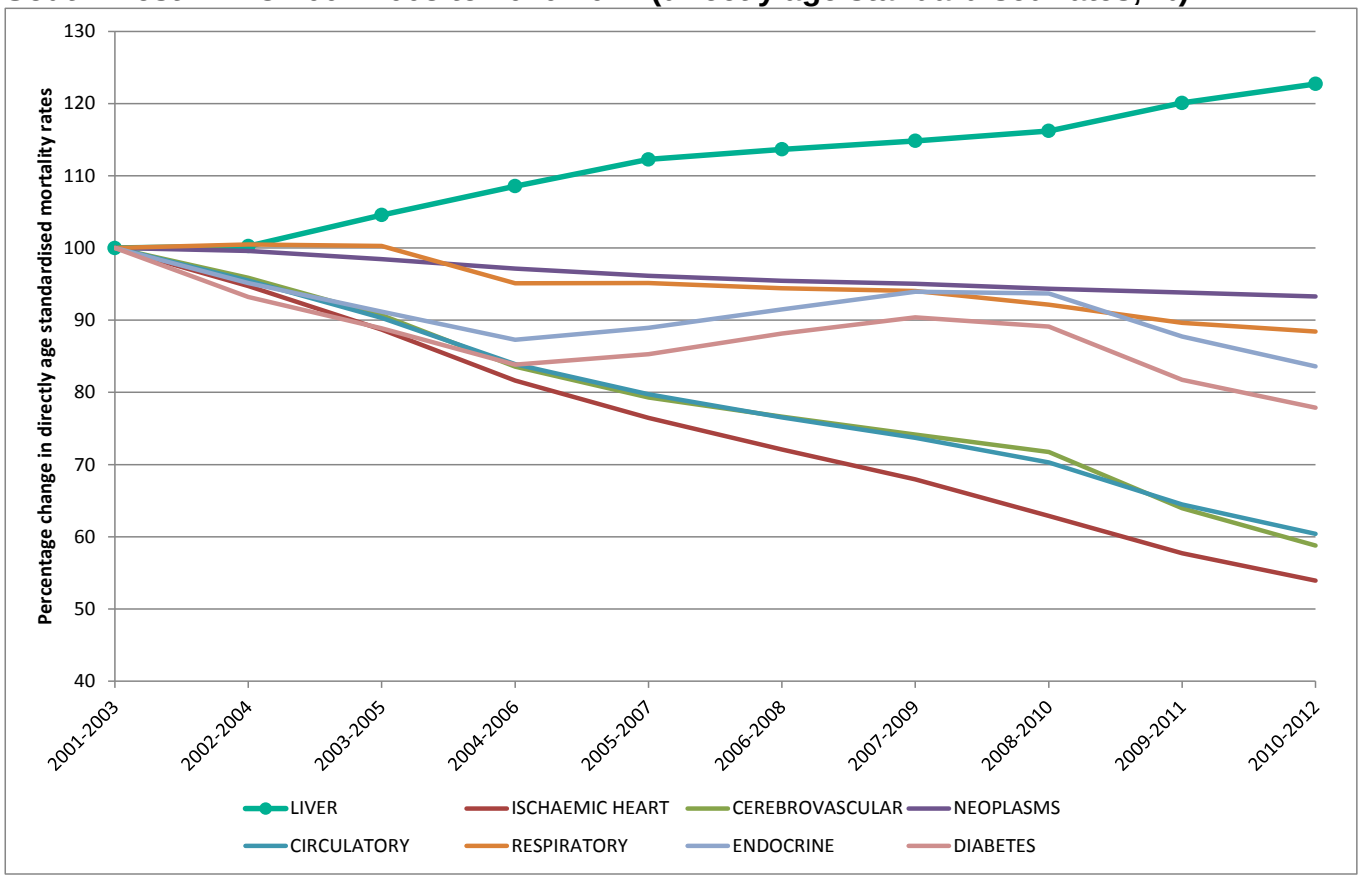
Hospital admissions due to liver disease have also been increasing. The increase in liver disease hospital admissions does not take into account pancreatitis or the effect of alcohol on cardiovascular disease.(2)

Liver disease includes alcohol related liver disease (ARLD), non-alcoholic fatty liver disease (NAFLD), hepatitis B, hepatitis C, cirrhosis, hepatocellular carcinoma (HCC), autoimmune liver disease, metabolic disorders, as well as a number of other disease (see appendix 1 for ICD codes and descriptions).

Injury is caused to the liver by a number of different mechanisms for example by viral infection, alcohol, non-alcoholic steatohepatitis (NASH), autoimmune disorders, metabolic disorders and cholestatic disorders. This injury leads to early fibrosis and over time may progress to cirrhosis. This process depends on a number of different elements including the mechanism of injury, whether the injury continues, other risk factors (such as alcohol intake and obesity) and genetic polymorphisms. If the cause of fibrosis is eliminated, early hepatic fibrosis can resolve. This means that early diagnosis and treatment (of those at risk and those with early stage disease) can lead to reversibility of liver disease. Unfortunately, liver disease often develops silently and frequently presents with late complications by which time morbidity and mortality is high.(3)

Cirrhosis may cause liver failure and portal hypertension (raised blood pressure within the liver), and can cause liver cancer (hepatocellular carcinoma, HCC).(4) Liver failure and portal hypertension can lead to serious complications such as ascites (fluid in the abdomen), oesophageal varices (enlarged blood vessels) which may bleed acutely or chronically and hepatic encephalopathy (accumulation of toxins in blood causing confusion, agitation, difficulty speaking and muscle tremors).

Figure 1: Trend percentage change for the main preventable causes of mortality in South West PHEC 2001-2003 to 2010-2012 (directly age standardised rates, %)



Source: PHE

Liver disease is largely preventable. While approximately 5% of liver disease is attributable to autoimmune disorders (diseases characterised by abnormal functioning of the immune system), most liver disease is due to three main risk factors: alcohol, obesity and viral hepatitis. However, most people at risk of developing serious liver disease, or who show early signs of liver damage, are not aware of the fact.

Liver disease affects younger people; in the South West in 2010-12 71% of people who died from liver disease were under 75 years old. People in the most deprived quintile of the population are 2.3 times more likely to die from liver disease. Furthermore, liver disease and its causes are often stigmatised.(5) Alcohol is the most common cause of liver disease in England, and is a large driver for inequalities.(1, 6) Alcohol related liver disease accounts for over a third of liver disease deaths.

People dying from liver disease often have complex end of life care needs. This is due to a number of reasons including; complicated course of advanced liver disease, stigma and possible mental health problems and/or drug dependence problems which complicate social circumstances. Between 2001 and 2009 73% of liver disease deaths occurred in hospital.(7)

The economic costs of liver disease encompass NHS spend and the wider cost to society. There is limited data available on the overall cost of liver disease to the NHS or society. In

England the cost of alcohol to society has been estimated at £55.1 billion (including £21 billion to individuals, families or households, £2.8 billion to public health and health care services, £2.1 billion to criminal justice, education and social services, £7.3 billion to employers, and £21.9 billion in human costs (reduced quality of life)).(8) The consequences of obesity are estimated to cost the NHS £4.2 billion per year, but this is likely to be an underestimate due to the wide range of health conditions associated with obesity.(9)

Estimates suggest liver disease costs the NHS approximately £460 million a year.(10) The Lancet commission(2) reports that in 2012/13 hospital admissions and outpatient attendances for a primary diagnosis of liver disease cost £270 million. This related to 34,347 people admitted to hospital (nearly half accounted for by alcohol-related liver disease) and 266,125 outpatient attendances. Inpatient mortality is high among people with liver disease, 8.8% compared to 1.4% for all hospital stays in 2012.

2. Inclusion/exclusion

This review covers the main preventable causes of liver disease; alcohol, hepatitis and obesity. It covers the area of South West England (defined as covering the Avon Gloucestershire & Wiltshire and Devon, Cornwall & Somerset PHE Centres, referred to as South West PHEC). For clarity, information pertaining to Bournemouth, Dorset and Poole have been excluded wherever possible since although they are in the former Government Office 'South West' Region they are not in AGW or DCS Centres. Where data for Bournemouth, Dorset and Poole have been included this is highlighted for clarity. The review takes a life-course approach, looking at liver disease from antenatal care to death. See appendix 1 for details of International Classification of Diseases (ICD-10) codes used to define liver disease and individual causes of liver disease.

Liver disease in childhood is relatively rare; however the burden for children, families and services can be large due to the complex nature of disease and possibility of liver transplant. There are many different types of liver disease in childhood which have different symptoms, treatment and prognosis. PHE is currently undertaking a national Children's Liver Disease report.

Hospital admission data represent the most severe cases of liver disease and do not include people treated in primary care or outpatient departments where a large number of people with liver disease are treated. This will particularly effect interpretation of admissions for non-alcoholic fatty liver disease, hepatitis B and hepatitis C. This and the underdiagnoses of liver disease, means the full burden of liver disease is not fully reflected in the data presented here.

3. General liver disease

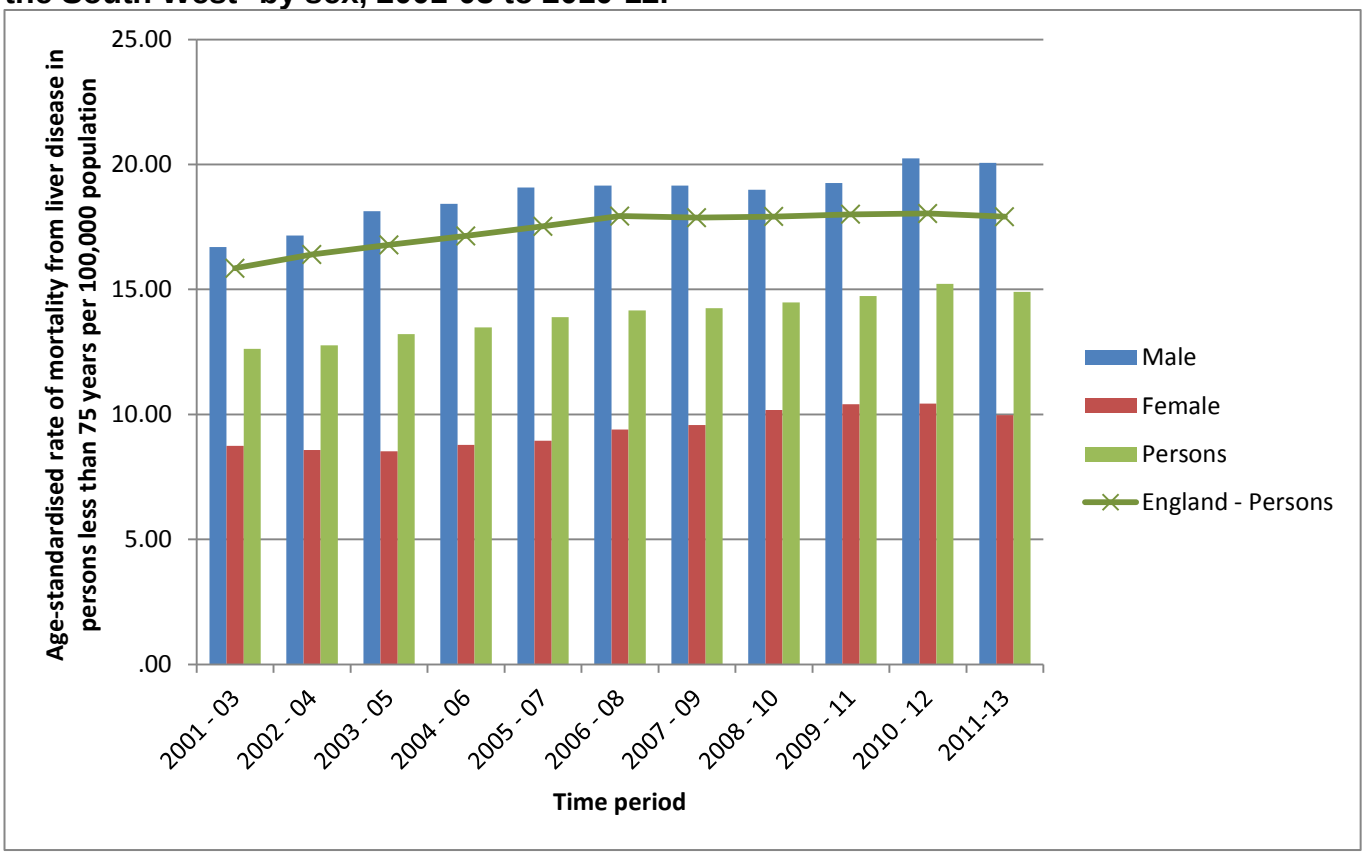
This section includes over-arching epidemiological data about liver disease mortality, hepatocellular carcinoma and liver transplants. As well as a general overview of primary and secondary care services for liver disease. More details of alcohol, hepatitis B, hepatitis C, blood-borne viruses in prisons and obesity can be found in the appropriate section.

3.1 Epidemiology

3.1.1 Premature Mortality

Premature mortality from liver disease in the South West has increased from 2001-03 to 2010-12. This increase is similar to the increase seen across England, even though the average age-standardised rate in the South West* is lower than the England average. Under 75 mortality from liver disease is an indicator (4.06) in the Public Health Outcome Framework (PHOF) the data for which is regularly updated.(11)

Graph 1: Under 75 mortality (age-standardised rate per 100,000) from liver disease in the South West* by sex, 2001-03 to 2010-12.

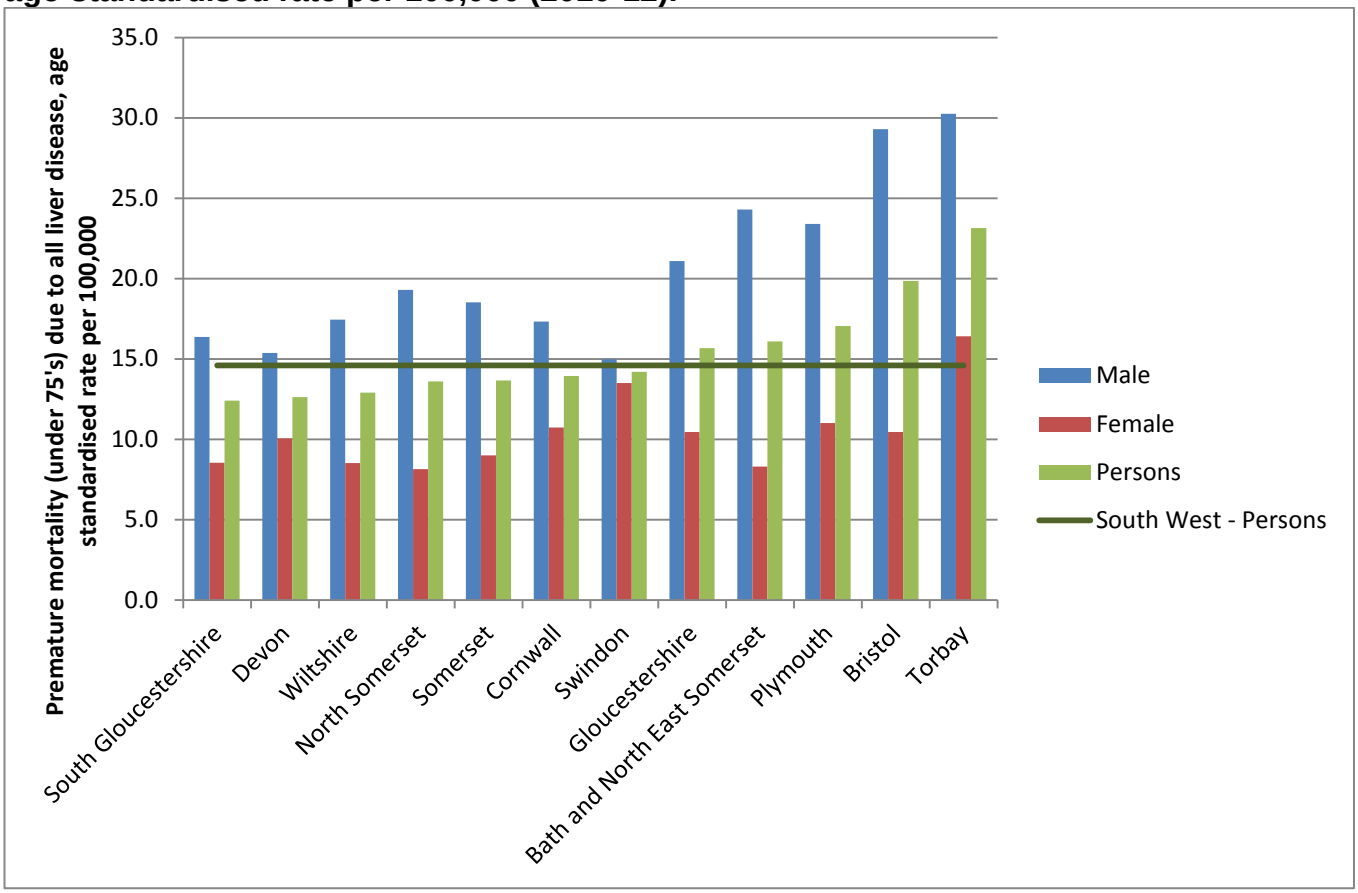


This South West figure includes Dorset, Bournemouth and Poole as these areas are included in South West for PHOF.

Source: PHE (based on ONS data)

In 2010-12 in the South West, 1,790 people died under the age of 75 from a liver cause.

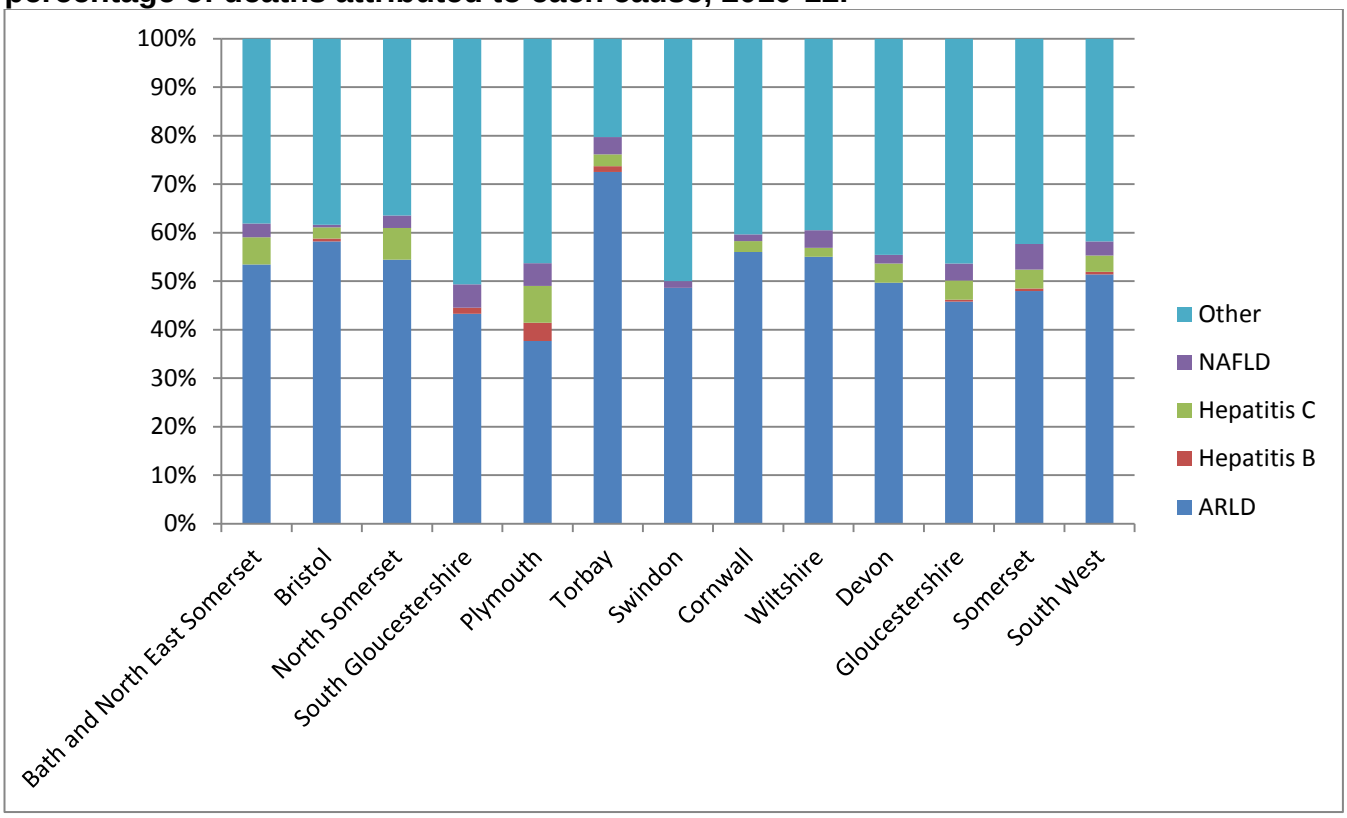
Graph 2: Under 75 mortality from liver disease by area in the South West by gender, age-standardised rate per 100,000 (2010-12).



Source: Public Health England (based on ONS source data)

In the South West in 2010-12, 922 of the 1,790 liver deaths under 75 were due to ARLD (51%). A large proportion of the 'other' is coded as liver cancer.

Graph 3: Under 75 mortality from liver disease by area in the South West by cause, percentage of deaths attributed to each cause, 2010-12.



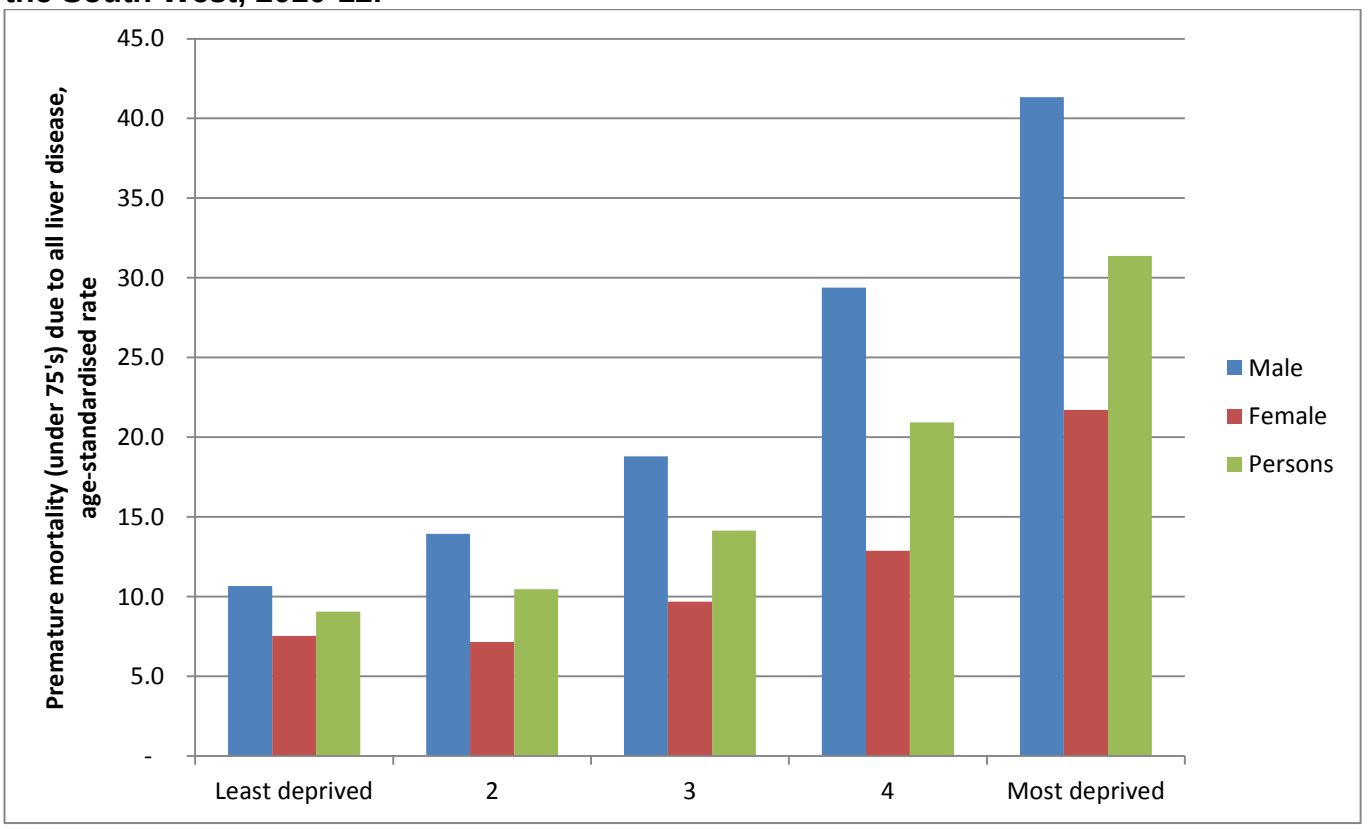
*'other' category includes deaths attributed to causes not ARLD, NAFLD, hepatitis B or hepatitis C as well as deaths where the underlying cause is not specified on the death certificate (therefore these may have been caused by ARLD, NAFLD, hepatitis B or hepatitis C).

Source: Public Health England (based on ONS source data)

The difference in deprivation between areas is a major determinant of health inequality in the UK. 'The English Indices of Deprivation measures relative levels of deprivation in small areas of England. It uses 38 separate indicators, across seven distinct domains of deprivation which can be combined, using appropriate weights, to calculate the Index of Multiple Deprivation 2010 (IMD-2010). The IMD-2010 can be used to rank every lower super output area in England according to their relative level of deprivation.'(p2)(12) The seven domains are; income, employment, health and disability, education skills and training, barriers to housing and other services, crime, and living environment. There is no definitive point on the scale below which areas are considered deprived and above which they are not. For the analysis within this report national quintiles of deprivation are used, which divide the IMD-10 ranks into five groups from least deprived to most deprived.

In the South West people in the most deprived quintile of the population are 2.7 times more likely to die from liver disease than those in the least deprived quintile. The deprivation gradient for premature mortality (under 75) is even higher, with people in the most deprived quintile of the population being 3.4 times more likely to die from liver disease than those in the least deprived quintile.

Graph 4: Under 75 mortality from liver disease by gender and deprivation quintile in the South West, 2010-12.



Source: Public Health England (based on ONS source data)

It is worth noting that there are other preventable causes of liver disease other than alcohol, hepatitis and obesity. For example paracetamol (which causes liver damage when taken in overdose) is the commonest drug taken in overdose in the United Kingdom, accounting for an estimated 100 to 200 deaths per year.(13)

The Public Health Outcome Framework (PHOF(11)) contains information on under 75 mortality rate (4.06i) and under 75 mortality rate considered preventable (4.06ii). In 2011-13 in the South West 90% of the premature mortality was considered preventable (see PHOF for details of methods and ICD codes).

3.1.2 All age mortality

In 2010-12 in the South West, 2,534 people died from liver disease. The age standardised rate was 24.8 per 100,000 for men, 13.1 for females and 18.6 for all persons (compared to 19.4, 10.0 and 14.6 for premature mortality).

A report by the national end of life care intelligence network in 2012 (7) reviewed deaths from liver disease in England and the implication for end of life care. They reported that there are a number of reasons why end of life care for people with liver disease is particularly challenging. ‘Patients tend to be younger and often come from either isolated or ethnically diverse subcultures. They are more likely to have come to healthcare attention by circuitous routes of access. They may feel great stigma associated with their disease, the progress of which is punctuated by acute exacerbations. Most of all, perhaps, it is challenging because the cause of their death may have been preventable.’(p1)(7) They concluded that with over 70% of people with liver disease dying in hospital people dying with liver disease recorded as either an underlying or contributory cause of death are likely to have specific end of life care needs related to these conditions and that end of life care needs to be considered within the broader spectrum of overall care for individuals living with liver diseases.

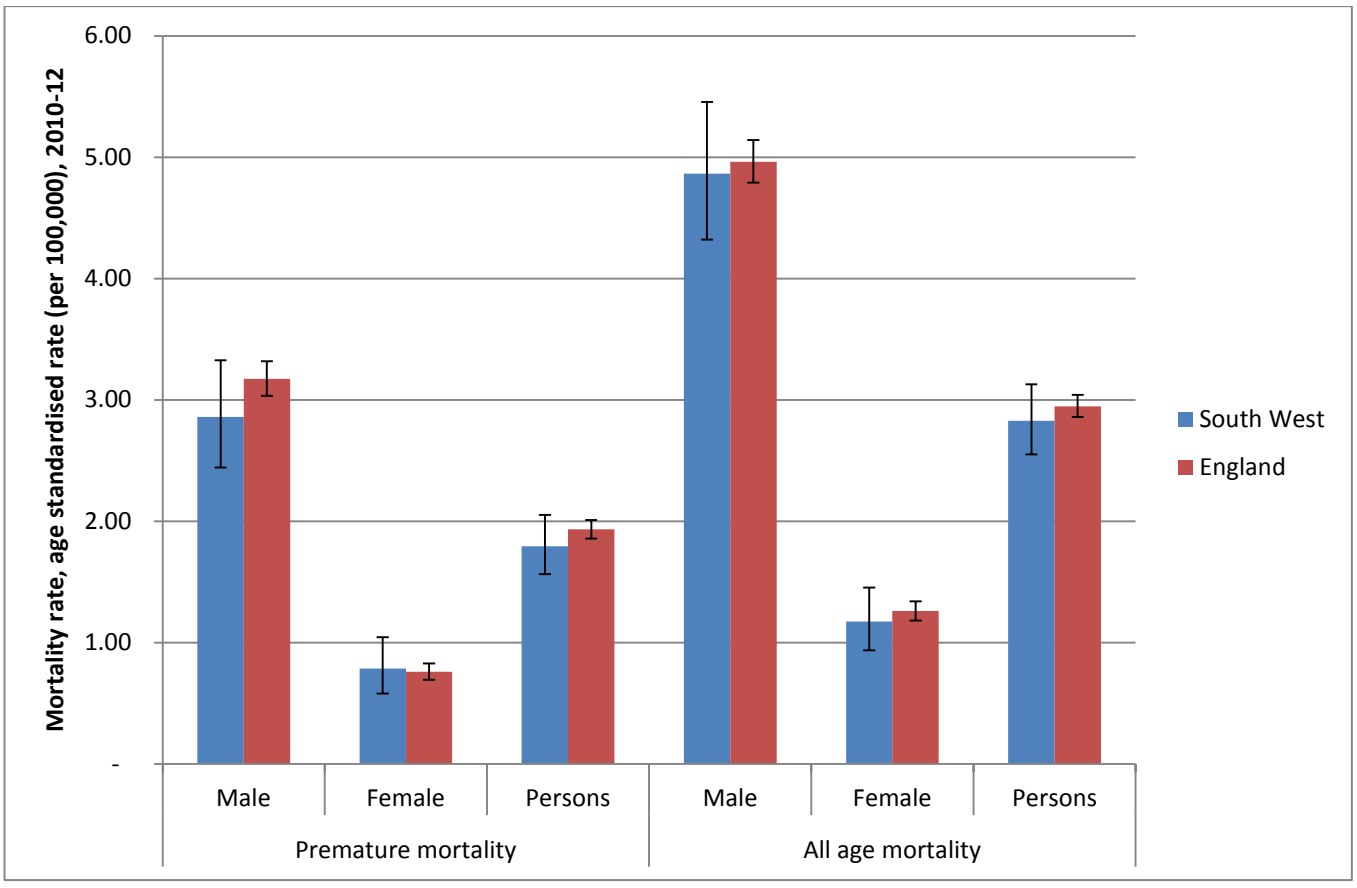
3.1.3 Hepatocellular carcinoma (HCC)

HCC accounts for most primary liver cancers. It occurs more commonly in men than women, and is usually seen in people aged 50 years or more. Liver cancer is often caused by cirrhosis (scarring of the liver). However people with hepatitis are at an increased risk of liver cancer even if they do not develop cirrhosis.

A study of patients referred to Newcastle-upon-Tyne hospitals NHS foundation trust between 2000 and 2010 showed an increase in referrals for HCC (from 8 to 118) and a 1.8 fold increase in regional mortality related to HCC.(14)

In the South West in 2010-12, 384 people died from liver cancer (217 of these people were under 75 years old).

Graph 5: Mortality from liver cell carcinoma (ICD code C22.0), age standardised rate 2010-12.



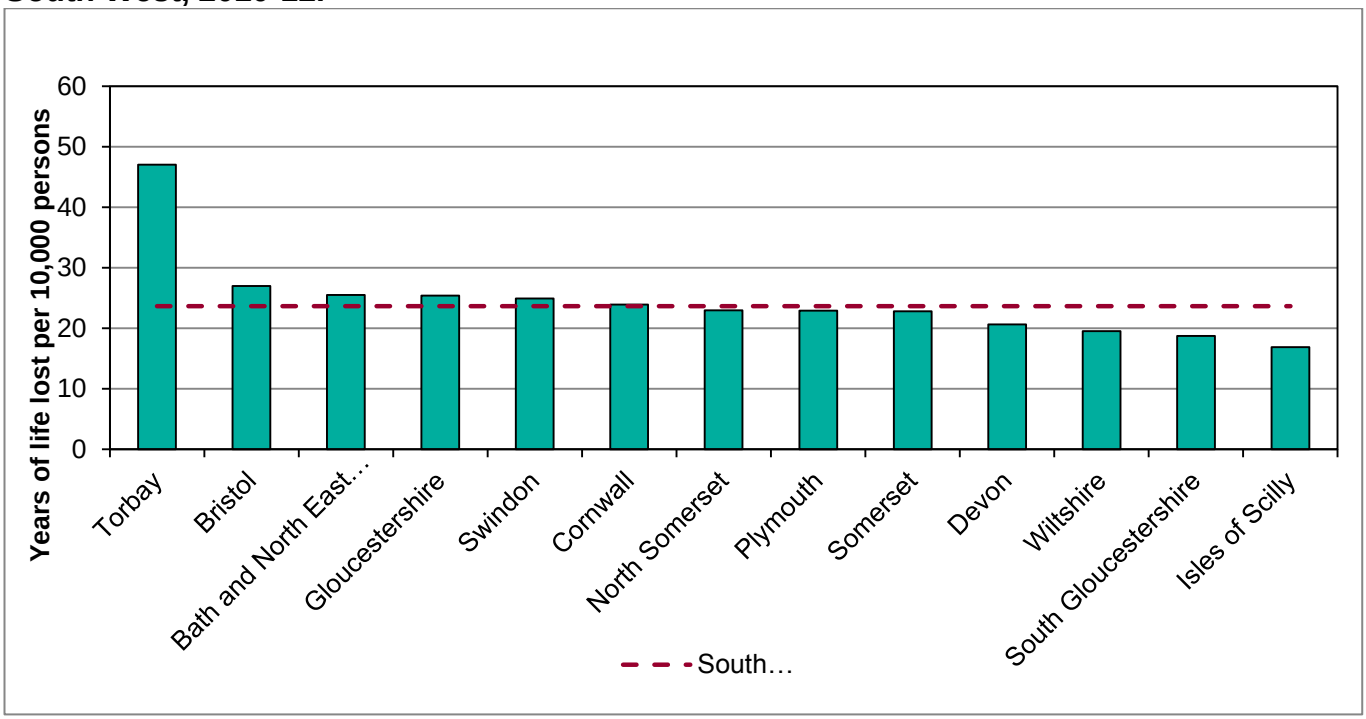
Source: Public Health England (based on ONS source data)

3.1.4 Years of life lost

Years of life lost (YLL) is a measure of premature mortality. It is commonly used to compare the relative importance of different causes of premature death within a particular population and it can therefore be used by health planners to define priorities for the prevention of such deaths. YLL weights each death depending on the age of death, therefore someone who dies younger loses more YLL.

Chronic liver disease is the fifth leading cause of years of life lost on the South West, 2010-12 (graph 6). In 2010-12 there were 23.6 years of life lost (under 75 years) per 10,000 persons due to liver disease in the South West. This equates to 28,918 years of life lost.

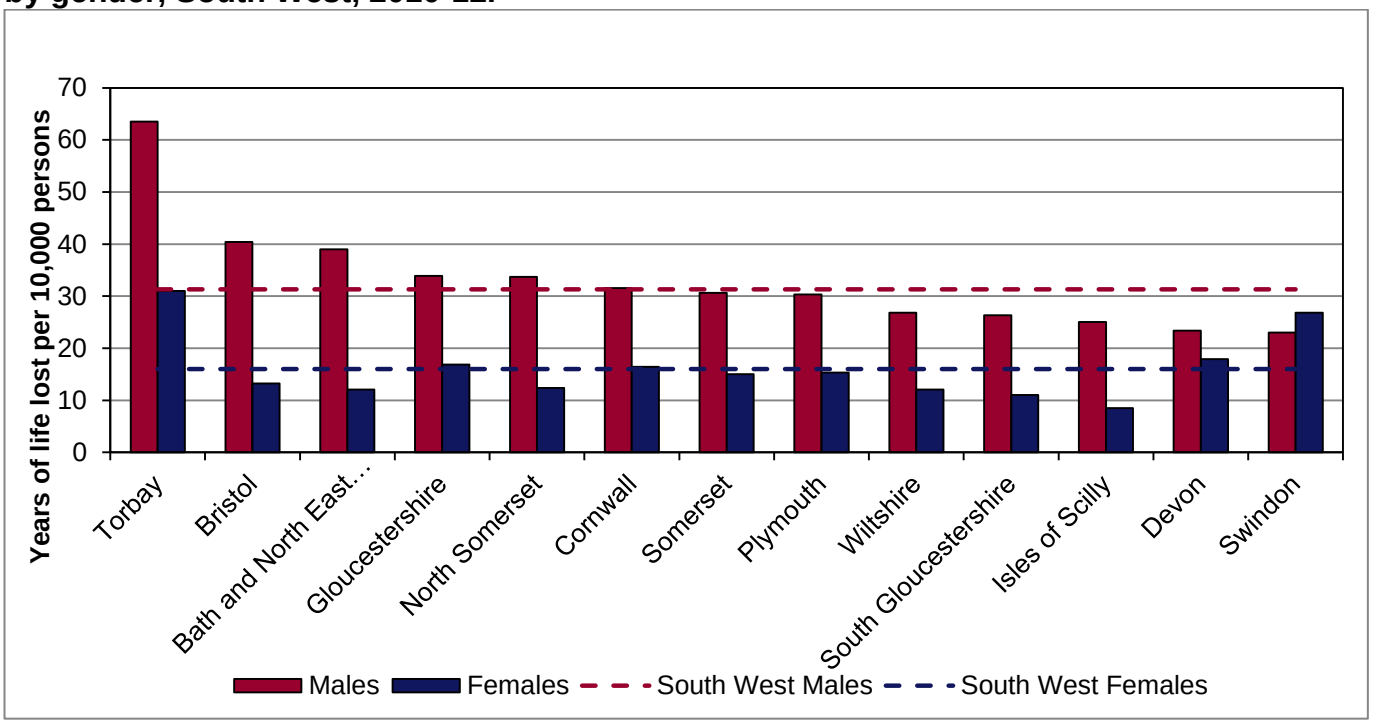
Graph 6: Years of life lost per 10,000 persons due to liver disease in local authorities, South West, 2010-12.



Source: Public Health England (based on ONS source data)

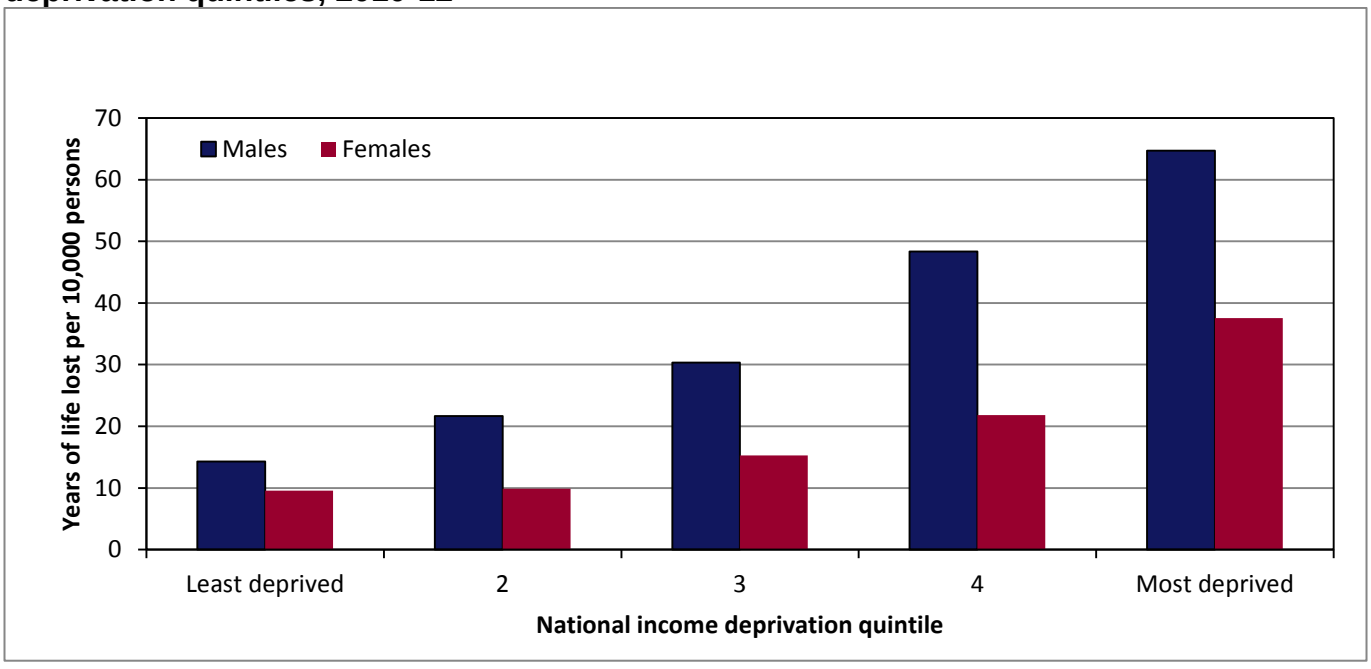
More years of life were lost due to liver disease in men and those who were more deprived (graphs 7 and 8). Men in the most deprived quintile lose 4.5 times more years of life than men in the least deprived quintile (64.7 YLL per 10,000 compared to 14.3 YLL per 10,000). Women in the most deprived quintile lose 4 times more years of life than women in the least deprived quintile (37.6 YLL per 10,000 compared to 9.6 YLL per 10,000). There is also variation in the South West (graph vi). This partly reflects risk behaviours in these groups and areas. Torbay has a high rate of years of life lost in both men and women. Swindon is the only area where female YLL exceed male YLL.

Graph 7: Years of life lost per 10,000 persons due to liver disease in local authorities, by gender, South West, 2010-12.



Source: Public Health England (based on ONS source data)

Graph 8: Years of life lost per 10,000 persons due to liver disease, South West, by deprivation quintiles, 2010-12



Source: Public Health England (based on ONS source data)

3.1.5 Hospital admissions

In the South West in 2012/13 there were 4,592 hospital admissions for liver disease, of which 2,811 were in men (61%). Those in the most deprived quintile are 2.4 times more likely to be admitted to hospital for liver disease than those in the least deprived quintile (170 per 100,000 age standardised rate versus 70 per 100,000 age standardised rate).

3.1.6 Emergency attendances

In some local areas there is data available for emergency attendances for alcohol. However this data does not cover the whole South West and it is likely that there are differences in the coding of data between departments. We have therefore not shown this data here.

3.1.7 Outpatient data

There are no regional figures on how many patients are seen in outpatient departments. Table 1 shows audit data from clinic letters in March 2015 at Royal Devon and Exeter Hospital outpatient department on the numbers of people seen by condition at initial presentation and follow up.

Table 1: Number of new and follow up patients seen at Royal Devon and Exeter Hospital outpatient department by condition, March 2015.

	New	**Follow up**
Alcoholic Liver Disease	10	89
Non-alcoholic fatty liver disease (NAFLD)	12	34
Hepatitis B	*	18
Hepatitis C	*	44
Autoimmune conditions/primary biliary cirrhosis/primary sclerosing cholangitis	9	22
Biliary obstruction	9	N/A
Abnormal LFTs (no clear cause)	*	N/A
Drug induced	*	
Haemochromatosis	*	12
Hepatocellular carcinoma (HCC)	*	5
Metastatic liver cancer	*	N/A
Post-liver transplant	N/A	9
Other	N/A	7
Total	**46**	**240**

*small numbers less than 5 suppressed

Source: Royal Devon & Exeter NHS Foundation Trust audit, March 2015

3.1.8 Transplants

The South West does not have a liver transplant centre. People are assessed for liver transplant eligibility at either Plymouth Hospitals NHS Trust or University Hospitals Bristol NHS Foundation Trust, and then referred to a transplant centre (some patients are referred directly to liver transplant units rather than via Plymouth Hospitals NHS Trust or University Hospitals Bristol NHS Foundation Trust). Transplant centres usually referred to are University Hospitals Birmingham NHS Foundation Trust, King's College Hospital NHS Foundation Trust and Royal Free London NHS Foundation Trust.

There were 61 multi-organ liver transplants in adults in the South West in 2013/14. The primary, secondary or tertiary liver disease recorded in these transplants was; 11 ARLD, 13 hepatitis C, 0 hepatitis B and 37 for other reasons (see table 2). There is no code related to obesity-related or non-alcoholic fatty liver related transplant.

The national audit of liver transplants showed that in England in 2011/12 the indications for elective first liver transplants were as follows; 26% cancer, 22% ALD, 12% hepatitis C, 2% hepatitis B, with the remaining primary sclerosing cholangitis, primary biliary cirrhosis, metabolic or other (38%).(15)

Table 2: Adult (>=17yrs) liver* transplants in South West residents, Apr 09 - Mar 14, by liver disease**

	ARLD	**Hepatitis B or C**	**Other**	Total
2009/10	11	5	17	33
2010/11	<5	8	17	
2011/12	10	7	27	44
2012/13	17	10	24	51
2013/14	11	13	37	61

* includes multi-organ

** whether primary, secondary or tertiary but: if specified as ALD and hep C then classified here as hep C, if specified as hep B and hep C then classified here as hep C, if specified as ALD and hep B then classified here as ALD, if specified as hep B, ALD and hep C then classified here as hep C.

Source: NHS Blood and Transplant

There were 37 South West adult residents listed for a liver transplant at the year end March 2014. The majority of these (35) were waiting for a liver only transplant rather than multi-organ transplants.

A more detailed analysis of liver transplant data is underway by PHE.

There are liver transplant selection criteria which give advice for the assessment of substance misuse (drug and alcohol). Patients admitted for assessment where alcohol has contributed to their liver disease are assessed by a specialist team in substance misuse. This assessment includes careful attention to risk factors associated with predicting a relapse to drinking and advising the transplant team on follow-up requirements to prevent this.

The transplant Healthcare Resource Group (HRG) does not have a national tariff. A NHSBT report (16) estimated that the mean cost of liver transplant in 2003 was £59,350 (from assessment to 27months after assessment, see table 3). These costs varied significantly depending on the centre and indication for the transplant. The observed costs for alcohol-related liver disease (ARLD) were £66,049 (£57K-£81K).

Table 3: Breakdown of mean costs of liver transplantation England and Wales in 2003 prices.

	Assessment	Candidacy	Transplant	Post-transplant
Mean total cost (£)	6,148	4,770	30,635	17,797

Source: NHSBT

Another study using data from the UK hepatitis C health technology assessment estimated that in 2011 a liver transplant cost £33,561 plus £11,614 for care in the year of the liver transplant. Post-liver transplant care then costs £1,701 per year.(17)

National data shows that the 2012/13 reference cost of an elective inpatient spell when someone aged 18 years and over has a liver transplant is approximately £17,000 (liver transplant includes liver cell transplant, partial/complete pancreas transplant and duodenal transplant). The difference in cost between the NHSBT report(16), Martin et al (17) and more recent national data may be due to inclusion of pancreas and duodenal transplants, changes in cost or differences about what is included within the reference cost and what the NHSBT report included within ‘transplant’. In the South West in 2013/14 post-liver transplant drugs (mycophenolate mofetil, sirolimus and tacrolimus) cost more than £125,000 to NHS England.

3.2 Services and service mapping

Specific services related to alcohol, hepatitis and obesity and presented in the relevant section. The data below covers services which cover all aspects of liver disease.

NICE is currently developing a guideline for liver disease ‘Management of liver disease (non-alcoholic)’.(18)

3.2.1 Primary care

To understand the diagnosis and management of liver disease in primary care a survey of local GPs was undertaken in March 2015. The survey went out via a number of different routes and as GPs were not required to specify their location we do not know the location of all respondents. However the 75% who did provide their location represented GPs from across the South West. Responses were from 52 GPs and GP trainees across the South West.

A number of specific questions were asked about alcohol, hepatitis and obesity, however some of the questions related to more general aspects of liver disease management. The first question was about the management of abnormal liver function tests (LFTs). All of the respondents said they would repeat and carry out a number of further risk screening (screen for alcohol misuse, review BMI/waist circumference, screen for blood borne viruses, request ultrasound scan or use flowchart/guidelines). A number of GPs mentioned local guidelines and map of medicine guidelines for management of abnormal LFTs.

The second question asked about opportunities and difficulties for early identification of liver disease in primary care. The opportunities highlighted were around alcohol screening and the frequency that LFTs were done for other reasons meaning they could be used to assist early diagnosis. The main difficulties highlighted were having time within consultations, a lack of evidence (especially in regards to management of abnormal LFTs and management of people with possible NAFLD) about management, patient engagement, lack of knowledge around liver disease and unclear pathways for referral. The third question specifically asked about referral for treatment of liver disease and treatment of risk factors for liver disease, with only one-third of respondents feeling that there were clear pathways available in this area. Of those who did feel there were clear pathways these were very rarely formally recorded.

Finally we asked what are the difficulties/good aspects you have experienced when referring to hepatology/gastroenterology. Generally respondents felt that the service was helpful and provided a good local service. However some noted long waiting times. Differences may reflect the wide area over which respondents were from.

3.2.1.1 Influenza vaccination

Chronic liver disease is identified as one of the risk groups for adult influenza vaccine. Examples given in the green book are cirrhosis, biliary atresia and chronic hepatitis. Chronic liver disease is identified as a risk group as it increases the risk of hospitalisation and mortality from influenza. Between September 2010 and May 2011 there were 32 fatal influenza cases (9% of all fatal cases). This gives a mortality rate of 15.8 per 100,000 compared to 0.4 per 100,000 for those not in a risk group and 4.0 per 100,000 for all those in a risk group. The age-adjusted relative risk is 48.2, which means that those with chronic liver disease are 48 times more likely to die from influenza than those not in a risk group.(19)

In England in 201/13 uptake of influenza immunisation was 51.3% in people in a clinical risk group aged 6 months to 65 years. For chronic liver disease uptake was only 42.9%.(20) Table 4 shows influenza vaccination uptake by CCG in the South West.

Currently GP practices have different methods for identifying and contacting people in at risk groups. This varies from letters or phone calls to information on prescriptions, posters or information on the website. Within the prisons setting individuals who meet the criteria for influenza vaccine are offered vaccination. A programme for promoting the uptake for influenza vaccine is supported through poster and leaflet information and all those eligible are identified through the electronic notes system and invited to healthcare for vaccination.

Table 4: Influenza vaccination uptake in people with chronic liver disease (under 65 years) by CCG, 2014/15.

CCG	Influenza vaccination uptake in people with chronic liver disease (%)
Bath & North East Somerset	36.0
Bristol	45.3
Gloucestershire	44.8
Kernow	42.1
NEW Devon	40.8
North Somerset	43.3
Somerset	42.2
South Devon and Torbay	39.0
South Gloucestershire	55.7
Swindon	37.8
Wiltshire	40.6

Source: Immform

3.2.2 Secondary care

Secondary care for liver disease is provided at a number of hospitals across the South West. There is considerable variation in the services provided between the hospitals. Nationally there is no clear divide between secondary and tertiary providers. There are usually a proportion of gastroenterologists within a district general hospital who have an interest in and see the majority of hepatology patients. In more specialist centres, which in the South West includes Plymouth Hospitals NHS Trust and University Hospitals Bristol NHS Foundation Trust, there are dedicated hepatologists. Many patients with liver disease find attending clinic appointments difficult, and it is felt by clinicians that local services are especially important. Hepatology clinical nurse specialists and blood borne virus nurses have an important role to play in coordinating the care of patients. Hepatology clinical nurse specialists' role varies regionally and depending on their experience; it generally includes assessment of new patients, counselling on treatments particularly for viral hepatitides, and they may be involved in outreach clinics. Some nurses, particularly in larger centres, are subspecialised to transplant and/or liver cancer and surgery, viral hepatitis, alcohol, or research.

Table 5 outlines the services that are available locally. Blood borne virus nurses (BBV) are counted separately to nurse specialists as their roles are structured very differently across the region. The majority are employed by the NHS but they may be employed by drug and alcohol services. They can be based in the community, particularly in drug and alcohol services, or in the NHS. For some areas, the role of the BBV nurse is taken on by hepatology nurse specialists who are based in the hospital, and other areas do not have a BBV nurse.

Table 5: Hospitals providing gastroenterology and/or hepatology services in the South West, staff levels – as at April 2015

Name of hospital	Number of gastroenterologists (WTE) and number of these with a hepatology interest*	Number of hepatologists (WTE)*	Number of liver surgeons	Number of specialist nurses	Number of blood borne virus nurses (counted separately to specialist nurses)
Gloucestershire Hospitals NHS Foundation Trust	11 (4) 5 (2) Gloucester 5 (2) Cheltenham	1 Gloucester		1	The hospital based nurse visits the local drugs and alcohol services on a monthly basis
Great Western Hospitals NHS Foundation Trust	7 (1)	0		0	None known about
Musgrove Park Hospital	8 including 1 locum (2)	0		2 (both part time)	Covered by the hospital based clinical nurses.
North Bristol NHS Trust	6 (2)	0		0	Covered by BBV nurse listed for University Hospitals Bristol NHS Foundation Trust
Northern Devon Healthcare NHS Trust	3 (3)	0		0	None known about
Plymouth Hospitals NHS Trust	6	4	4	6.1 WTE including: 1 nurse consultant 1 alcohol liaison 1 viral hepatitis 0.6 transplant 1.5 research 1 HCC (to be appointed)	1 Employed by the NHS, works across various community settings
Royal Cornwall Hospitals NHS Trust	9 (1)	1		2	1 Employed by and based in the drug and alcohol services
Royal Devon & Exeter NHS Foundation Trust	8 (2)	0	1	2	Covered by the hospital based clinical nurses. They outreach to a GP surgery for the homeless and vulnerably housed, and provide ad hoc clinics when requested at the local drug service

Royal United Hospitals Bath NHS Foundation Trust	6 (2)	0		2	1 – employed by NHS and based in local drug and alcohol services
Salisbury NHS Foundation Trust	4 (2)	0		1	1 -Employed by drug and alcohol team, covers the whole of Wiltshire
South Devon Healthcare NHS Foundation Trust	8 (2)	0		0.8	None but the hepatology clinical nurse specialist liaises with drug and alcohol services to encourage testing
University Hospitals Bristol NHS Foundation Trust	4	4	4	8 including 1 liver transplant 1 hepatology 2 alcohol 3 viral hepatitis 1 research nurse	1 – employed by NHS and based in local drug and alcohol services
Weston Area Health NHS Trust	3 (0)	0		0 – however, there is a clinical nurse specialist outreach clinic from Bristol for hepatitis that is held at the drug and alcohol service fortnightly	None known about
Yeovil District Hospital NHS Foundation Trust	4 (1)	0		0	None known about

*Different hospitals may define these differently.

Source: Gastroenterology secretaries surveyed across the region, information from trust websites and hepatobiliary networks.

There is an average of around 27 gastroenterology registrars appointed annually to South West training schemes. Posts for subspecialising in hepatology are appointed nationally after ST5, and of the fifteen posts available each year one includes 6 months training in Plymouth Hospitals NHS Trust.

The laboratories at all hospitals can provide AST:ALT ratio from blood tests but they do not generally provide these routinely. Histopathology is either available within the laboratory or sent to Birmingham. North Bristol NHS Trust has a liver histopathologist who is shared with University Hospitals Bristol NHS Foundation Trust. All the hospitals listed above have the following liver services available; 7 day emergency care for acute alcoholic hepatitis, gastrointestinal bleeding from oesophageal varices and high level critical care. However, in district hospitals the on call/out of hours gastrointestinal bleeding service may be covered by surgeons who do not have the ability to band oesophageal bleeds. District general hospitals will depend on the back up of bigger centres for uncontrolled bleeding.

Specialist centres provide additional liver services such as hepatobiliary surgery and specialised radiological procedures such as transjugular intrahepatic portosystematic shunts (TIPSS) for portal hypertension and chemo-embolisation for hepatic tumours. (See table 6 for a description of these services locally)

It is difficult to review the information available about some of the aspects highlighted in Lancet commission (2) such as percentage of liver readmissions within 30 days, comparative mortality and survival rates, percentage of variceal bleeds endoscoped within 24 hours of admission, percentage of alcohol intake assessed during admissions and percentage for brief intervention, percentage of liver cancer cases reviewed by multidisciplinary team, percentage of liver admission reviewed by hepatologist (or gastroenterologist) and percentage completion of care bundle for decompensated liver disease. It is likely that there are a number of local audits on each of these have been completed, but is difficult to access or compare these.

Table 6: Hospitals providing gastroenterology and/or hepatology services in the South West, description of services available.

Name of hospital	Description of additional liver services available
Plymouth Hospitals NHS Trust	Hepatobiliary surgeons who perform major liver resections for metastases and HCC. Specialised radiological procedures. Early access scheme for hepatitis C treatment.
Royal Devon & Exeter NHS Foundation Trust	Hepatobiliary surgeon who performs liver resections. Specialised radiological procedures.
University Hospitals Bristol NHS Foundation Trust	Hepatobiliary surgeons who perform major liver resections for metastases and HCC. Specialised radiological procedures. Early access scheme for hepatitis C treatment
North Bristol NHS Trust	Specialised radiological procedures.

3.2.2.1 Paediatric services

This report does not include a separate paediatric section, as PHE KIT is writing a national children's liver disease report. The provision for children's liver services in the South West is through Bristol Children's Hospital, who has three gastroenterology consultants. They deal with non-transplant liver disease, and there is a monthly liver clinic and a bi-annual joint liver clinic with consultants from Birmingham. They offer specialist visiting clinics to Swindon and Truro.

3.3 Key themes and recommendations

General recommendations include:

- liver disease needs to be included within Joint Strategic Needs Assessments (JSNA) as it is an increasing cause of mortality and important contributor to inequalities
- hepatobiliary networks have a crucial role to play in increasing awareness of liver disease, prevention of liver disease and improving liver care. Hepatobiliary networks need to be strengthened, have a wider membership and have a clearer leadership structure
- increase influenza vaccination uptake in people identified as having chronic liver disease

4. Alcohol

4.1 Background

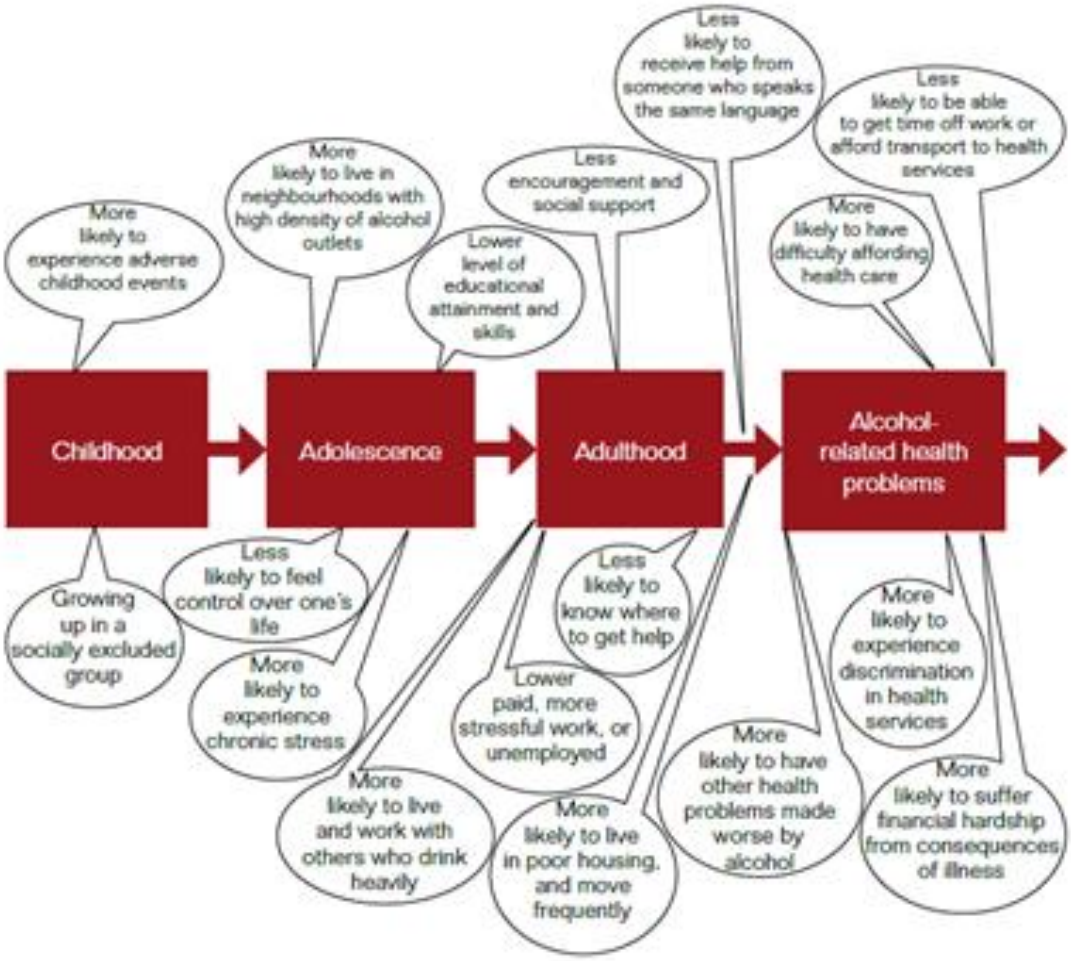
Alcohol problems are widespread in England; consumption per head of population more than doubled between the mid-1950s and the late 1990s, although more recently consumption has reduced slightly. During this time disposable income increased and alcohol became comparatively cheaper making it more affordable. Alcohol has also become more widely available and purchasing has shifted from predominantly on-sales (pubs, clubs and bars) to off-sales from small retailers, supermarkets and on-line sales.

It is estimated that around 9 million adults drink at levels that pose some level of risk to their health, and 1.6 million of these have some level of alcohol dependence. Around 650,000 drink at levels that would classify them as dependent and that may require some specialist alcohol treatment. Approximately 250,000 are severely dependent and may require more intensive specialist treatment. Alcohol-related liver disease deaths in Britain have increased more than four fold since 1970 and at a time when most other major causes of mortality have been falling.(21)

The negative effects of alcohol on the population can be grouped into three broad groups: health and wellbeing, community safety and economic. It is estimated that alcohol related harm costs society at least £21 billion per year.(22) This comprises of alcohol-related health conditions (costing the NHS in England an estimated £2.7 billion), crime and antisocial behaviour (linked to half a million crimes and may contribute to as many as 1 million assaults), loss of productivity in the workplace, and problems for those who misuse alcohol and their families, including domestic abuse (may contribute to about 125,000 instances of domestic violence).(22) Recent research into binge drinking suggests that nationally binge drinking leads to 2,504 additional A&E attendances per day, an additional 82 road accidents per day, 786 additional arrests per day and an additional 3.2 police officers on duty at the weekend for every 10,000 people in the UK.(23)

Alcohol related harm is very strongly associated with deprivation. People living in the 20% most deprived areas are approximately 5.5 times more likely to die from a condition caused by alcohol than those living in the 20% least deprived areas.(24) The diagram below shows how a range of factors over the life course lead to different degrees of exposure, and harms.

Figure 2: How inequities in alcohol-related harm are compounded over the life course.



Source: Alcohol and Inequalities, WHO.(25)

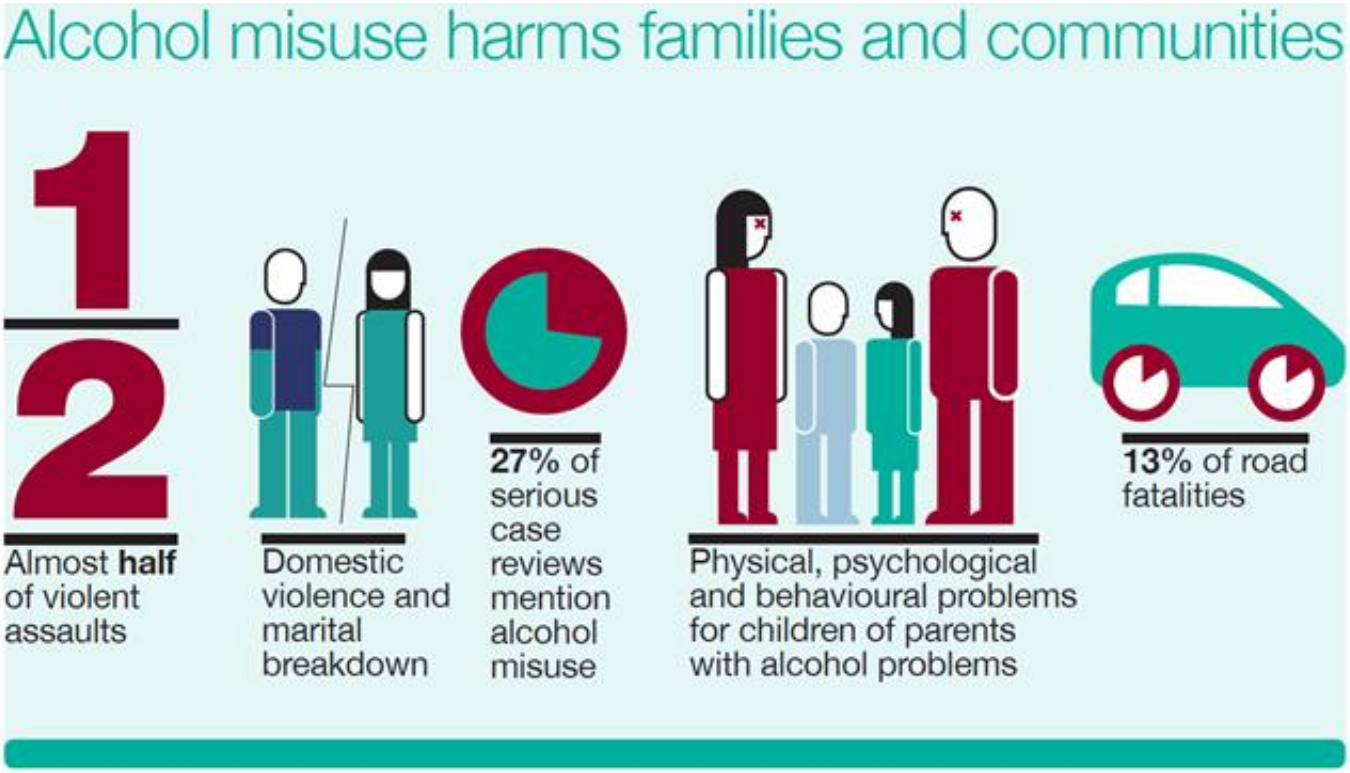
4.1.1 Children and Young People

An estimated 2.6 million children live with a parent whose drinking puts them at risk of neglect, and 705,000 live with a dependent drinker. More than 100 children as young as five contact ChildLine every week with worries about their parent's drinking. 78% of young offenders who misuse alcohol are found to have grown up in homes with parental alcohol abuse and domestic abuse.(26) Alcohol has been identified as a tool used as a ‘gift’ in the grooming and as an intoxicant in the coercion and exploitation of young people.

Children born to mothers who are alcohol dependent are at increased risk of foetal alcohol spectrum disorder of which foetal alcohol syndrome is a severe form. The higher the level of

consumption the higher the risk. This is a life-long condition not just affecting people in infancy.(27)

Youth Justice Board research indicates that alcohol use among young people who are offenders is much higher than those who are not offending. 60% of 12 – 18 year olds in the youth justice system report daily or weekly alcohol use and 66% reported weekly binge drinking.(28)



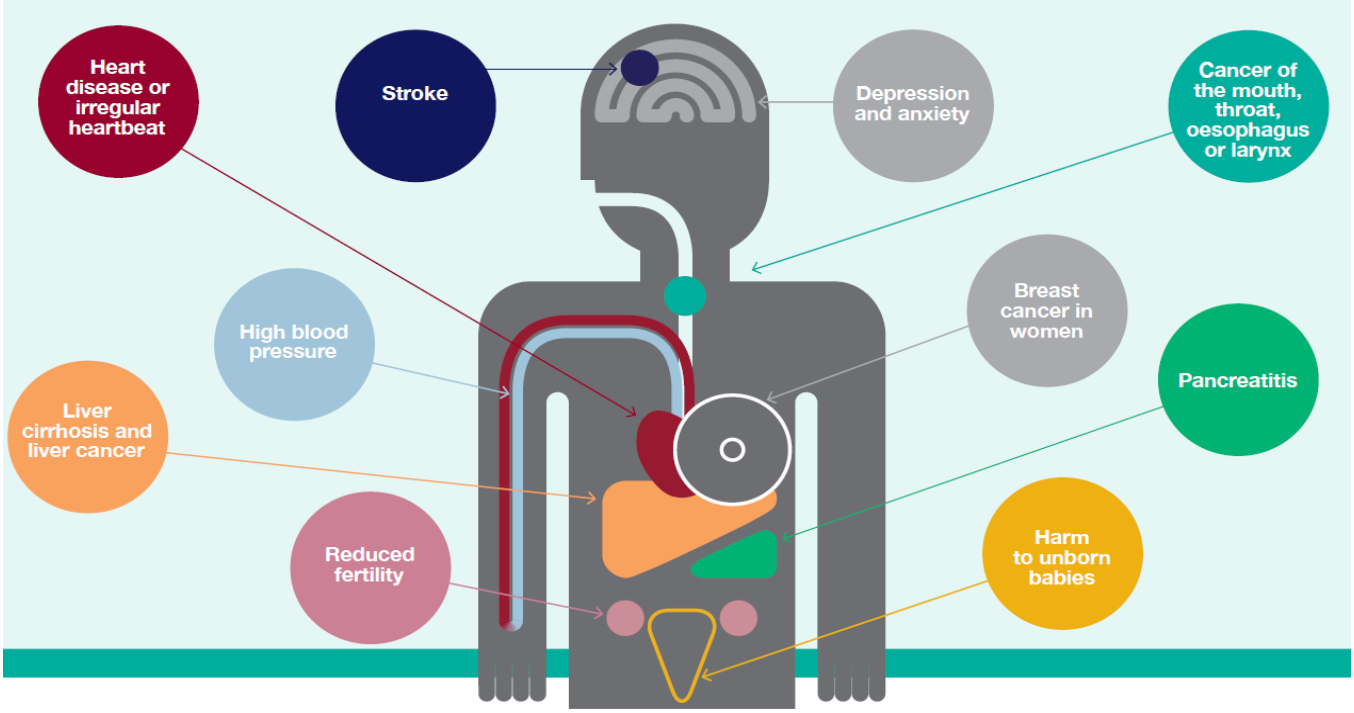
Source: PHE(29)

4.1.2 Military

Research has shown that excessive alcohol consumption is more common in the UK armed forces than in the general population even after taking age and gender differences into account. One study found that 65% of this population drink at higher risk levels.(30) Sub-groups within the armed forces are particularly predisposed to heavy drinking. In particular those who are young, single and who have been involved in traumatic incidents.(31)

4.1.3 Health Effects

The health effects of alcohol are well documented, a simple visual summary is below.



Source: PHE(29)

The relative risks in the whole population of drinking above recommended limits shows exponential increased risk of some diseases associated with increasing amounts of alcohol consumption. Drinking 12 units per day increases a person's risk of hypertension four times compared to the standard risk of illness and increases a person's risk of oesophageal varices and liver disease ten times.(32)

4.1.3.1 Alcohol-related liver disease (ARLD)

See general section background for natural history and complications of liver disease.

'The problem is that alcohol related liver disease (ARLD) develops silently, progressing from fatty liver through progressive fibrosis to cirrhosis and finally liver failure and death. Once patients have been seen by liver specialists half will stop drinking, but half of these patients die before their liver has a chance to recover with only the remaining half surviving long term.' (e698)(33)

'If liver deaths are to be reduced, then there is a need to address the major risk factors for liver disease …but it is also necessary to detect liver disease before the development of cirrhosis, when lifestyle changes or specific treatment can prevent the progression of disease.'(e616)(3)

4.1.4 Recommended drinking limits and definitions

Women
Women should not regularly consume more than 2-3 units of alcohol per day and should have at least one clear day per week that is alcohol free. Drinking above these limits increases the risks to health and wellbeing.

Higher risk drinkers are defined as women who drink more than 6 units per day

Men
Men should not regularly consume more than 3-4 units of alcohol per day and should have at least one clear day per week that is alcohol free. Drinking above these limits increases the risks to health and wellbeing.

Higher risk drinkers are defined as men who drink more than 8 units per day

Binge drinking is defined as drinking double the daily limit in one drinking session ie 5-6 units for a woman and 7-8 units for a man. It is recommended that a binge should be followed by an alcohol free period of at least 48 hours. The risks to health and wellbeing are slightly different and are more weighted towards accidents, violence and/or unprotected sex.

Alcohol Consumption in pregnancy
Women should abstain from alcohol completely during the first three months of pregnancy because of the risks of miscarriage. And for the rest of pregnancy to drink no more than one or two units of alcohol once or twice a week.

4.2 Epidemiology of Alcohol and Alcohol Related Liver Disease

4.2.1 Burden of alcohol

4.2.1.1 Prevalence Estimates

Table 7 identifies prevalence estimates of higher risk and dependent drinkers at a Primary Care Trust (PCT) level across the SW. PCT is referred to as this related to health commissioning structures at the time the estimates were developed (updated 2011). The PCT boundaries map on to local authority boundaries directly. The estimates are taken from the Alcohol Ready Reckoner which uses a variety of data sources, including the Local Alcohol Profiles for England (LAPE) higher risk drinking estimates, to determine a synthetic estimate for dependent drinkers.

Higher risk drinking estimates are significant as the evidence suggests that alcohol consumption at this level is likely to increase the risk of liver disease and other alcohol related harm.(32) Therefore, the table represents an estimate of the magnitude of risk in each local authority areas.

Table 7: Prevalence estimates (estimated number in each area) of higher risk and dependent drinkers by PCT, 2011.

Local Authority (PCT)	Higher risk (men drinking more than 50 units/week; women drinking more than 35 units/week)	Dependent number
Bath and North East Somerset	6,668	5,543
Bristol	19,591	16,285
Cornwall and Isles of Scilly	19,500	16,210
Devon	25,603	21,283
Gloucestershire	20,707	17,212
North Somerset	6,914	5,747
Plymouth Teaching	11,321	9,411
Somerset	17,376	14,444
South Gloucestershire	8,786	7,304
Swindon	7,618	6,333
Torbay	5,780	4,805
Wiltshire	15,199	12,634

Source: Alcohol Ready Reckoner

Estimates of the number of dependent drinkers are important as this provides a basis for consideration of the likely demand for local structured alcohol treatment. It is acknowledged that the Alcohol Ready Reckoner estimates are somewhat outdated and not authoritative. Confidence intervals are wide for LAPE data and are not sensitive to cultural drinking patterns associated with different BME communities. Local authority public health teams may well have local prevalence estimates that are considered more up to date and robust. However, they provide a starting point for consideration. Public Health England is working with Sheffield University to develop more up to date and robust estimates to support local areas. These are likely to be available during 2015/16.

Table 7 shows that the largest higher risk and dependent drinker populations in the South West are to be found in Devon, Gloucestershire, Bristol, Cornwall and Isles of Scilly and Somerset. In addition to a sizeable population identified in the estimates above, Wiltshire also has complex and unknown needs associated with a significant military population (see military population section below).

Smaller numerical population estimates do not on their own indicate that alcohol should not be considered a priority local matter. Alcohol related and alcohol related liver disease mortality and admissions data presents a varied picture across the South West. Some smaller local authorities have significant and disproportionate alcohol health harms, which reflects the impact of alcohol on health inequalities. For example Torbay has the lowest estimate for number of dependent drinkers but some of the highest admission rates for alcohol and premature mortality from ARLD in the South West.

4.2.1.2 NHS Health Checks and AUDIT-C

NHS Health Checks are offered to all adults in England aged 40-74 years old without a pre-existing condition. As part of an NHS Health Check an alcohol risk assessment should be undertaken. Somerset Health Checks have collected clear information about those who have presented for a health check from 2012/13 to quarter 1 of 2014/15. This data gives a snapshot on the AUDIT-C scores of those who presented for a health check in Somerset over this time period.

Of the 28,841 people who had a health check (and had complete age data) there was data available on AUDIT-C scores for 26,803 people (93%). Of these 6,219 (21.6%) had an AUDIT-C score of greater than five or equal to five. With an AUDIT-C score of greater than or equal to five a further seven questions are required and advice tailored depending on the score of these (lower risk drinking no further action required; brief advice; brief advice and/or offer extended brief advice; referral to alcohol treatment services). With an AUDIT-C score of less than five no further action is required.

Table 8 shows the AUDIT-C score by Somerset deprivation quintile (of 26,220 as 583 with missing deprivation data). There was no evidence to suggest that the odds of being at increased risk from alcohol consumption are reduced by being resident in the least deprived areas of Somerset compared to the most deprived areas OR 0.92 (CI 0.83, 1.02), p < 0.10. The age composition for each quintile in the study population was similar to that of Somerset overall.

Table 8: AUDIT-C score distribution by Somerset Deprivation Quintile

AUDIT-C Score	Most Deprived	Quintile 2	Quintile 3	Quintile 4	Least Deprived
AUDIT-C ≥5	798	1,273	1,385	1,419	1,197
AUDIT-C <5	2,611	3,991	4,6000	4,669	4,277
Total	**3,409**	**5,264**	**5,985**	**6,088**	**5,474**

Table 9 and 10 show the AUDIT-C score by smoking status (of 26,208 as 595 with missing smoking status data) and BMI (of 26,527 as 276 with missing BMI data). There is evidence of an increased chance of being a smoker when at increased risk from drinking behaviour, OR 1.8 (95% confidence interval (CI) 1.7 to 2.0), p<0.01. There is evidence of an increased chance of being overweight or obese when at increased risk from drinking behaviour, OR 1.2 (95% CI 1.2 to 1.3), p<0.01.

Table 9: AUDIT-C score by smoking status

	Non Smoker	Smoker
AUDIT-C ≥5	4,881	1,147
AUDIT-C <5	17,887	2,293
Total	**22,768**	**3,440**

Table 10: BMI by AUDIT-C

	BMI <25	BMI 25-30	BMI >30
AUDIT-C ≥5	2,169	2,825	1,167
AUDIT-C <5	8,149	8,126	4,091
Total	**10,318**	**10,951**	**5,258**

4.2.1.3 Drug and alcohol treatment

The number accessing drug and alcohol treatment (data collected by National Drug Treatment Monitoring System, NDTMS. See appendix 2 for details of data collection) gives another indication of potential need in the population. However there are differences in who and when people access services. There is a significant gap between availability and need of drug and alcohol treatment.

In the South West the pattern of drug and alcohol use is different to the national profile in that non-opiate users make up a larger proportion of the treatment population in the South West than other regions. Compared to the general population there is a much higher proportion of drug users than alcohol users within drug and alcohol treatment services.

In the South West there were 10,838 clients in treatment with problematic alcohol use in 2013/14. These are separated into four categories depending on the clients drug and alcohol use. 5,601 clients were seen with alcohol only as an identified issue; 2,189 clients where opiate use, non-opiate use, and alcohol were identified as issues; 944 where opiate use and alcohol were identified as issues; 2,104 where alcohol and non-opiate use was identified as an issue. See table 11 for breakdown by local authority. Of the four groups in the NDTMS cohort, those with adjunctive drug use alongside alcohol show lower rates of recovery from dependency. This is particularly significant where opiate use and alcohol are combined, as recovery from dependency is less than a third of that seen from alcohol only users. Treatment services initially started as a service of opiate users and later took on alcohol. Since prevalence shows alcohol use to be higher there is therefore potential for unmet need.

Table 11: Number of clients in treatment in the last 12 months, 2013/14.

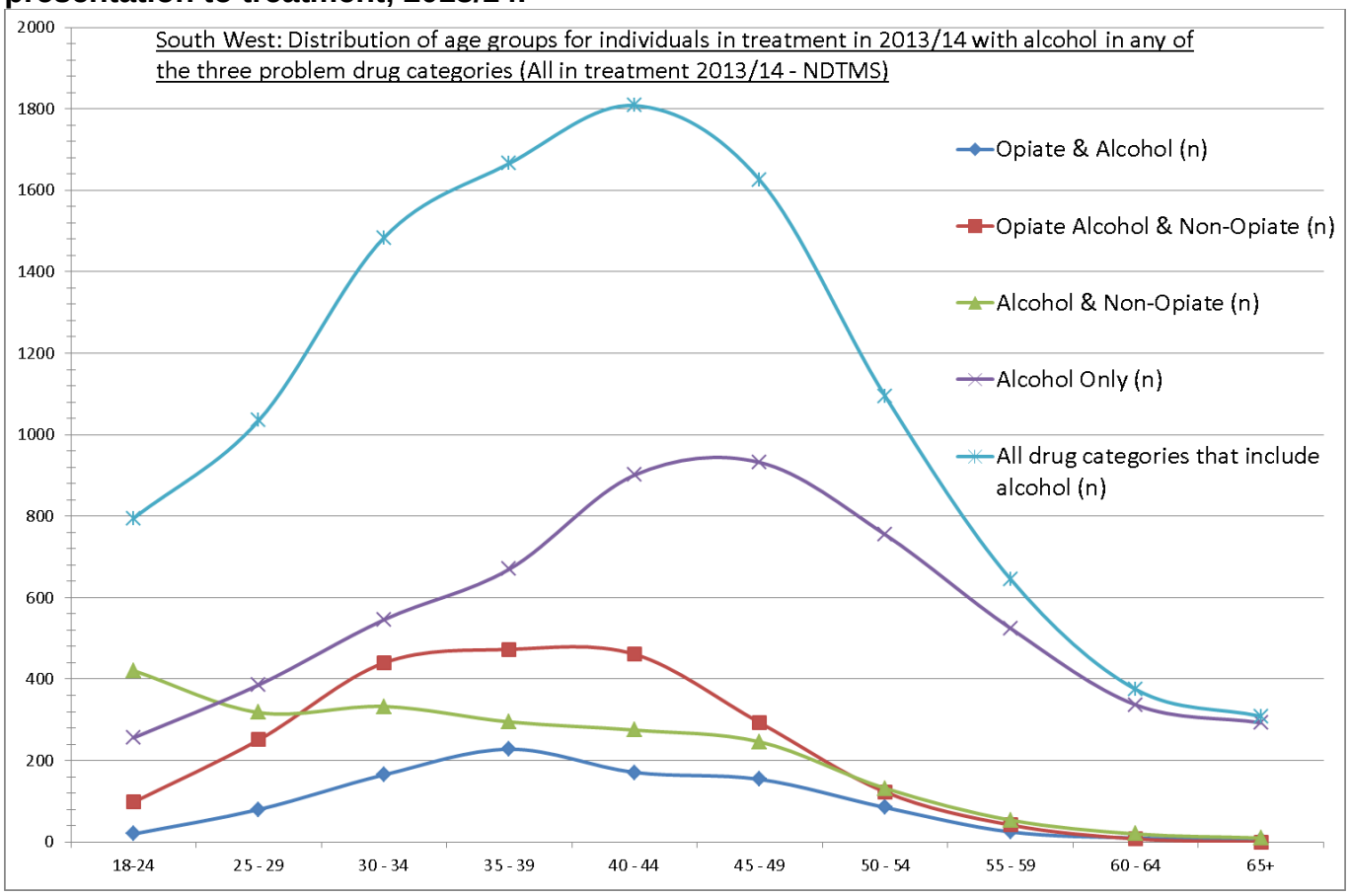
	Opiate & Alcohol	Opiate Alcohol & Non-Opiate	Alcohol & Non-Opiate	Alcohol Only	Total
Bath and North East Somerset	61	174	151	354	**740**
Bristol	94	631	266	580	**1,571**
Cornwall & Isles of Scilly	135	242	277	731	**1,385**
Devon	101	134	272	1,111	**1,618**
Gloucestershire	96	175	226	535	**1,032**
North Somerset	49	110	181	184	**524**
Plymouth	101	195	182	430	**908**
Somerset	118	184	107	266	**675**
South Gloucestershire	15	61	126	157	**359**
Swindon	28	89	56	374	**547**
Torbay	83	72	99	434	**688**
Wiltshire	63	122	161	445	**791**

Source: NDTMS

The majority of clients in treatment were male (65%) and the median age of clients in treatment in 2013-14 was 41.3 years for both males and females combined. The vast majority of clients in treatment who cite alcohol were 30 years of age or older; (83%). There was a distinct variation in the median ages between different combinations of drug and alcohol use with the oldest median in the alcohol only group (47) and the youngest in the non-opiate and alcohol group (see graph 9). The proportion of genders shifts with differing combinations of drug type with alcohol. Opiate using groups are predominantly male (74%),

and the least gender biased group in the cohort was the alcohol only group where 59% were male and 41% were female.

Graph 9: Distribution of age groups for individuals in treatment in 2013/14 within different drug combinations with alcohol stated as a problem substance on presentation to treatment, 2013/14.



Source: NDTMS

The age profile between areas in the South West shows some variation. B&NES has fewer people over 50 accessing services than most areas. Plymouth, Bristol, Swindon, Torbay and Wiltshire all have a broader distribution across the age bands, and Somerset has an older population in treatment than other areas. For individual partnership data please see the Alcohol NDTMS data tool available from the SW Alcohol & Drug Team.

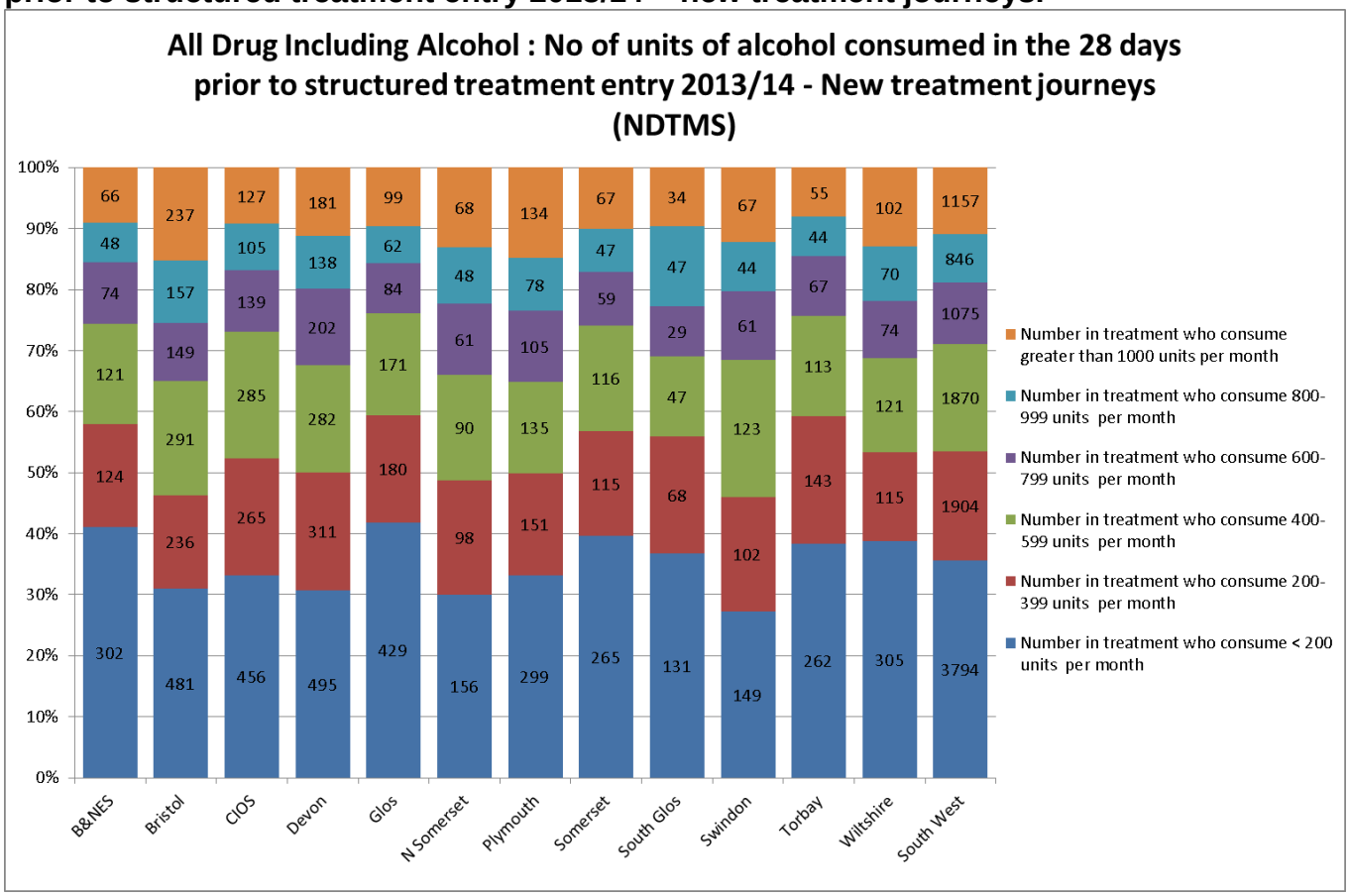
Where reported, most clients in the South West (90.77%) were white British and 2.09% were other white. No other ethnic group accounted for more than one per cent of the total cohort. Five of the fifteen partnerships in the South West data show significant numbers of missing ethnicity codes, which makes both comparisons between areas difficult, and limits the ability of local areas to ensure that they are providing services that are suited to the needs of minority ethnic groups.

NDTMS collected data on the number of units consumed in the 28 days prior to treatment start for 10,762 individuals (99.3% of all in treatment 2013/14). The median number of units consumed in 2013/14, was 210 in the 28 days prior to starting treatment. Alcohol use prior to the start of treatment varied across the four drug category groups. The group with the lowest median was the opiate and alcohol group at 186 units in the 28 days prior to starting treatment. The alcohol only group showed unsurprisingly much higher levels of alcohol use prior to treatment start, with a median of 415 in the 28 days prior to treatment start, identifying those entering treatment are at risk of significant liver and health harm if such use goes unaddressed.
The profile of alcohol use varied considerably across the four drug groups in the 28 days prior to treatment entry with alcohol only users consuming a conspicuously higher number of units than other groups.

Significant numbers of individuals with other substance misuse problems were also drinking at health damaging levels in the 28 days prior to treatment entry. This is important as excess alcohol combined with opiate use is a common feature of drug related death.

There is considerable variation in the profile of alcohol use prior to treatment entry between local authority areas (graph 10). Ten of the twelve areas in the South West show greater numbers entering treatment drinking in excess of 400 units per month. A number of areas have notably higher numbers accessing treatment who are drinking over 800 units in the 28 days prior to treatment entry. Other areas have the bulk of their treatment population consuming less than 200 units in the 28 days prior to treatment. This suggests different systems are focussed on different segments of the population, which may be an artefact of the local system configuration, or service design. Local areas should be using their annual needs assessment processes as an opportunity to explore how their local structured treatment system aligns with other local provision to provide a comprehensive navigable care pathway.

Graph 10: All drug including alcohol: number of units of alcohol consumed in 28 days prior to structured treatment entry 2013/14 – new treatment journeys.



Source: NDTMS

4.2.1.4 Licensed premises

Table 12 shows a range of factors that describes how available alcohol is via licensed premises. The number of premises per 10,000 population gives an indication of 'standardised accessibility'. However, crude numbers of licensed premises gives an indication of the scale of the licensing role for local authorities. Devon on its own accounts for just under 20% of all licensed premises in the South West, closely followed by Cornwall. Devon also accounts for 23% of the total number of 24 hour licensed premises in the South West. Torbay, although in population terms are a relatively small unitary local authority, accounts for 17% of all South West 24 hour licensed premises. This is more than Bristol, Plymouth and North Somerset combined. Devon and Torbay also are the local authorities with the highest number of licensed premises per 10,000 population (excluding Isles of Scilly).

The World Health Organisation acknowledges the relationship between the rise in accessibility and relative affordability of alcohol and increased harm caused by alcohol, noting that 'there is consistent evidence that regulating and limiting the days and hours of sale can reduce alcohol related harm.'(p69)(34)

Table 12: Availability of alcohol via licensed premises, 2012/13

Area	# Licensed Premises	Persons per Premise	# Premises per 10,000	# 24 Hr Licensed Premises
Bath and North East Somerset	780	184	54	28
Bristol, City of	1,721	199	50	35
Cornwall	3,580	121	82	n/a
Devon	3,686	166	60	182
Gloucestershire	2,332	206	49	103
Isles of Scilly	61	31	322	17
North Somerset	681	239	42	32
Plymouth	805	257	39	37
Somerset	2,379	179	56	180
South Gloucestershire	691	303	33	n/a
Swindon	n/a	n/a	n/a	n/a
Torbay	797	134	75	132
Wiltshire	1,767	211	47	41
South West PHEC	19,280	190	53	787
England	189,068	223	45	7,285

n/a: no data available

Source: Licenced premises: Home Office, Alcohol and Late Night Refreshment Licensing Statistics, supplementary tables, 2012/13. Populations: ONS, Mid-2012 population estimates.

4.2.1.5 Hospital admissions related to alcohol

Hospital admissions related to alcohol are used as a way of understanding the impact of alcohol on the health of a population. There are a number of ways to look at hospital admissions related to alcohol, alcohol-specific or alcohol-related hospital admissions. Alcohol-specific outcomes include those conditions where alcohol is causally implicated in all cases of the condition; for example, alcohol-induced behavioural disorders and alcohol-related liver cirrhosis. The alcohol-attributable fraction is 1.0 because all cases (100%) are caused by alcohol. Alcohol-related conditions include all alcohol-specific conditions, plus those where alcohol is causally implicated in some but not all cases of the outcome, for example hypertensive diseases, various cancers and falls. The attributable fractions for alcohol-related outcomes used here range from between 0 and less than 1.0. For example, the alcohol-attributable fraction for mortality from pneumonia among men aged 75 and over is 0.10 because the latest epidemiological data suggest that 10% of pneumonia cases among this population are due to alcohol. Outcomes where alcohol has a protective effect (ie the fraction is less than 0) are not included when the alcohol-attributable fractions are applied to mortality and hospital episode statistics data.

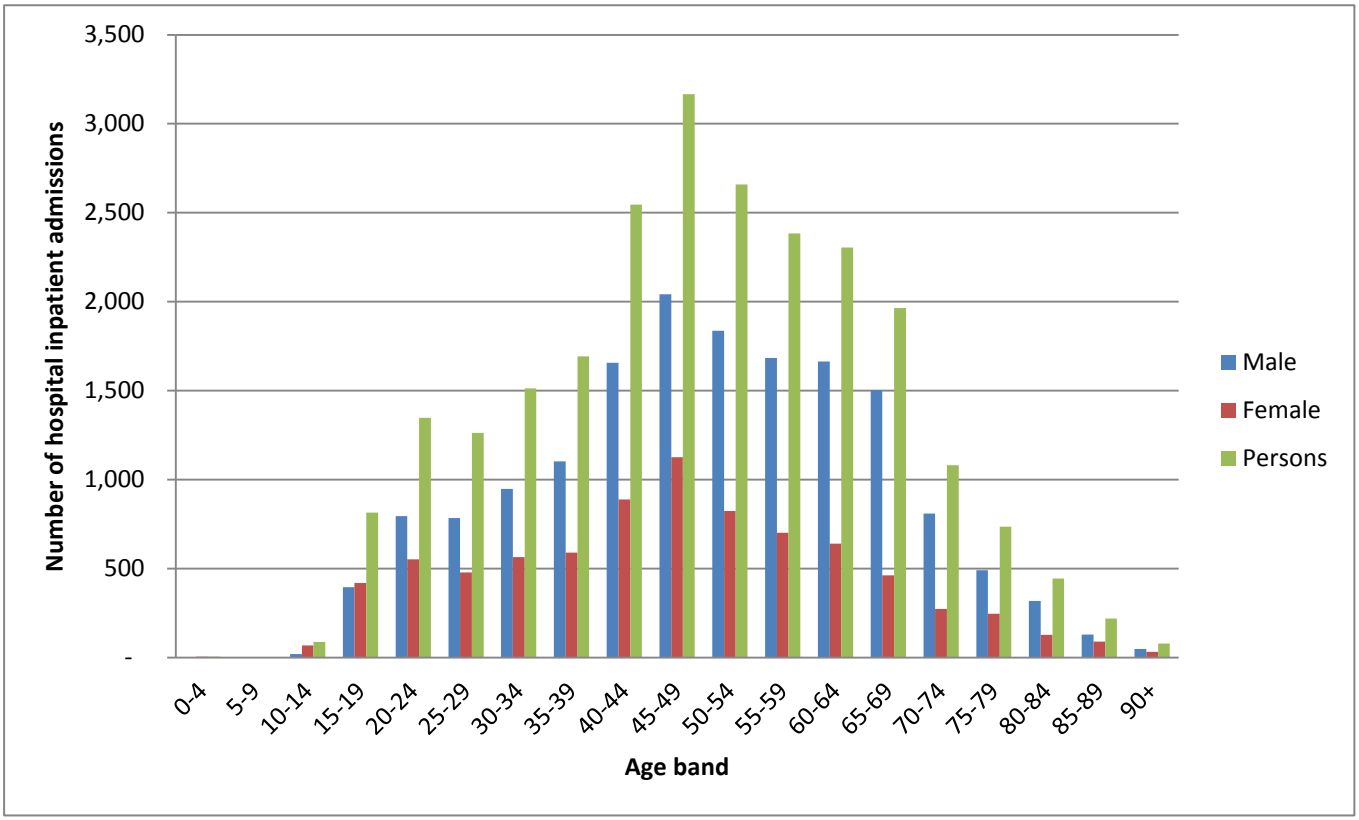
Alcohol-related admissions can then be further broken down into a narrow or broad measure (indicators used by LAPE). The broad measure considers all codes (primary and any secondary codes) that are recorded in relation to a patient's admission record, and if any of these codes has an alcohol-attributable fraction* then that admission would form part of the alcohol-related admission total. It provides evidence of the scale of the problem but is sensitive to changes in coding practice over time. The narrow measure seeks to count only those admissions where the *primary code* has an alcohol-attributable fraction. Although alcohol-attributable fractions exist for *external cause codes* (such as 27 per cent of assaults), these cannot be recorded as a *primary code* so the new indicator also includes admissions

where the *primary code* does not have an alcohol-attributable fraction but where one of the *secondary codes* is an *external cause code* with an alcohol-attributable fraction. This represents a narrower measure. Since every admission must have a primary code it is less sensitive to coding practices but also understates the part alcohol plays in the admission.(35, 36)

*Alcohol causes, or can contribute to the development of, many health conditions. Academics have been able to use high quality research evidence to estimate what proportion of cases of a health condition are alcohol-related. Conditions such as alcoholic liver disease where alcohol is the sole cause are known as alcohol-specific or wholly alcohol-attributable conditions and their alcohol-attributable fraction is 1.0 (100 per cent). For other conditions, where alcohol has a proven relationship but it is one of a range of causative factors, an estimate of the contribution alcohol makes is calculated. For example, it is estimated that alcohol plays a causative role in 25-33 per cent of cardiac arrhythmias. These are the partially alcohol-attributable conditions and the alcohol-attributable fractions would be 0.25-0.33. Fractions differ slightly for men and women. Some external cause codes also have an alcohol-attributable fraction (for example, 27 per cent of assaults are estimated to be alcohol-related and therefore the alcohol-attributable fraction is 0.27).(35)

In the South West there were 535.4 per 100,000 alcohol specific admissions in 2012/13 (24,302 admissions). Males had twice as many admissions (16,224) compared to females (8,078). There is a peak in alcohol specific admissions in those aged 45-49 years (see graph 11).

Graph 11: Hospital inpatient admissions due to alcohol specific conditions, by age in the South West, 2012/13

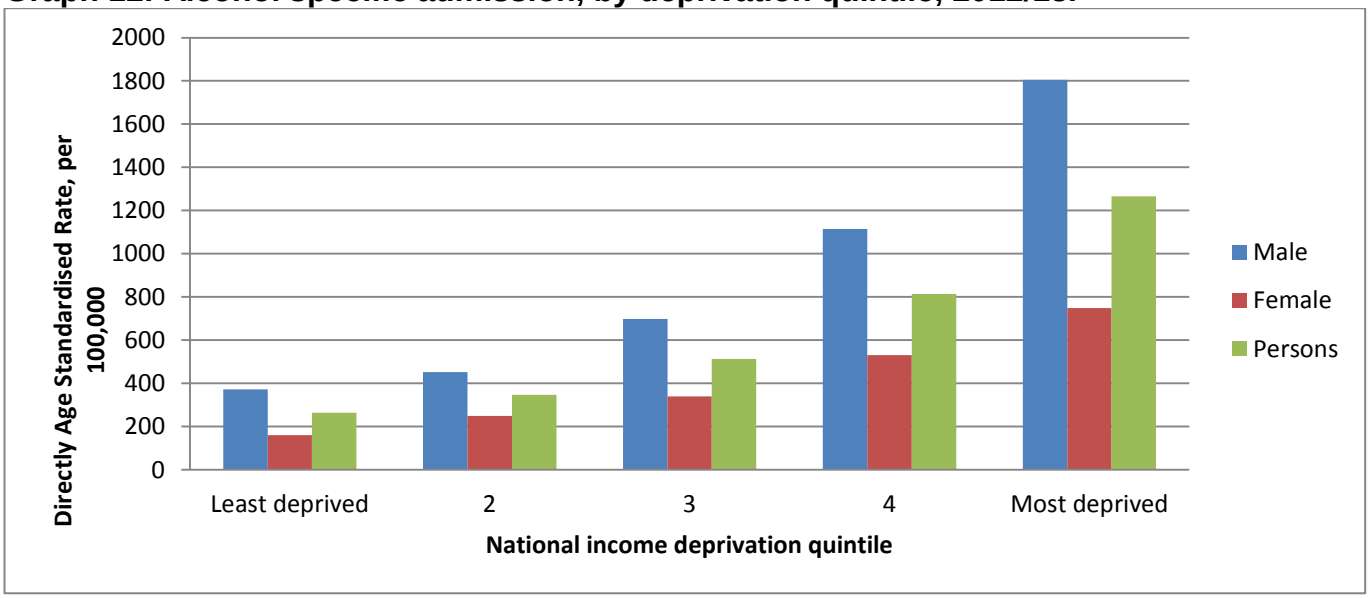


*Alcohol specific admissions have been calculated based on finished consultant episodes (FCEs) for consistency with other admissions calculations presented above and so will contain instances where the same person could have multiple admissions.
Note this methodology differs from the Local Alcohol Profiles for England (LAPE) which calculate alcohol specific admissions based on admissions for unique individuals during the course of a HES year.

Source: PHE

People in the most deprived quintile are 4.8 times more likely to have an alcohol specific admission than those in the least deprived quintile, with a similar gradient for men and women (graph 12). This reflects the national picture and evidence that that people with low individual or neighborhood socioeconomic status (SES) show a greater susceptibility to the harmful effects of alcohol. However a lack of evidence means that it is not possible to conclude what mechanisms and pathways might underlie this difference in risk. Although people in different SES groups do not differ in the unit amount and frequency of alcohol drunk across the week, there are important differences in 'binge drinking', beverage choice, and patterns of heavy drinking.(37)

Graph 12: Alcohol specific admission, by deprivation quintile, 2012/13.

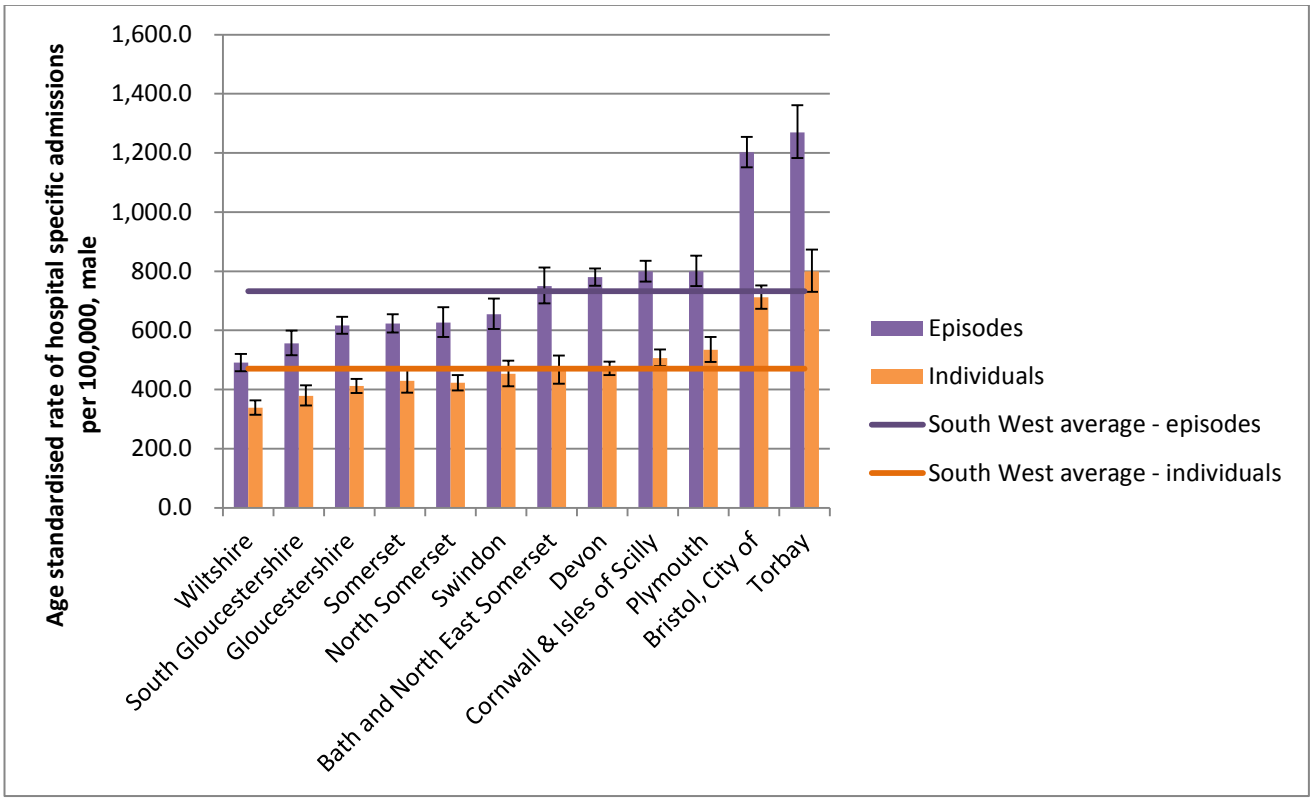


*Alcohol specific admissions have been calculated based on finished consultant episodes (FCEs) for consistency with other admissions calculations presented above and so will contain instances where the same person could have multiple admissions.
Note this methodology differs from the Local Alcohol Profiles for England (LAPE) which calculate alcohol specific admissions based on admissions for unique individuals during the course of a HES year

Source: PHE

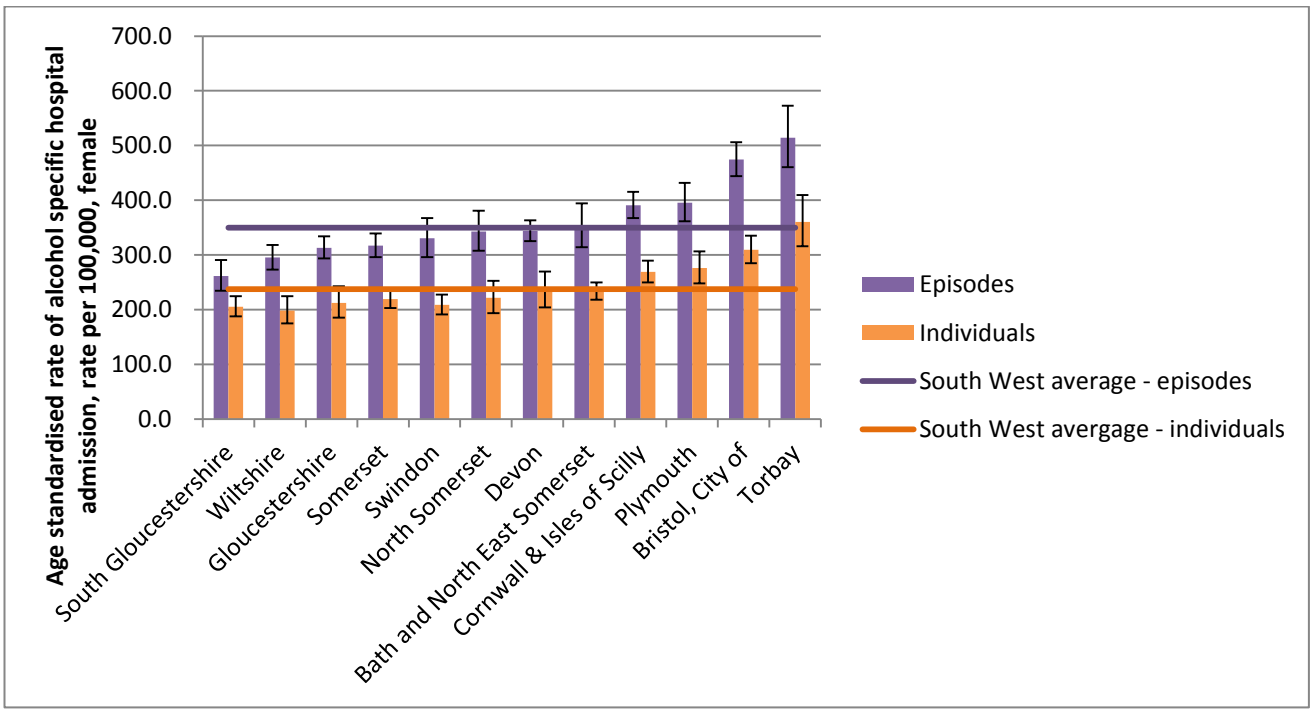
Cornwall & Isles of Scilly, Bristol, Plymouth and Torbay have statistically significant higher age-standardised alcohol specific hospital admission in men and women for both episodes (total number of admissions) and individuals (total number of people) than the South West (graph 13 and graph 14).

Graph 13: Alcohol specific hospital admissions for males by area in the South West, episodes (total number of admissions) and individuals (total number of people) 2012/13.



Source: PHE and LAPE

Graph 14: Alcohol specific hospital admissions for females by area in the South West, episodes (total number of admissions) and individuals (total number of people), 2012/13.

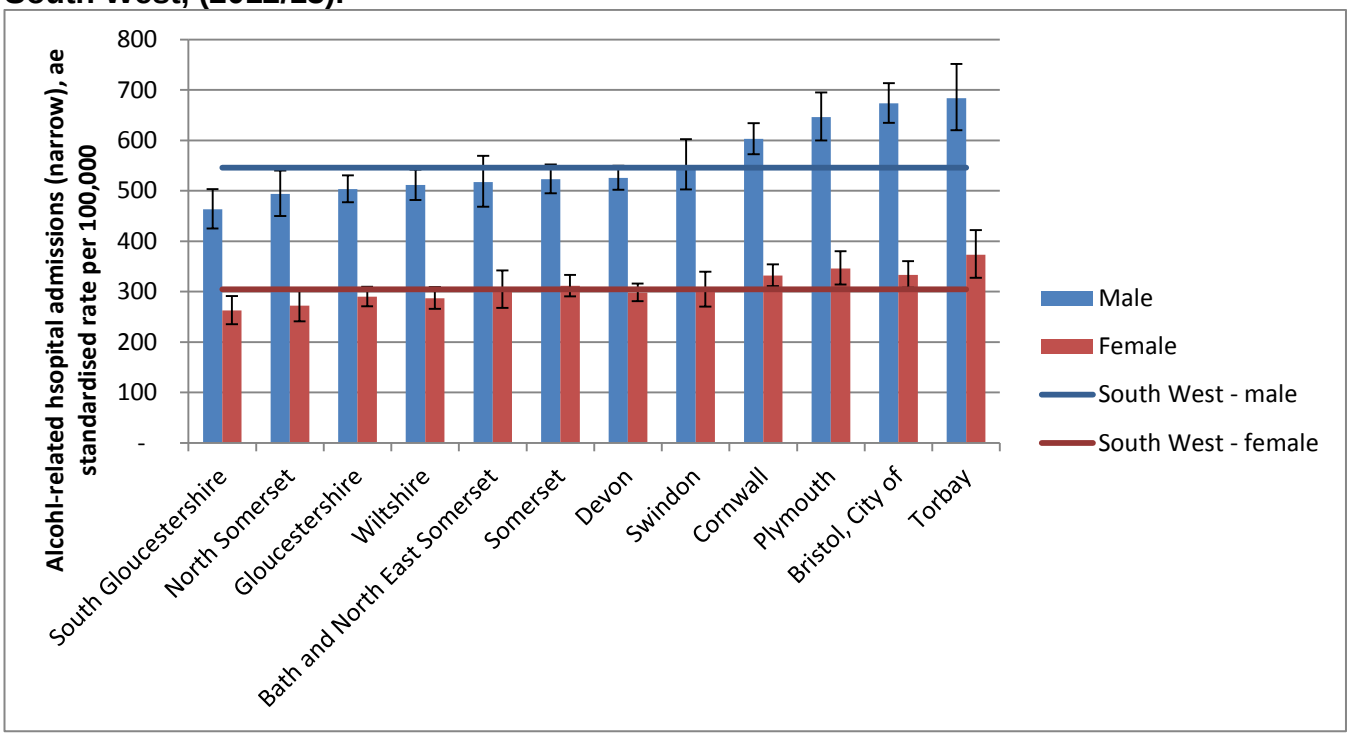


Source: PHE and LAPE

For alcohol-related hospital admissions (narrow category) Bristol, Cornwall, Plymouth, and Torbay have statistically higher age standardised rate than the South West (age standardised rate 546 per 100,000) for males. Bristol, Plymouth and Torbay have statistically higher age standardised rate than England (589 per 100,000) for males (graph 15). For alcohol-related hospital admissions (narrow category) Torbay has statistically higher age standardised rate than the South West (age standardised rate 305 per 100,000) and England (306 per 100,000) for females (graph 15).

Alcohol-related hospital admissions (broad category) are shown in graph 16. It is not advised to compare these admissions between areas due to potential differences in hospital coding of secondary causes of admissions.(38)

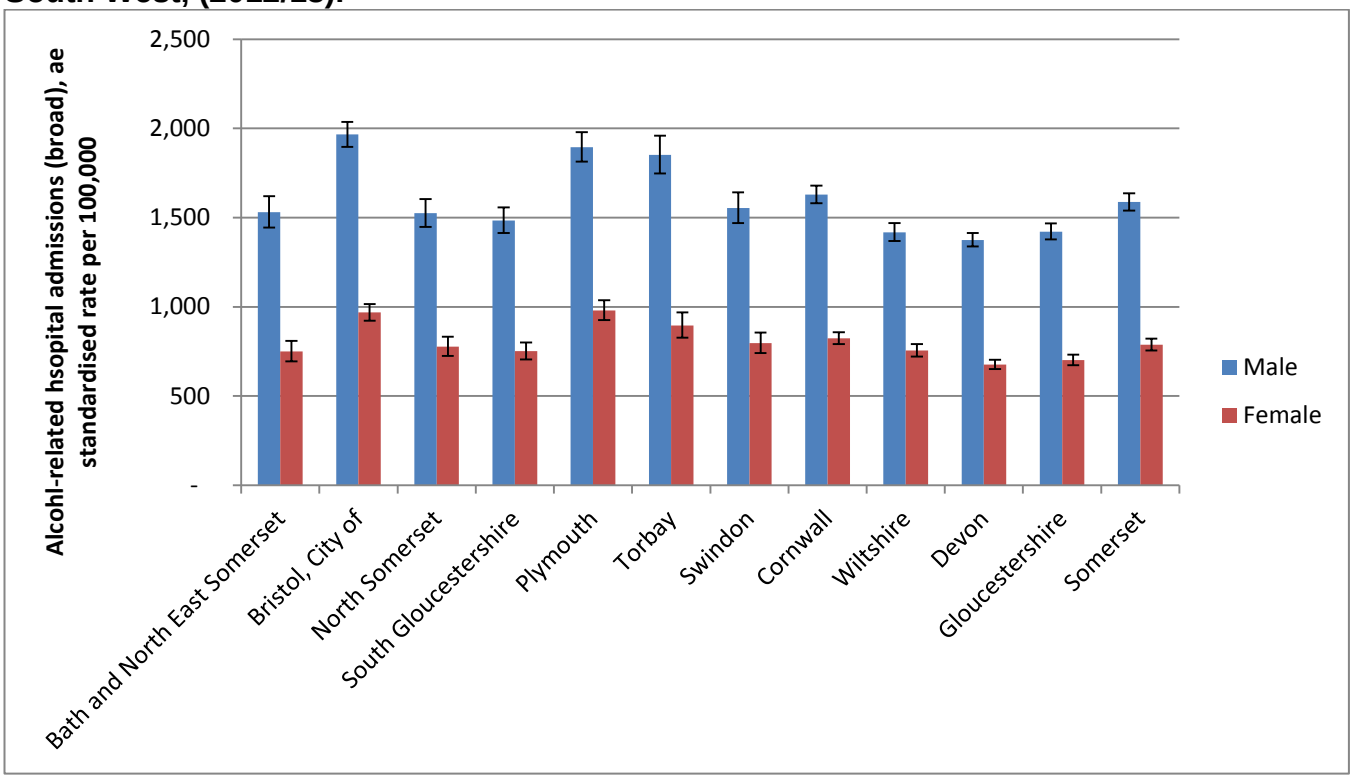
Graph 15: Admitted to hospital with alcohol-related conditions (narrow) by area in the South West, (2012/13).



*Isles of Scilly removed due to small numbers.

Source: LAPE

Graph 16: Admitted to hospital with alcohol-related conditions (broad) by area in the South West, (2012/13).



Source: LAPE

There is variability in the trend of hospital admissions over time (2008/09 to 2012/13) in the South West. Some areas have shown an increase in alcohol-related admissions (narrow) whereas others have shown a decrease. Alcohol-related admissions (broad) have nearly universally increased across the South West over the same time period.

4.2.1.6 Primary care

To obtain data of the impact of alcohol on primary care consultations would require accessing individual primary care databases to extract information on conditions that are more likely to have some relationship with alcohol.

4.2.1.7 Crime and domestic violence

Local Alcohol Profiles for England indicators use attributable fractions to estimate the number of crimes that are related to alcohol consumption. Alcohol-attributable fractions from the former UK Prime Ministers Strategy Unit were used in the production of the alcohol-related crime indicators (table 13). These alcohol attributable fractions estimate the statistical association between measures of alcohol and crime, and not necessarily the causal association, and should therefore be distinguished from the disease specific alcohol-attributable fractions used for the hospital admission and mortality indicators.

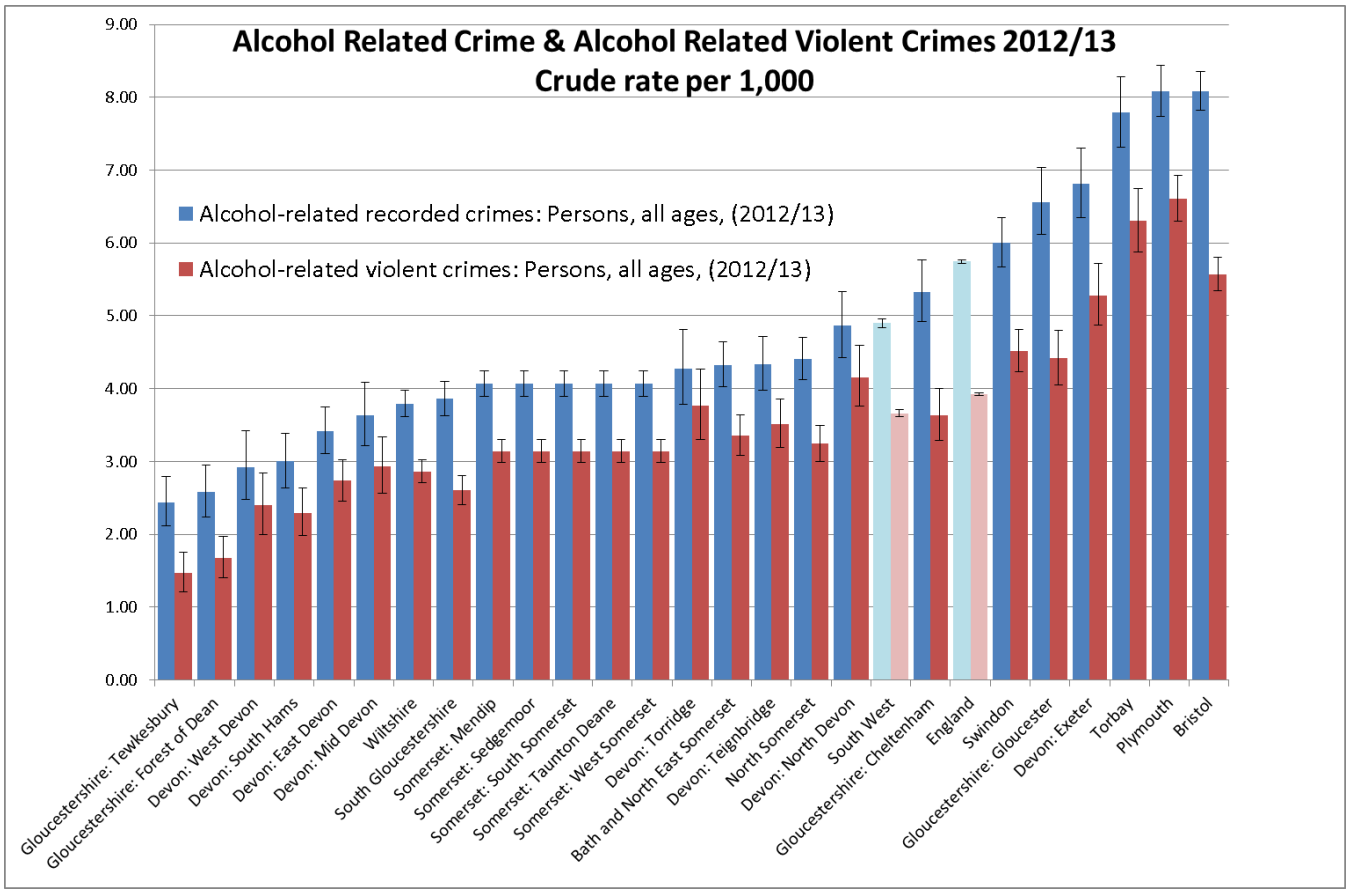
Table 13: Alcohol-attributable fractions for crime

Crime category	Alcohol-attributable fraction
Violence against the person	0.37
Sexual offences	0.13
Robbery	0.12
Burglary	0.17
Theft of motor vehicle	0.13
Theft from a motor vehicle	0.13

Source: LAPE (36)

Graph 17 shows the alcohol related crime and alcohol related violent crime in the South West.

Graph 17: Alcohol related crime and alcohol related violent crime crude rate per 1,000, 2012/13.

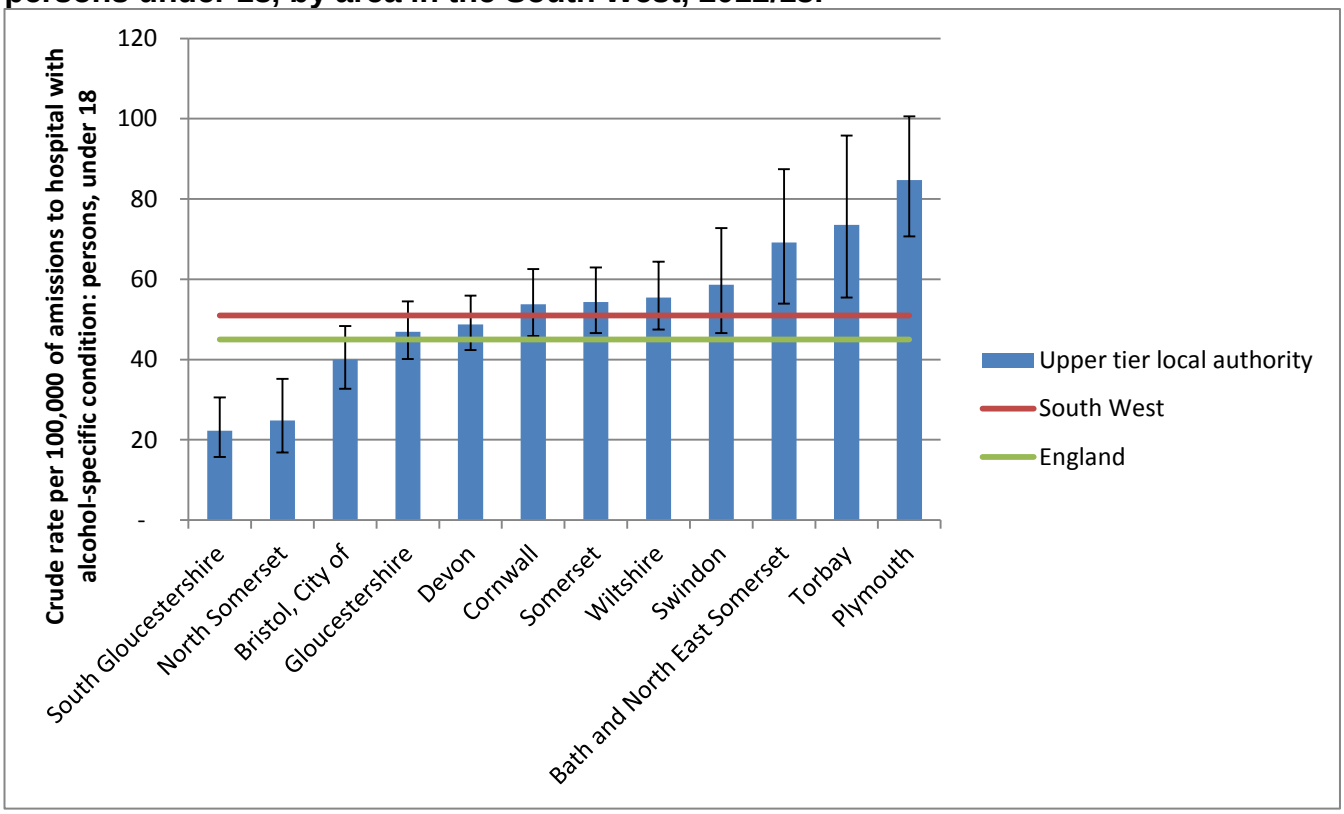


Source: LAPE

4.2.1.8 Children and Young People

South Gloucestershire and North Somerset have the lowest crude rates for under-18 admissions, half that of the South West while Plymouth and Torbay are the highest.

Graph 18: Crude rate per 100,000 admitted to hospital with alcohol-specific conditions: persons under 18, by area in the South West, 2012/13.



Source: LAPE

4.2.1.9 Military populations

In 2009 a report estimated that the South West region (including Dorset, Bournemouth and Poole) was home to around 24% of the military personnel in the UK, amounting to almost 39,000 individuals.(39) The highest numbers are stationed in Wiltshire followed by Plymouth, Devon, Cornwall and Somerset.

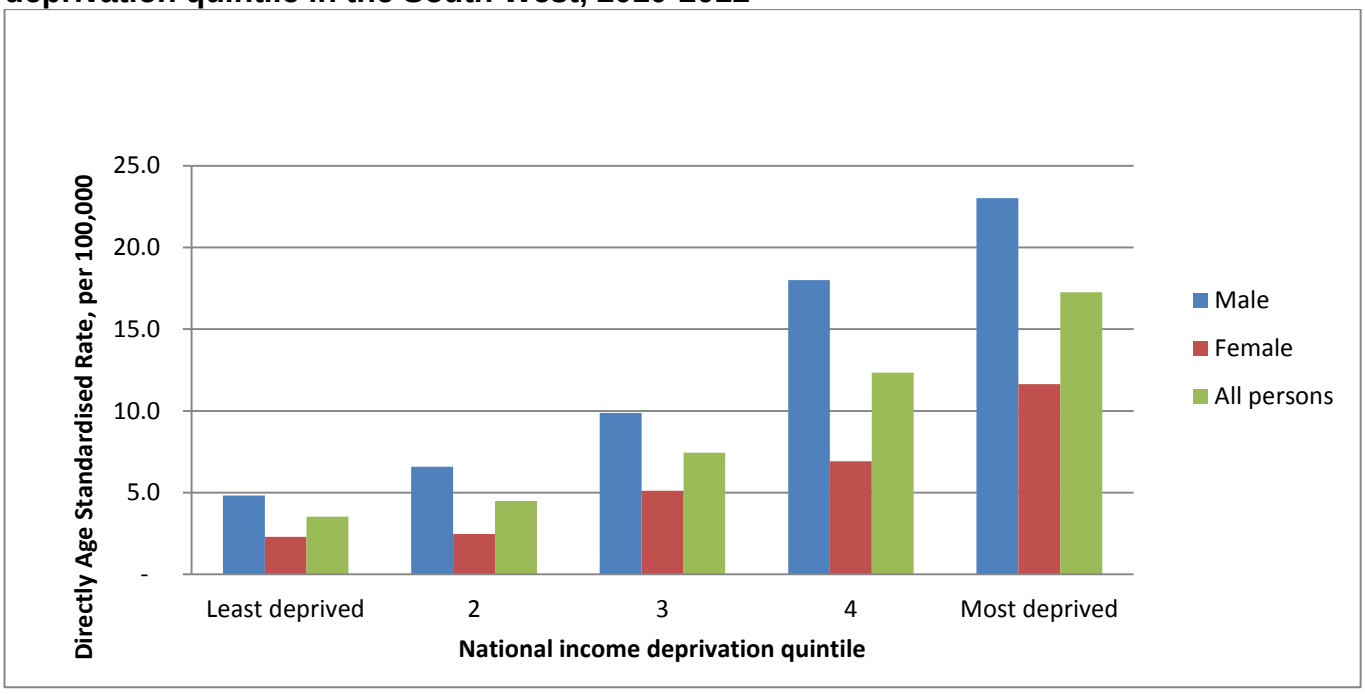
4.2.2 Alcohol Related Liver Disease (ARLD)

This includes ICD-10 code K70 (alcoholic liver disease), see appendix 1 for more details.

4.2.2.1 Mortality

922 people in the South West died from ARLD under the age of 75 in 2010-12 (age standardised rate 7.5 per 100,000, 10.4 per 100,000 for men and 4.7 per 100,000 for women). People in the most deprived quintile are 4.9 times more likely to die prematurely from ARLD than those in the least deprived quintile (graph 19). 94% of those who died from ARLD were under the age of 75 (equating to a total of 983 deaths from ARLD in the South West in 2010-12).

Graph 19: Premature mortality (under 75's) due to ARLD, by national income deprivation quintile in the South West, 2010-2012



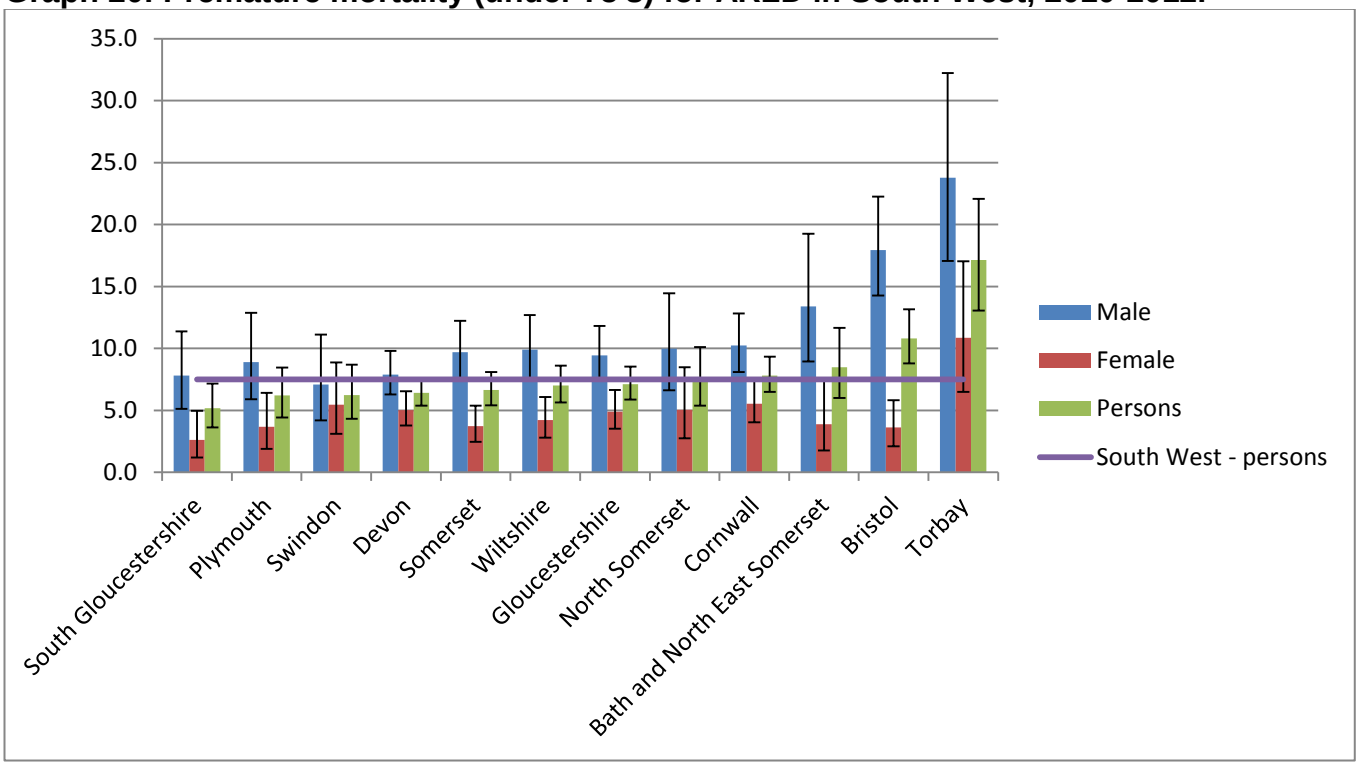
Source: PHE

The Measuring the Units study (40) gives some ideas on the underlying cause of death in people who died with ARLD. The study reviewed the records of a sample (512) of those identified as having died from ARLD and looked at those where there was information on gastrointestinal bleeding and endoscopy (416 patients). 35.3% (147 patients) had a gastrointestinal bleed, of whom 129 had an endoscopy. At endoscopy the cause of bleeding was identified as likely to be due to varices in 48% of cases.

Graph 20 shows age standardised rates of premature mortality (under 75's) per 100,000 among upper tier local authorities in the South West. The rate for 'all persons' varies considerably across local authority areas, with South Gloucestershire showing the lowest rate (5.2 per 100,000) and Torbay the highest rate (17.1 per 100,000).

The ‘all persons’ rate masks significant differences between male and female rates both within and between local authorities. In all local authorities, male rates exceed female rates. In Swindon, the difference between male and female rates is 1.6 per 100,000, whereas in Bristol the difference between male and female rates is 14.3 per 100,000.

Graph 20: Premature mortality (under 75's) for ARLD in South West, 2010-2012.

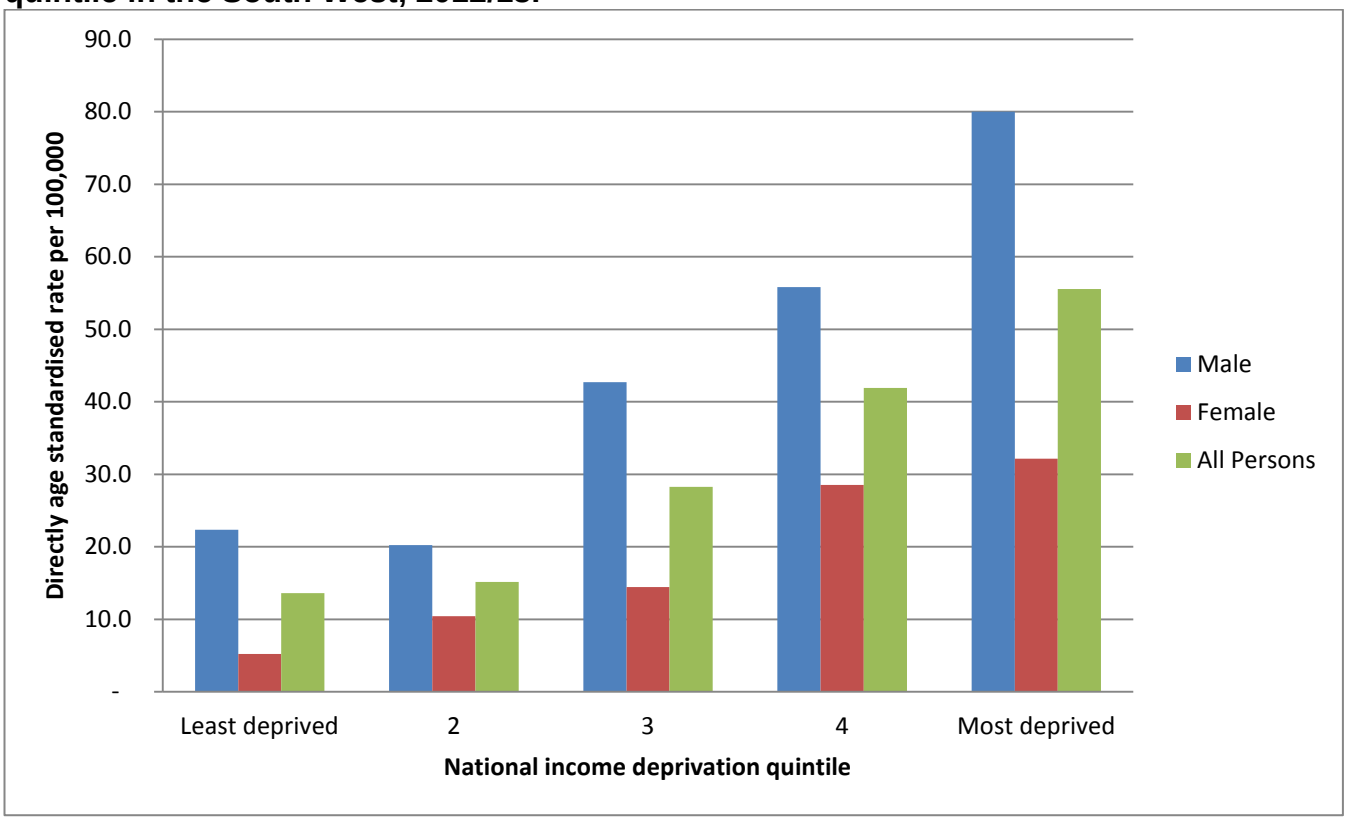


Source: PHE

4.2.2.2 Hospital Admissions

In 2012/13 there were 1,201 hospital admissions due to ARLD in the South West (age standardised rate 26.4 per 100,000, 37.8 per 100,000 for men and 15.4 per 100,000 for women). People living in the most deprived quintile are 4.1 times more likely to be admitted to hospital due to ARLD than those living in the least deprived quintile (graph 21).

Graph 21: Hospital inpatient admissions due to ARLD by national income deprivation quintile in the South West, 2012/13.

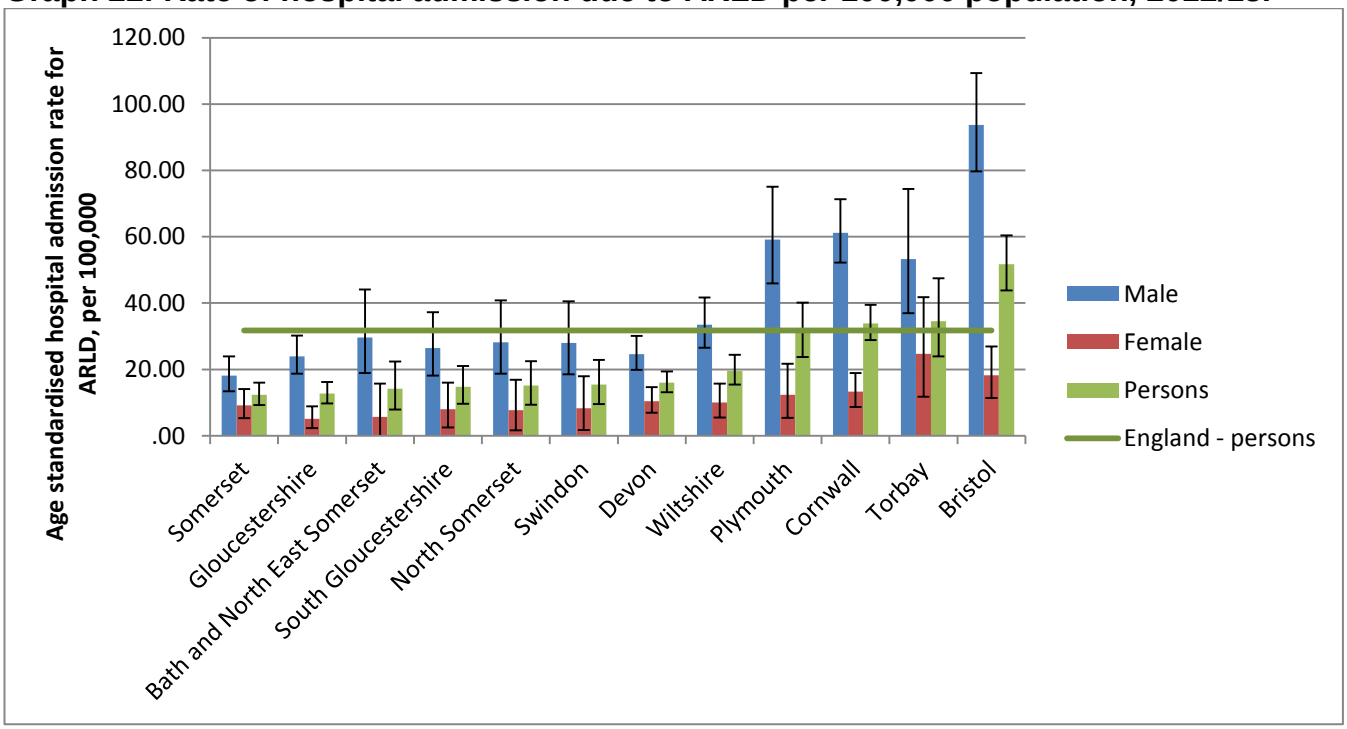


Source: HES

The 1,201 hospital admissions due to ARLD in 2012/13 related to 749 people. Of these the majority (546, 70%) only had one admission and 132 (20%) had had two admissions. However 13 people had between 7 and 26 admissions. In the Measuring the Units study of 2,454 people identified over 6 months as having died from ARLD 71.4% had had previous hospital admissions in the 2 years before they had died.(40)

Graph 22 shows hospital admissions due to ARLD per 100,000 by local authority. Bristol has statistically higher admissions due to ARLD for all persons than England (59.6 per 100,000 compared to 31.3 per 100,000 for England). Bristol, Cornwall and Plymouth have statistically higher admissions due to ARLD for males than England (which is 43.4 per 100,000). Torbay has statistically higher admissions due to ARLD for females than England (37.5 per 100,000 compared to 19.3 per 100,000 for England).

Graph 22: Rate of hospital admission due to ARLD per 100,000 population, 2012/13.



Source: Calculated by Public Health England: Knowledge and Intelligence Team (South West) from data from the Health and Social Care Information Centre (HSCIC) - Hospital Episode Statistics (HES) and Office for National Statistics (ONS) - Mid Year Population Estimates.

4.2.2.3 Outpatients' appointments

There are no regional figures on how many patients are seen in outpatient departments. Audit data from clinic letters in March 2015 at Royal Devon and Exeter Hospital outpatient department shows 10 of the 46 new referrals were for ARLD and 89 of 240 follow up appointments.

4.2.2.4 Complications

See general section for information on mortality from HCC.

4.3 Service mapping

4.3.1 Self-assessment alcohol stocktake

All local authorities in the South West were asked to complete a self-assessed alcohol stocktake in 2013 which was then updated in 2014/15. The stocktake covered a range of domains. Details of the stocktake are available in appendix 3.

Strategic Leadership and Planning

The self-assessments were fairly comfortable about progress though the area consistently indicated as needing more work was the integration of the alcohol agenda across strategies and joint commissioning. All areas had developed and published alcohol treatment pathways though some required refreshing. Not all were confident that changing needs and demands could be met through existing service structures

Population level actions

The self-assessments expressed a reasonable confidence in this area though subsequent conversations indicate that the level of ambulance data is very poor compared to hospital data. Local social marketing approaches were felt to be good and most reflected the national programmes. Much of this local social marketing was seasonal and/or focused on specific geographic areas. The use of data to support licensing and enforcement is varied. Although there were a variety of local approaches to working with the drinks industry and retailers, implementation and perceptions of likely benefits varied within local partners.

Targeted Interventions

A range of Identification and Brief Advice (IBA) was commissioned across a variety of organisations but it was recognised that structure and delivery was variable even within the same partnership area. More effective monitoring of such arrangements could better inform planning of future activity. Where Making Every Contact Count (MECC) initiatives were identified, it was not always clear whether this involved alcohol focused IBA. Where alcohol focused IBA was identified, the subsequent referral pathway was often to GPs who were expected to refer to specialist services where this was required.

Specialist Treatment

The range of specialist treatment interventions was generally judged to be adequate in the range of interventions available but less so to meet assessed need. Treatment interventions vary from enhanced Brief Interventions to highly complex interventions for dependent drinkers and were commissioned utilising a treatment plan or alcohol action plan.
Some hidden populations/hard to reach groups may need an additional focus to deliver appropriate interventions to meet their needs. The custody-community interface is an area where continuity of care issues is indicated.

4.3.2 Primary care and other community settings

It is unclear what ARLD pathways are in place across the South West, how these function whether they are acceptable and well understood.

South Gloucestershire – practice example

Community GP

(three options for referral when patient presents with alcohol issues)

If evidence of Liver Disease GP to refer to: -Secondary Care, -Gastroenterology, -Alcohol Interface, -Nurse/ NBT, -Alcohol Specialist Nurse (ASN), -Liaison with ward staff.	GP Alcohol Liaison Nurses Assessment (including physical and mental health); -Brief Interventions and advice/information /signposting, -Community Detox; -CEST/CESI, -1:1 Key work Sessions, -Mind Mapping, -Prescribing via GP -Access to in -patient treatment.	Refer to Community Substance Misuse service for assessment and alcohol screen and access to broad range of support services and brief interventions and referral to specialist community treatment service if required

4.3.2.1 GP Survey

In March 2015 GPs and GP trainees across the South West were surveyed about their responses to patients who might exhibit underlying causes to liver disease. A total of 52 GPs or GP trainees responded though not all answered every question.

In response to the question ‘how would you raise alcohol with patients as a risk factor for liver disease or other issues?’ some areas utilised a screening tool (AUDIT or AUDIT-C) for all new registrations or where indicated by blood test results or liver issues. These tended to be counted as formal approaches. Informal approaches tended to be more opportunistic though often associated where the context of the consultation indicated a need to discuss alcohol issues and were focused on unit consumption. A single responder mentioned the NHS Healthcheck.

GPs tended to focus their discussions on units consumed rather than a screening tool (except for new patients) and in some cases indicated they would resist mandated/incentivised use of a screening tool, whereas GP trainees had a greater focus on using screening tools. This may be related to the time available for the consultation being much shorter for GPs and screening tools require a certain amount of time. There were limited responses regarding linking alcohol consumption to harms, specifically liver disease and it is not clear if GPs are aware of pathways for liver disease treatment. Also uncertain was the result of conversations or screens though most responders indicated that they were aware of how to refer to Drug and Alcohol services.

The general section (service mapping; primary care) gives details of GPs overall impression of referral pathways.

4.3.2.2 Licensing

Weston-super-Mare Cumulative Impact Area
In some areas, where the number, type or density of premises selling alcohol is high or exceptional, serious problems of nuisance and disorder may arise outside or some distance from those premises. Such problems generally occur as a result of large numbers of drinkers being concentrated in an area, for example when leaving premises at peak times or when queuing at fast food outlets or for public transport. The problem may be compounded where there are a number of licensed premises, grouped together, near residential areas.

North Somerset Council recognised that parts of Weston-super-Mare town centre were having increased numbers of reported violent crime among local residents, especially domestic violence incidents. (This co-incided with a request from Avon and Somerset Police and Crime Commissioner for victims to report all incidences of domestic violence.) The Council received evidence that the cumulative impact of licensed premises in and around the town centre of Weston-super-Mare was undermining the promotion of the licensing objectives; and after considering this evidence adopted a special policy in respect of this area.

The adoption of a cumulative impact policy creates a rebuttable presumption that applications for new premises licences, club premises certificates or variations to existing licences and certificates within the Cumulative Impact Area will be refused if relevant representations are received. In order to rebut this presumption, applicants must demonstrate that the operation of the premises will not add to the cumulative impact already being experienced.

Early qualitative report suggests a positive impression felt by residents and elected members. There has also been an improvement of reporting. Evaluation of the longer term impacts is underway.

4.3.2.3 IBA

There is very limited data on the use of IBA in primary care or other community settings. Information from NHS England on the previous alcohol enhanced service shows that in 2013/14 in the South West there were approximately 156,000 IBA claimed through the enhanced service. This will not reflect all the IBA being undertaken in primary care.

The direct enhanced service (DES) for alcohol risk assessment (and IBA where appropriate) for newly registered patients has now been incorporated into the overall GP contract. This means it is a requirement for GPs to deliver the alcohol risk assessment to all newly registered patients. Monitoring of this by CCGs would provide information on alcohol risk and IBA within primary care. IBA is also delivered as part of the NHS Health Check.

4.3.2.4 Community detoxification

A variety of different models exist for this in the South West.

4.3.3 Secondary care

4.3.3.1 IBA in hospital settings

Alcohol IBA delivered across a hospital complements the work of alcohol liaison services within acute settings. Some hospital and (community) trusts are commissioned to deliver alcohol IBA as part of CCG funded CQUINs (Commissioning for Quality and Innovation) and is compatible with the 2015/16 priorities of Indicators

- CQUIN Indicator 7- Reducing the Proportion of Avoidable Emergency Admissions to Hospital,
- CQUIN Indicator 8- Improving Diagnoses and Re-attendance Rates of Patients with Mental Health Needs at A&E.

4.3.3.2 Alcohol liaison teams in district general hospitals in the South West

An online questionnaire to local authority commissioners on alcohol liaison services in the South West was conducted in April 2015. The survey covers 11 services and reflects the recommendations for alcohol liaison services made in the Lancet Commission Addressing Liver Disease Report 2014 (2) and the Public Health England Report 'Alcohol care in England's hospitals: An opportunity not to be wasted' 2014 (41).

Summary of findings (see appendix 4 for details of services provided in each general hospital):

Case identification and brief advice(IBA)

Most services engage in case identification of repeat attenders with the exception of the Royal Cornwall Hospital Trust and Weston Area Health Trust. Case identification could be a way to prevent the way that 'people are failed all the way through their pathway'.(40) Screening and brief advice is delivered by all services in the South West.

Comprehensive alcohol use assessment

All services screen people using a version of AUDIT or FAST, however these tools do not assess the degree of dependence or if dependent, the approach to withdrawal. It is possible that other teams within acute trusts conduct these assessments to assess and facilitate safe withdrawal. Some teams conduct comprehensive assessments including readiness to change and motivational assessment. This is good practice however, if a specialist community alcohol service is delivering in-reach, then this may be provided by the community service.

Contribution to nursing and medical care planning

All services contribute to nursing and medical care planning. All services also support discharge planning and therefore enable continuity of care into the community and support shorter lengths of stay.

Psychotherapeutic interventions

Most services offer a broad range of therapeutic interventions which mirror the interventions provided in specialist community alcohol services. Some services offer limited interventions and appear to only be focussed on the need for medically assisted withdrawal. The risks of repeated withdrawal and a return to drinking increase the longer term risks of 'Kindling' (Repeated episodes of withdrawal, can be detrimental to the central nervous system. The effects, such as increased anxiety and withdrawal seizures have been shown to become more severe as people have more withdrawals/detoxification) and represents another failure to act to address alcohol related harm. Liaison between hospital and community services in required to reduce these risks.

Medically assisted alcohol withdrawal management

Medically assisted withdrawal is not provided by all alcohol care teams however this is not necessarily an issue because the responsibility needs to reside with prescribers and smaller teams may not include prescribers. The benefit alcohol care teams providing medically assisted withdrawal would be that withdrawal regimes could be standardised across the hospital and consistent with community detox arrangements. This would maximise safety and enable patients to be discharged and continue their withdrawal in the community while engaging with the community alcohol service.

Planning of safe discharge, including referral to community services

All services support discharge planning and referral to community services except Musgrove Park and Yeovil Hospital

Seven day cover

None of the alcohol liaison services in the South West provide a full seven day cover. Most offer five days only and two provide some weekend cover.

Psychiatry services specialising in alcohol

Most alcohol liaison services employ specialists in mental health or addictions.

Multi-agency assertive outreach alcohol services

Few services are multidisciplinary. All services employ nurses; four of which are exclusively nursing and three (Plymouth, Salisbury and Yeovil) are 'teams' of one. Lack of funding was cited by some commissioners as a barrier to developing capacity.

Integrated alcohol treatment pathways between primary care and secondary care services

All services with the exception of Musgrove Park, Salisbury, Weston Area Health Trust and Yeovil provide integrated treatment pathways between primary and secondary care services

Training in alcohol and addiction for staff and trainees in gastroenterology, hepatology, general medicine, ED, medicine and psychiatry

All services provide training in IBA to other staff groups with the exception of Royal Cornwall Hospital Trust, Weston Area Health Trust and Yeovil Hospital.

Clinical champions

Clinical champions are predominantly either medical or nursing. Two are hepatologists (Plymouth and Salisbury); three are gastroenterologists (Musgrove Park, North Bristol Trust and Torbay & South Devon). The remainder are psychiatry/mental health or other backgrounds. The presence of a clinical champion from a medical background does not seem to correlate with the size of the team, its composition or reach across the hospital.

Challenges identified in delivering alcohol care teams were:

- service capacity:
  - capacity was not felt to be always sufficient to meet the need or to provide cover for holidays and sickness absence.
  - some services are facing vacancies and difficulties in recruitment.
- organisational barriers
  - organisational inertia to change,
  - perceived risks of increased work resulting from a roll out of IBA,
  - difficulties in co-commissioning arrangements and in managing accountability.
- evidencing outcomes
  - difficulties with data collection and sharing reduced the ability of some services to demonstrate outcomes.
  - inability to track client details from one part of the system to another due to different IT systems.

Achievements of alcohol care teams

- better patient care
  - the examples of better patient care includes some successful outcomes for those who were initially difficult to engage and improving access to and reducing fear of the community alcohol service
- financial savings
  - a number of trusts have been able to evidence an impact on repeat attendances and cost savings.
- whole system benefits
  - ‘industrial scaling’ of training on staff groups has introduced a more positive approach to working with service users and has led to alcohol care work being embedded across the hospital and has led to improved working with people with mental health problems

4.3.4 Drug and alcohol teams

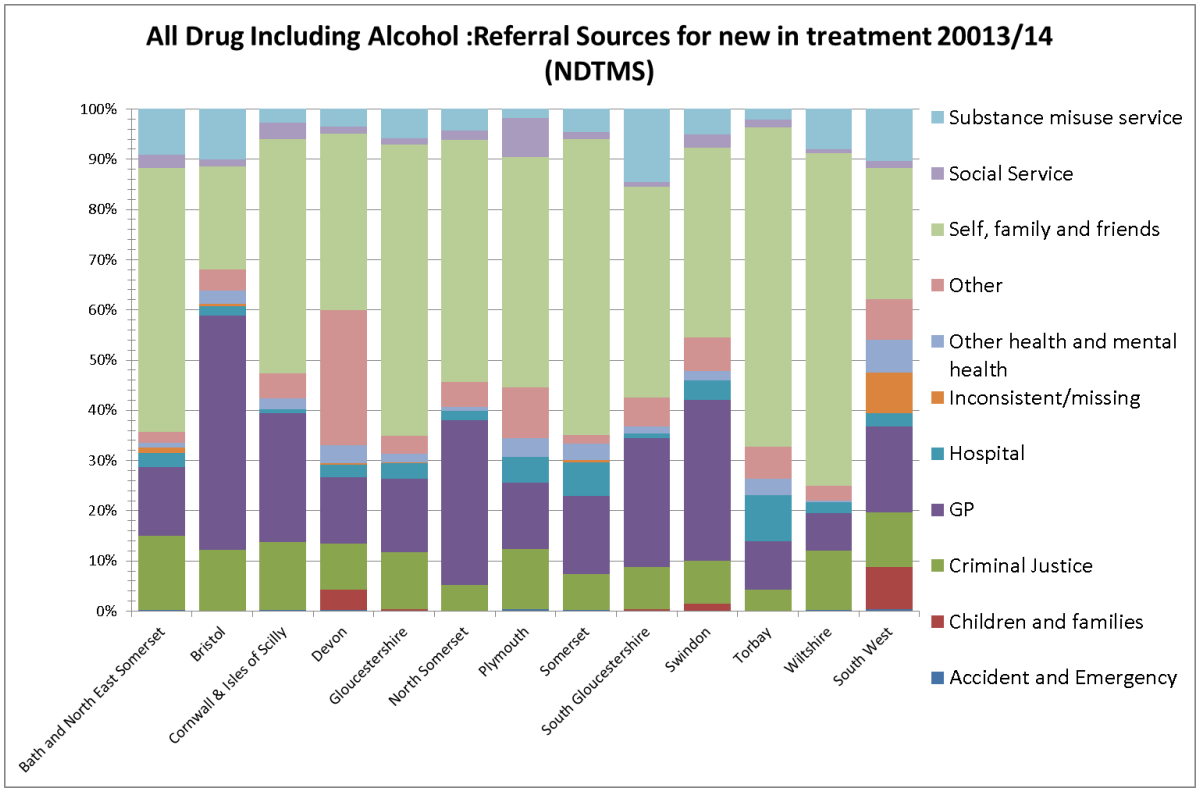
Data in this section is from NDTMS 2013/14. For individual partnership data please see the Alcohol NDTMS data tool available from the SW Alcohol & Drugs Team. (See appendix 2 for details of data collection and coding.)

4.3.4.1 Referral source

In the South West information about source of referral was provided for 6,397 individuals in any of the four categories at referral that included alcohol. Of all recorded referral sources, self-referral, family and friends was the most common accounting for 46% of all recorded referrals. The second most common source of referral was from GPs (21%). Referrals from the criminal justice system (consisting of: arrest referral/DIP, CARAT/prison, DRR or probation) made up 10% of all referrals. Referrals from substance misuse services (which reflect movement between treatment agencies) amounted to 6% of the total. However information on referral from this setting is not always easily recognisable within NDTMS.

There is some variation in the pattern of referrals into services across the South West (graph 23). All show that the highest referral route is through self-referral, but there are some local variations. For example there are greater proportions of referrals through criminal justice agencies in B&NES and Plymouth, with a much broader spread of referral source in Devon than elsewhere in the South West.

Graph 23: All drug including alcohol: referral source for new treatments in 2013/14 by local area in the South West.



Source: NDTMS

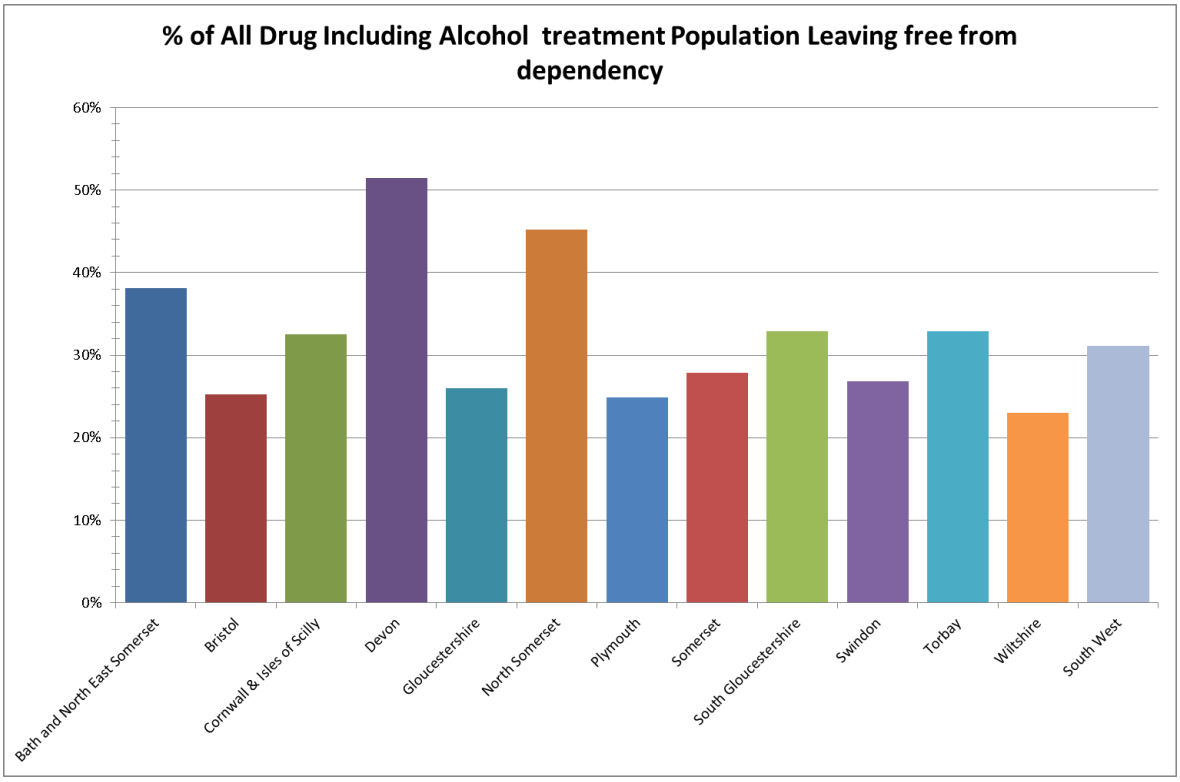
4.3.4.2 Successful treatments

- In 2013/14 nearly a third of the South West population with alcohol cited as a problem drug left treatment no longer requiring treatment for their dependency (3553 individuals).
- The number of individuals leaving treatment without a successful outcome was 1696 (16%).
- 158 (1.5%) individuals were transferred into custody.
- 45% remained in treatment at the end of the period.
- Rates of successful completion (people leaving treatment with no further treatment required) varied significantly across the four drug groups, with the opiate using groups having the lowest rates of successful exit from treatment. Non-opiate using groups have three times the rate of successful completion from treatment than opiate using groups.

There is a broad range of recovery from dependency reported across the South West as can be seen by the two charts below (graph 24 and 25). As we have shown in the commentary above, the populations accessing services between local authority areas are not homogenous. Recovery rates and caseload complexity vary between areas.

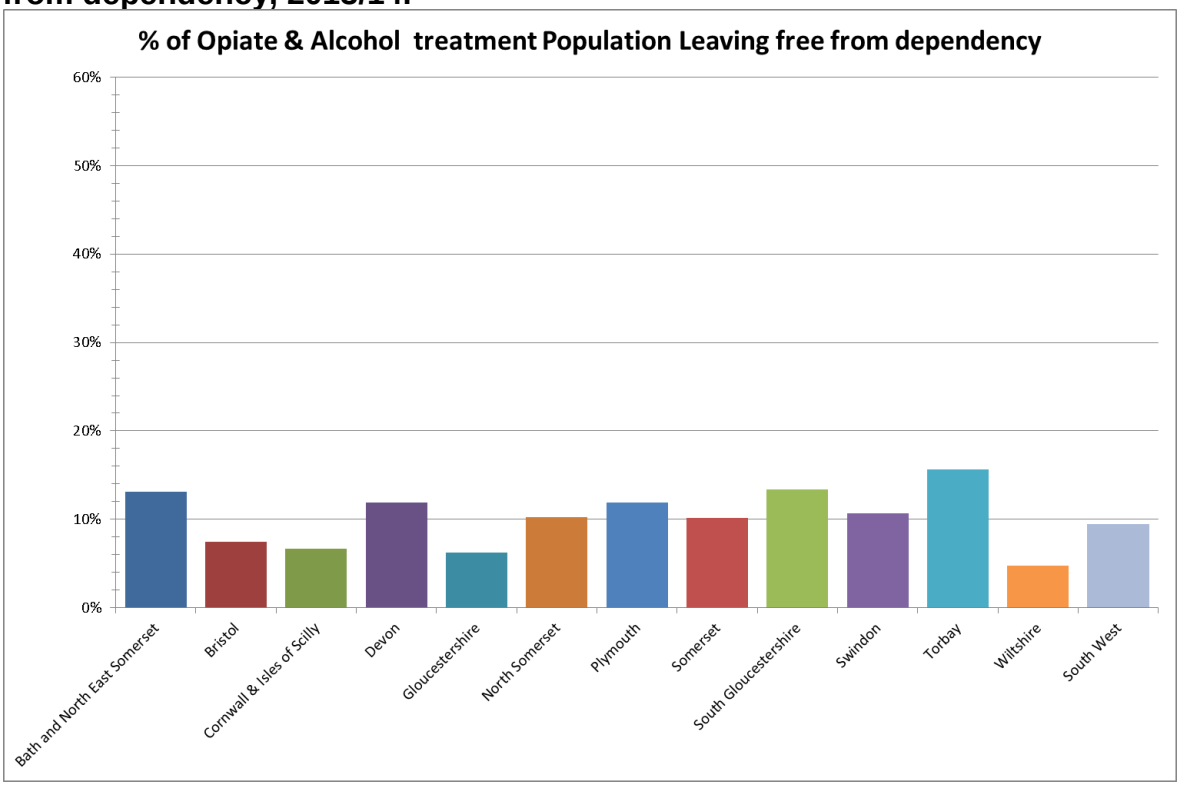
Local understanding of system and service configuration and service user profile will enable local judgements to be made about the effectiveness of delivery. Those with any opiate use associated with alcohol use have significantly lower rates of successful completion than other groups, which is in line with national trends. Areas should consider whether the needs of multiple substance use are adequately and effectively met through the existing range of services delivered.

Graph 24: Percentage of alcohol only treatment population leaving free from dependency, 2013/14.



Source: NDTMS

Graph 25: Percentage of all drugs including alcohol treatment population leaving free from dependency, 2013/14.



Source: NDTMS

4.3.4.3 Recovery support interventions

Recovery support interventions can also be delivered and recorded outside of structured treatment, following the recording of an exit from structured treatment, but they are linked to an earlier episode of structured treatment. Of the 10,838 in treatment over the period, the three most frequently cited sub-interventions were: 1,496 (14%) received facilitated access to mutual aid; 1,406(13%) received evidence-based psychosocial interventions to support substance misuse relapse prevention and 1,249 received recovery check-ups.

The opiate, alcohol and non-opiate user group have the highest levels of access to mutual aid (18.0%) and housing support (11.9%). The group with some of the least access cited to recovery support interventions in seven of the twelve categories are those using opiates and alcohol. Opiate using groups are the most likely to need enhanced support through these interventions to support and improve their chances of achieving a safe and sustained recovery from their addiction.

The least frequently cited activities for recovery support across all groups were, supported work interventions (1% of the whole cohort), employment support interventions (3%), family support (4.0%). Well-evidenced and effective interventions that improve the lives of individuals and their families, particularly children are increasingly important elements of properly integrated treatment systems. These data should be reviewed to ensure that appropriate referrals to children and families services and the troubled families programme are in place and effective. It may be possible that activity delivered through other programmes or partners as part of a recovery support package are under-reported.

These data only collect information about access to mutual aid where the individuals are ac cessing formal structured addiction treatment. Many more individuals who are not actively engaged in formal treatment access mutual aid groups (eg Alcoholic Anonymous, SMART recovery groups) and manage their addiction through such organised peer support networks. Due to the nature of these groups we do not have any reliable data to understand the level of utilisation of both the in treatment and out of treatment cohorts.

4.3.5 Prison setting

In order to map service provision, the substance misuse teams in each of the eight establishments across the South West were asked to complete an alcohol questionnaire. These questionnaires were completed in early 2014 and again in early 2015.

Upon first reception into the custodial establishments, all individuals receive an initial healthcare reception screen, which focusses upon immediate healthcare/social needs. At this point in all establishments an alcohol AUDIT is completed. The AUDIT score is recorded onto the System One Computer (IT system used within prison service) and appropriate referrals made to GP and substance misuse teams, who then refer onto other specialists as required.

In local establishments, where individuals are received from the courts, individuals with a raised AUDIT score are accommodated on a specialist substance misuse unit where they are monitored by specialist substance misuse staff. If required, an alcohol detoxification is commenced alongside other clinical interventions.

International Treatment Effectiveness Programme (ITEP) mapping techniques are used to support individuals to identify key areas of concern in regards to their alcohol consumption and to develop a recovery plan. Consultations take place on a 1:1 basis, in a group work setting and by the provision of in cell work. Prisoners can transfer around the estate in order to attend a specific treatment programme. Table 14 shows details of services relating to alcohol available at each establishment in the South West.

Table 14: Alcohol related services at prisons in the South West, 2015.

Prison Establishment	1:1	Group work	Stabilisation unit	Abstinence Based treatment programme	Alcohol Related Violence Programme	Peninsular Alcohol Violence Programme	Alcohol Action Programme	Mutual Aid
Ashfield	✓	✓						✓
Bristol	✓	✓	✓					✓
Channing's Wood	✓	✓		✓		✓	✓	✓
Dartmoor	✓	✓				✓	✓	✓
Eastwood Park	✓	✓	✓	✓				✓
Erlestoke	✓	✓		✓	✓			✓
Exeter	✓	✓	✓			✓	✓	✓
Leyhill	✓	✓						✓

The majority of establishments report that continuity of care upon releases is less problematic than it has been in the past. However one area that was highlighted as remaining problematic in some areas is identifying a prescriber for acamposate. Alcohol is included in health needs assessments for all prisons.

4.4 Evidence

4.4.1 Population interventions

Whole population approaches, although operating at a population basis, impact disproportionately on communities where the impact of alcohol is highest.

4.4.1.1 Minimum unit price for alcohol

Consumption of alcohol is highly price elastic. This means that the more affordable alcohol is, the more is consumed across a population, and alcohol in the UK has become more affordable since the 1980s.(42) NICE and the World Health Organisation (WHO) considers the most promising intervention to reduce alcohol related harm and target inequities is by raising the price.

People in lower socioeconomic groups with harmful levels of drinking are likely to benefit more from measures to increase the price of retailed alcohol. Poorer people, young people and the heaviest drinkers are most likely to reduce their consumption with increases in price. Thus, the health benefit will be greatest in poorer groups, yet the economic burden will be greater in wealthier groups, who are more likely to continue drinking when the price is raised.(34)

NICE suggests that tackling alcohol misuse could bring about the following benefits (43):

- reduce costs:
  - improve local productivity and economic performance
  - reduce sickness absence. In the UK, up to 14 million working days are lost annually through absences caused by drinking
- protect people from harm:
  - reduce crime
  - reduce drinking among children and young people
- tackle health inequalities
- improve the population's health:
  - reduce risky consumption and dependence among adults. In Canada an increase of 10% in price was associated with a 30% reduction in deaths wholly attributable to alcohol within 12-24 months.(2) See table 15 for the predicted effect of a 45 pence minimum unit price in the UK
  - encourage a sensible drinking culture
- support national strategy

Table 15: Predicted effects of a 45 pence minimum unit price on harmful level drinkers by different socioeconomic group in the UK.

	Routine or manual	Intermediate	Managerial or professional
Reduction in annual units consumed per drinker	258	92	62
Reduction in alcohol-related deaths per 100,000	78.3	16.9	12.1

Source: Holmes et al. (44)

4.4.1.2 Licensing/availability

'International evidence clearly indicates that increasing the price and reducing the availability of alcohol are among the most effective policy measures to reduce alcohol consumption and harm in a population.'(p1)(45)

Licensing is the mechanism by which the availability of alcohol is regulated in the UK, controlling numbers and types of alcohol outlets, opening hours and conditions of sale.

Reducing the availability of alcohol is a possibility through an extension of some legal powers and through the development of voluntary agreements. Directors of Public Health have a statutory role in the licensing process as a responsible authority and licensing is one of a range of tools that public health can use to address the issues of alcohol related harm. Within the UK a number of areas have used licensing powers to designate areas with a high number of outlets as 'Cumulative Impact Zones' and prevent additional licenses being granted. Examples of this exist in Weston Super Mare, Newcastle upon Tyne and Leeds. Exercising licensing powers to their full potential requires a commitment to systematically share specific anonymised data on community safety and health harms (see assault data sharing section below).

4.4.1.3 Reducing the Strength Schemes

Voluntary agreements to limit the sale of high strength (defined as 6.5% abv and upwards) alcoholic drinks have been introduced by some local authorities with the objective of reducing street drinking. Schemes typically focus on a specific issue, on products or in defined geographical areas. Generally schemes target a vulnerable population and initiatives should include engagement in treatment and recover. These schemes typically need to have multi-agency endorsement including with licensees and take a "collaborative, comprehensive" approach to street drinking. The Local Government Association has endorsed the approach to reduce the sale of high strength drinks and has published guidance for implementation in 2014.(46)

There is limited evidence for the effect of reducing the strength schemes In Suffolk, where a reducing the strength campaign was launch in 2012, successes have been shown including a reduction in street drinkers (from 70 in the year before the campaign to just over 20 in the

year after the campaign), and a reduction of nearly 25% in incidents where the public has called the police about street drinking.

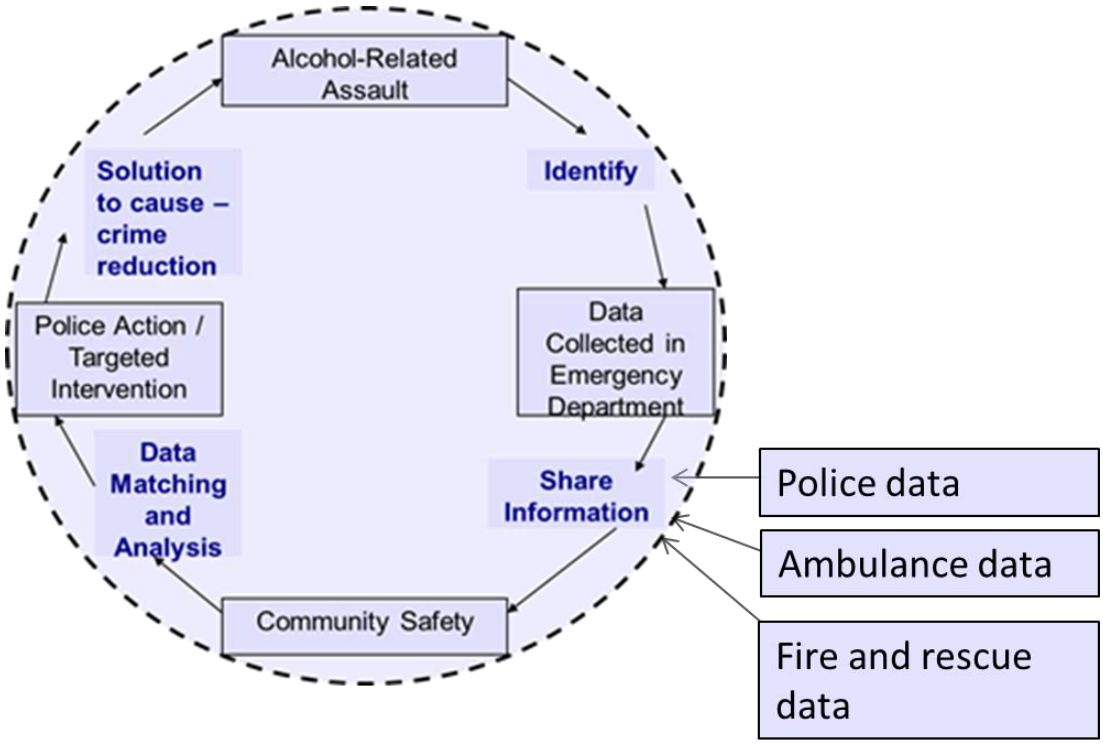
Reducing the strength schemes are new and there may be some challenges under competition law. The Local Government Association advises that councils should take legal advice if considering implementing a scheme.

4.4.1.4 Assault data sharing

A partnership approach to data sharing is endorsed by PHE, the College of Emergency Medicine and the College of Policing.(47-49) The aim of this approach is to establish a 'Virtuous Circle' of anonymised data sharing between key partners in the night time economy. The detailed sharing of information about the type of incident timing and specific location enables:

- community safety partnerships to agree and plan a set of actions to modify the deployment of police, ambulance and street wardens on the streets from month to month
- responsible Authorities, including Directors of Public Health to use the data to challenge or call for a review of a license
- local councils to lead or support the development of voluntary agreements as part of their licensing policies (as described previously)

Figure 3: Virtuous Circle to reduce alcohol related harm in the community



In Cardiff assault data sharing has led to:

- mprovements in the design of licensed premises and management
- replacement of glass bottles with plastic ones
- staff training to encourage responsible drinking and customer care
- safer outside environments
- increased use of CCTV, restrictions in the numbers of bars in one area and similar actions with food outlets
- improved street lighting
- traffic light system with local alcohol outlets to reduce problem establishments
- closer working with police teams to monitor the night time economy and episodes of violent assaults
- reduced attendances in the emergency department

Other models exist but may not have formally published evaluations.

4.4.1.5 Social marketing

The application of social marketing methods to alcohol harm reduction is a relatively new area of activity. Behavioural insights have been used to identify the communities that are of high risk of alcohol related hospital admissions and population segmentation tools can identify the best methods to communicate with different population profiles. In summary these can assist in identifying which newspapers, radio and TV stations people use and the supermarkets different segments of the population are most likely to use. This can inform the placement of key communications. Public Health England has developed a set of campaign materials in the Change for Life branding.

'Balance North East' is the first example of a regional office of alcohol behaviour change. A new regional behaviour change service will be launched in the South West during 2015.

During 2015 the first participative abstinence campaign between Public Health England and Alcohol Concern based on Dry January took place. Early evaluation reports of this campaigning indicate that 45,000 people participated in the campaign nationally in January 2015 compared with 17,000 people in 2014.

An independent study (50) by the University of Sussex showed that 72% of participants in Dry January 2014 had maintained moderate levels of drinking six months after completing the month. After completing Dry January, participants also highlighted what benefits they experienced after 31 days alcohol free:

- 79% of participants saved money,
- 62% of participants had better sleep and more energy,
- 49% of participants lost weight .

An evaluation of the Dry January campaign in the South West commissioned by Public Health England from Alcohol Concern reported the following findings:

- there was a gender split. In the South West most of the participants were female, aged between 36 and 55 years. Women were important in encouraging their partners to take part in the challenge
- many of the participants drank to help them unwind when they returned from work and would usually drink wine with an evening meal, or after the children had gone to bed
- health reasons were the most frequently cited reasons for taking part in Dry January; in addition, it was seen as a personal challenge for some participants who wanted to see if they had the willpower to remain dry for the whole month. They reported that alcohol had a negative effect on willpower
- participants were most likely to need support during the initial weeks in particular in finding ways to 'replace' alcohol while still allowing them to relax and unwind
- successfully completing Dry January had longer-term effects. Those who successfully completed the challenge felt more confident to take further steps to become healthier. Interestingly, whether successful or not at remaining dry the whole month, giving up alcohol for January made nearly all the participants think more carefully about their alcohol consumption and often resulted in a reported reduction in the quantity drunk in February
- alcohol was seen by most of the participants as being a treat, a reward for a hard day's work. Therefore, most of the participants only had positive associations with alcohol. This was further reinforced as most of the participants were regular, but not binge, drinkers. Therefore they did not experience hangovers and the day-to-day effects of regular drinking were more subtle and not fully noticed until they stopped drinking. For example, effects on their quality of sleep
- many of the participants felt as if abstaining from alcohol for a month had "reset their autopilot button"; now they would not automatically order an alcoholic drink. Instead they would stop to think if they actually wanted one

4.4.2 Identification and Brief Advice (IBA)

IBA is a simple, well-evidenced intervention aimed at people drinking above recommended limits, but who are not seeking help for an alcohol problem and are not dependent (harmful and dependent drinkers identified in the screening process will require longer term specialist interventions). Non-alcohol specialists deliver IBA in general healthcare settings. It involves a screening tool such as AUDIT to identify the level of risk from alcohol use, and a five-minute motivational discussion.

It is estimated that approximately 1 in 8 drinkers who are drinking above recommended limits will reduce their intake to lower risk levels from a competent practitioner and will still be drinking at lower risk levels for up to 2 years.(51) A reduction in alcohol consumption from 50 units per week to 42 units per week (although still higher than the recommended limit) will reduce the relative risk of alcohol-related conditions by 14% and the absolute risk of lifetime alcohol-related death by 20%. (Anderson 2008). Alcohol IBA within primary care and A&E has been shown to be cost-effective and in some scenarios, cost saving. IBA can be delivered with cost savings for health commissioners of £123 per person.(52) Early identification of alcohol misuse may assist in the early identification of liver disease. Reduction in alcohol use has the potential to reduce liver disease damage and progression of liver disease. There is variable evidence on the effectiveness of using brief interventions outside primary care and emergency departments.(53)

IBA in the clinical setting is effective in reducing the risk of alcohol related liver disease when Practitioners:

- congratulate those drinking at lower-risk levels and encourage them to keep to this level of alcohol consumption
- deliver simple brief advice to those drinking above lower-risk levels
- encourage referral to a specialist treatment service for those showing signs of dependence and/or in need of more in-depth treatment.(54)

NICE guidance PH24(53) recommends that alcohol IBA should be offered:

- by health professionals to people:
    - with relevant physical conditions such as hypertension, gastrointestinal or liver disorders
    - with relevant mental health problems such as anxiety, depression or other mood disorders
    - who have been assaulted
    - at risk of self-harm
    - who regularly experience accidents or minor traumas
    - who regularly attend GUM clinics or repeatedly seek emergency contraception

- by non-health professionals focussing on groups that may be at increased risk of harm, such as people:
    - at risk of self-harm
    - involved in crime or antisocial behaviour
    - who have been assaulted
    - at risk of domestic abuse
    - whose children are involved with safeguarding agencies
    - with drug problems

IBA was previously part of the DES for alcohol risk assessment for newly registered patients. This has now been incorporated into the overall GP contract. Some localities commission IBA as a primary care Local Enhanced Service (LES) or within local public health contracts for other groups of patients.

IBA, delivered on a large scale in primary care has the potential to have a significant impact. Alcohol IBA delivered to people age 40 to 74 as part of the NHS Health Check has the potential to reach 3 million adults in England each year and as part of a new patient check to approximately 3.4 million adults per year. The new GP contract 2015 has alcohol IBA embedded it but without a payment tariff. As a result there may not be the same incentive for GP practices to deliver and record the activity.

IBA can be delivered as part of medicines utilisation reviews and offered to customers requesting key products at pharmacies eg antacids, emergency contraception, and stop smoking advice. Commissioning arrangements for pharmacy interventions are highly varied.

IBA is being extended within the principle of Making Every Contact Count (MECC) to a range of other settings including housing services, children’s services and criminal justice settings and linking to arrest referral schemes.

On-line training resources are available aimed at staff in, primary care, pharmacy and hospital settings.(55) Many local authorities offer programmes of IBA training and are systematically training staff and ensuring that care pathways are in place for higher risk and dependent drinkers to access specialist support.

4.4.3 Primary Care

Primary care is the most intensively researched and well evidenced setting for the delivery of IBA. The evidence of effectiveness and cost savings described above predominantly relate to primary care. Research and the development of resources for use in primary care has been led by the Alcohol Screening and Brief Intervention Consortium (SIPS) (56) This is supported through on-line training endorsed by the Royal College of General Practitioners and accredited by the Royal College of Nursing.(57)

Early diagnosis of alcohol problems or ARLD provides opportunities for treatment, and reversal of liver disease.(2) Feedback on liver risk may reduce alcohol consumption.(33)

4.4.3.1 Community detoxification

Community detoxification should only be offered as part of a comprehensively assessed care package with a specialist provider. Treatment will usually last for at least 3 months, involve a preparatory stage before detoxification and a range of psychosocial interventions with a phasing and layering or stepped care approach to provide the appropriate intensity and duration of support. Treatment should have a planned ending that dovetails into mutual support or self-care.

Where detoxification takes place as an unplanned intervention within an acute unit care, robust in-reach arrangements or comprehensive care pathways need to be in place to complete the detox safely in the community or residential setting and plan a package of psychosocial support to prevent relapse.

Most planned alcohol detoxifications now take place within the community once a comprehensive care package has been put in place to ensure that people are safe and receive the appropriate level of monitoring. This is often achieved through the use of short term supported housing and regular medical/nursing monitoring in the community.

Interventions for severely dependent drinkers will also work to support full recovery. For people whose drinking may have been precipitated by or led to the loss of employment, family breakdown and stable housing; support may also include wrap around day programmes, housing support, family/couples interventions, support to access education and training, mutual aid and volunteering.

4.4.4 Secondary Care

4.4.4.1 Teachable moment in ED

Emergency departments may deliver IBA or a shortened version such as the Paddington Alcohol Test (PAT) which is designed to be delivered in the ED on initial presentation and takes less than a minute to conduct. People screening positive in the PAT test should be offered a follow up belief intervention. The aim is to deliver the intervention within the "72 hour teachable moment" '. The 72 hour window has been identified as the optimal time during which people will consider changing behaviour in alcohol related incidents. Beyond this time it appears that people has overcome the initial shock of an injury (frequently facial injury) and are less amenable to brief advice. It is estimated that for every two referrals to brief interventions there was one less emergency department attendance.(58)

4.4.4.2 Hospital alcohol services

The aim of hospital alcohol services is to reduce hospital admissions and re-admissions by improving patient care. The Royal College of Physicians have advocated the appointment of a dedicated Alcohol Health Worker or an Alcohol Liaison Nurse in each major acute hospital since 2001. In 2014 73% of district general hospitals had some kind of alcohol service. Current guidance recommends that alcohol liaison services should provide:

- case identification and brief advice (IBA)
- comprehensive alcohol use assessment
- contribution to nursing and medical care planning
- psychotherapeutic interventions
- medically assisted alcohol withdrawal management
- planning of safe discharge, including referral to community services

Teams may include:

- seven day cover
- psychiatry services specialising in alcohol
- multi-agency assertive outreach alcohol services
- integrated alcohol treatment pathways between primary care and secondary care services
- training in alcohol and addiction for staff and trainees in gastroenterology, hepatology, general medicine, ED, medicine and psychiatry

The benefits of a hospital alcohol service are that hospital alcohol teams can include(41, 59):

- improving quality and efficiency of care
- reducing admissions, re-admissions and length of stay for patients with alcohol-related problems
- contributing to a potential reduction in alcohol-related A&E attendances
- reducing mortality related to the misuse of alcohol by systematically identifying alcohol-related conditions

- reducing the duration of detoxifications in hospital by working with services in the community to complete detoxification after discharge

The NICE endorsed case study(10), 'Alcohol care teams: reducing acute hospital admissions and improving quality of care' made two key recommendations for hospitals(41): a seven-day alcohol specialist nurse service and a hospital-led assertive outreach alcohol service.

Seven-day alcohol specialist nurse service

The seven-day alcohol specialist nurse service was recommended to screen, triage and provide brief interventions and provide comprehensive alcohol assessment including physical and mental health. At the Royal Bolton Hospital, the cost of investing in a specialist nurse service is £165,000 annually. As a result of this investment 2,000 bed days are saved, liberating four to six hospital beds. This equates to a financial saving of £636,000, representing a return of £3.85 for every £1.00 invested.

Hospital-led assertive outreach alcohol service

As part of NICE's case study, it also recommended a hospital-led assertive outreach alcohol service targeting two defined patient groups:

- the top-30 patients with frequent alcohol-related admissions
- patients, such as those with alcohol-related liver disease, who exceed the threshold of two alcohol-related admissions in a short period, the "fast risers"

Salford Royal Hospital has pioneered this service. Work with the first top 30 cohort resulted in a 59% reduction in emergency department attendances in the three-month period post-intervention, when compared with the three-month period before intervention (average monthly attendances were reduced from 120 to 49). There was also a 66% reduction in average monthly hospital admissions (50 to 17).

The Salford Royal annual service cost is £300,000, liberating two to three hospital beds and amounting to £556,500 in benefits; this represents a return of £1.86 for every £1.00 invested

4.4.4.3 Treatment in secondary care

A National Confidential Enquiry into Patient Outcomes and Death report in 2013 (40) reviewed patients who died of alcohol-related liver disease and identified a number of serious shortcomings in the way that acutely ill people with ARLD are treated in hospital. These included:

- insufficient effort made to exclude or treat sepsis resulting in patient death
- unnecessary delays in investigation and initiating treatment for ascites
- inadequate investigation a patient's liver disease in almost half of first admissions
- early fluid administration might have prevented the deterioration in renal function and that escalation of care may have been beneficial

‘It is …hard to avoid a feeling that these people are failed all the way through their pathway. Looking back before their final illness, the clinicians responsible as well as our Advisors identified a high proportion of missed opportunities for the Service to have intervened.’(p6)(40)

The following recommendations were made:

All doctors:

- all patients presenting to hospital services should be screened for alcohol misuse. An alcohol history indicating the number of units drunk weekly, drinking patterns, recent drinking behaviour, time of last drink, indicators of dependence and risk of withdrawal should be documented
- all patients presenting to acute services with a history of potentially harmful drinking, should be referred to alcohol support services for a comprehensive physical and mental assessment. The referral and outcomes should be documented in the notes and communicated to the patient’s general practitioner

Consultants:

- all patients admitted with decompensated alcohol related liver disease should be seen by a specialist gastroenterologist / hepatologist at the earliest opportunity after admission. This should be within 24 hours and no longer than 72 hours after admission to hospital
- escalation of care should be actively pursued for patients with alcohol-related liver disease, who deteriorate acutely and whose background functional status is good. There should be close liaison between the medical and critical care teams when making escalation decisions

Medical Directors:

- each hospital should have a 7-day Alcohol Specialist Nurse Service, with a skill mix of liver specialist and psychiatry liaison nurses to provide comprehensive physical and mental assessments, Brief Interventions and access to services within 24 hours of admission
- a multidisciplinary Alcohol Care Team, led by a consultant with dedicated sessions, should be established in each acute hospital and integrated across primary and secondary care

4.4.5 Specialist alcohol treatment services

People with an AUDIT score of 20 or more should be encouraged to accept a referral to specialist alcohol treatment services for comprehensive assessment and care coordinated treatment.

NICE guidance CG115 suggests specialist alcohol treatment should follow the principles of:

- helping people to recognise problems and potential problems related to their drinking
- helping to resolve ambivalence and encourage positive change and a belief in the ability to change
- adopting a persuasive approach and supportive rather than argumentative and confrontational

Recommended interventions for moderately dependent drinkers should be based on:

- comprehensive assessment
- psychosocial interventions delivered one to one or in groups over a typical period of 6 to 12 weeks depending on complexity and individual circumstances
- a controlled reduction programme or community detoxification
- consideration of medication (Thiamine if at risk of Wernicke's encephalopathy or Acamprosate, Naltrexone or Nalmethene) to prevent relapse although most mild/moderate drinkers will not require this

It is estimated that for every £1.00 spent on alcohol treatment (social behaviour and network therapy or motivational enhanced therapy) £5.00 is saved to the public purse.(60) This included health, social services and criminal justice costs. The treatment costs between £129 and £221 per person.

Severely dependent drinkers (score of 31 or more using SADQ- Severity of Alcohol Dependency Questionnaire) and complex cases will be offered similar interventions to moderate dependent drinkers described above but will almost always require community or in-patient detoxification.

4.4.6 Interventions for those with complex needs

Drinkers with complex needs are more likely to require a multi-agency response either to deliver harm reduction approaches, enable people to access services, protect others eg in domestic abuse or deliver appropriate treatment and support packages.

4.4.6.1 Wet clinics/cafes

The term 'wet' reflects the recognition that dependent drinkers struggle to stop drinking entirely and so are allowed to consume alcohol on the premises. Wet clinics work with dependent drinkers to reduce the impact of anti-social street drinking and the impact on emergency departments and police. This approach focuses on providing a safe place to go, a gradual building of relationships and basic practical support such as food, GP consultations, vitamins, laundry facilities, housing, benefits help, and signposting to local services. Evaluation of wet clinics in Bristol showed benefits such as rough sleepers housed, benefits support and liaison with/referral to other support workers or services.

4.4.6.2 Street drinkers

Street drinkers have complex multiple needs and will typically be in contact with a range of public and non-statutory sector services. Street drinkers are at increased risk of liver disease due to levels of alcohol consumption as well as being at increased risk of drug use (and therefore hepatitis). 'Safer Bristol' developed a multi-agency approach to working with street drinkers which integrates an offender management methodology and utilises a range of pathways including:

- accommodation
- alcohol
- drugs
- finance, benefits and debt,
- mental and physical health
- children and family issues
- education, training and employment
- attitude, thinking and behaviour

This methodology uses legal coercion and enforcement contained within anti-social behaviour orders as powerful levers to engage street drinkers. This enables services to work with clients to address the issues that could support or impede recovery. An evaluation (61) of this approach has described a number of benefits for clients, who agreed to participate in the scheme, including:

- a 74% Reduction in attendance at the emergency department
- a 72% reduction in reports of anti-social behaviour in the compliant clients
- improvements in housing arrangements
- engagement with drug and alcohol services in the compliant and the non-compliant clients of the scheme

4.4.6.3 Specialist case-workers

Some services identify cohorts of complex cases that are known to a number of other key services; sometimes referred to as 'frequent flyers'. An example of this is a pilot project funded by the national charity Combat Stress to work with service veterans in Wiltshire. This approach recognises that veterans may use alcohol and drugs to deal with underlying post-traumatic stress or other mental health problems and due to their military training find it particularly difficult to ask for, or find, effective help and treatment. The pilot in Wiltshire provides a specialist case worker to enable veterans to access specialist support and access charitable foundation support specifically set up for ex-servicemen. In the first six months of the pilot being live in Wiltshire 16/17 people accessing this support were alcohol users. This work is new and outcomes data will not be available until 2016.

4.4.6.4 "Blue Light- Treatment resistant drinkers"

The Blue Light project set up by Alcohol Concern aims to identify ways of working to address perceptions that if a problem drinker does not want to change, nothing can be done to help until the person discovers some motivation. This message has been repeated many times

over the years and is still heard frequently in specialist treatment services and in key referring agencies such as primary care. The Alcohol Needs Assessment Research Project (ANARP) estimated that in any one year only approximately 15% of dependent drinkers access specialist treatment services. Those not accessing treatment will include some of the most risky and vulnerable members of the community including those with criminal justice histories, personality disorders and/or mental illness. One strand of work within the Blue Light project is looking at domestic abuse and the learning from domestic homicide reviews where there can be a high number of missed opportunities to intervene. Through engagement and consultations with local services in the pilot areas the Blue Light Project will publish guidance on 'what works' however the recommended approaches in the Blue Light Project handbook (62) are:

- take every opportunity
- not everyone will change
- change is not the only option
- whole system change
- holistic approach
- recording unmet need
- learning lessons

> 'The one thing you can do more than any other is to demonstrate that you believe the person can change. Promoting self-belief is crucial. You will help them believe they can change if you demonstrate that belief yourself.'(p17)(62)

4.5 Key themes and recommendations

The major recommendations include:

- local areas should ensure that specialist alcohol treatment is reviewed as part of the JSNA process, is commissioned in sufficient capacity to meet local need and is compliant with NICE guidelines
- the alcohol related treatment needs of military populations may benefit from a closer focus.
- local partners should consider the coverage, delivery and outcomes of IBA delivered in primary care and those delivered as part of NHS Healthchecks.
    - consideration should be given to the transferability of IBA outside of the primary care setting. Opportunities to develop these programmes should have appropriate monitoring arrangements to evidence outcome
      local areas should consider the evidence for linking alcohol consumption to liver disease during the delivery of Identification and Brief Advice
- local partners should review the response to alcohol-related harm in all district general hospitals in light of the benefit to patient care and the available efficiency savings:
    - hospital alcohol care teams should accelerate IBA delivery throughout the hospital, by supporting the training of colleagues in all clinical areas
    - local partners should consider employing assertive out-reach or in-reach services for high impact service users in all major hospitals and existing services should be comprehensively evaluated to assess their impact on hospital and community services
- local authorities consider their role and capacity to make representations to licensing applications:
    - local authorities consider establishing a joint and clear strategic position with other stakeholders with a role in considering licensing applications as part of their local alcohol strategy
- local areas should consider the impact and cost effectiveness of social marketing and behavioural change interventions as part of a partnership wide strategic approach
- local areas should formalise care pathways for alcohol related liver disease including both primary and secondary care
    - local areas should consider the opportunities that are presented in primary care, for early identification of higher risk drinking that is likely to increase the risk of liver disease
    - consideration should be given to the cost effectiveness of liver screening for high risk groups in a primary care setting

In addition to the above there is clear public health evidence to support the benefits of minimum unit price for alcohol. Local Authority Public Health should consider how to best facilitate a local understanding of the benefits of minimum unit price and its appropriate place as the most cost effective response to alcohol related harm and an understanding of the necessary steps for implementation.

4.6 Resources and data sources

Resources and data sources include:

- The National Alcohol Strategy 2012 https://www.gov.uk/government/publications/alcohol-strategy.
- No Health without Mental Health 2011 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213761/dh_124058.pdf.
- NHS Five year plan https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf.
- The National Drug Strategy 2010, https://www.gov.uk/government/publications/drug-strategy-2010--2.
- The Police Reform and Social Responsibility Act 2011 http://www.legislation.gov.uk/ukpga/2011/13/contents/enacted.
- Putting Full Recovery First 2012. https://www.gov.uk/government/publications/putting-full-recovery-first-the-recovery-roadmap.
- Local Government Association. Reducing the Strength. Guidance for councils considering setting up a scheme. http://www.local.gov.uk/documents/10180/5854661/L14-350+Reducing+the+Strength_14.pdf/bbbb642e-2bcb-47d4-8bea-2f322100b711.
- Assessing the impacts of alcohol policies. http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/assessing-the-impacts-of-alcohol-policies_5js1qwkvx36d-en#page1.(63)

5 Hepatitis B

5.1 Background

Hepatitis B is a virus which is transmitted through contact with infected blood or other body fluids. Acute infection can lead to chronic disease and during the acute phase of infection the majority of people including children are asymptomatic; less than 50% of adults develop symptoms which may include cold-like symptoms, nausea, fever and jaundice. Most acute infections are acquired through adult risk behaviours such as injecting drug use and sexual contact. Acute hepatitis B is highly contagious. However the contribution of acute infections to the pool of people infected with hepatitis B is relatively small.

The risk of developing chronic hepatitis B infection depends on the age at which infection is acquired. Chronic infection occurs in up to 90% of children who acquire the infection under the age of 5 years and up to 10% of people infected as adults. Infectivity of chronically infected individuals varies from highly infectious (HBeAg positive) to often sparingly infectious (anti-HBe positive).(64) The prevalence of chronic hepatitis B infection in the UK is estimated to be 0.3% (approximately 180,000 people). In the UK, the majority (95%) of newly identified chronic hepatitis B infections have been acquired overseas at birth or at a young age. The higher risk of hepatitis B for migrants (people born outside the UK) is a cause of health inequalities.(65)

Some people with chronic hepatitis B go on to develop liver cirrhosis and hepatocellular carcinoma (HCC). The progression of liver disease is associated with the hepatitis B virus DNA loads (copies of virus per ml) in the blood. Without antiviral treatment, the 5-year cumulative incidence of cirrhosis is 8-20%. Development of HCC is closely related to the severity of the liver disease, with an annual incidence of 0.1% for people with asymptomatic chronic hepatitis B which increases to 3-10% for people with cirrhosis.(66, 67)

Hepatitis B is a vaccine preventable disease. Immunisation is recommended for high risk groups including children born to hepatitis B positive mothers, those who change sexual partners frequently and people who inject drugs. Other groups who should receive hepatitis B vaccine are detailed in ‘Immunisation against Infectious Disease'.

Actions required to prevent hepatitis B infection also include:

- follow-up of children born to hepatitis B positive mothers, and close household and sexual contacts of hepatitis B positive individuals, ensuring testing and vaccination
- education and promoting increased awareness of the infection, offering testing and immunisation to those at increased risk and promoting safer sex and condom use
- harm reduction services for people who inject drugs eg needle and syringe programmes and opioid substitution therapy

5.2 Epidemiology

5.2.1 Incidence

The incidence of acute or probable acute hepatitis B (from laboratory reports) in 2013 in the South West was 0.66 per 100,000 compared to 0.77 per 100,000 in England. Numbers are very small (34 cases of acute or probable acute hepatitis B in 2013 in the South West) and a change in laboratory reports does not necessary reflect a change in new cases.

5.2.2 Prevalence

In England the number of laboratory reports for acute and chronic hepatitis B has increased since 2005. In 2005 the rate of acute and chronic hepatitis B diagnosed (from positive laboratory reports) per 100,000 was 4.3, but by 2013 this had increased to 16.0 per 100,000. The rate increase has not been so great in the South West (3.1 to 5.7). The increase in positive laboratory reports does not necessary reflect an increase in hepatitis B, and may be due to a number of reasons such as changes in ascertainment. Therefore it is not clear whether the lower rate of positive blood tests in the South West shows lower prevalence or lower case ascertainment.

In 2013, there were 263 laboratory reports for acute and chronic hepatitis B in the South West. The majority of these are chronic hepatitis B. However with a population of approximately 4.6 million and a prevalence of 0.3%, it is roughly estimated that there are approximately 13,800 people in the South West with chronic hepatitis B (this may be an over-estimated due to demographic differences between England and the South West, differences in the proportion of people at high risk of hepatitis B).

Table 16: Number of laboratory reports for acute and chronic hepatitis B by upper tier local authority in the South West, 2009-2013.

Upper tier local authority	Number of laboratory reports				
	2009	**2010**	**2011**	**2012**	**2013**
Bath and North East Somerset	19	18	18	16	9
Bristol	102	131	109	126	123
Cornwall	18	15	21	13	9
Devon	25	37	21	18	31
Gloucestershire	39	50	47	46	29
North Somerset	10	11	*	8	5
Plymouth	8	6	*	*	*
Somerset	35	24	30	22	17
South Gloucestershire	26	20	12	10	13
Swindon	41	26	29	11	10
Torbay	10	22	8	5	*
Wiltshire	30	29	28	21	12
South West	**363**	**389**	**328**		**263**

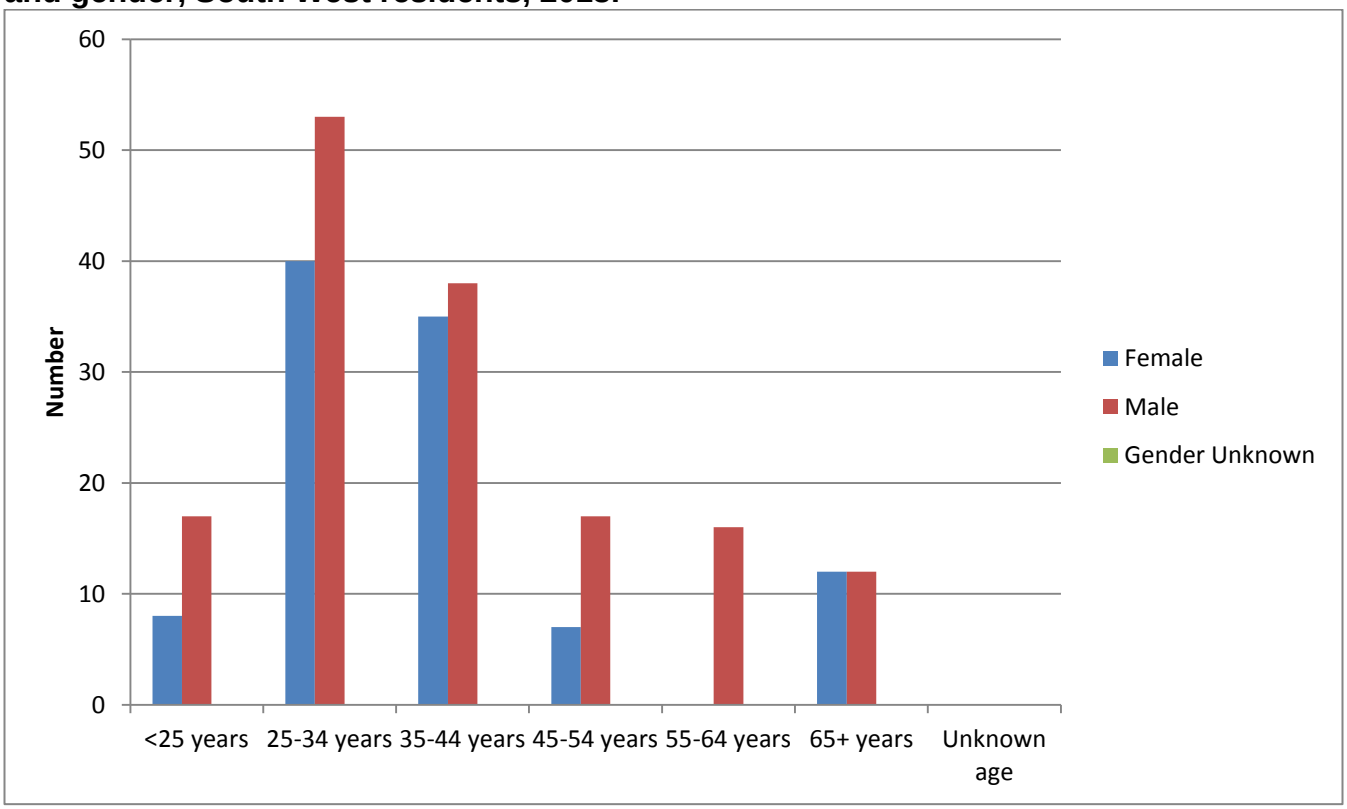
Source: PHE hepatitis B workbook, 2014.

Data are summarised by upper tier local authority of residence, not upper tier local authority of laboratory. Data are assigned to upper tier local authority by patient postcode where present; if patient postcode is unknown, data are assigned to upper tier local authority of registered GP practice; where both patient postcode and registered GP practice are unknown data are assigned to upper tier local authority of laboratory.

*numbers less than 5 suppressed

Bristol local authority has the highest number of laboratory reports for acute and chronic hepatitis B in the South West. This is likely to be partially due to more cases in Bristol due to the population (higher percentage of population from countries with high prevalence of hepatitis B than other areas of the South West).

Graph 26: Number of laboratory reports for acute and chronic hepatitis B by age group and gender, South West residents, 2013.



Source: PHE hepatitis B workbook, 2014.

Data are summarised by upper tier local authority of residence, not upper tier local authority of laboratory. Data are assigned to upper tier local authority by patient postcode where present; if patient postcode is unknown, data are assigned to upper tier local authority of registered GP practice; where both patient postcode and registered GP practice are unknown data are assigned to upper tier local authority of laboratory.

Numbers less than 5 suppressed

Nationally the incidence of acute hepatitis B continues to remain higher in males than females. This excess of male cases is partly explained by cases in men who have sex with men (MSM) as well as other risk taking behaviours such as injecting drug use. Cases diagnosed with an exposure of MSM are more likely to be diagnosed through genitourinary medicine clinics (GUM) reinforcing the importance of opportunistic hepatitis B immunisation in this setting.(68)

5.2.3 High risk groups

5.2.3.1 People who inject drugs

The anti-HBc prevalence from the Unlinked Anonymous Monitoring Survey (UAMS) of HIV and Hepatitis in People Who Inject Drugs (survey of people who inject drugs in contact with specialist services) was 16% in the South West in 2013 (17% in England) for people who inject psychoactive substances.(69) The anti-HBc prevalence in people who inject image and performance enhancing drugs was 2.8% in England and Wales in 2013.(70)

5.2.3.2 Local stratification by risk groups

Hepatitis B virus infection disproportionately affects migrants (people born outside the UK) and is a cause of health inequality. Using country of birth table 17 shows the approximate number of people within each area of the South West whose country of origin is one of those identified by NICE as having a more than 2% prevalence of hepatitis B (this includes all countries in Africa, Asia, the Caribbean, Central and South America, Eastern and Southern Europe, the Middle East and the Pacific islands). This does not necessarily mean that 2% of this population have hepatitis B but represent a population at increased risk of hepatitis B.

Table 17: Number and percentage of population from country of origin where hepatitis B prevalence greater than 2% (as identified through census, 2011).

	Number 'country of origin' >2% prevalence for hepatitis B (NICE guidance)	Percentage of population 'country of origin' >2% prevalence for hepatitis B (NICE guidance)*
Bath and North East Somerset	11,528	6.5%
Bristol, City of	49,489	11.6%
North Somerset	8,329	4.1%
South Gloucestershire	13,211	5.0%
Plymouth	13,356	5.2%
Torbay	4,790	3.7%
Swindon	21,451	10.3%
Devon	29,732	4.0%
Gloucestershire	33,042	5.5%
Somerset	22,192	4.2%
Cornwall & Isles of Scilly	15,610	2.9%
Wiltshire	23,524	5.0%

*Denominator population census day count

Source: ONS Crown Copyright Reserved [from Nomis on 23 April 2015]

A study in Bristol (71, 72) of 687,483 patients registered with a GP in 2006–13 showed 82,561 (12%) were born in a country with an hepatitis B prevalence of more than 2% (as identified by NICE), and for 194,025 patients (28%) country of birth was unknown. The study showed that the estimated prevalence of hepatitis B infection in ‘eligible migrants’ in Bristol is 1.7% (95% confidence interval 1.4 to 2.1). This reflects other reports where the prevalence of hepatitis B in a country does not always reflect the hepatitis B prevalence in migrants.(73)

From the study in Bristol the distribution of 'eligible migrants' is concentrated in certain geographical areas, and the burden of implementing the NICE guidance on general practices in these areas would be high. The authors also found that testing all those recommended by NICE would involve testing approximately 12% of the Bristol GP registered population, with an estimated yield of 929 new diagnoses of chronic hepatitis B infection. Testing only those who are members of Bristol migrant populations with evidence of hepatitis B infection prevalence of >2% (migrants born in Eastern or South Eastern Asia, Eastern, Middle or Western Africa, Bulgaria and Romania) would involve testing approximately 5% of the Bristol GP registered population, with an estimated yield of 842 new diagnoses of hepatitis B infection.

5.2.3.3 Prisoners

Table 18 shows the percentage of prisoners testing positive for hepatitis B in England, this is 1.5% compared to 1.2% in the general population. The most recent statistical information for South West Prisons indicates a capacity of 4,500 individuals across the estate. Previous studies estimated the prevalence of Hepatitis B in prisons at approximately 8%.

Table 18: Trends in individuals tested for HBsAg by service type (excluding antenatal screening) trend centres in England, 2013.

Service	Number tested for hepatitis B	Number of positive hepatitis B results (percentage)
Drug services	1,506	8 (0.5%)
Prison services	3,477	51 (1.5%)
All primary care	141,293	1,706 (1.2%)

Source: PHE sentinel surveillance of blood-borne virus testing in England all age groups

5.2.4 Treatment and secondary care

5.2.4.1 Treatment

The estimated annual cost of hepatitis B and C medications across the South West is approximately £3.5 million. It is not possible to distinguish between the cost of medication used for hepatitis C and hepatitis B. The overall figure may be an overestimate as interferon alfa can also be used for the treatment of HIV and cancer, and the indication cannot be distinguished within the costing. This data does not give an indication of the number of patients being treated.

5.2.4.2 Admissions

In the South West in 2013, there were 190 hospital admissions in individuals with hepatitis B (acute or chronic), 21 of whom had hepatitis B related end-stage liver disease (defined by codes for ascites, bleeding oesophageal varices, hepato-renal syndrome, hepatic encephalopathy or hepatic failure.).

The majority of hepatitis B is seen in outpatient clinics and therefore hospital admissions are unlikely to reflect the true burden of disease. It is also unlikely that coding of hepatitis B is complete due to the under-diagnosis of hepatitis B.

5.2.4.3 Outpatient appointments

There are no regional figures on how many patients are seen in outpatient departments. Audit data from clinic letters in March 2015 at Royal Devon and Exeter Hospital outpatient department on the numbers of people seen by condition show 18 of 240 follow up appointments were for hepatitis B.

5.2.5 Complications and mortality

5.2.5.1 Mortality

In 2010-12 there were nine deaths attributed to hepatitis B (hepatitis B related end-stage liver disease/hepatocellular carcinoma). This is likely to be an underestimate due to under diagnosis and difficulties with coding. The crude rate has been similar since 2001-2003, with a rate of 0.07 per 100,000 in 2010-12.

5.2.5.2 Transplants

Between 1999 and 2013 there were 43 first liver transplants where post-hepatitis B cirrhosis and acute hepatitis B were given as primary, secondary or tertiary indication for transplant at registration and HBV positive at transplant in England. This was 7.1% of all liver transplants in the South West (compared to 734 of 7,963, 9.2% across England).(74)

A more detailed analysis of liver transplant data is underway by PHE.

5.3 Service mapping

5.3.1 Services for specific higher risk groups

5.3.1.1 Case finding

National Institute of Clinical Excellence (NICE) guidance published in December 2012 has recommended targeted hepatitis B (and C) case finding in at risk groups particularly people born in areas where prevalence is > 2% and people who inject drugs.

There is a lack of data of tests offered to those in high risk groups. Testing of high risk groups and awareness of this is an important part of early diagnosis.
Data from the sentinel* laboratories can provide information on the risk exposure/reason for testing.(75) However at the Bristol laboratory between 2009 and 2013 the reason for testing was unknown in 43.8%

* The sentinel surveillance of blood borne virus testing began in 2002, with the aim of supplementing the routine surveillance of hepatitis. Information on the testing carried out in participating centres is collected irrespective of test result and can therefore also be used as a basis for estimating prevalence among those tested. In 2013, sentinel surveillance captured front-line testing for hepatitis B and C among 13 out of 15 PHECs in England, covering approximately 40% of the population. In the South West the only participating laboratory is Bristol.(76)

A service evaluation in Bristol showed that testing all migrants recommended by NICE would involve testing approximately 12% of the Bristol GP registered population, with an estimated yield of 929 new diagnoses of chronic HBV infection. However a more targeted approach would only need to test approximately 5% of the Bristol GP registered population, with an estimated yield of 842 new diagnoses of chronic HBV infection. The distribution of ‘eligible migrants’ is concentrated in certain geographical areas and implementing the NICE guidance on general practices in these areas may require investment.(72)
In the same study (72) 88% of patients who were born in a country with a hepatitis B prevalence of more than 2% were not hepatitis B tested. Of those tested 40% were first hepatitis B tested antenatally.

5.3.1.2 Maternal screening and newborn immunisation

In 2013, reported uptake of hepatitis B antenatal screening was 98%. In 2013, 0.58% of pregnant women screened for hepatitis B were positive for hepatitis B surface antigen (a marker of current infection). Hepatitis B positivity rates have been stable in recent years. In 2013, hepatitis B rates ranged from 0.16% in the South West to 1.46% in London. In the South West in 2013 0.16% of pregnant women were hepatitis B positive (91 of 57,286 pregnant women screened and previously diagnosed), with 0.05% being newly diagnosed (28 of 57,286 pregnant women screened).(77)

The UK National Screening Committee has a key performance indicator for timely referral of hepatitis B-positive women for specialist assessment. This showed that in 2013/14 in the South West 60% (49 of 82) of pregnant women were seen by a specialist within 6 weeks of being identified with hepatitis B (compared to 68% in England).(78) The follow up of household contacts for testing and immunisation is unknown.

Newborn immunisation

There are only experimental statistics (see table 19) available for the percentage of children born to hepatitis B positive women who received immunisation (three doses vaccine by 1st birthday and four doses by 2nd birthday). A large number of NHS Trusts were unable to supply some or all of the data required on infants born to hepatitis B positive mothers. It would therefore be inadvisable to draw conclusions from these data. Of those trusts with submitted data in 2013/14 the percentage of children who had had three doses by their 1st birthday ranged from 14% to 100%, and 10% to 100% when looking at children who had had four doses by their 2nd birthday.(79)

Local audits and maternal screening data also suggest that the numbers identified within the experimental statistics as eligible (born to hepatitis B positive mother) may not reflect all those children who are eligible for (or received) hepatitis B immunisation. Babies who are born to mothers who are hepatitis B negative are eligible for pre-exposure prophylaxis if the father or other close contact is positive, if they are at risk from parental injecting drug use or travel to/from high prevalence area, or if they are in a household taking emergency foster placements where the foster-child's status may not be known. A health needs assessment in Gloucestershire found that the two groups (post/pre exposure) were of equal size, ie babies from positive mothers only covered half of the eligible population. The audit report found late immunisation across both groups with the majority of babies receiving their second and subsequent immunisations late.

Table 19: Experimental statistics – percentage of children vaccinated against hepatitis B by their 1st and 2nd birthday, by former PCT in the South West 2013/14.

Primary Care Organisation	By 1st birthday				By 2nd birthday			
	Eligible population [1]	Number of children immunised [2]	Coverage (%)	Data type	Eligible population [1]	Number of children immunised [2]	Coverage (%)	Data type
Bath & North East Somerset PCT	5	5	100.0	Full data submitted	*	*	*	Full data submitted
Bristol PCT	*	*	*	Full data submitted	*	*	*	Full data submitted
Cornwall & Isles of Scilly PCT	3	3	100.0	Full data submitted	*	*	*	Full data submitted
Devon PCT	*	*	*	Full data submitted	*	*	*	Full data submitted
Gloucestershire PCT	11	10	90.9	Full data submitted	8	6	75.0	Full data submitted
North Somerset PCT	-	-	-	Data not available	-	-	-	Data not available
Plymouth Teaching PCT	5	4	80.0	Full data submitted	3	*	*	Full data submitted
Somerset PCT	8	4	50.0	Full data submitted	3	3	100.0	Full data submitted
South Gloucestershire PCT	-	-	-	Data not available	-	-	-	Data not available
Swindon PCT	7	7	100.0	Full data submitted	5	5	100.0	Full data submitted
Torbay PCT	0	0	-	Full data submitted	0	0	-	Full data submitted
Wiltshire PCT	10	8	80.0	Full data submitted	7	7	100.0	Full data submitted

(1) Total number of children reaching their 1st/2nd birthday during the specified evaluation period with maternal Hep B positive status.
(2) Total number of children from (1) receiving 3 doses of Hep B before their 1st/2nd birthday.
(3) Trust has reported that the data submitted either is or may be incomplete (ie that there are or may be more children eligible and vaccinated than reported).

*data suppressed due to small numbers

Source: HSCIC

In addition to immunisation children should receive a blood test at 12 months to ascertain if they have acquired hepatitis B. It is recognised that these tests do not always occur. Nationally 44% of high risk infants were tested for hepatitis B at 12 months. This low figure may reflect difficulties in obtaining venous blood samples in primary care, as well as loss to follow up which may reflect a mobile population. In addition local audits have shown that even when children received a blood test the correct test was not always carried out by the laboratory (for a Hepatitis B surface antigen (HBsAg) on a serum sample).

There is a direct enhanced services (DES) covering hepatitis B for primary care which practices sign up to. The DES involves practices taking responsibility for identifying newborn babies who are registered with the practice and who are at risk of hepatitis B due to their mother being hepatitis B positive when the baby is born. The practice will then provide vaccination (2nd, 3rd and 4th dose and blood test for hepatitis B surface antigen at 12 months, also provide 1st vaccination if not done in hospital or by community midwife). Data is entered by the practice into Calculating Quality Reporting Service (CQRS). Area teams are responsible for verification (ie checking practices have identified those at risk, followed vaccination schedule, ensuring blood test completed and recorded and referral made as necessary). The DES came into effect from April 2014.

5.3.1.3 Prisons and prisoners

This section includes an overview on services for blood borne viruses in prisons in general. Detail that is specific to hepatitis C is omitted as it is included within the hepatitis C section.

There are eight prisons in the South West which include resettlement prisons, an open prison where individuals are serving in-determinate sentences, a female prison and training prisons. There are a number of challenges within the estate including the fluidity of the population for sentence transfer and release and more frequent movement from local prisons to the rest of the estate, making the provision of opt out testing and getting it right all the more important. To address the challenges and incorporate the work in the prisons and ensure management of individuals on release, PHE and NHS England Commissioners have developed BBV Prison forums set up across the South West Prisons clusters chaired by PHE as a collaborative building on best practice and include the move toward a whole system approach and inclusion of secondary care specialist services and the ripple effect within the community.

As well as implementing programmes for prevention and management of communicable disease, there is a need to translate through transfer from one prison setting to another and into the community on release from prisons. Seamless communication with primary and secondary care is invaluable in ensuring treatment pathways continue, and prevention programmes are consistent. Similarly with the potential for a revolving door this service and communication needs to translate from the community to a prison setting.(80)

The opt-out process within prisons moved from an ‘at-risk’ selective policy to a universal offer of testing and access to subsequent treatment pathways.(81) Data sources available indicating the increased risk among prisoners for BBV’s also indicate significant under-testing of prisoners. Annual PHPQI data for 2013/14 shows that less than 9% of new receptions have been tested for hepatitis C in prison. This can be explained by several factors, including biases in the way that testing is offered and in risk perception by both patients and staff. Implementation of the BBV opt-out testing policy began in April 2014 in identified ‘pathfinder’ prisons. The definition of a pathfinder is those prisons who are recommending BBV testing to people in prison as per national guidance. As an identified pathfinder, the prison will be evaluated based on the national guidance to enable lessons to be learned and shared across the estate. For the South West in phase one this included the following prisons; HMP Exeter, HMP Dartmoor and HMP Channing’s Wood.

The opt-out policy advocates that people in prison should be offered the chance to test for BBV infection at or near reception, and at several time points thereafter, by appropriately trained staff in a range of different healthcare services within the prison. Those patients testing positive for hepatitis C, hepatitis B, or HIV, should then be able to access care and treatment pathways, both in prison and following release into the community.

The opt-out mission statement intends to ensure successful implementation and allow learning to guide practice. The support for a phased roll out plan via '*pathfinder prisons'* started in 2014/15. Additional emphasis is placed on building on good practice already established in many prisons. Experience gained in these pathfinders will inform commissioners and their partners to plan and deliver a sustainable service across the whole estate.

In addition, moving from current "at risk" policy to "opt-out" should increase uptake thus addressing inequalities. It should also rationalise testing, avoiding multiple testing by different teams in prisons and ensure correct testing and a reduced frequency of testing. "Getting it right" in local prisons will leave training prisons with little testing to do.as the testing will be carried out at the local prisons in the majority of cases.

Phase 1 of the BBV opt out process ran from April – September 2014 and included 11 prisons across the country of which three are in the South West (HMP Exeter, HMP Dartmoor and HMP Channing's Wood). Following the submission of the evaluations from phase 1 a report has been collated by the national BBV Opt-out Testing Task & Finish Group, identifying lessons that can be learned and shared from the first 6 months of the policy. Preliminary data suggests a near doubling of BBV testing following the introduction of the opt-out testing policy, with an increase from 12% to 22% of prisoners tested for hepatitis B.

Moving forward phase 2 includes 15 pathfinders. There are also 27 other prisons who are not identified pathfinders but are implementing or well on their way to implementing the policy. This means that approximately half of the English estate is implementing the policy. It is the ambition to have full implementation by 2016/17. As a follow up to the national event in May 2014 a further national event taking place later this year. This will further enable stakeholders to share practice/learn lessons. In the South West those prisons not identified as pathfinders are developing the implementation supported by NHSE and PHE Health and Justice.

Immunisation

National hepatitis B vaccination coverage was 57% in 2012/13. Table 20 shows the vaccination coverage for prisons in the South West. With the implementation of the BBV Opt out country wide we expected to see an improvement in 14/15 and additional data will be captured on the HJIP's implemented in July 2014 replacing the PHPQI's (Public Health Performance and Quality Indicator). In the South West 2013/14 data provided indicates that there were eight chronic hepatitis B cases diagnosed in prisons in the South West.

Table 20: Hepatitis B vaccination coverage (percentage) in prisons in the South West, 2009-2013.

Prison	2009	2010	2011	2012	2013
HMP Channings Wood	84%	79%	87%	78%	74%
HMP Dartmoor	81%	83%	84%	85%	90%
HMP Exeter	69%	65%	64%	58%	71%
HMP Shepton Mallet	100%	88%	85%	92%	Closed
HMP Ashfield	81%	83%	79%	82%	75%
HMP Bristol	66%	80%	87%	84%	79%
HMP/YOI Eastwood Park	57%	66%	85%	83%	82%
HMP Erlestoke	85%	94%	92%	93%	92%
HMP Gloucester	53%	80%	83%	81%	Closed
HMP Leyhill	65%	57%	87%	89%	88%

The PHIP team used fixed denominators provided by Offender Health, which were estimates of throughput for the month based on yearly average throughput until December 2007. The PIP team then moved to ask each individual prison to report actual throughput together with the number of new receptions vaccinated that month.

Source: PHPQI

Vaccination in prisons is complicated by the movement between prisons and when people leave prison as to who is responsible for completing the schedule. Clear communication between agencies is essential. With the challenge of a fluid population a structured approach to the process of offering, completing and documenting vaccination in individuals in contact with criminal justice system is essential, while at the same time ensuring that risk is reduced using available information and intelligence strategies within the system.

5.3.1.4 People who inject drugs (PWID)

In the South West in 2013, the UAMS showed that 20% of those who had injected drugs in the last 4 weeks had directly shared needles or syringes compared to 16% across England. Levels of direct sharing were higher in under 25 year olds (31% in England, Wales and Northern Ireland, compared to 17% for 25-34 year olds and 13% for 35 years and over).(69)

'The transmission of hepatitis B continues among PWID, but appears to have declined in recent years as the proportion of participants in the Unlinked Anonymous Monitoring Survey (UAMS) who had ever been infected has fallen from 29% in 2002 to 17% in 2012, with 0.94% currently infected in 2012.'(p6)(82) The decrease is due to increased vaccine uptake and a decline in equipment sharing. In the South West there has not been a reported acute hepatitis B infection where injecting drug use was the risk factor since 2006.

The self-reported uptake of hepatitis B vaccination from the UAMS was 71% in England and 65% in the South West (includes Dorset, Bournemouth and Poole due to collection methods of UAMS).(69)

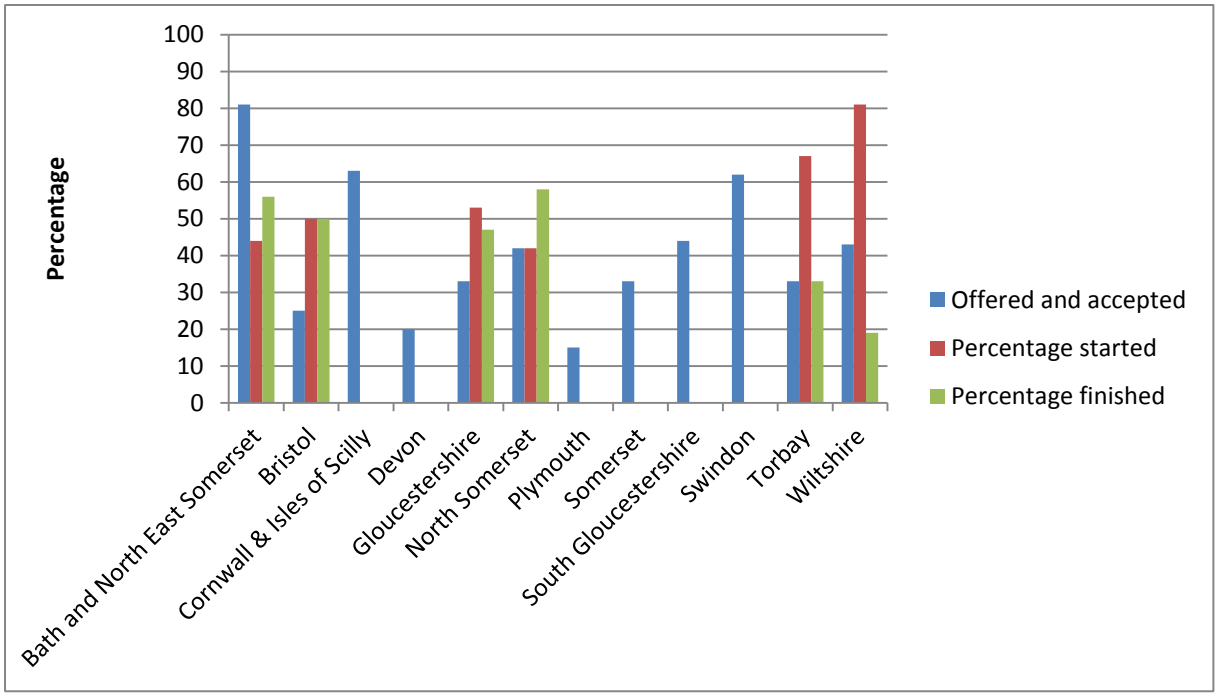
Table 21 shows the number and percentage of people who inject opiates (new patient journeys only) offered and accepted hepatitis B vaccination by injecting status, and number of these started and completed hepatitis B vaccination course. Graph 27 shows the same information for current injectors only.

Table 21: Number (and percentage) of people who inject opiates offered and accepted hepatitis B vaccination by injecting status, and number of these started and completed vaccination course (new patient journeys only) 2013-2014.

Local Authority		Current Injectors			Previous Injectors		
		Offered and accepted	No. started	No. finished	Offered and accepted	No. started	No. finished
Bath & North East Somerset	No.	51	21	27	36	11	23
	%	81	44	56	84	32	68
Bristol	No.	59	10	10	70	*Numbers too small to include*	
	%	25	50	50	18		
Cornwall & Isles of Scilly	No.	85	*Numbers too small to include*		55	8	6
	%	62			46	57	43
Devon	No.	32	9	8	25	5	7
	%	33	53	47	20	42	58
Gloucestershire	No.	63	14	7	39	*Numbers too small to include*	
	%	33	67	33	24		
North Somerset	No.	8	*Numbers too small to include*		10	*Numbers too small to include*	
	%	20			13		
Plymouth	No.	13	13	18	48	8	25
	%	42	42	58	32	24	76
Somerset	No.	63	25	6	44	17	5
	%	43	81	19	40	77	23
South Gloucestershire	No.	12	*Numbers too small to include*		33	*Numbers too small to include*	
	%	63			62		
Swindon	No	16	*Numbers too small to include*		13	*Numbers too small to include*	
	%	33			23		
Torbay	No.	6	*Numbers too small to include*		10	*Numbers too small to include*	
	%	15			11		
Wiltshire	No.	27	*Numbers too small to include*		9	*Numbers too small to include*	
	%	44			26		

Source: NDTMS

Graph 27: Percentage of people who currently inject opiates offered and accepted hepatitis B vaccination, and percentage of these started and completed vaccination course (new patient journeys only) 2013-2014.*



*numbers <5 suppressed

Source: NDTMS

Local providers and commissioners feel that there may be differences in data between NDTMS and that locally collected by BBV nurses. In Gloucestershire a hepatitis needs assessment reported an immunisation completion rate of 25% of eligible people in treatment services but highlighted data quality issues.(83)

Example of improving hepatitis B immunisation

Bath and North East Somerset Health and Wellbeing Board have a blood borne virus (BBV) action plan. As part of this there is a flow chart for those in drug and alcohol treatment which means that people who are current or previous injectors are referred for BBV nurse hepatitis B immunisation. The key worker is responsible for recording hepatitis B immunisation status and reviewing risk every 3 months. During 2013-14, 87% of appropriate clients accepted hepatitis B immunisations, 74% of people who accepted hepatitis B immunisations have had at least one vaccination (n=124 people). Of these 124, 33% have been fully immunised (55 people). The data for fully immunised people is collected annually. Therefore if people have only recently been diagnosed it is unlikely that they will be fully immunised as per the recommended schedule of 0, 1 and 2 months.

5.3.1.5 People using sexual health and genitourinary medicine clinics

There are UK National Guidelines on safer sex advice produced by the British Association for Sexual Health and HIV.(84) There is limited national data on the promotion of safer sex. More detailed information on sexual health is available within local areas Sexual Health Needs Assessments.

There is a lack of national data on immunisation or testing for hepatitis B in this group. Data from electronic paper records at Bristol Sexual Health Centre indicates that there were 2,100 tests (689 female, 1,411 male) performed for hepatitis A, B or C between 01/3/2014 and 31/3/2015. During the same time hepatitis B vaccination was initiated in 423 (89 female, 334 male), and 254 (50 female, 204 male) people completed the hepatitis B immunisation schedule. The higher proportion of men accessing testing and immunisation through the sexual health services is likely accounted for by men who have sex with men but there are no data on testing and vaccination offered by risk factor. These data use national codes (Sexual Health and HIV Activity Property Type Codes) for recording, the figures rely on staff coding correctly. The Terrence Higgins Trust has referral pathways with Bristol Sexual Health Clinic, and they refer for hepatitis B testing and immunisation if a risk is identified.

5.3.1.6 Contacts

In most of the UK PHE health improvements teams send a letter to GPs for each newly diagnosed patient requesting that the GP arrange testing and vaccination of sexual partners and household contacts. 15 GPs answering a questionnaire in Bristol rated the effectiveness of the contact vaccination service in migrants with hepatitis B as 1-7/10 (mean 3.9) on a 10 point scale. An attempt to audit testing and vaccination coverage of contacts in primary care in Bristol found that documentation was poor, and coverage could not be determined, however a pilot nurse led contact tracing service found significant unmet need.(85)

5.3.2 Diagnosis and Management

The management of patients diagnosed with hepatitis B lies with the clinician. However cases of acute and chronic hepatitis B are reported to PHE who are responsible for appropriate public health actions. These include contacting the GP to ensure that appropriate actions are taken; the letters that are sent to GPs include information about testing and vaccinating household contacts and sexual partners and advice to give to patients to minimise the risk of transmission. For infants born to carrier mothers GPs are advised to ensure completion of the vaccination schedule and to ensure testing is performed at 12 months. Advice is given for all patients to be discussed with or referred to the local gastroenterology or hepatology department, and for GUM referral and HIV testing if sexual transmission is suspected.

5.3.2.1 Primary care

To understand the diagnosis and management of liver disease in primary care a survey of local GPs was undertaken in March 2015. Responses were from 52 GPs and GP trainees across the South West. One question asked GPs what would prompt or stop them offering a hepatitis B vaccination. Most (69%) GPs felt that they would offer hepatitis B immunisation to those who they felt fell into an at-risk group but that this was opportunistic process. A few respondents felt that they normally only offered hepatitis B immunisation for occupation health or travel reasons. There were very few barriers to offering a hepatitis B immunisation identified.

A survey of GPs in Bristol in 2013-2014 (65) investigated practice and opinion regarding case finding, referral and contact tracing in migrants. Regarding case finding, only 3/18 GPs indicated that they routinely offered opportunistic testing to people born in high prevalence countries. Most of the GPs felt that lack of staff time or other resource was the most important barrier to increased testing in line with NICE 2012 recommendations. Regarding referral 18/19 said they would routinely refer a newly diagnosed patient with chronic hepatitis B to secondary care.

5.3.2.2 Referral and assessment

An audit of hepatitis B in Bristol in 2009 found that of 160 patients tested positive 98 (61.3%) was seen by a hepatologist. A more recent audit(86) of migrants with hepatitis B who had their first positive test between 2010 and 2013 found that >92% were referred to secondary care, and estimated that 62% were currently engaged (ie had attended a hepatology clinic in the last 12 months), 26% were previously engaged (ie had attended a hepatology clinic in the past but not in the last 12 months) and 21% had never attended a hepatology clinicI. Hepatology services in Gloucestershire accepted between 27 and 55 referrals for hepatitis B per year between 2009-2013/14.(83) An audit from the Royal Devon and Exeter Hospital found that of 46 new patients seen in March 2015 two were seen for hepatitis B, and of 240

follow up patients 18 were for hepatitis B. The full data are available in the general liver section.

5.3.2.3 Treatment

There is no national data available on; the proportion of people with chronic hepatitis B infection, and their family members or carers (if appropriate), who are given a personalised care plan outlining the proposed treatment and long-term management of their infection, the proportion of people with chronic hepatitis B infection who do not meet the criteria for antiviral treatment who are monitored regularly at intervals determined by their infection status and age or the proportion of adults with chronic hepatitis B infection with significant liver fibrosis or cirrhosis who receive 6‑monthly surveillance testing for hepatocellular carcinoma. Some of this information is reviewed locally by audit.

5.4 Service user's perspective

Case Study

I am a 55 year old single mum with a teenage son still living at home. I have had chronic hepatitis B, which I contracted via maternal transmission. Last year I had a flare up with my hepatitis B viral levels which meant I now required treatment.

I started Pegasys (peginterferon alfa-2a) treatment in September 2014. I started on a low dose as my blood counts were low and I had the expected side effects, ie flu-like symptoms. The next day the symptoms had gone. General side effects have been very itchy dry skin especially in the areas of injection and my back. Also, I have had decreased appetite, feeling weak, weight loss, hair thinning, cramp in my calf muscles and aching bones. I went through a stage where I felt miserable and even the news on the radio upset me. I started taking an anti-depressant which made me vomit so I changed to an herbal anti-depressant. My white blood cells unfortunately decreased so I started to receive a separate injection of GCSF - this has stabilised my blood count and enabled me to increase my Interferon dose. I used to work five days a week but I have cut down to three days; this allowed me to spend the day after the injection in bed but now I don't need to although I don't do too much.

I am now on the second half of the year's treatment and the initial side effects have gone except itchy skin and hair falling out. I am taking herbal medicine to keep my mood positive. I have used tea tree oil in water to alleviate itchiness although now I am now using calendula cream. I have very much noticed how my ability to think clearly has improved and I have more mental energy which has allowed me to be more assertive. I have just moved house to be nearer work and I am not sure I would have done that if I had been foggy-brained. If I do too much I get a temperature so that keeps me in check and I just rest.

I am pleased that I am on treatment despite the side effects experienced and happy to say that so far I am responding and my virus levels are undetectable. I am really pleased that I have had the support of my specialist nurse at all times throughout my treatment to encourage and support me. It is very important to have this support otherwise I am sure I would have decided to discontinue treatment in the early months.

5.5 Evidence

5.5.1 Prevention

5.5.1.1 Increasing awareness, testing and diagnosis

NICE makes recommendations for raising awareness and for hepatitis B testing among the general population and among people at increased risk of infection; this includes people from countries with an intermediate or high prevalence (>2%), people who have ever injected drugs, men who have sex with men (MSM), those who have frequent unprotected sex such as sex workers, looked after children and young adults, people diagnosed with a sexually transmitted infection, household or sexual contacts of someone infected with chronic hepatitis B.

Among migrants language, culture, and practical constraints may act as barriers to testing and there may be confusion surrounding the various forms of hepatitis and transmission risk. Understanding and awareness of hepatitis B is strongly influenced by personal experiences and cultural beliefs. It follows that material and events used for increasing awareness need to be culturally sensitive and address the needs of non-English speakers. However, while providing information to migrant populations can improve their knowledge about risk, screening and prevention, it may not increase testing uptake.(87, 88)

NICE suggests targeted testing in primary care, where information about risk factors should be routinely sought when registering patients. However, robust evidence on what is the most effective strategy for case finding is scarce (see service mapping section for research conducted in the South West). Alternative approaches include offering alerts to encourage opportunistic case finding, or screening immigrants at the time of obtaining a visa for entry to the UK, which may pick up up to 7000 new cases per year.(2) It is unclear whether interventions aimed at improving professional practice in relation to hepatitis B testing are effective, as there have been no UK-based studies examining this.(87)

The cost effectiveness of interventions to improve hepatitis B case finding among migrant populations reported an estimated cost of £20,900 per quality adjusted life year (QALY) for populations with a prevalence of 2%, based on a cost of £20 per extra person invited for testing, and a 17.5% intervention effect.(89) The cost estimated per QALY would be marginally above the NICE threshold for cost effectiveness, which is £20,000, but it would be cost effective if prevalence were 3% or higher. At 20% prevalence, as is believed to be the case among some migrant groups, the estimated cost per QALY of finding and testing people falls to £12,000, which is deemed cost effective. (89)

5.5.1.2 Vaccination

In populations with moderate to high endemic levels of hepatitis B (>2%) universal infant vaccination substantially reduces the prevalence of chronic hepatitis B and complicating liver disease including HCC.(90) Those infected in adulthood have a lower risk of HCC than those infected in childhood because there is less time for the infection to cause inflammation.(91) The Joint Committee of Vaccination and Immunisation (JCVI) reviewed the evidence for universal hepatitis B immunisation in October 2014. They concluded that:
'The Committee agreed that universal HBV vaccination of infants in the UK was of considerable public health importance and in line with current global WHO advice. … a hexavalent infant vaccine (DTaP-IPV-Hib-HBV) could be cost-effective, if such a hexavalent vaccine could be procured at a price which was only marginally higher that of the price of pentavalent vaccines.' (p11)(92)

Pre-exposure vaccination is 95% effective at preventing infection and the development of chronic liver disease and liver cancer. Post-exposure vaccination is highly effective in preventing acute infection if given within 7 days and preferably within 48 hours. It is recommended for contacts that have had recent unprotected sex with individuals who have acute hepatitis B or are HBsAg positive.

The uptake and completion of hepatitis B immunisation among people who inject drugs (PWID) in community-based settings remains relatively low, and there is a need to improve this. Contingency management incentives are recommended by NICE and can improve adherence.(93) A UK-based cluster randomised study compared timely completion of a super accelerated schedule in heroin users without incentive, with fixed value contingency management (three £10 vouchers), or escalating value contingency management (£5, £10, £15 vouchers). 9% of those treated as usual compared with 45 % in the fixed value contingency management group and 49% in the escalating value contingency management group completed the schedule within 28 days; a significant difference.

5.5.1.3 Household, sexual and family contacts of people with hepatitis B

Hepatitis B prevalence has not been robustly described in hepatitis B contacts in the UK, though one study in London found that 53/167 (31%) of contacts screened were HBsAg positive (including 3 (6%) of children; 35 (66%) of partners; and 15 (28%) of 'Other adults') (94). In in a larger study from India 29% of first degree relatives of index cases had chronic hepatitis B (95). Prevalence in the contacts reviewed in a pilot contact tracing service in Bristol was 6.5% (3/46) including all contacts, and 9.4% excluding children vaccinated at birth.

5.5.1.4 Prisons

It is well documented that individuals in contact with the criminal justice system are an increasingly vulnerable population, with evidence that these individuals are at greater risk of chronic physical and mental health conditions.(96, 97)

The evidence goes further to support that these individuals are more likely to engage in high risk behaviours and activities such as smoking, alcohol dependence and substance misuse and are more likely to be vulnerable to some communicable disease.(98)
Rates of communicable diseases in prisoners, including hepatitis B, have historically been reported as much higher than in similar individuals within the local community.(98)

5.5.1.5 Children and adults in care/residential settings

Looked after children and young people are identified as high risk for hepatitis B compared to the general population, and should be considered for testing.(89) It is a statutory requirement that looked after children have a comprehensive health assessment, as it is acknowledged that they have unmet health needs and could be at risk of a wide range of health problems. Families fostering or adopting children from high risk countries are recommended for immunisation against hepatitis B.

PHE published guidelines on hepatitis B in residential/boarding schools. The guidelines were developed because of the high proportion of children at independent boarding schools who come from oversees and because of anecdotal evidence of incidents where students attending boarding school were found to have hepatitis B. The potential increased transmission risks in residential/boarding schools relates to the sharing of razors between pupils, the sharing of hair clippers, sexual relationships between pupils, contact/collision sports that invoke bleeding injuries, and fighting between pupils. The report concluded ‘A wide sweep of peer-reviewed journal articles, UK guidelines, and policies and advice from independent advisory bodies uncovered no evidence on the prevalence and incidence of hepatitis B in residential/boarding schools. In addition, very little good quality evidence was found on hepatitis B transmission risk in a residential/boarding schools setting. Therefore, there seems to be very little compelling evidence that hepatitis B in residential/boarding schools is a priority issue.’(p13)(99)

There is evidence that residential institutions for persons with learning disabilities have an increased prevalence of hepatitis B in comparison to the general population.(99) Close, daily living contact and the possibility of behavioural problems may lead to residents being at increased risk of infection. Vaccination is therefore recommended. Similar considerations may apply to children and adults in day care, schools and centres for those with severe learning disability. Decisions on immunisation should be made on the basis of a local risk assessment. In settings where the individual’s behaviour is likely to lead to significant exposure (such as biting or being bitten) on a regular basis, immunisation should be offered to individuals even in the absence of documented hepatitis B transmission.

5.5.1.6 Vertical transmission

If a pregnant woman has hepatitis B and is HBeAg positive, (about 10% of pregnant women with hepatitis B) there is a 70–90% likelihood that the infection will be transferred to the baby.(100) If she is infected and HBeAg negative then this likelihood reduces to 10%. The prevention of hepatitis B transmission is a complex task that involves gynaecologists, hepatologists, midwives and general practitioners. It encompasses antenatal screening, infant vaccination, and administration of hepatitis B immunoglobulin (HBIG) for infants at high risk, and monitoring and treatment of the mother.

Antenatal screening was introduced in the UK in 2000 to identify mothers infected with hepatitis B. Timely immunisation and completion of the schedule in infants born to mothers with hepatitis B can prevent the development of chronic infection in over 90% of cases.(101, 102); it is highly cost effective, and likely cost-saving.(103, 104) However, many infants receive their vaccines late and high risk infants (defined as those born to mothers who suffer acute hepatitis B during pregnancy, or mothers who are seropositive for HbsAg and who are either seropositive HBeAg or seronegative for antiHBe, or mothers who are HBsAg seropositive but whose HBeAg and antiHBe serostatus is unknown) who receive their second and third doses late are at increased risk of infection.(104, 105) Taking their cut-offs for timely vaccine administration as an indicator of a loss of effectiveness of vaccination, an extra 14 deaths in each cohort might be expected because doses are given too late. Improving the timeliness of vaccination could likely be achieved at little additional cost, and increasing resources to achieve this should be cost effective.(104)

HBIG confers marginal impact over and above vaccination, and the benefit is only in high risk infants. The early response to hepatitis B vaccination is known to be lower in pre-term than term infants, and therefore HBIG is recommended in very premature infants (birth weight under 1500g) irrespective of the mother's anti-HBe status. Other infants considered high risk and for whom HBIG is recommended are those whose mother is HBsAg seropositive and HBeAg seropositive or anti-HBe negative, if e markers are not available.(106) An audit of infants eligible for HBIG in the UK confirmed chronic infection in around 26/543 (4.9%) despite receiving HBIG and vaccination.(105)

High maternal viral load (>10^6 copies/mL) is associated with an increased risk of vertical transmission; the risk is around 3% between 10^6-10^7copies/mL, 7% between 10^7-10^8copies/mL, and 9% above 10^8 copies/mL. Where viral load testing has been performed to inform the management of the mother, infants of women with a high viral load are recommended to receive HBIG. In cases of high maternal load third trimester prophylaxis with a class B drug (telbivudine or tenofovir) is able to further reduce the risk of vertical transmission.

There is conflicting evidence for the role of elective Caesarean section in reducing the risk of transmission of hepatitis B and it is not routinely recommended. Breastfeeding does not increase the risk for acquisition of HBV in the infant.(107)

[See also recent data of relevance: Cost effectiveness of improved prevention of mother to child transmission through increased vaccination completion was quantified in England and Wales in 2009 as evidence for NICE guidance (108). This study found that vaccination at the base-case (optimistic) level of coverage was expected to reduce the incidence of perinatal infection by about 60%. This was estimated to result in a saving of 90 deaths in England and Wales, and 169 discounted QALYs compared with no vaccination, resulting in net savings to the health service of approximately £288,000 (discounted) over the life-span of the cohort. Increasing coverage of the second to fourth doses, so that every child who initiates a vaccine course (92% of the cohort) completes it was expected to result in extra net savings of £18,000 over the life-span of the cohort (assuming administration costs are unchanged). Administration costs for each extra dose could increase to £32.50 for such a change to be cost-saving, and approximately £600 for the change to be cost-effective (at 30,000 per QALY gained).]

5.5.2 Treatment

Acute hepatitis B is managed supportively, sometimes in hospital. Chronic infection occurs in up to 90% of children who acquire the infection under the age of 5 years and up to 10% of people infected as adults. The goal of treatment for chronic hepatitis B is to prevent cirrhosis HCC and liver failure.

Antiviral therapy suppresses hepatitis B replication and decreases hepatic inflammation and fibrosis, thereby reducing the likelihood of serious clinical disease. Since the introduction of effective treatment in the form of interferon alfa, several nucleoside and nucleotide analogues are now approved for use in adults with chronic hepatitis B, together with a pegylated form of interferon alfa. Peginterferon alfa 2-a is usually the first treatment offered depending on liver function, and is given by injection once a month over a period of 12 months; the most common side effects are flu-like symptoms. Patients for whom peginterferon alfa 2-a is not suitable or who have a limited response may then be offered antiviral medications, most commonly tenofovir (NICE technology appraisal (TA)173) or entecavir (NICE TA153), which are taken as tablets. Side effects can include nausea, diarrhoea, rash, insomnia, fatigue and dizziness. Treatments for hepatitis B are generally better tolerated than those most frequently used for hepatitis C. With multiple treatment options that are efficacious and safe, the key questions are which patients need immediate treatment and what sequence and combination of drug regimens should be used, and which patients can be monitored and delay treatment.

NICE (CG165, TA96, TA153, TA173) has reviewed the evidence for effectiveness and cost-effectiveness and made recommendations on treatment sequences and combination drug regimes, which takes account of age, HBeAg status, co-infection with hepatitis C or D or HIV, presence of compensated or decompensated liver disease, pregnancy and breastfeeding.

Interferon alfa or peginterferon alfa-2a therapies followed by lamivudine appear to be cost effective relative to alternative strategies. Entecavir could be considered as a cost effective option for the treatment of people of HBeAg positive chronic hepatitis B in whom antiviral treatment is indicated.

5.6 Key themes and recommendations

The major recommendations included:

- local partners should review immunisation coverage and timeliness among infants born to mothers with hepatitis B to improve coverage. This is likely to be cost-effective and significant improvements should be achievable. The proportion of infants tested for hepatitis B at 12 months is low and this is another area where improvements are achievable. Difficulties in collecting venous samples in primary care may be contributing to the problem and offering dried blood spot testing at the time of the third or fourth vaccination may increase numbers. Blood borne virus nurses have a key role to play in delivering immunisations, and in coordinating services and recording data
- local partners should consider methods for improving testing and vaccination of sexual partners, family and other close contacts of people with hepatitis B
- local areas should consider reviewing case finding among high risk groups, particularly immigrants from countries with high prevalence. This would reduce health inequalities and transmission risk, especially in children
- maintain preventative strategies delivered through drug services to retain the positive outcomes that have been achieved in this area. For example the transmission of hepatitis B among PWID has been falling as a result of increased vaccine uptake and a decline in equipment sharing; in the South West there has not been a case of acute hepatitis B transmission where injecting drug use was the risk factor since 2006
- local partners should ensure there is a comprehensive database of hepatitis B patients, clear care pathways and increased public and professional awareness, particularly around the treatments. This would address the lack of information on the patient pathway where it is often unclear what happens to a patient during their journey and lead to improvements in diagnosis and treatment. Investigation of the current pathways and follow up by following a cohort of patients may assist in this process
- local areas should ensure that there are hepatitis B strategies in every local area, including standards and action plan. Hepatitis B should be included within the Joint Strategic Needs Assessment (JSNA)
- local partners should ensure continued work towards full BBV opt out in prisons in the South West on schedule with the national picture

5.7 Resources and data source

The major resources and data sources include:

- NICE public health guidance PH 43. Hepatitis B and C: ways to promote and offer testing to people at increased risk of infection. www.guidance.nice.org.uk/ph43
- NICE clinical guidelines CG165. Hepatitis B (chronic): Diagnosis and management of chronic hepatitis B in children, young people and adults. http://publications.nice.org.uk/hepatitis-b-chronic-cg165
- NICE Quality Standard 65. Hepatitis B. http://www.nice.org.uk/Guidance/QS65
- Department of Health. Immunisation against Infectious Disease (The Green Book) 2013. Available at URL: https://www.gov.uk/government/publications/immunisation-against-infectious-disease-the-green-book-front-cover-and-contents-page
- Health and Social Care Information Centre. NHS Immunisation Statistics, England 2012-13: https://catalogue.ic.nhs.uk/publications/public-health/immunisation/nhs-immu-stat-eng-2012-2013/nhs-immu-stat-eng-2012-13-rep.pdf
- National Antenatal Infections Screening Monitoring (NAISM): http://webarchive.nationalarchives.gov.uk/20140714084352/http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1245581538007
- UK National Screening Committee Key performance indicators – KPI ID2 Antenatal infectious disease screening – timely referral of hepatitis B-positive women for specialist assessment: http://www.screening.nhs.uk/kpi/reports/2013-14.
- data tables of the Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in People Who Inject Drugs. 2014: https://www.gov.uk/government/statistics/people-who-inject-drugs-hiv-and-viral-hepatitis-monitoring.
- improving testing rates for blood-borne viruses in prisons and other secure settings: https://www.gov.uk/government/publications/improving-testing-rates-for-blood-borne-viruses-in-prisons-and-other-secure-settings

6. Hepatitis C

6.1 Background

Hepatitis C virus infection is an important global problem. The hepatitis C virus is transmitted mainly through contaminated blood and blood products. Injecting drug use is the most important risk factor for infection within the United Kingdom (UK). People born or brought up in a country with high prevalence of chronic hepatitis C are also at risk (especially those in Africa and Asia, including Egypt, China, Bangladesh and Pakistan). Transmission through sexual contact is uncommon at around 1% or less per year for monogamous heterosexual couples. However, reports have identified clusters of acute hepatitis C in men who have sex with men (MSM), primarily MSM who are co-infected with HIV. The risk of household transmission is very low.

In 2013 the overall prevalence of chronic Hepatitis C infection in England was estimated to be around 0.4% in adults (approximately 160,000 people). Hepatitis C infection is often asymptomatic, and symptoms may not appear until the liver is severely damaged. It is estimated that around 75% of infected cases are still unrecognised.(2) Data from the Unlinked Anonymous Monitoring survey (UAMS) of people who inject psychoactive drugs suggest that levels of infection in this group are high at around 50% in England with around 1 in 7 sharing needles or syringes.(69)

Around 20-30% of infected people clear their infection naturally within the first six months of infection. For the remainder, hepatitis C is a chronic infection which can lead to liver disease. Approximately 20-30% of people will develop cirrhosis and 25% hepatocellular carcinoma (HCC). These complications can take 10-15 years to develop. Sustained viral response (SVR), which is defined as an undetectable viral load test six months after completing treatment, is associated with decreased liver related mortality and risk of HCC.(109) In one study (110) approximately two-thirds of those treated had SVR.

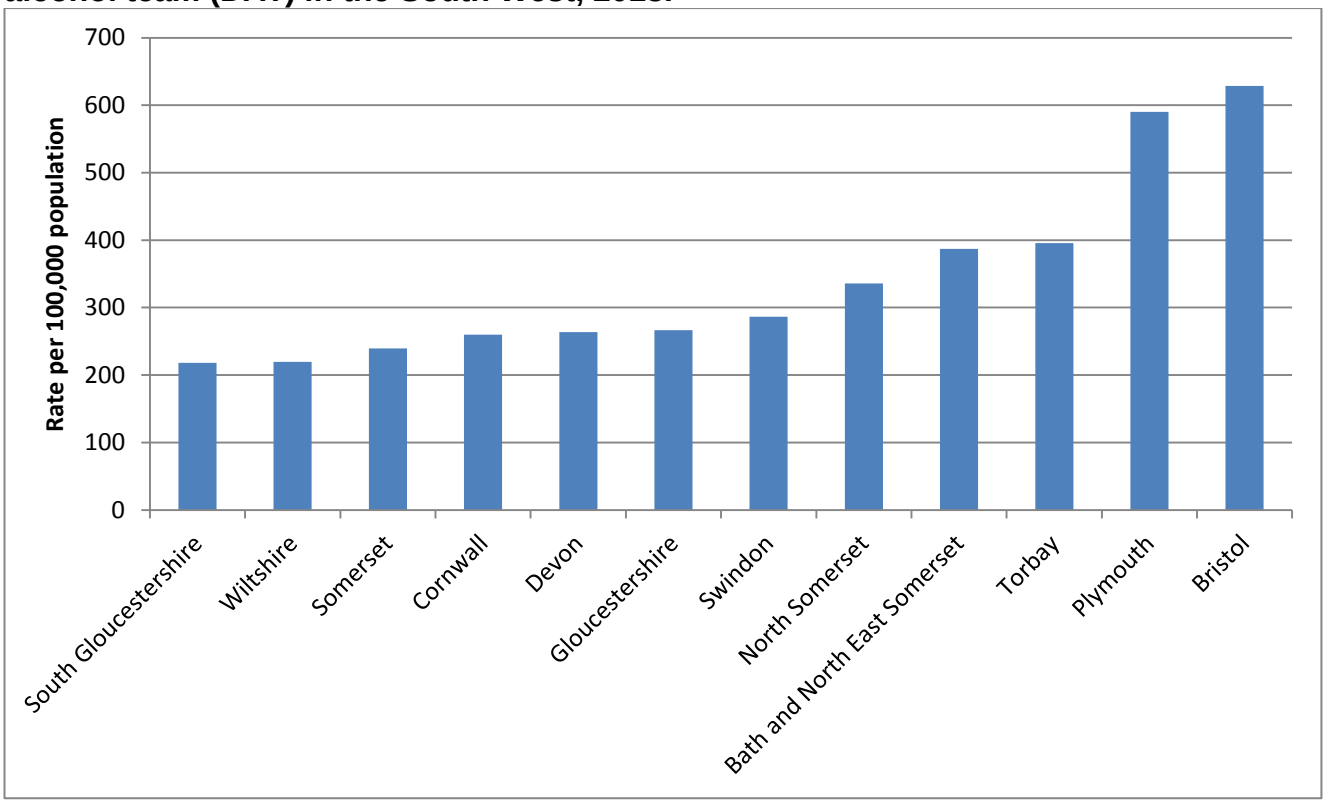
Actions required to prevent Hepatitis C infection include:

- interventions to reduce initiation of injecting drug use and to help people to stop injecting
- harm reduction services for people who inject drugs eg needle and syringe programmes and substitution therapy
- increasing awareness, testing and diagnosis of those at risk of infection
- getting diagnosed individuals into treatment and care

6.2 Epidemiology

A hepatitis C annual report published by Public Health England (PHE) in 2014 estimates that there are 14,635 people infected with hepatitis C in the South West. These are modelled estimates (using data from various research studies) based on estimated population and prevalence figures for people who currently inject drugs, people who previously injected drugs and people who have never injected by specific ethnic groups. Therefore where local prevalence differs from these research studies estimates may be less accurate.

Graph 28: Modelled estimates of chronic hepatitis C infection per 100,000 by drug & alcohol team (DAT) in the South West, 2013.

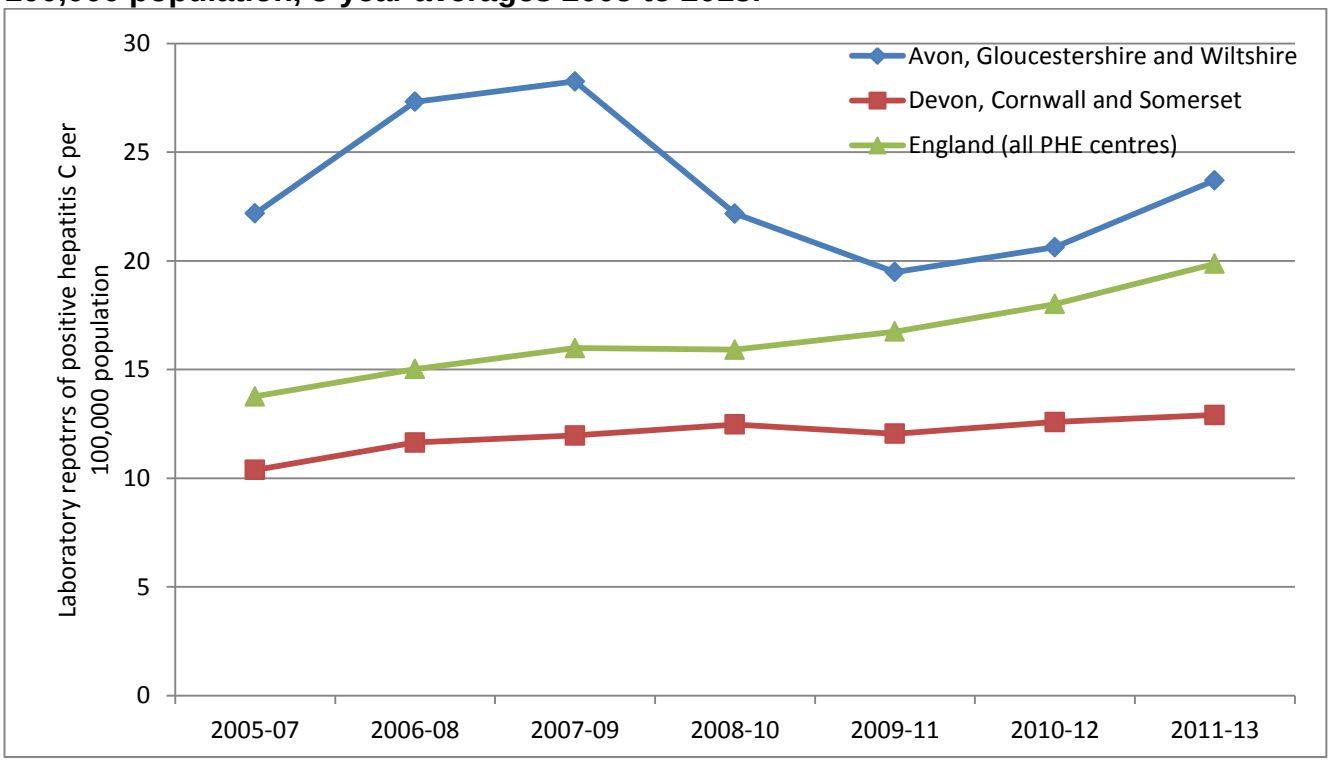


Source: PHE hepatitis C annual report 2014 supporting charts

Laboratory surveillance undertaken by PHE provides information on the number of positive hepatitis C laboratory reports (positive test for hepatitis C antibody and/or detection of hepatitis C RNA). In England laboratory reports have been increasing since 2005, 12.4 per 100,000 in 2005 to 20.6 per 100,000 in 2013. It is more difficult to understand the trend in the South West due to relatively small numbers leading to large year on year variation (graph 29). It is unclear how much of this is due to differences in ascertainment (number of people tested) as there is only data available from the Bristol laboratory (the only laboratory participating in the PHE Sentinel Hepatitis C testing surveillance) on the number of hepatitis C tests done and the proportion positive. In 2013 the Bristol laboratory did 16,125 hepatitis C tests, of which 265 (1.6% were positive).(111)

Other than PHE Bristol laboratory the following ten laboratories perform hepatitis C testing in the South West are; Cheltenham General Hospital, Exeter Microbiology Laboratory, Derriford Hospital Plymouth, Great Western Hospital Swindon, Royal United Hospital Bath, Southmead Hospital Bristol, Taunton Microbiology Laboratory, Torbay Hospital Torbay, Truro Microbiology Laboratory and Weston General Hospital Weston-Super-Mare.

Graph 29: Positive laboratory reports for hepatitis C (positive test for hepatitis C antibody and/or detection of hepatitis C RNA) by PHE centre in the South West per 100,000 population, 3-year averages 2005 to 2013.



Source: PHE hepatitis C annual report 2014 supporting charts

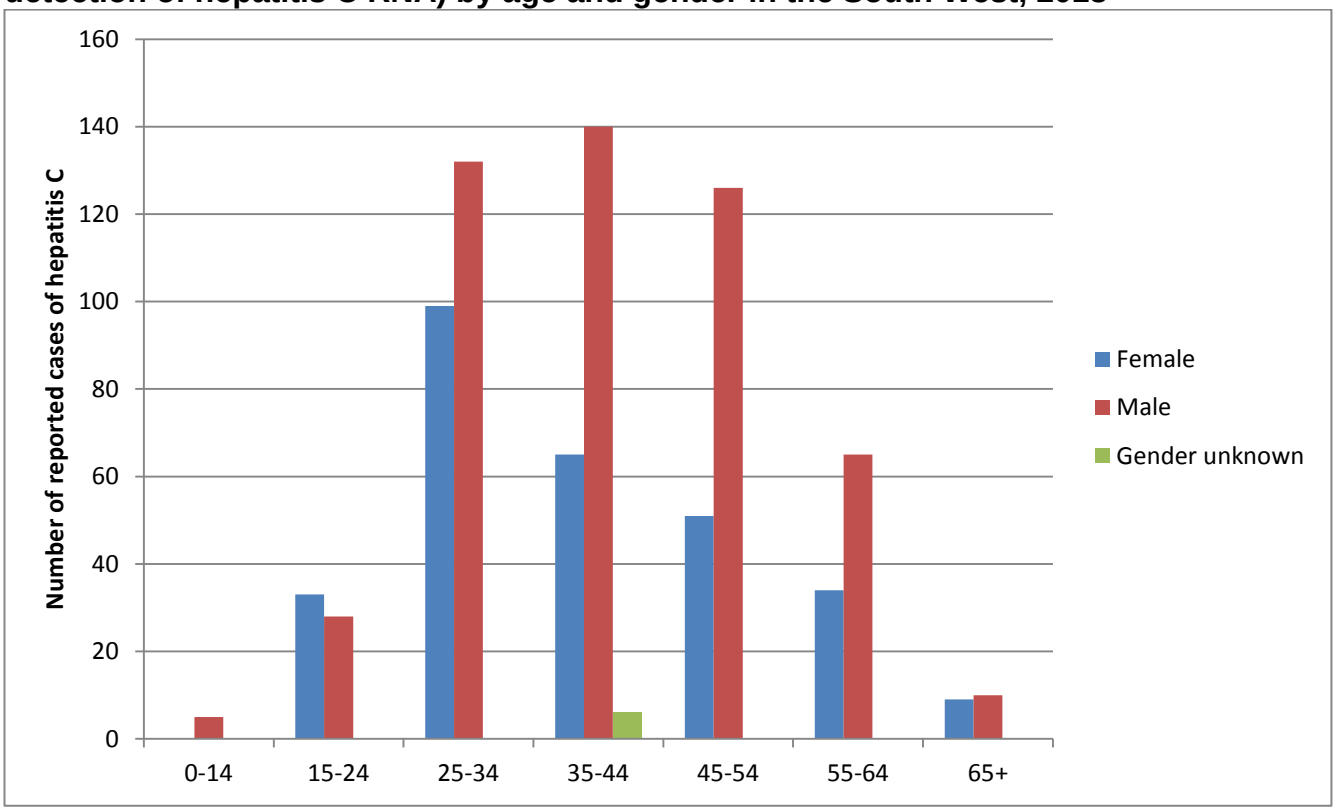
Table 22: Number of laboratory reports positive for hepatitis C (positive test for hepatitis C antibody and/or detection of hepatitis C RNA) and rate per 100,000 by drug and alcohol team (DAT) in the South West, 2013.

	Number of laboratory reports positive for hepatitis C	Laboratory reports positive for hepatitis C per 100,000 population
Bath and North East Somerset	50	28.15
Bristol	282	65.21
Cornwall	78	14.50
Devon	97	12.88
Gloucestershire	69	11.46
North Somerset	35	17.12
Plymouth	35	13.56
Somerset	59	11.03
South Gloucestershire	26	9.77
Swindon	25	11.80
Torbay	29	22.05
Wiltshire	24	5.03
AGW PHE centre		21.5
DCS PHE centre		13.4
England		20.6

Source: PHE hepatitis C annual report 2014 supporting charts

In the South West 63% of hepatitis C positive laboratory reports were in men. 55% of cases were diagnosed in peopled aged 25-44 years old, with 77% diagnosed in people aged 25-54 years. This is similar to national data where approximately two-thirds of positive reports were in men and approximately half in people aged 25-44 years old.(112)

Graph 30: Reported cases of hepatitis C (positive test for hepatitis C antibody and/or detection of hepatitis C RNA) by age and gender in the South West, 2013*



*small numbers (<5) supressed

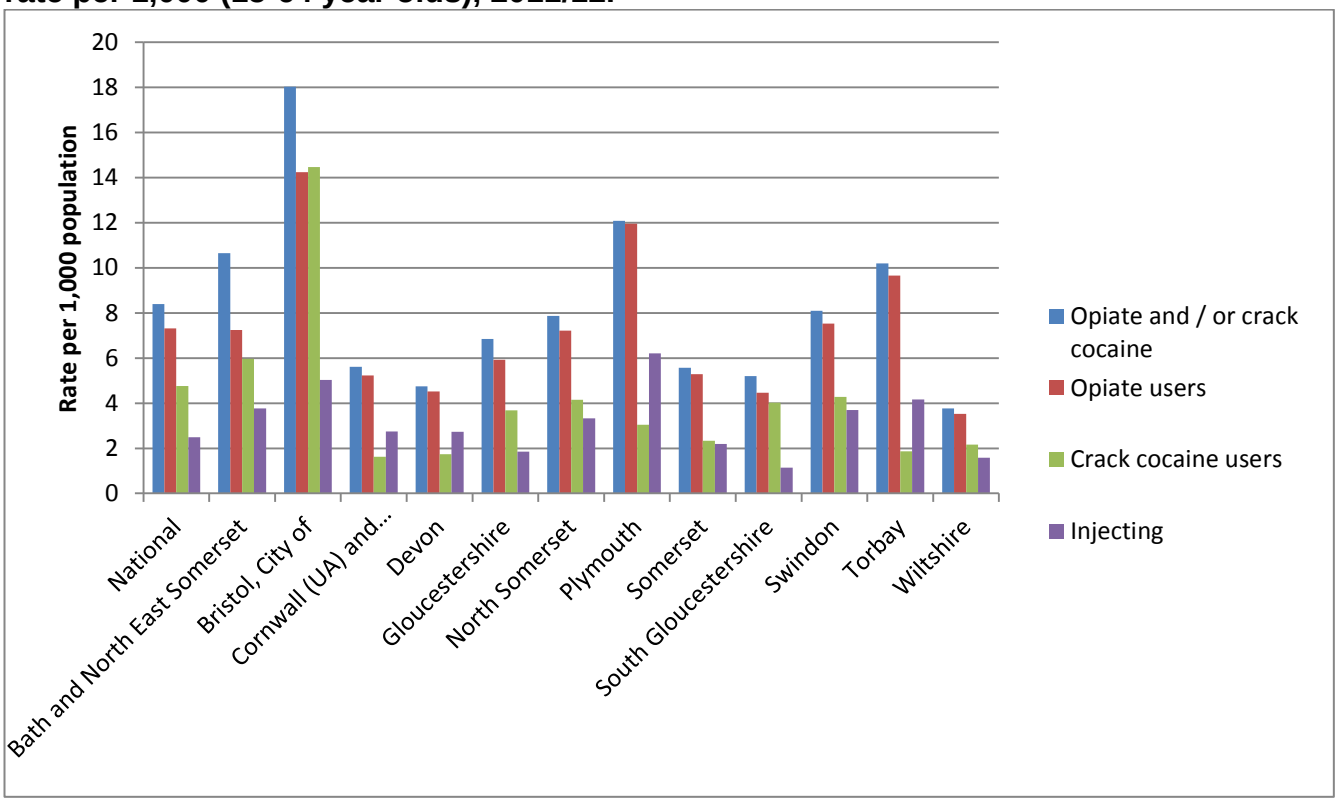
Source: PHE hepatitis C annual report 2014 supporting charts

6.2.1 Prevalence of risk factors

Persons at risk for hepatitis C include people who inject drugs (PWID), prisoners, men who have sex with men (MSM) and people born in high prevalence countries. The largest risk factor is PWID. Estimates of the prevalence of PWID are available by local authority area. These may be more or less accurate for certain areas. One issue highlighted by providers is that these estimates are based on dependent users who have been in treatment or in the criminal justice system and are intended for the planning of services and assessing the effectiveness those services. However a large proportion of former injecting drug users are those who injected once or twice, sometimes called “party users” or “experimental users” are unlikely to have ever been in contact with drug treatment services or the criminal justice system and are less likely to have used clean injecting equipment. Local commissioners felt that some areas may have overestimates for the number of cocaine users due to regional variation, but may have drug misuse from other substances.

Graph 31 shows the estimated prevalence of opiate and/or crack users and injectors by drug and alcohol team in the South West. See appendix 2 for national prevalence estimates (2011/12) and rates per 1,000 population aged 15 to 64 with 95% confidence intervals (CI).

Graph 31: Estimated prevalence of opiate and/or crack users and injectors, estimated rate per 1,000 (15-64 year olds), 2011/12.



Opiates and/or crack cocaine, including those who inject either of these drugs. It does not include the use of cocaine in a powder form, amphetamine, ecstasy or cannabis, or injecting by people who do not use opiates or crack cocaine. Although many opiate and/or crack users also use these drugs it is very difficult to identify exclusive users of these drugs from the available data sources.

It must be stressed that these figures are estimates. They should always be interpreted in conjunction with their associated confidence intervals, which are specified in each table. The confidence intervals show the range within which there is a 95% certainty that the true value exists, though it is most likely to lie near the estimate itself. For a full description of the study's methodology please refer to the full report of the first sweep.(113)

Source: National Treatment Agency.(114) (See appendix 2 for figures)

The one sentinel laboratory in the South West (Bristol) is the only laboratory providing information on the reason for hepatitis C testing. However this information is only available from the data provided on the request form and is missing in a large percentage of tests (see table 23). Information on the proportion of people who inject drugs (PWID) is included in service mapping section.

Table 23: Risk/reason for test for individuals tested and testing positive for anti-HCV in sentinel laboratories in AGW centre area, 2009-2013.

Risk exposure/reason for testing#	Number tested	Number positive	% testing positive	% of all positive cases
Antenatal screening	1,439	28	1.9	1.6
Confirmatory test	385	136	35.3	7.9
Contact testing	387	*	*	0.2
Fertility treatment screening	7,310	14	0.2	0.8
LFTs - abnormal result	4,245	53	1.2	3.1
Liver disease symptoms	2,671	138	5.2	8.0
Maternal/vertical exposure	104	0	0.0	0.0
Needlestick donor/recipient	2,078	7	0.3	0.4
Other medical condition	433	10	2.3	0.6
PWID	1,240	224	18.1	13.0
Renal patient	1,683	7	0.4	0.4
Risk of infection	4,093	185	4.5	10.7
Screening	11,990	165	1.4	9.6
Sexual exposure	3,192	45	1.4	2.6
Study participants	25	*	*	0.1
Symptoms (non-liver)	1,572	16	1.0	0.9
Travel or lived abroad	534	8	1.5	0.5
Unknown	25,473	686	2.7	39.7
Total	**68,854**	**1,727**	**2.5**	**100.0**

*small number suppressed

#Headings from data provided on laboratory request form

Source: PHE hepatitis C annual report 2014 supporting charts

6.2.2 Treatment and Secondary Care

6.2.2.1 Treatment

The estimated annual cost of hepatitis B and C medications across the South West is approximately £3.5 million. It is not possible to distinguish between the cost of medication used for hepatitis C and hepatitis B. The overall figure may be an overestimate as interferon alfa can also be used for the treatment of HIV and cancer, and the indication cannot be distinguished within the costing. This data does not give an indication of the number of patients being treated.
It is very difficult to estimate the cost of hepatitis C drugs due to the uncertainty about the number of people with hepatitis C who are in treatment, as well as the variability of treatment costs depending on individual patient's clinical circumstances.

Some areas conduct regular audits on the number of patients treated for hepatitis C, what treatments they receive and the results, however the data from these has not been collate year on year.

6.2.2.2 Admissions

Hospital admissions from hepatitis C (hepatitis C related end-stage liver disease (ESLD)/hepatocellular carcinoma (HCC)) are continuing to rise in the UK; hospital admissions rose from 608 in 1998 to 2,390 in 2012. However the majority of hepatitis C is managed in outpatient clinics and therefore hospital admissions are unlikely to represent the true burden of disease.

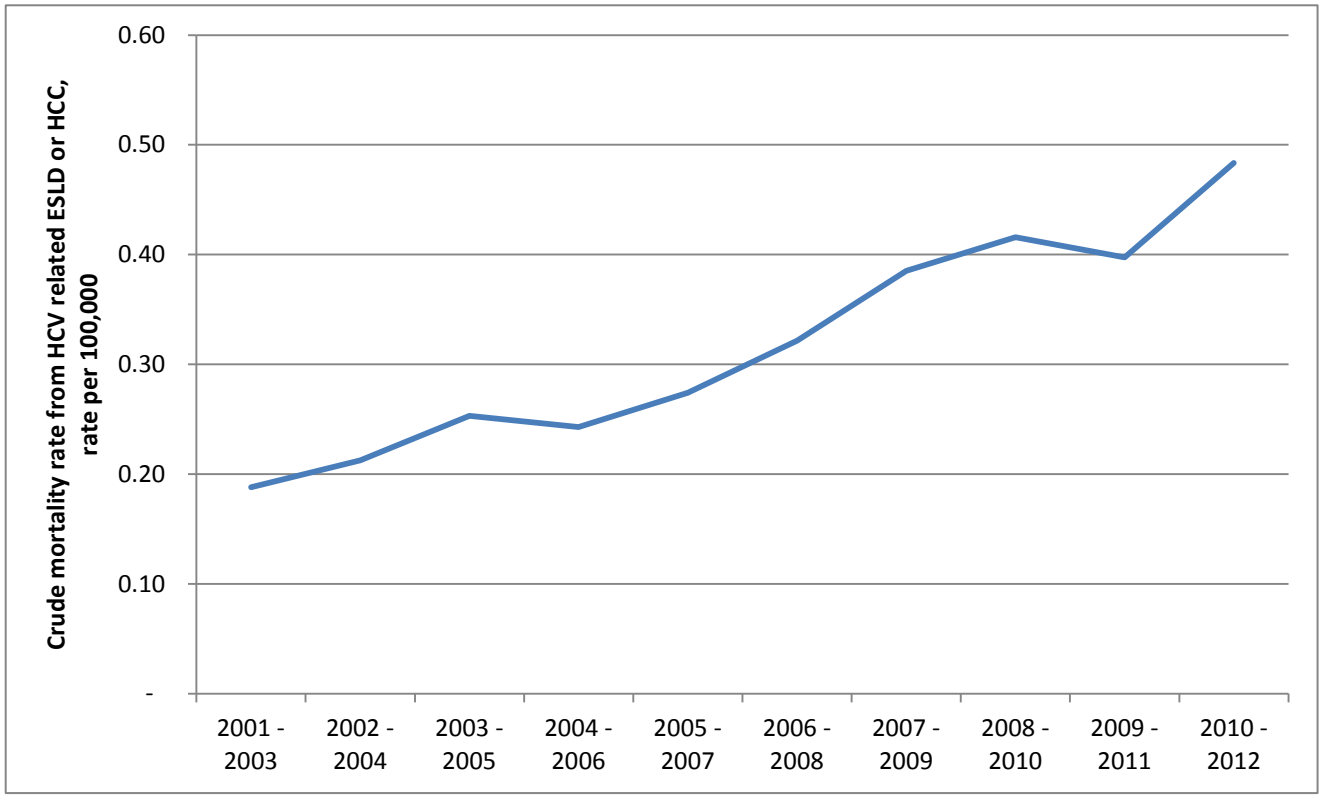
In 2012/13 in the South West there were 115 hospital admissions for hepatitis C (ICD-10 B17.1 and B18.2). The number of admissions varies considerably depending on the criteria used to define hepatitis C. There does not appear to be any clear trend in admissions for hepatitis C in the South West since 2008.

6.2.3 Complications and mortality

6.2.3.1 Mortality

In 2010-12 in the South West 65 people died from hepatitis C (hepatitis C related end-stage liver disease/hepatocellular carcinoma). Of these 60 were less than 75 years old. The crude rate of premature mortality (under 75's) has increased in the South West since 2001-2013 from 0.19 per 100,000 (95% confidence interval [CI], 0.12 to 0.29) to 0.48 (95%CI 0.37 to 0.62) in 2010-12 (graph 32). This reflects a national increase in deaths (98 in 1996 to 428 in 2012 in the UK).

Graph 32: Crude rate of premature mortality (under75s) from hepatitis C (hepatitis C related end-stage liver disease/hepatocellular carcinoma), South West 2001-2012.



Source: Mortality data analysed by PHE

6.2.3.2 Liver transplants

In 2013 in England 18% of liver transplants (124 of 708) were for a first liver transplant with post hepatitis C cirrhosis as the primary, secondary or tertiary indication at registration. Sixty-three of these were for post hepatitis C cirrhosis and 57 for hepatocellular carcinoma. In the South West between 2009 and 2013 there were 39 first liver transplants with post-hepatitis C cirrhosis as primary, secondary or tertiary indication for transplant at registration who were HCV positive at registration or transplant (17% of liver transplants in South West).(112)
A more detailed analysis of liver transplant data is underway by PHE.

6.3 Service mapping

6.3.1 Services for people who inject drugs

Prevention of hepatitis C in people who inject drugs (PWID) rests with drug misuse treatment services, as well as with primary care and pharmacies, including harm reduction services such as needle exchange (NEx)/needle and syringe programmes (NSP). Awareness raising campaigns focussing on PWID have been channelled through drug misuse treatment services but there has been no national campaign since ‘Harm Reduction Works’ by National Treatment Agency in 2009.The materials for this campaign (DVDs, posters, leaflets and handbooks) remain available at a cost from a social enterprise.

In the South West in 2012/13 there were 240 registered providers of needle and syringe programmes, 90 (38%) who submitted data to the Needle Exchange Monitoring System (NEXMS). 1,550,661 needles were dispensed compared to a projected 1,739,024. Number of dispensed needles has been increasing. Estimated clients were between 4,969 and 9,661 (from total dispended needles). 830,563 needles were returned compared to a projected 951,660.

Table 24 shows the provision of NEx/NSP across the South West in 2015. Generally, additional equipment is added to the packs to reduce the potential for harm. Most operate a ‘pick and mix’ from the static sites allowing service users to select the range of needles, syringes or barrels to suit their needs so pack numbers are estimates rather than actuals. All areas indicated increased numbers of steroid users are attending NSP/NEx and are requesting a different range of injecting equipment to opiate injectors. All areas review provision against NICE PH52 guidance. Services should be commissioned to provide an appropriate range of services with sufficient coverage to meet local need and informed by national guidelines.

In 2011/12 only about half of PWID report that the number of needles they had received was greater than the number of times that they had injected (47% during preceding four weeks). One-third of PWID report injecting with a previously used needle that they had attempted to clean (33% during last 28 days).(115)

Table 24: Provision of NEx/NSP across the South West, 2015.

	Number NEx/NSP Sites					
	Pharmacy	Static	Other	Are these commissioned directly	No. needle packs issued in last year	Other comments
Bath & North East Somerset	8	2	1	Yes	12,976	Other = specialist outreach run by volunteers for hard to reach groups
Bristol	18	1	5	Yes as part of contract for substance misuse treatment	54,210	'Other' + 4 mobile units and 1 hostel. Peer distribution encouraged and used for street homeless. Awaiting Steroid audit return but volume twice that of 13/14
Cornwall and Isles of Scilly	28	9	0	Yes	21,536	Issue related to change to LA PH as previously in PCT pharmacy contract. Had to renegotiate separate arrangements.
Devon	34	?	0	Yes	40,600	41% return rate
Gloucestershire	23	6	0	Yes	36,382	Needle returns 21,247
North Somerset	All	1	0	No	7,015	Commissioned via Frontier Medical with whom North Somerset have SLA
Plymouth	15	1	0	Yes as part of contract for substance misuse treatment but pharmacies Indirectly through treatment provider	9,969	660 service users 199,380 needles
Somerset	24	6	4	Yes as part of contract for substance misuse treatment but pharmacies Indirectly through treatment provider	50,918	4 'Other' sites are a mobile bus visiting once per week. Issues related to challenge of rural area delivery in a cost effective way
South Gloucestershire	10	0	0	Yes	1,938	
Swindon	12	1	0	Static site commissioned as part of drug treatment services, pharmacies commissioned via broad Pharmacy contract	14,280	Further 6 pharmacies undertaking training
Torbay	10	0	0	Yes	5,600	About to re-commission all pharmacy contracts jointly with Devon
Wiltshire	45	3	0	Yes	5,476	Only pharmacies noted - 3552 opiate and 1924 stimulant packs

Source: NEx/NSP providers

In the South West in 2013, the Unlinked Anonymous Monitoring survey (UAMS) showed that 20% of those who had injected drugs in the last 4 weeks had directly shared needles or syringes compared to 16% across England. Levels of direct sharing were higher in under 25 year olds (31% in England, Wales and Northern Ireland, compared to 17% for 25-34 year olds and 13% for 35 years and over). In England, Wales and Northern Ireland among those who injected during the preceding year 28% reported symptoms of an injection site infection.(69) For UAMS data there are a number of participating services in the South West but is felt by healthcare professionals to sample more stable, older populations of service users who attend specialist clinics rather than NSP sites and therefore is not representative of the whole service user population.

The South West as in the rest of England provides drug treatment services and NSP on a commissioned basis to local populations. Until 2013 this was centrally directed through the National Treatment Agency for Substance Misuse with ring-fenced funding, this now sits within the public health budget of local authorities. Although localism will have resulted in revised priorities for public health spend in local authorities, particularly the balance between alcohol and drug misuse spending, the basic structure and scale of service provision remains intact from 2012/13 as commissioned services with 3-5 year contracts remain intact. Prisons are also a significant part of the drug treatment system providing opioid substitution therapy (OST), detox, group work and recovery programmes.

There are different service models in place across the South West and these have changed significantly since 2010. Across large areas of the South West national voluntary organisations specialising in substance misuse operate a single tier model of service. Local professionals report that this is not universally understood, especially by NHS staff not working in substance misuse. This can be an obstacle to joint working between hospitals and drug misuse services unless there is a proactive engagement by both teams. Some hepatology staff described retendering of local services as very disruptive to joint working.

Table 25 shows the number of people currently and previously injecting opiates within drug misuse services in the South West. As there are very small numbers in the drug misuse services who inject non-opiates this data has not been included. In addition data within National Drug Treatment Monitoring Service (NDTMS) only provides the number of people within treatment which can vary for a number of reasons between areas (population size, PWID population, access to service, recording within the service), therefore comparison between areas is difficult.

In the South West field 7 of the NDTMS core dataset appears to be unused. This includes questions such as; has the client injected in the last 28 days, has the client ever shared injecting paraphernalia, is the client hepatitis C positive and has the client been referred to a hepatology unit.

Table 25: Gender and whether dual diagnosis (alcohol and drug misuse) of currently and previously injecting opiate users within drug misuse services in the South West, 2013/14.

	Currently injecting				Previously injected			
	Male	**Female**	**Total**	**Dual diagnosis**	**Male**	**Female**	**Total**	**Dual diagnosis**
Bath and North East Somerset	208 (76%)	65 (24%)	273	103 (38%)	144 (72%)	56 (28%)	200	54 (27%)
Bristol	721 (76%)	232 (24%)	953	219 (23%)	839 (71%)	340 (29%)	1179	207 (18%)
Cornwall & Isles of Scilly	344 (71%)	138 (29%)	482	117 (24%)	359 (72%)	142 (28%)	501	106 (21%)
Devon	399 (71%)	162 (29%)	561	48 (9%)	351 (72%)	139 (28%)	490	57 (12%)
Gloucestershire	386 (78%)	107 (22%)	493	118 (24%)	433 (75%)	147 (25%)	580	120 (21%)
North Somerset	169 (75%)	56 (25%)	225	31 (14%)	199 (73%)	74 (27%)	273	36 (13%)
Plymouth	366 (70%)	154 (30%)	520	88 (17%)	401 (73%)	145 (27%)	546	77 (14%)
Somerset	318 (73%)	115 (27%)	433	64 (15%)	312 (71%)	127 (29%)	439	67 (15%)
South Gloucestershire	69 (75%)	23 (25%)	92	10 (11%)	120 (73%)	45 (27%)	165	26 (16%)
Swindon	202 (80%)	52 (20%)	254	38 (15%)	126 (68%)	59 (32%)	185	31 (17%)
Torbay	139 (72%)	53 (28%)	192	24 (13%)	186 (70%)	78 (305)	264	33 (13%)
Wiltshire	205 (75%)	69 (25%)	274	54 (20%)	130 (70%)	56 (30%)	186	52 (28%)
South West	3,526 (74%)	1,226 (26%)	4,752	914 (19%)	3,600 (72%)	1,408 (28%)	5,008	866 (17%)

Does not include those seen by the service who never injected or those who inject/ previously injected non-opiates.

Source: NDTMS

Table 26 shows the percentage successful treatment of drug treatment. There is considerable random variation in the figures over time due to fluctuations in the numbers within the service. Table 27 gives more information on the injecting status of those in treatment at the start of treatment and at 6 months. This shows the variation between areas and should be reviewed compared to need in local areas.

Table 26: Successful completion of drug treatment - opiate users and non-opiate users (18-75 years). (PHOF 2.15i and ii)

	Period	England	Bath & North East Somerset	Bristol	Cornwall & Isles of Scilly	Devon	Gloucestershire	North Somerset	Plymouth	Somerset	South Gloucestershire	Swindon	Torbay	Wiltshire
Successful completion of drug treatment (%) - opiate users	2013	7.8	7.7	8.7	10.6	9.5	5.7	9.5	7.2	10.1	9.3	5	8.4	6.1
Successful completion of drug treatment (%) - non-opiate users	2013	38	33.7	48	40	43.5	24.8	44.7	29	35.3	30	36	35	23

Source: NDTMS

Table 27: Injecting status at the start of treatment and at 6 month review, 2013-2014.

Local authority	Number of clients injecting at the start of treatment	Average number of days injecting at the start of treatment	Average number of days injecting at the 6 month review	Number of clients that deteriorated or unreliably changed	Number of clients that became abstinent	Number of clients that improved
Bath and North East Somerset	36	16.94	15.83	17 (47.2%)	13 (36.1%)	6 (16.7%)
Bristol	152	16.68	14.00	50 (32.9%)	85 (55.9%)	17 (11.2%)
Cornwall & Isles of Scilly	86	21.03	13.23	31 (36.1%)	34 (39.5%)	21 (24.4%)
Devon	68	18.71	13.60	24 (35.3%)	34 (50%)	10 (14.7%)
Gloucestershire	136	19.36	16.70	41 (30.2%)	82 (60.3%)	13 (9.6%)
North Somerset	33	19.73	12.20	*Numbers too small to include*		
Plymouth	69	16.09	10.79	26 (37.6%)	36 (52.2%)	7 (10.1%)
Somerset	113	19.41	13.67	49 (43.4%)	44 (38.9%)	20 (17.7%)
South Gloucestershire	13	22.00	11.00	*Numbers too small to include*		
Swindon	38	19.47	13.25	8 (21.1%)	21 (55.3%)	9 (23.7%)
Torbay	45	21.31	14.28	*Numbers too small to include*		
Wiltshire	40	18.85	13.97	17 (42.5%)	17 (42.5%)	6 (15%)
South West	982			329 (33.5%)	510 (51.9%)	143 (14.6%)
National	7346	19.03	13.26	2211 (30.1%)	4078 (55.5%)	1057 (14.4%)

Source: NDTMS

People who inject steroids are in a group that it is generally very difficult to engage with, as they do not perceive themselves at risk. There is research underway by a PhD student in Plymouth looking at this area.
PHE is conducting a full survey of NSPs, and more detailed information will be available towards the end of the year.

6.3.1.1 Diagnosis

The NDTMS data shows a considerable variation in the rate at which drug misuse service users are tested for hepatitis C. Ideally PWID should be tested regularly as long as they remain at risk.

Table 28: Number and percentage of hepatitis C tests offered and accepted, and of those offered and accepted number and percentage where hepatitis C test recorded in patient journey in the South West among currently and previously injecting opiate users- only for new treatment journeys 2013/14.

		Currently injecting		Previously injecting	
		Hepatitis C Intervention Offered and accepted	**Hepatitis C offered and accepted with a hepatitis C test**	**Hepatitis C Intervention Offered and accepted**	**Hepatitis C offered and accepted with a hepatitis C test**
Bath and North East Somerset	No.	60	57	41	40
	%	95%	95%	95%	98%
Bristol	No.	96	89	133	121
	%	40%	93%	34%	91%
Cornwall & Isles of Scilly	No.	111	91	85	64
	%	80%	82%	71%	75%
Devon	No.	57	52	54	46
	%	59%	91%	44%	85%
Gloucestershire	No.	82	55	54	39
	%	43%	67%	33%	72%
North Somerset	No.	19	17	22	19
	%	46%	89%	28%	86%
Plymouth	No.	48	19	62	33
	%	53%	40%	41%	53%
Somerset	No.	88	46	55	31
	%	62%	52%	50%	56%
South Gloucestershire	No.	12	9	36	35
	%	63%	75%	68%	97%
Swindon	No.	23	18	16	13
	%	47%	78%	29%	81%
Torbay	No.	32	30	53	52
	%	78%	94%	61%	98%

Wiltshire	No.	40	23	10	5
	%	65%	58%	29%	50%
South West	No.	668	506	621	498
	%	57%	76%	44%	80%

Source: NDTMS

Discussion with some local stakeholders revealed that low rates of hepatitis C testing may historically have been due to the lack of a pathway between the drug misuse service and the provider of hepatitis C testing. Some local stakeholders also felt that provision of hepatitis C testing at GP practices was not the most effective method due to the difficulty of arranging blood tests for some service users (multiple appointments for service user, difficult veins).

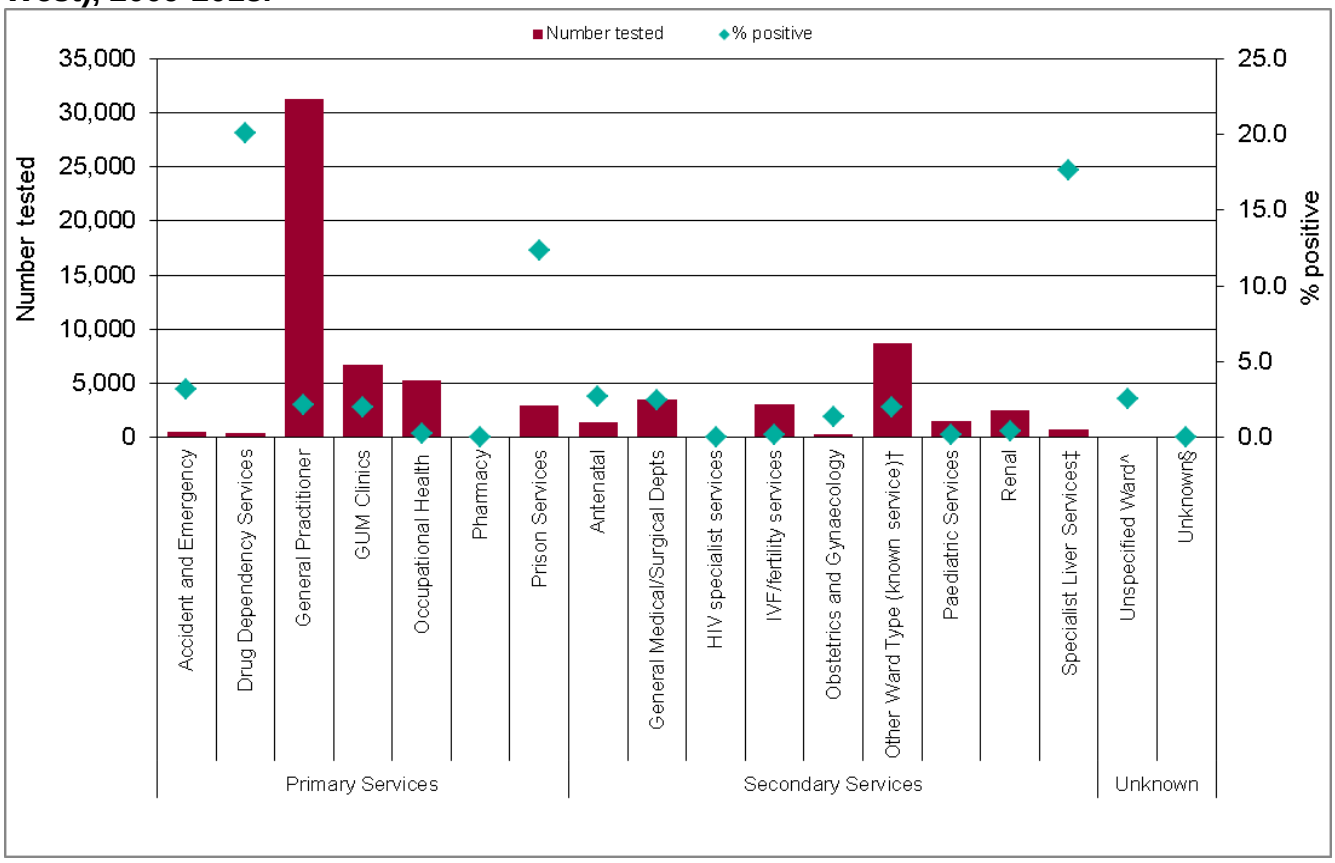
In response to this situation some commissioners have put in place a blood borne virus nurse (BBV nurse) with a specific responsibility for testing PWID at all potential locations that PWID were to be found (see table 5). This enabled a proactive approach. In addition the introduction of dried blood spot testing (DBST) has meant that a more proactive approach to hepatitis C testing is possible, with drug misuse staff able to provide DBST. The BBV nurse then does the confirmatory blood testing and maintains a clinical link with the hepatology services.

The collation of DBST data appears to be problematic. The Bristol drug service for instance sends their testing kit to Manchester, which means that the laboratory report to PHE is bypassed. Positive results are fed back to PHE by the BBV nurse on a periodic basis. The reason for this arrangement is that test results are made available within a couple of weeks rather than 5-6 weeks.

6.3.2 Diagnosis in other settings

Graph 33 provides details of the number of hepatitis C tests done in the Bristol laboratory (only sentinel laboratory in the South West), where the hepatitis C test was requested from and the percentage positive by service type. The bars show the number of hepatitis C tests done by each service type. The diamonds show the percentage of these tests which were positive for hepatitis C. This shows that a large number of hepatitis C tests are being done in primary care.

Graph 33: Number of individuals tested for hepatitis C (anti HCV) and percentage positive by service type at Bristol laboratory (only sentinel laboratory in the South West), 2009-2013.



* Excludes dried blood spot, oral fluid, reference testing, and testing from hospitals referring all samples. Data are de-duplicated subject to availability of date of birth, soundex and first initial. Excludes individuals aged less than one year, in whom positive tests may reflect the presence of passively-acquired maternal antibody rather than true infection. All data are provisional.

‡ This refers to infectious disease services, hepatology departments and gastroenterology departments.

Source: PHE hepatitis C annual report 2014 supporting charts

6.3.2.1 Primary care

There is no further data available about the testing of hepatitis C through primary care. A service evaluation in Bristol (at six practices) showed that of 3,765 patients identified as being at risk of hepatitis C, 3051 (81%) had no test result, including 53% of PWID and 93%

who were born or brought up in a country with a moderate or high prevalence of HCV. All GPs said they usually test PWID. Most GPs test for HIV and hepatitis B in immigrants more often than they test for HCV. Barriers to testing included not questioning patients about risk factors, competing priorities, the chaotic lifestyle of PWID, difficulty extracting information from computerised records, and forgetting to address HCV.(116)

To understand the diagnosis and management of liver disease in primary care a survey of local GPs was undertaken in March 2015. Responses were from 52 GPs and GP trainees across the South West. One question asked whether GPs would discuss hepatitis C testing and/or treatment if they were aware that a patient has history of injecting drug use, even if it was some time ago. The majority of GPs (90%) would discuss hepatitis C testing and/or treatment. Some stated that they felt this was usually done within specialist drug services, but that the data from these services is not always shared.

The Royal College of General Practitioners (RCGP) in conjunction with the Substance Misuse Management in General Practice team has produced a Certificate in the Detection, Diagnosis and Management of Hepatitis B and C in Primary Care. The certificate is an educational package primarily aimed at GPs, practice nurses and other primary healthcare workers, such as midwives and health visitors as well as sexual health and drug workers. The certificate consists of an online e-module and an RCGP accredited training day. The programme will help primary care practitioners in the detection, diagnosis and management of hepatitis B and C and will enable commissioners to confidently commission hepatitis services across all levels of healthcare.

Table 29: Numbers participating in the RCGP certificate in the detection and diagnosis of hepatitis B & C in primary care.

	Level 1 components				Level 1		Level 2	
	e-module		Face-to-face training		Both components completed			
	By end of 2012	2013	By end of 2012	2013	By end of 2012	2013	By end of 2012	Jan to May 2013
South West	56	43	42	0	23	0	2	0

Source: PHE hepatitis C annual report 2014

The hepatitis C trust provides peer to peer (P2P) education which is a free one hour workshop at drug services, residential rehabs and detoxes and HCV Action have developed a film to raise awareness of hepatitis C among GPs and other primary care practitioners. The film is split into four bite-size sections, each of which is also available as a stand-alone resource; the impact & consequences of hepatitis C, identifying those at risk, current & future treatments and supporting people through treatment.(117)

6.3.2.2 Prisons

The hepatitis B section provides additional detail on the services for blood borne viruses in general, and gives information on the BBV opt out process. Only information specific to hepatitis C is reported here.

Phase 1 of the BBV opt out programme ran from April to September 2014. In this time 21% of new receptions were tested for hepatitis C in nine out of the 11 pathfinder prisons that provided data. These figures represent a significant improvement on levels of testing prior to the programme when 11% of new receptions were tested for hepatitis C but further work is required to explore why 79% of new receptions to these prisons were not tested.

Collection and reporting of hepatitis C test results needs to be improved as it was not possible to ascertain the proportion who were chronically infected due to variable reporting of hepatitis C RNA status and hepatitis C Ab positivity. However, using results from the subset of prisons with data on hepatitis C Ab status before and after the introduction of the opt-out policy (4/11), the number testing positive for hepatitis C Abs has remained stable at 9% despite the change from targeted testing to opt-out testing.

6.3.3 Referral and Assessment

In the South West, hepatology services are closely linked to drug treatment services. Service users felt that hepatology services generally provided client centred non-judgemental services to a client group who may be extremely ambivalent about treatment. Some of these services are innovative and recognise the specific needs of the client. For example, hepatology nurses outreach to prison settings and to community drug services, home visits, teleconsultation support and a primary care based hepatology clinic. Some hepatology services provide the blood-borne virus (BBV) nurse in so doing building the necessary clinical links between drug service and hepatology. There appears to be a clear recognition that this is complex clinical care of chronic conditions requiring creative and flexible responses. See general liver section for provision of hepatologist, hepatology nurses and BBV nurses.

There are no data that indicate how many patients are seen in secondary/tertiary across the region. However, an audit at the Royal Devon and Exeter Hospital found that of 46 new patients and 240 follow up patients seen in March 2015 two and 44 respectively were for hepatitis C. The full audit data is available in the general liver section.

6.3.3.1 Prisons

The numbers being referred for hepatitis C treatment have increased significantly since the introduction of the opt-out testing policy, with 226 being referred during the 12 month period between January and December 2013 compared to 185 during the 6 month period between April and September 2014. Of those being referred for hepatitis C treatment, around 1 in 3 (69/226) commenced treatment in the 12 month period before the opt-out policy was introduced and around 1 in 4 (42/185) in the 6 month period after.

6.3.4 Treatment

Ensuring adequate treatment of hepatitis C reduces the risk of transmission as well as progression to liver damage. There is currently a regional multi-disciplinary group meeting on hepatitis C which meets every 6 months. NHS England service specification specification for operational delivery networks for hepatitis C care in adults has recently been finalised after consultation.(118) The aim of these will be to is to maximise appropriate uptake and completion of HCV treatment and to cure more people of infection.

Decisions made on whether to initiate or delay treatment for hepatitis C are complex and are made on an individual basis. There are South West Hepatology Group Guidelines that were developed in 2012. Patient management and treatment options are discussed at weekly multidisciplinary team meetings. Decisions to initiate or delay treatment are based on many factors, of which patient engagement is crucial. For this reason treatment is often not initiated in patients who are continuing to inject but this is not a strict criteria. The patient's viral genotype will also influence treatment decision, as will their comorbidities, age and gender. Interferon is contraindicated in decompensated cirrhosis, and other conditions such as immunosuppression or renal failure may preclude its use. Ribavarin is teratogenetic, and this influences treatment decisions for women of childbearing age. There is an early access programme for the newer treatments, for which patients can be put forward for discussion at weekly meetings. Patients entered into the early treatment programme are primarily those with end-stage liver disease.

A number of new hepatitis C treatments have recently been approved by NICE or are being reviewed by NICE currently. It is anticipated by clinicians that these will change management. Clear information on the criteria for treatment will assist in services developing pathways for hepatitis C positive service users.

In the larger centres the majority of patients will be managed in a nurse-led clinic; this includes new patient assessments, follow up, antiviral treatment and HCC surveillance. In other centres patients may be initially seen by a nurse and then assessed by a consultant at their subsequent appointment once investigation results are available. Patients will be seen as often as clinically required depending upon where they are in their disease trajectory. Patients receiving treatment may be seen on a weekly to monthly basis depending on side effects, how they are progressing clinically, and on how often they want to be seen. Those not on treatments are seen less frequently, usually every 3-12 months to review their symptoms, liver function, and future treatment. Cirrhotic patients are entered into a HCC surveillance programme, and they should be followed up at least 4-6 monthly. Those who have other comorbidities will be seen according to clinical need.

A study using supply, dispensing and purchasing data estimated that approximately 17% of those estimated to have chronic hepatitis C were treated.(119)

A recently published study(120) looked at hepatitis C treatment rates among people who inject drugs in seven UK sites. People who inject drugs were classified as current injectors, people who had injected in the last three years and/or who were on OST. Annual treatment rates ranged from <5 to over 25 per 1000. For Bristol the treatment rate was 4.1-5.6/1000 and for Plymouth it was 8.5-15.5/1000.

There is no routinely collected data available on the proportion of people with cirrhosis that are seen at least 6 monthly for HCC surveillance. This is often audited locally.

In Swindon patients with hepatitis C travel to Oxford to be seen in secondary care. A local health needs assessment identified this as problematic for some patients and made recommendations for a nurse-led inreach clinic, and a community based hepatitis nurse or blood borne virus nurse; most areas in the South West have a community-based nurse who fulfils this role (see table ii in the general liver section).

6.3.5 Community-based intervention programmes – examples of practice

North Somerset
Non-attendance and dropout rates for treatment of hepatitis C are high, and transport costs and chaotic lifestyles can make it difficult for people to access treatment. In Weston-Super-Mare, where drug misuse and hepatitis C rates are high, this was a particular problem with patients having to make a 50 mile round trip to be seen in Bristol. The 'did not attend' (DNA) rate was up to 80%. Local GPs, patient group and drugs services highlighted a problem with people not accessing treatment, which resulted in the local authority funding a community-based treatment service. This is run from the drug and alcohol service, which allows the treatment service to respond to the specific needs of patients, for example from drug workers and peer support groups, and it means that people can be more easily fed into treatment directly from the drug services. Clinics are held fortnightly led by a clinical nurse specialist. The clinical nurse specialist sees around 15 patients; 8 who are currently accessing treatment, 4-5 new patients and 2-3 who are post treatment. The nurse arranges for investigations, such as fibroscans, and refers for psychiatric assessment where necessary. As well as discussing and initiating treatment. This service has led to significant improvements in the number of people accessing assessment and treatment. The majority of patients who are referred are initiated on treatment, and an estimated 12-15 of the people that are seen each fortnight would not have otherwise accessed treatment. Dropout rates have fallen significantly with most people and most people who are referred are now initiated on treatment. This has reduced the burden on secondary and tertiary care.

Cornwall
The hepatitis C management model that has been developed in Cornwall provides an integrated model of care for people with hepatitis C , incorporating partnerships between hospital-based hepatology and drug and alcohol services and spanning testing, treatment and care. The model was established after it was identified that Penzance had a disproportionately high number of patients with hepatitis C who were failing to attend hospital for treatment. To address this the team worked with the local drugs and alcohol team to develop a plan for community-based treatments and a pilot delivering community-based treatment was set up in a local GP practice. This was successful with the ten patients who were initially treated being 100% adherent to the programme. Following on from this a nurse-led community –based treatment service covering the north of the county was incorporated, and funding was obtained for dried blood spot testing. Prior to 2011 only venous testing was available, which represented a serious barrier to testing. The programme provides on-going support and training to workers in the local drug services delivering the testing. Of 600 service users of the local drug service who are current or previous injecting drug users 86% have now been tested for hepatitis C, which compares favourably to the national average of 70%. Since the programme has been instigated there has been a significant reduction in Did Not Attend (DNA) rates and an increase in the number of people in Cornwall accessing HCV treatment. It serves as an excellent example of how NHS providers can work together with third sector providers to develop a regional hepatitis C management model which is fully cognisant of the often-complex needs of people with hepatitis C, and which works in an innovative way to address these needs. Importantly, the model can be easily replicated in other areas. While a rural model, it can be easily adapted for use in other areas, where the need for community-based treatment is just as pressing.

6.4 Service user perspective

Service users within three locations (Swindon, Bristol and Cornwall) were involved in focus group discussion on their views of services for hepatitis C in January 2015. Four key themes emerged from these discussions; stigma and discrimination, ignorance and myths, testing support need, and treatment support needs.
The key messages that emerged were:

- reducing the stigma of Hepatitis C is crucial, for example through a national promotional campaign
- informal support services are important and necessary because they a meet a need that neither primary care or specialist hospital care are able to. While drug services may provide a focus, staff are mostly engaged with changing alcohol and drug using behaviour
- support groups can sidestep the stigma of association with currently injecting drug users (mostly male) and reach a broader population including ethnic minorities, former experimental drug injectors and women

Stigma and discrimination

There was a feeling that there was a widespread stigma about hepatitis C rooted in its association with drug use, the absence of national promotional campaigns and widespread ignorance among those caring professions not knowingly in contact with the disease. There was also a frequently expressed view that there is discrimination in drug using communities with users and former users describing a hierarchy of prejudice where having hepatitis C places the user at the bottom of the hierarchy. It was widely believed that this was one of the obstacles to getting tested and based on fear.

Ignorance and myths

People described a basic lack of information about Hepatitis C in a form they could deal with when they most needed it, usually after having a positive test result. The Hep C Trust website was felt to be a useful source of information.

Many felt that the myths about treatment were an obstacle to seeking a test or pursuing treatment after a positive test result. The belief and fear that everyone must have a liver biopsy was reported to be widespread and while it may be required for some, the non-invasive fibroscan is the routine response and in some areas is provided at the drug misuse service.
Issues about pain are common for those who are dependent on opiates and such an anxiety needs to be addressed seriously.

Hepatitis C testing – support need

Testing took place at a variety of locations (GPs, drug treatment services, hepatology). The response to a positive test hepatitis C test varied depending on where the test was done and the local service provision. There was some concern about confidentiality of test results.

It was generally expressed that this is a time of great anxiety and fear. Some reported that thought they were going to die. Most agreed that the best advice is to keep calm but this requires contact with knowledgeable people skilled in providing emotional and psychological support and able to signpost to other services which could include: housing advice, benefits advice, healthy eating, psychological support, relationship counselling etc.

One person with HIV and Hep C contrasted the experience of support services that were in place for HIV with those for people who had Hep C alone. Although they may be quite ill

“where was the psychological support, where were the complementary therapies, benefits advice and all the rest of it I had with HIV?”

Hepatitis C treatment – support need

Many described substantial treatment experiences, some involving repeated treatments for hepatitis and also liver transplants. The structure of specialist liver treatment services varies widely across the region and because of this there is no uniform experience.

Travel times to treatment were felt to be very important, and although people found the staff at the units were very considerate and supportive, the journeys were stressful and exhausting. Some described home visits when necessary assisting in their treatment participation.

Feelings of isolation and depression were reported by many.

Example of hepatitis C support group
There is a hepatitis C positive support group in Swindon which provides support and information to those people whose lives are affected by the Hepatitis C virus. ‘Formed by an enthusiastic nucleus of volunteers in August 2011 and was supported by the Swindon Borough Council Community Safety Partnership on the agreed basis that it would be a non-professional, voluntarily run and attended peer support group.’ It now offers an effective community based HCV support model.
http://www.hepcpositive.org.uk/

6.5 Evidence

6.5.1 Prevention

6.5.1.1 Increasing awareness, testing and diagnosis

People who inject drugs (PWID) have an uncertain and incomplete knowledge of hepatitis C and are frequently confused over how it is transmitted and what the symptoms are.(121, 122) Hepatitis C is often understood in relation to HIV in a way that trivialises the seriousness of contracting the disease, and this may have implications for the adoption of safe injecting practices and the uptake of hepatitis C services.(88) Barriers to safe injecting practice include trusting relatives, withdrawal and uncontrolled drug use, restricted access to needles and syringes at specific times, homelessness, policing and gender.(88)

Barriers to hepatitis C testing among PWID include a perception of low risk, a lack of symptoms, a fear of positive test result, the use of needles, and a fear of disclosure.(88) Stigma may prevent engagement with further prevention education, investigations and treatment.(121-124) Convenient and opportunistic testing can help improve uptake and guidance from the National Institute for Health and Care Excellence (NICE) support the use of dried blood spot testing in substance misuse clinics; this increases uptake compared to venepuncture alone.(89, 123, 125) Trust and rapport with health professionals is important for motivating people to get tested.(126) There is limited evidence on whether a positive diagnosis leads to safer injection practices among PWID, and reduced transmission of hepatitis C. A qualitative study on the impact a hepatitis C diagnosis in homeless PWID identified some behaviour change towards safer injecting, although most seemed to continue to share drug related paraphernalia.(127)

NICE guidance (PH43) on testing for hepatitis C recommends targeted case finding in primary care, prisons and immigration removal centres, drugs services, and in sexual health clinics.(89) Primary care testing should target migrants from moderate to high prevalence countries, and PWIDs. Educating GPs about hepatitis C infection and targeted paid testing for individuals identified as having indicators of past injecting drug use is likely to result in an increase in testing and is cost effective.(89) Active case finding among high risk groups, specifically PWID, and high risk migrant groups is cost effective.(128, 129) Cost effectiveness of interventions to improve hepatitis C case finding among migrant populations reported an estimated cost of £10,200 per QALY for populations with a prevalence of 2%, based on a cost of £20 per extra person invited for testing, and a 17.5% intervention effect.(89)

6.5.1.2 Harm reduction services for PWID

Most of the evidence for harm reduction strategies reports on reductions in injecting risk behaviour. There is less evidence for reducing hepatitis C incidence, which is often not included as a study outcome.

Any drug addict not in treatment costs society an average £26,074 a year. Every £100 invested in drug treatment prevents a crime.(130) Every £1 spent on drug treatment saves society £2.50 in reduced NHS and social care costs and crime.(9)

Of the higher quality evidence that is available most relates to opiate substitution therapy (OST) and combination treatments. A meta-analysis demonstrated a 55% reduction in the risk of new hepatitis C infection as a result of OST.(131) When combined with a high coverage needle and syringe programme (NSP) this was reduced even further.

As a single intervention NSPs have been shown to reduce injecting risk behaviour but there is a lack of reviews demonstrating that they reduce transmission of hepatitis C.(132) Nevertheless, ecological studies examining hepatitis C transmission in the context of NSP

suggest that they do have an effect. For instance, cities with NSP have decreasing or stable levels of hepatitis C compared to those without NSP.(133)

There is NICE guidance on needle and syringe programmes. The PH52 costing statement includes additional information supporting investment in NSP.(134) The authors estimated that for a relatively small investment (approx. £200 per person who injects heroin/crack cocaine per year and £6 per person who injects image and performance enhancing drugs (IPED) per year), there are the following potential benefits:

- £22,000-£41,000 saving per annum for every prevented case of hepatitis C treatment
- £10,000-£42,000 saving (depending on disease progression) per annum for every prevented case of HIV treatment
- reductions in A&E attendances and associated bed days for injection site infections
- reductions in the need to treat blood-borne infections and viruses and any chronic conditions arising from them
- other wider societal cost savings – eg, an average crime cost saving per person of approx. £26,000

Psychosocial interventions, such as counselling, contingency management and residential rehabilitation, have not shown a direct effect on reducing transmission of hepatitis C. However, few studies have directly examined its impact in this context, and the effects can be complex to assess. There is evidence that when used alongside OST psychosocial interventions can improve compliance, completion of treatment and abstinence at follow up.(135)
There is insufficient evidence to support antagonist pharmacological treatment using naltrexone to prevent relapse following opiate withdrawal.(135)

6.5.1.3 Vertical transmission (transmission from mother to foetus/baby)

No clinical intervention has been adequately studied or proven to reduce HCV vertical transmission risk.(136) Elective Caesarean section is not recommended; a large European observational study of hepatitis C transmission demonstrated no benefit in reducing transmission.(137) However, procedures that promote mixing of fetal and maternal blood, such as the use of scalp electrodes or amniocentesis, should be avoided because there is some evidence of transmission; randomized trials of these interventions are not likely to be performed.(138)

Breastfeeding does not appear to play an important role in the transmission of hepatitis C infection, despite the fact that HCV RNA has been detected in breast milk.(136-138) However, there may be confusion about transmission risk among those who carry infection, and education is important in this context.

Antenatal hepatitis C screening has previously been reviewed and rejected by the National Screening Committee.

6.5.1.4 Prisoners

Individuals in contact with the criminal justice system are an increasingly vulnerable population, who are more likely to engage in high risk behaviours and activities such as substance misuse.(98) Rates of hepatitis C in prisoners has historically been reported as much higher compared to similar individuals within the local community. Data from PHE laboratories shows that between 2008 and 2012 approximately four times as many of those tested for hepatitis C within prisons were found to be infected, compared with people in the community over the same period. Prisons remain an important setting to test and treat people for hepatitis C.

6.5.1.5 Young people who inject drugs

Patterns of young people's drug use often change. Cannabis and alcohol are the most common substances that young people say they have a problem with when they present to specialist substance misuse services; a small minority present with class A drug problems (such as heroin and cocaine). Prevalence of drug injecting is higher among the 25–34 age group (17.9 per 1000) than the 15–24 age group (6.9 per 1000).(139) It is not known how many people under 18 in England and Wales are involved. Data from PHE suggest that in 2011/12, 156 young people aged 17 or under who were in drug treatment were currently injecting drugs, and 257 of this same group had experience of injecting. This is a decrease from 2010/11. Data from UAMS suggest that in 2011, out of 2838 participants, 0.6% were under 18 (n=16) and 23% reported first injecting before age 18 (n=509).(69) These numbers will represent a minority of young people who inject drugs, because UK evidence suggests that only 25% of this group are in treatment at any one time.(140) It also suggests the proportion in treatment may be smaller for those under 18.

Among young people, vulnerable groups are more likely to inject drugs; this includes young offenders and those who are homeless or involved in sex work (141), those excluded from school (142), young people with parents with drug or alcohol problems (143) and those who are, or have been, in care(144). Looked after children are identified as a high risk group who should be considered for testing.(89) There were 68,110 looked after children in England at 31 March 2013. A Department of Education report states that 3.5% were identified as having a substance misuse problem during the year.(145)

6.5.2 Treatment and Care

Treatment levels in the UK are low. In England, an estimated 28,000 patients were treated between 2006 and 2011; approximately 17% of those chronically infected per year. Modelling

predicts that there will be a rise in the number of people with hepatitis C-related cirrhosis from 10,850 to 13,590 in 2025 if low coverage of treatments is maintained. Statistical modelling suggests that increased uptake and new therapies are both needed to avert rising levels of hepatitis C-related end stage liver disease.(119)

Treatment is aimed at achieving a sustained viral response (SVR) and reducing the risk of long term sequelae associated with chronic infection. Treatment is usually with ribavirin, which is taken orally, and interferon, which is given as an injection. Uptake and completion of treatment rates have been limited by the length of treatment required (24-48 weeks) and by the associated adverse effects. The side effects are loss of appetite, depression and anxiety, irritability, insomnia, anaemia, hair loss, itchiness, feeling sick, dizziness, and flu-like symptoms. Ribavarin is teratogenic, requiring women of childbearing age to be on reliable contraception and to regularly check for pregnancy; and it means that treatment in pregnancy is delayed until after the woman has given birth. Adults with genotype 1 chronic hepatitis C infection and compensated liver disease who are treatment naïve or where treatment was unsuccessful may be started on a protease inhibitor (also classed as direct acting antivirals) (boceprevir or telaprevir) in combination with peginterferon alfa and ribavirin. Side effects of boceprevir include flu-like symptoms, loss of appetite, nausea, insomnia, weight loss and shortness of breath. Side effects of telaprevir include anaemia, nausea and vomiting, diarrhoea, haemorrhoids, and pruritis. Efficacy and safety appear to be comparable but is unclear which of the two is more effective because there have been no head-to-head studies.(146, 147) Treatment costs vary depending on length of treatment, whether the person has had previous treatment and whether the person has cirrhosis. NICE estimates average costs for treatment with boceprevir, peginterferon alfa-2a and ribavirin range from £22,863 to £41,193.(148) NICE estimates average costs for treatment with telaprevir, peginterferon alfa-2a and ribavirin range from £27,595 to £32,791.(149)

Newer treatments are becoming available that are better tolerated, administered orally, require shorter treatment times, and are more effective at achieving a SVR (91% 12 weeks after treatment compared with the historical control of 60%).(150) NICE (TA330) has recently approved the use of sofosbuvir in combination with peginterferon alfa and ribavirin or with ribavirin alone (depending on the genotype and previous treatment). Treatment is usually for 8-12 weeks. Side effects of this combination therapy are less severe and less frequent than with the traditional treatments; they may include fatigue, headache, nausea, rash and irritability. NICE estimates the cost of implementing its guidance at £106 million for the population of England. This cost includes savings from onward transmissions avoided of £10 million and resources released from reduced treatment periods £10 million. The population eligible for treatment is approximately 28,600 people per year in England. NICE is currently undertaking further cost-effectiveness evaluation of hepatitis C treatment options. In addition, NICE is currently reviewing ledipasvir-sofosbuvir for treatment of hepatitis C.

An early access program is being delivered by 16 centres across the UK, which allows 500 patients with decompensated cirrhosis to receive sofosbuvir plus a non-structural protein 5A (HS5A) inhibitor (ledipasvir or daclatasavir) for free. This means that patients will need to be prioritised appropriately, and that effective preventative strategies should remain an emphasis.

A recent review on addressing liver disease suggests initially targeting patients with cirrhosis who are at imminent risk of premature death, as well as treating active drug users to reduce onward spread and lessen the future burden.(2) Currently few people who inject are treated but models suggest that in some settings treating specifically this group of people, rather than those who previously injected drugs or other risk groups is cost effective.(17) Scaling up the treatment rate of hepatitis C virus to 30-40 per 1,000 people who inject drugs with 60% coverage OST and NSP could reduce overall prevalence of hepatitis C by 75-90% in 10 years.(151) A recently published model of optimum strategies for minimising hepatitis C showed a possible 95% reduction in the hepatitis C prevalence and an 80% reduction in hepatocellular carcinoma could avert 5,200 deaths by 2030.(2, 152)

6.6 Key themes and recommendations

The main themes and recommendations include:

- local partners should ensure services for the prevention of hepatitis C, in particular to reduce transmission and reduce morbidity and mortality. As part of this the needle and syringe programmes and opiate substitution therapy need to provide an appropriate range of services with sufficient coverage to meet local need and informed by national guidelines
- local partners should review testing among population groups at risk of infection to improve early diagnosis of hepatitis C through increased uptake of tests:
    - blood borne virus nurses have been identified as vital to provide a link between community and hospital services. They are able to provide expertise and knowledge in testing and treatment for hepatitis C. To understand the service offered for BBV infections in the South West through drug and alcohol teams a review of services using methodology from the PHE East of England Hepatitis Group should be undertaken
- local areas should ensure that there are hepatitis C strategies in every local area, including standards and action plan. Hepatitis C should be included within the Joint Strategic Needs Assessment (JSNA)
- local partners should ensure there is a comprehensive database of hepatitis C patients and clear care pathways. This would address the lack of information on the patient pathway where it is often unclear what happens to a patient during their journey and lead to improvements in diagnosis and treatment. Investigation of the current pathways and follow up by following a cohort of patients may assist in this process
- there is a need for support groups for hepatitis C, the development of which should be led through local strategies
- local areas should consider the impact of increased public and professional awareness of hepatitis C which would improve case finding and early diagnosis, particularly in high-risk groups
- local partners should ensure continued work towards full BBV opt out in prisons in the South West on schedule with the national picture

6.7 Resources and data sources

The main resources and data sources include:

- hepatitis C in the UK - 2014 report. https://www.gov.uk/government/publications/hepatitis-c-in-the-uk.
- hepatitis C in the UK - 2014 report. https://www.gov.uk/government/publications/hepatitis-c-in-the-uk.

- commissioning template for estimating HCV prevalence and numbers eligible for treatment by Drug Action Team Area: http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HepatitisC/EpidemiologicalData/
- NICE public health guidance PH 43. Hepatitis B and C: ways to promote and offer testing to people at increased risk of infection: www.guidance.nice.org.uk/ph43
- NICE public health guidance PH52. Needle and syringe programmes guidance: www.guidance.nice.org.uk/ph52/Guidance/pdf/English
- HCV Action 2012. Hepatitis C Commissioning Toolkit: www.hcvaction.org.uk/Commissioning/Commissioning+Toolkit/Commissioning+toolkit .
- Public Health England Drugs and Alcohol Team Facts and Figures: http://www.nta.nhs.uk/facts.aspx
- Health Protection Agency (HPA) 2013. Unlinked Anonymous Monitoring Survey of People Who Inject Drugs (PWID): www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HIV/OverallHIVPrevalence/hivsti_hiv_prev_InjectingDrugUseUAIDU/
- improving testing rates for blood-borne viruses in prisons and other secure settings. https://www.gov.uk/government/publications/improving-testing-rates-for-blood-borne-viruses-in-prisons-and-other-secure-settings
- National Partnership Agreement – Prison Healthcare: https://www.justice.gov.uk/about/noms/working-with-partners/health-and-justice/partnership-agreement
- HCV Action. Detecting and Managing Hepatitis C in Primary Care. http://hcvaction.org.uk/resource/film-detecting-managing-hepatitis-c-primary-care
- Swindon Hepatitis B & B Joint Strategic Needs Assessment, June 2013. http://www.swindon.gov.uk/sc/Health%20Document%20Library/Information%20-%20Swindon%20Hepatitis%20B%20and%20C%20Needs%20Assessment.pdf.
- NHS England. Service Specification for hepatitis C networks (over consultation). https://www.engage.england.nhs.uk/consultation/specialised-services-policies/user_uploads/hep-c-netwrk-serv-spec.pdf
- NHS England. Clinical Commissioning Policy Statement: Treatment of chronic hepatitis C in patients with cirrhosis: http://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/06/hep-c-cirrhosis-polcy-statmnt-0615.pdf

7 Obesity and liver disease

7.1 Background

Obesity is an important risk factor for liver disease because of its link to non-alcoholic fatty liver disease (NAFLD), which is the term used to describe accumulation of fat within the liver that is not caused by alcohol. It is usually seen in people who are overweight or obese. The overall prevalence of NAFLD in England is between 17-33%, with the highest prevalence in people who are obese.(2) NAFLD affects 2.6% to 9.8% of children and young people.(153) The longer-term consequences of NAFLD, such as cirrhosis, have also been seen in children.(154) As with other health effects of obesity, central (abdominal) obesity is more strongly associated with NAFLD.(2)

The evidence about the natural history of NAFLD is incomplete, and therefore it is difficult to know the proportion of people with NAFLD who will progress to serious liver disease. It is thought that although the great majority people with NAFLD never experience any symptoms from the condition, a minority may progress to a more serious form of the disease known as non-alcoholic steatohepatitis (NASH), which may ultimately lead to fibrosis and, in a small number of cases, cirrhosis. In those patients with cirrhosis, 5-10% will develop liver cancer.(2) 'Although most factors affecting the risk of development of NAFLD in an individual are environmental, including the level of obesity, presence of diabetes, and extent of physical activity, genetic factors might also have a role in establishing why some individuals are predisposed to depositing fat in the liver and why hepatic steatosis progresses to the more serious condition of NASH in only some patients.'(p14)(2)

NAFLD is the most common cause of abnormal liver function tests (LFTs) in primary care.(155) A study from the United States showed that people with NAFLD have significantly lower quality of life (measured by SF-36) than the general US population.(156) As with other causes of liver disease if the cause of fibrosis is eliminated, early hepatic fibrosis can resolve. With studies showing that weight loss can lead to improvements in LFTs, inflammation and fibrosis.(157, 158) Liver health has not traditionally been included within the health risks of overweight and obesity or the benefits of weight reduction.

Definition of overweight and obesity are according to NICE guidelines; in adults overweight = BMI of 25 to less than 30kg/m^2, Obese = BMI 30kg/m^2 or more. Waist circumference may be used, in addition to BMI, in people with a BMI less than 35 kg/m^2, This is taken at midway between the lowest rib and the iliac crest (increased risk of health problems is defined as>94 cm for men and >78 cm for women; greatly increased risk is defined as ≥ 102cm for men and ≥ 88cm for women). There are different cut-offs according to sex and ethnic origin.(159) However waist circumference is not routinely collected or reported. There are different definitions used for children. Population measures for children who are overweight are defined as having a BMI ≥85th centile of the British 1990 growth reference, and children who

are obese are defined as having a BMI ≥95th centile of the British 1990 growth reference. When measuring individual children, weight status is defined using the following definitions: Clinically overweight: ≥ 91st centile; clinically obese: ≥98th centile of the British 1990 growth reference.

7.2 Epidemiology of obesity

Obesity and overweight have significant implications for health, social care, education and the economy. Obesity and overweight is linked to a wide range of diseases, such as diabetes (type 2), hypertension, cancer, heart disease and stroke. In addition obesity is associated with poorer psychological and emotional health, and can result in physical and social difficulties which impact on social care. ‘The social care costs to local authorities for the care of house-bound residents suffering from obesity related illnesses, including arthritis, heart disease and diabetes and those requiring help towards walking aids and home adaptations may be considerable - and likely to increase in line with national predictions for obesity prevalence.’(160)

Obesity is also associated with educational attainment. PHE reports that ‘Men and women who have fewer qualifications are more likely to be obese. Around a third of adults who leave school with no qualifications are obese, compared with less than a fifth of adults with degree level qualifications. Part of the reason for this is that levels of educational attainment are linked to levels of inequality and deprivation. People who are socioeconomically deprived tend to have poorer health and lower levels of education. In addition, low achievement at school among obese children may be due to a variety of factors such as poor psychological health, teasing, bullying and discrimination, low self-esteem, disturbed sleep, absenteeism and less time spent with friends or being physically active.’(161)

Although there is no causal link between obesity and alcohol it appears that heavy drinkers (drinking 21-42 units per week) have an increased risk of obesity than moderate drinkers. The effects of alcohol on body weight may be more pronounced in overweight and obese people.(162)

PHE reports that in 2007 estimates of the direct NHS costs of treating overweight and obesity, and related morbidity in England were £4.2 billion and estimated to be £6.3 billion in 2015, with indirect costs as much as £27 billion by 2015.(163) As highlighted by the NHS 5-year forward view ‘the NHS is now spending more on bariatric surgery for obesity than than on a national roll-out of intensive lifestyle intervention programmes that were first shown to cut obesity and prevent diabetes over a decade ago.’(164)

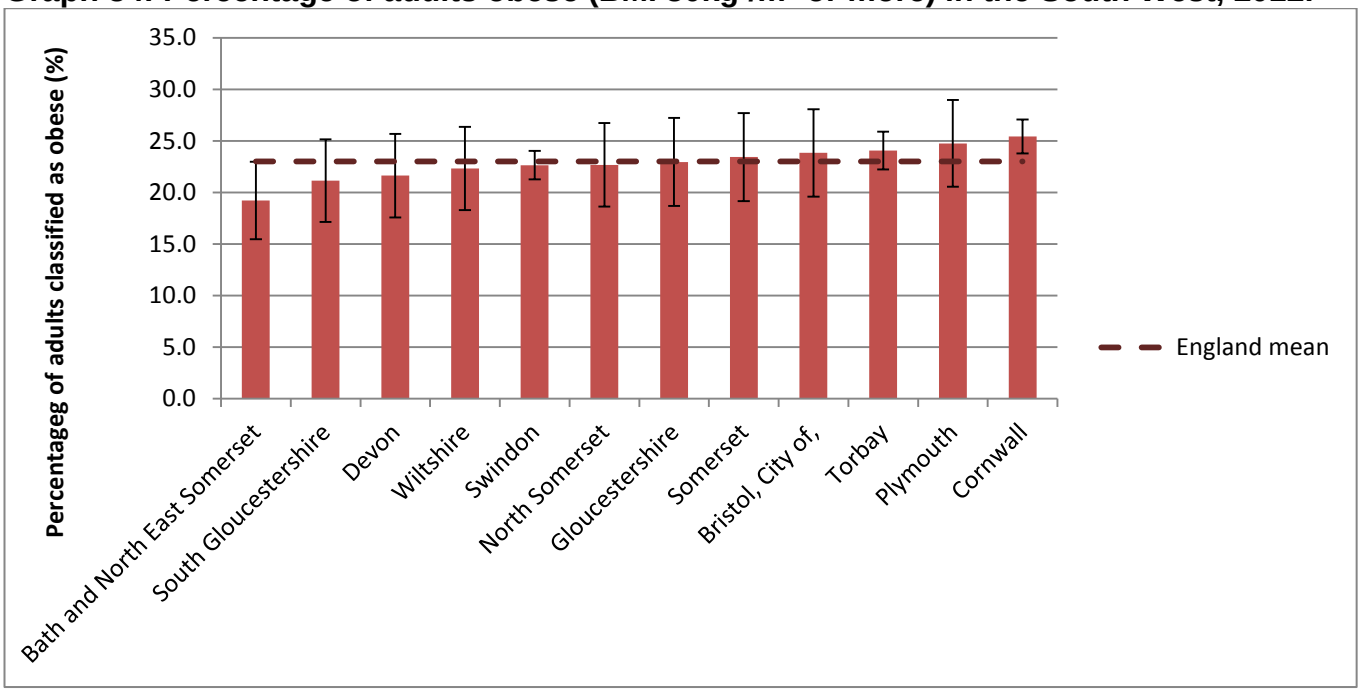
By 2050 these costs could have increased to £9.7 billion attributable to overweight and obesity, and total costs of £49.9 billion (at 2007 prices). ‘Work in progress in PHE in 2014 initially suggests that an estimated extra £352 million per year is spent by local authorities on providing formal care for severely obese people compared to healthy weight people.’(160)

7.2.1 Prevalence of obesity in adults

Obesity prevalence has increased dramatically since the 1990s. In 1993 the Health Survey for England reported that 13% of adult men were obese, by 2013 this had increased to 26%.For adult women over the same time period the increase was from 16% to 24%.There was little change in the percentage overweight (41% of men and 33% of women in 2013) over the same time period.(165)

In the South West (including Dorset, Bournemouth and Poole which has been excluded in other definitions of South West used in this report) in 2012 62.7% of adults were overweight or obese, which is statistically significantly lower than the England average of 63.8%. Compared to England, the percentage overweight or obese is statistically significantly lower in Bath and North East Somerset, whereas the percentage overweight or obese is statistically significantly higher in Cornwall and Swindon.

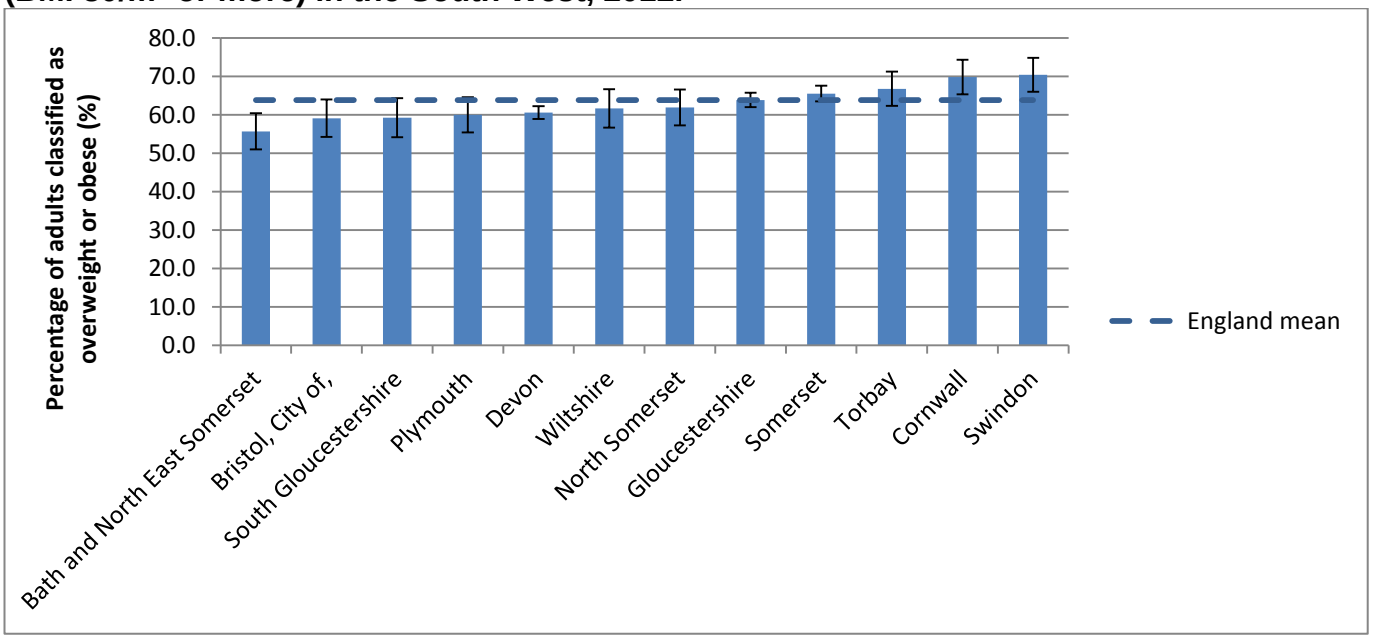
Graph 34: Percentage of adults obese (BMI 30kg /m^2 or more) in the South West, 2012.



It is known that adults tend to underestimate their weight and overestimate their height when providing self-reported measurements and the amount to which this occurs can differ between population groups. Therefore prevalence of excess weight (overweight including obese) calculated from self-reported data is likely to produce lower estimates than prevalence calculated from measured data.

Source: Active People Survey, Sport England (166)

Graph 35: Percentage of adults overweight (BMI of 25 to less than 30kg/m^2) or obese (BMI 30/m^2 or more) in the South West, 2012.



It is known that adults tend to underestimate their weight and overestimate their height when providing self-reported measurements and the amount to which this occurs can differ between population groups. Therefore prevalence of excess weight (overweight including obese) calculated from self-reported data is likely to produce lower estimates than prevalence calculated from measured data.

Source: National Obesity Observatory from Active People Survey, Sport England (166)

Nationally there are significant differences in obesity prevalence by age and sex. ‘Prevalence of obesity is lowest in the 16-24 year age group, and generally higher in the older age groups among both men and women’ (with a decline in prevalence in the oldest age group).(167) Deprivation is associated with obesity prevalence in men and women, with decreasing prevalence of obesity with increasing levels of educational attainment.

PHE reports that there is not a straightforward relationship between obesity and ethnicity, with many different factors affecting the health in minority ethnic communities. Among adults, women seem to have a higher prevalence in almost every minority ethnic group.(167) There is limited data on disability and obesity but people with disabilities are more likely to be obese than the general population. Another important distinct group identified are pregnant women, as they require different advice. It is also a critical period to address obesity in a woman’s life, as well as being a risk factor for poorer birth outcomes and a risk factor for the child to become obese.

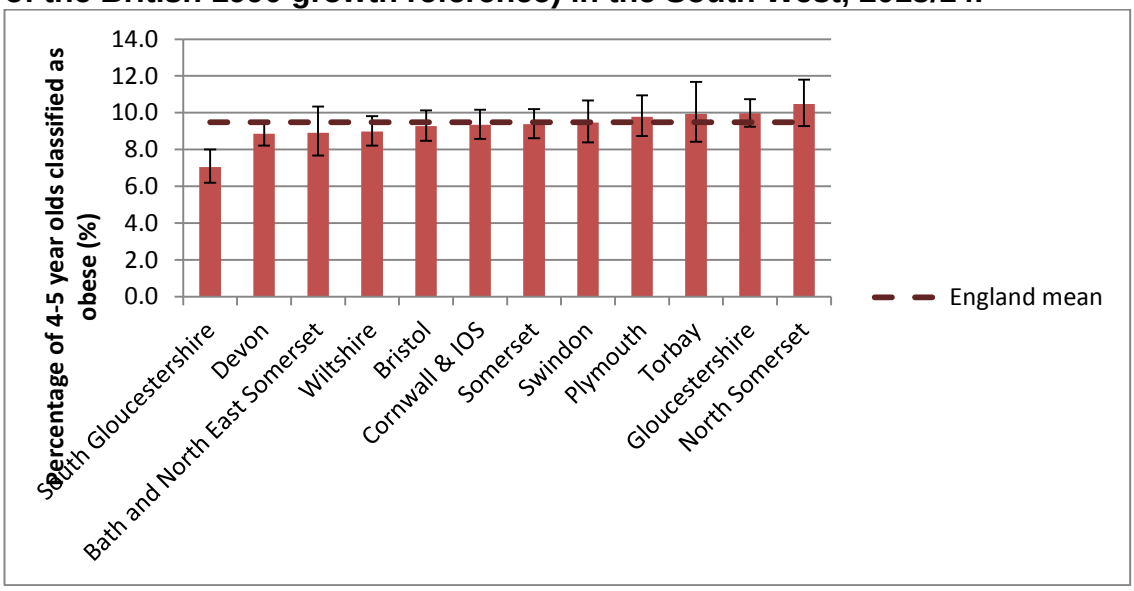
7.2.2 Prevalence of obesity in children and young people

The National Child Measurement Programme (NCMP) measures the weight and height of children in reception class (aged 4 to 5 years) and year 6 (aged 10 to 11 years) to assess overweight and obesity levels within primary school children. These data therefore provides information about obesity prevalence in childhood.

In 2013/14 23.5% of children aged 4-5 years in the South West (includes Dorset, Bournemouth and Poole) were overweight or obese, which was statistically significantly higher than the England average of 22.5%. Compared to England Cornwall & IOS, Gloucestershire, North Somerset, Plymouth and Torbay had statistically significantly higher percentage of 4-5 years olds who are overweight or obese.

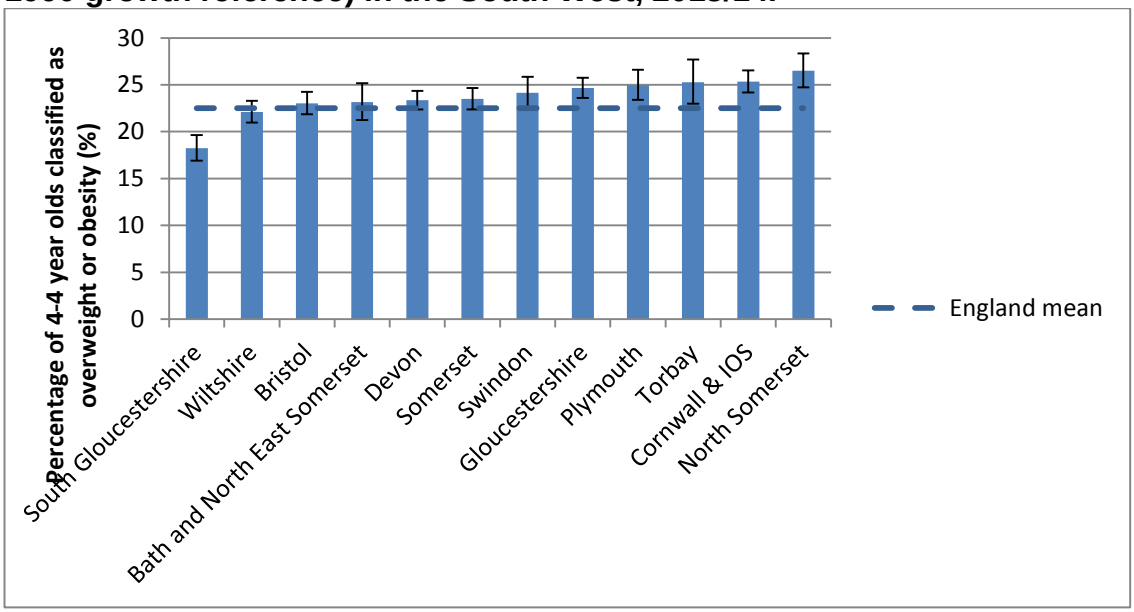
In 2013/14 31.0% of children aged 10-11 years in the South West were overweight or obese, which is significantly lower than the England average of 33.5%. Compared to England all areas have statistically significantly lower or no significant difference in the percentage of children overweight or obese. However compared to the South West, Bristol, Plymouth, Swindon and Torbay had statistically significantly higher percentage of 10-11 years olds overweight or obese. In 2013/14 in England the percentage of obese children in year 6 was over double that of reception children showing that this is an important life period for intervention for healthy weight.(168)

Graph 36: Percentage of children aged 4-5 years classified as obese (BMI ≥95th centile of the British 1990 growth reference) in the South West, 2013/14.



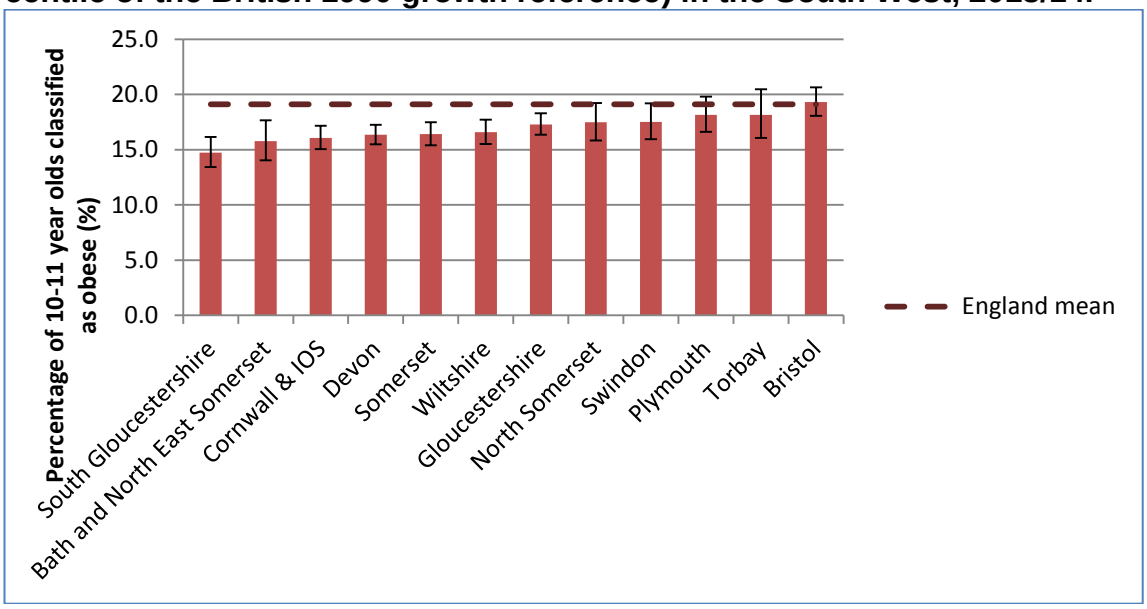
Source: National Child Measurement Programme.

Graph 37: Percentage of children aged 4-5 years classified as overweight (BMI ≥85th centile of the British 1990 growth reference) or obese (BMI ≥95th centile of the British 1990 growth reference) in the South West, 2013/14.



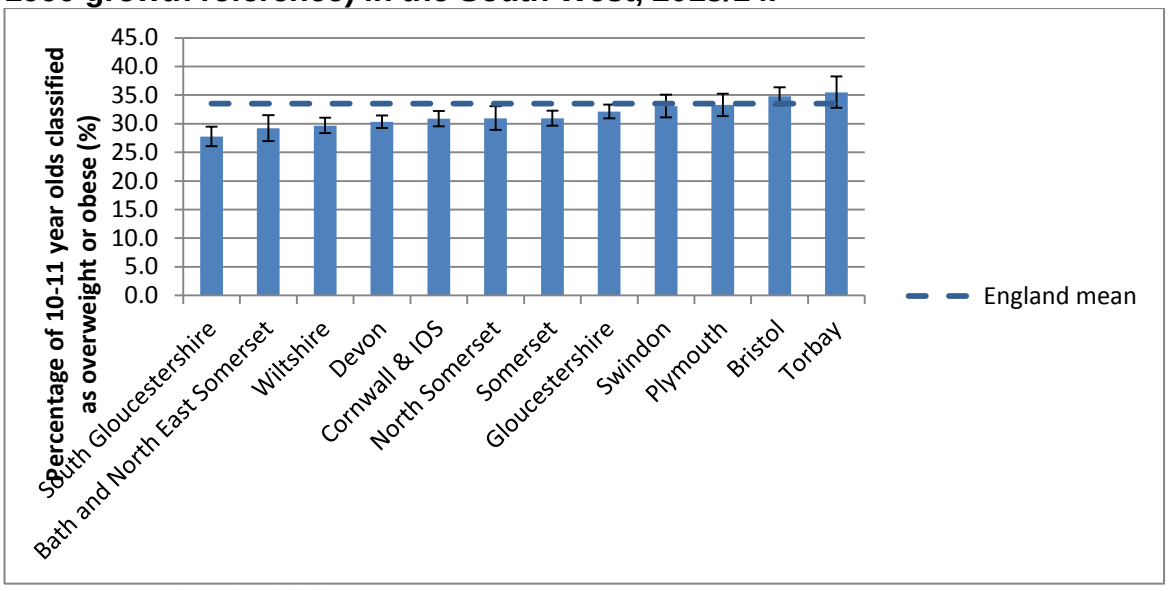
Source: National Child Measurement Programme.

Graph 38: Percentage of children aged 10-11 years classified as obese (BMI ≥95th centile of the British 1990 growth reference) in the South West, 2013/14.



Source: National Child Measurement Programme.

Graph 39: Percentage of children aged 10-11 years classified as overweight (BMI ≥85th centile of the British 1990 growth reference) or obese (BMI ≥95th centile of the British 1990 growth reference) in the South West, 2013/14.



Source: National Child Measurement Programme.

Among children there is significant variation in obesity prevalence by ethnic group. By 10-11 years of age boys from all minority groups are more likely to obese than White British boys. For girls aged 10-11 years, obesity prevalence is especially high for those from Black African and Black Other ethnic groups. Some of these differences may be due to the influence of deprivation.(167) There is a strong relationship between deprivation and childhood obesity, with obesity prevalence of the most deprived 10% of the population approximately twice that of the least deprived 10%.(167)

7.3 Epidemiology of NAFLD

The coding for and diagnosis of NAFLD are likely to be incomplete and not represent the true burden of NAFLD. The majority of the workload is currently in outpatients clinics. The Lancet commission states 'The absence of any robust survey or screening systems to report the clinical burden of non-alcoholic fatty liver disease or NASH in either primary or secondary care is a major limitation in assessing the effect of these diseases on workload and costs in the NHS.'(p14)(2)

In England there has been a 12-times increase in the number of hospital admissions for NAFLD between 1998 and 2010 and this is thought to be largely driven by the increase in obesity over the same period.(2) The numbers in the South West are small (78 hospital admissions for NAFLD in 2012/13) and therefore unlikely to reflect the true burden of disease.

In the South West in 2010-12 there were 76 deaths attributed to NAFLD (52 in people less than 75 years old). Premature mortality rate from NAFLD has doubled from 2001-2003 when the crude rate was 0.21 per 100,000 (95% confidence interval [CI], 0.13 to 0.31) to 0.42 (95%CI 0.31 to 0.55) in 2010-12. All age crude mortality rates had also increased from 0.20 per 100,000 in 2001-2003 (95%CI 0.13 to 0.30) to 0.56 in 2010-2012 (95%CI 0.44 to 0.70). There is no difference in male and female age standardised all age mortality rates.

There are no regional figures on how many patients are seen in outpatient departments. Audit data from clinic letters in March 2015 at Royal Devon and Exeter Hospital NHS Foundation Trust outpatient department on the numbers of people seen by condition at initial presentation and follow up showed that 12 of 46 new referrals were for NAFLD and 34 of 240 follow up appointments were for NAFLD.

7.3.1 Hepatocellular carcinoma

A recent World Cancer Research Fund report concluded that greater body fatness (marked by BMI) is a convincing cause of liver cancer.(91)

A study (14) of patients referred to Newcastle-upon-Tyne hospitals NHS foundation trust between 2000 and 2010 showed a greater than tenfold increase in referrals for hepatocellular carcinoma (HCC) associated with NAFLD. By 2010 NAFLD accounted for 34.8% of cases (41/118) and 66.1% of cases had metabolic risk factors (one major (type 2 diabetes, BMI>30kg/m^2) or two minor (hypertension, hypertriglyceridaemia, reduced HDL cholesterol, previous cardiovascular event).

7.4 Service mapping

The best way for an individual to prevent becoming overweight or obese is by eating healthily and exercising regularly. However the problem of obesity cannot be solved by individual behaviour change alone. Obesity is a complex problem that requires action at all levels, from individual to societal, and across all sectors, to create environments that promote and support physical activity and healthy eating.

7.4.1 Prevention and community based interventions

The obesity pathway is classified into four layers; tier 1, 2, 3 and 4 (see appendix 7 for details of these tiers and where weight management services lie). These provide different levels of intervention dependent on need and are commission by different organisations. Weight management services are often embedded in wider healthy lifestyle services. Outside these tiers there are other very important aspects including environmental and policy changes (obesogenic environment, food labelling, trans fat ban taxes), planning and transport, and leadership/strategic approach.

For tier 3, liver disease is not specifically mentioned as a co-morbidity by NICE and is not usually listed as a co-morbidity in local policies/guidelines. For tier 3 and 4 local clinicians raised concerns over difficulties in accessing these services for patients with liver disease.

In the South West in 2013/14 there were 587 bariatric surgeries undertaken. This includes 351 gastric bypass, 240 gastric band, 26 stomach staple and 16 revisions. The number of bariatric surgeries done is lower than the total number of procedures as some patients had two procedures during the same surgery. It is not possible to know the number of these where liver disease was a co-morbidity. A systematic review of 15 studies showed an improvement in NAFLD after bariatric surgery; pooled proportion of patients with improvement or resolution in steatosis 91.6% (95% confidence interval [CI], 82.4%–97.6%), in steatohepatitis 81.3% (95% CI, 61.9%–94.9%), in fibrosis 65.5% (95% CI, 38.2%–88.1%), and for complete resolution of non-alcoholic steatohepatitis 69.5% (95% CI, 42.4%–90.8%).(169)

PHE are currently undertaking a process to map the provision and access to weight management services across the life course in England for tiers 2 and 3.
The aims of the mapping exercise are; to establish a clear local and national picture of weight management service provision and access, to determine how PHE can best support local authorities to commission weight management services that are effective, to understand how weight management services are currently evaluated, to understand local concerns with regards to weight management and the most appropriate method for PHE to support and address these concerns

The mapping was undertaken in two formats; firstly a face to face exercise for each PHE centre locality with relevant commissioning leads, followed by an e-survey for any missing data with an online questionnaire. Data analysis is currently underway.
This is a significant programme of work on a national scale and a report that will collate and interpret the findings nationally as well as encompass findings from the South West perspective is due this summer (2015).

In the South West there is a Peninsula Healthy Weight Network (covering DCS PHE centre area) and an Obesity Leads Network (covering AGW PHE centre area). These provide a vital opportunity for stakeholders to provide a continuous service and share good practice.

See appendix 8 for an example of a local children's obesity pathway and a lifestyle, eating and activity for families programme from Cornwall.

There are return on investment tools available for physical activity (170) and a weight management economic assessment tool which helps make an economic assessment of existing or planned weight management interventions.(171) Many areas now have healthy lifestyle services rather than separate weight management services and therefore it can be difficult to assess the impact of the different elements on weight.

7.4.2 Diagnosis and treatment for non-alcoholic fatty liver disease (NAFLD) and related health problems

7.4.2.1 Primary Care

NAFLD is the most common cause of abnormal liver function tests (LFTs) in primary care.(155) Local clinicians report that there are an increasing number of referrals for abnormal liver function tests (LFTs) potentially caused by NAFLD. There is national research underway to produce guidelines for primary care after finding abnormal LFTs. Currently there are 'map of medicine' guidelines for the management of abnormal liver test.(172) Locally Plymouth hospital has developed guidelines for the management of abnormal LFTs in primary care (appendix 9). In addition the Lancet commission(2) recommends 'triage of patients in primary care for the likelihood of significant liver fibrosis, by inclusion of an aspartate aminotransferase to alanine aminotransferase ratio followed, when indicated, by a more accurate staging of liver fibrosis by use of transient liver elastography and the diagnostic pathway.'(p17)

To understand the diagnosis and management of liver disease in primary care a survey of local GPs was undertaken in March 2015. Responses were from 52 GPs and GP trainees across the South West.

Three questions related to obesity and liver disease. They were asked whether they thought about the possibility of liver problems when they see obese patients presenting with a problem unrelated to their liver. Approximately half of the respondents would think about liver disease in this situation. The second and third question asked about referral patterns if they thought a patient may have NAFLD and NASH (non-alcoholic steatohepatitis) or more serious liver disease. Approximately one-third of respondents would refer for NAFLD, with more (around half) referring for NASH. A large number discussed that they would conduct certain investigations and use these to decide whether they would refer, and that there was limited evidence about who to refer and the benefits of referral (since a mainstay of treatment was weight loss and management of metabolic syndrome)(combination of cardiovascular risk factors including obesity, high cholesterol and high blood pressure). Finally we asked what are the difficulties/good aspects you have experienced when referring to weight management services. The answers were very mixed about their experience of weight management services which probably represents the diverse areas where respondents worked. Some felt services were effective and patients liked these, while others found the services difficult to refer to and had long waiting lists.

These results highlight the lack of evidence around NAFLD and NASH, and the importance of improving this to ensure appropriate treatment (for those who do and do not require further investigation).

7.4.2.2 Secondary Care

There are currently no drug options available for the treatment of NAFLD or NASH. The management in secondary care is mainly risk stratification, therapy for weight loss and management of metabolic syndrome. There is some access to clinical trials. One difficulty is identifying who holds responsibility for weight loss therapy and management of metabolic syndrome. For example a multi-disciplinary clinic (MDT) for NASH, as suggested within the Lancet commission, would do these within the clinic. Another model is for primary care management (or secondary care cardiovascular clinician if under one) of metabolic syndrome and weight loss (through tier 1, 2, 3 or 4 services as appropriate), with advice about impact of liver disease from secondary care. Locally there are different models in place, but the most important aspect seems to be the patient and clinician knowing who is responsible for what elements. The importance of awareness of what weight management services are available in each area was also raised.

7.5 Key messages and recommendations

The main messages and recommendations include:

- local areas should consider the impact of increased awareness for the public and professionals of NAFLD to increase recognition of NAFLD and increase the use of risk stratification for management
- local partners should consider their role in increasing research into the natural history of NAFLD to aid in the development of guidelines and assist management decisions
- local partners should ensure there is an increased awareness and understanding between existing weight management services and hepatology services, including the inclusion of liver disease within healthy weight strategies and the specific noting of liver disease as a co-morbidity for tier 3 services. More general awareness of NAFLD should also be raised
- local areas need to be clear about the management pathway for patients with NAFLD and who is responsible for weight loss therapy and management of metabolic syndrome
- PHE should engage with the existing two Healthy Weight networks in the South West to develop actions to ensure these recommendations are taken up. It is recommended that this is through discussion/workshop sessions at their regular meetings

7.6 Resources and data sources

The main resources and data sources include:

- PHE Obesity: http://www.noo.org.uk/
- National Institute for Health and Care Excellence. Managing overweight and obesity in adults – lifestyle weight management services (PH53). http://www.nice.org.uk/guidance/PH53.
- National Institute for Health and Care Excellence. Managing overweight and obesity among children and young people: lifestyle weight management services (PH47). http://www.nice.org.uk/guidance/PH47.
- National Institute for Health and Care Excellence. Obesity: working with local communities (PH42). http://www.nice.org.uk/guidance/PH42.
- National Institute for Health and Care Excellence. Obesity (CG43). http://www.nice.org.uk/guidance/CG43.
- NICE. Physical activity return on investment tool. https://www.nice.org.uk/about/what-we-do/into-practice/retun-on-investment-tools/physical-activity-return-on-investment-tool.
- NICE. Obesity pathways. http://pathways.nice.org.uk/pathways/obesity.
- NICE. Liver disease: management of liver disease (non-alcoholic) – scope. http://www.nice.org.uk/guidance/gid-cgwave0692/resources/liver-disease-nonalcoholic-draft-scope2.
- Longer Lives: http://longerlives.phe.org.uk/
- Healthy weight, healthy lives: A toolkit for developing local strategies http://www.fph.org.uk/healthy_weight,_healthy_lives%3A_a_toolkit_for_developing_local_strategies
- PHE Obesity. Weight Management Economic Assessment Tool. http://www.noo.org.uk/NOO_pub/.
- Academy of Medical Royal Colleges Measuring Up: The Medical Profession's Prescription for the Nation's Obesity Crisis http://www.aomrc.org.uk/publications/statements/doc_view/9673-measuring-up.html.
- PHE. Ensuring every child has the best start in life in the South West: outcomes, evidence and resources. www.swpho.nhs.uk/resource/view?RID=110834.

8. References

1. PHE. Liver Disease Profiles 2015 [June 2015]. Available from: http://fingertips.phe.org.uk/profile/liver-disease.
2. Williams R, Aspinall R, Bellis M, Camps-Walsh G, Cramp M, Dhawan A, 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(9958):1953-97.
3. Sheron N, Moore M, Ansett S, Parsons C, Bateman A. Developing a 'traffic light' test with potential for rational. Br J Gen Pract. 2012;62(602):e616-24.
4. Pellicoro A, Ramachandran P, Iredale J, Fallowfield J. Liver fibrosis and repair: immune regulation of wound healing in a solid organ. Nature Reviews Immunology. 2014;14:181-94.
5. All-Party Parliamentary Hepatology Group. Inquiry into improving outcomes in liver disease.2014. Available from: http://www.ias.org.uk/uploads/APPHG%20report%20March%202014%20FINAL.pdf.
6. All-Party Parliamentary Group on Alcohol Misuse. All-Party Parliamentary Group on Alcohol Misuse, Manifesto 2015.2015 May 2015. Available from: All-Party Parliamentary Group on Alcohol Misuse http://www.alcoholconcern.org.uk/assets/files/Publications/2014/APPG_Manifesto.pdf.
7. National end of life care intelligence network. Deaths from liver disease. Implications for end of life care in England.2012 May 2015. Available from: www.endoflifecare-intelligence.org.uk/view?rid=276.
8. Lister G. Evaluating social marketing for health—the need for consensus. Proceedings of the National Social Marketing Centre.2007 May 2015. Available from: http://www.publications.parliament.uk/pa/cm201213/cmselect/cmhealth/132/132vw30.htm.
9. King's Fund. Making the case for public health interventions.2014 May 2015. Available from: http://www.kingsfund.org.uk/audio-video/public-health-spending-roi.
10. NHS England. Strategic and operational planning 2014 to 2019. Liver Disease.2013 June 2015. Available from: http://www.england.nhs.uk/ourwork/forward-view/sop/red-prem-mort/ld/.
11. Public Health Outcomes Framework2015. Available from: http://www.phoutcomes.info/.
12. Communities and Local Government. The English Indices of Deprivation 20102011 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf
13. Wallace C, Dargan P, Jones A. Paracetamol overdose: an evidence based flowchart to guide management. Emerg Med J. 2002;19:202-5.
14. Dyson J, Jaques B, Chattpadyhay D, Lochan R, Graham J, Das D, et al. Hepatocellular cancer: The impact of obesity, type 2 diabetes and a multidisciplinary team. Journal of Hepatology. 2014;60:110-7.
15. UK Liver Transplant Audit. Annual Report: Advisory Group for National Specialised Services. 2012. Available from: https://www.rcseng.ac.uk/surgeons/research/surgical-research/docs/liver-transplant-audit-report-2012.
16. NHSBT. Organs for Transplants, the supplement report.2008 May 2015. Available from: http://www.nhsbt.nhs.uk/to2020/resources/Taskforceevidencereview.pdf.

17. Martin N, Miners A, Vickerman P. Assessing the cost-effectiveness of interventions aimed at promoting and offering hepatitis C testing to injecting drug users: An economic modelling report2012 May 2015. Available from: http://www.nice.org.uk/guidance/ph43/evidence/hepatitis-b-and-c-ways-to-promote-and-offer-testing-economic-modelling-2.
18. NICE. Liver disease draft scope for consultation2014 June 2015. Available from: http://www.nice.org.uk/guidance/gid-cgwave0692/resources/liver-disease-nonalcoholic-draft-scope2.
19. PHE. Green Book chapter 19_v82014 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/385226/Green_Book_Chapter_19_v8_2.pdf.
20. PHE. Influenza vaccine uptake among GP patient groups in England. Winter Season 2012/13.2013 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207134/Influenza_vaccine_uptake_among_GP_patient_groups_in_England_for_winter_season_2012_2013.pdf.
21. PHE. Alcohol care in England's hospitals. An opportunity not to be wasted. 2014.
22. Home Office. The Government'a alcohol strategy2012 April 2015. Available from: https://www.gov.uk/government/publications/alcohol-strategy.
23. Institue for Policy Research. The cost of binge drinking in the UK.2015 June 2015. Available from: http://www.bath.ac.uk/ipr/pdf/policy-briefs/cost-of-binge-drinking.pdf.
24. PHE. Indications of Public Health in the English Regions. Indicators 8: Alcohol.2007 May 2015. Available from: http://www.apho.org.uk/resource/item.aspx?RID=39304.
25. Loring B. WHO. Alcohol and inequities: Guidance for addressing inequities in alcohol-related harm.2014 May 2015. Available from: http://www.euro.who.int/en/publications/abstracts/alcohol-and-inequities.-guidance-for-addressing-inequities-in-alcohol-related-harm.
26. Alcohol Concern, the Children's Society. Swept under the carpet: Children affected by parental alcohol misuse2010 April 2015. Available from: http://www.childrenssociety.org.uk/what-we-do/resources-and-publications/publications-library/swept-under-carpet-children-affected-pare.
27. BMA Board of Science. Fetal alcohol spectrum disorders. A guide for healthcare professionals2007 June 2015. Available from: http://www.nofas-uk.org/PDF/BMA%20REPORT%204%20JUNE%202007.pdf.
28. Youht Justice Board. Substance misuse Services in the Secure Estate.2009 June 2015. Available from: http://yjbpublications.justice.gov.uk/Resources/Downloads/Substance%20misuse%20services%20in%20the%20secure%20estate_fullreport.pdf.
29. PHE. Alcohol and drugs prevention, treatment and recovery: why invest?2013 June 2015. Available from: http://www.nta.nhs.uk/uploads/why-invest-2014-alcohol-and-drugs.pdf.
30. Aguirre M, Greenberg N, Sharpley J, Simpson R, Wall C. A pilot study of an Enhanced Mental Health Assessment during routine and discharge medicals in the British Armed Forces J R Army Med Corps 2014;160:27-31.
31. Jones E, Fear N. Alcohol use and misuse within the army: a review. International Review of Psychiatry. 2011;23:166-72.
32. Corrao G, Bagnardi V, Zambon A, La Vecchia C. A meta-analysis of alcohol consumption and the risk of 15 diseases. Preventive Medicine. 2004;38:613-9.
33. Sheron N, Moore M, O'Brien W, Harris S, Roderick P. Feasibility of detection and intervention for alcohol-related liver disease in the community: the Alcohol and Liver Disease Detection study (ALDDeS). Br J Gen Pract. 2013;63(615):e698–e705.

34. WHO. Evidence for the effectiveness and cost-effectiveness of interventions to reduce alcohol-related harm.2009 March 2015. Available from: http://www.euro.who.int/__data/assets/pdf_file/0020/43319/E92823.pdf.
35. PHE. Understanding alcohol-related hospital admissions 2014 [April 2015]. Available from: https://publichealthmatters.blog.gov.uk/2014/01/15/understanding-alcohol-related-hospital-admissions/.
36. PHE. User Guide: Local Alcohol Profiles for England 2014. 2014 June 2015. Available from: http://www.lape.org.uk/downloads/LAPE%20User%20Guide_Final.pdf. .
37. Alcohol Reseach UK. Alcohol Reseach UK. Understanding the alcohol harm paradox.2015 May 2015. Available from: http://alcoholresearchuk.org/alcohol-insights/understanding-the-alcohol-harm-paradox-2/?utm_source=Public+Health+Bulletin&utm_campaign=0dd03127a8-PHB_May_2015&utm_medium=email&utm_term=0_a51736aa99-0dd03127a8-169391629.
38. PHE, Health Do, HSCIC. Alcohol-related admissions: summary of responses to the consultation and future plans2013 June 2015. Available from: http://www.lape.org.uk/downloads/Admissions_consultation_nov8.pdf.
39. Wiltshire Council. Military Presence and Economic Significance in the South West Region.2009 May 2015. Available from: http://www.intelligencenetwork.org.uk/community/. .
40. National Confidential Enquiry into Patient Outcome and Death. Measuring the units. A review of patients who died with alcohol-related liver disease.2013 April 2015. Available from: http://www.ncepod.org.uk/2013report1/downloads/Measuring%20the%20Units_full%20report.pdf.
41. PHE. Alcohol care in England's hospitals An opportunity not to be wasted.2014 May 2015. Available from: http://www.alcohollearningcentre.org.uk/_library/Alcohol_Care_in_Englands_Hospitals_An_opportunity_not_to_be_wasted_PHE_Nov_14.pdf.
42. HSCIC. Statistics on Alcohol. England, 2014.2014 May 2015:[11 p.]. Available from: http://www.hscic.gov.uk/catalogue/PUB14184/alc-eng-2014-rep.pdf.
43. NICE. NICE advice [LGB6]. Alcohol. 2012 [June 2015]. Available from: https://www.nice.org.uk/advice/lgb6.
44. Holmes J, Meng Y, Meier P, Brennan A, Angus C, Campbell-Burton A, et al. Eff ects of minimum unit pricing for alcohol on diff erent income and socioeconomic groups: a modelling study. . Lancet.383(1655-64).
45. Alcohol Research UK. Using licensing to protect public health: from evidence to practice. 2014 [June 2015]. Available from: http://alcoholresearchuk.org/alcohol-insights/using-licensing-to-protect-public-health-from-evidence-to-practice-2/.
46. Local Government Association. Reducing the strength. Guidance for councils considering setting up a scheme. 2014 [June 2015]. Available from: http://www.local.gov.uk/documents/10180/5854661/L14-350+Reducing+the+Strength_14.pdf/bbbb642e-2bcb-47d4-8bea-2f322100b711.
47. PHE. PHE Alcohol Learning Resources. Work in Partnership. 2012 [June 2015]. Available from: http://www.alcohollearningcentre.org.uk/Topics/Browse/HIC/Partnership/.
48. The Royal College of Emergency Medicine. Information sharing to reduce community violence. 2011 [June 2015]. Available from: http://www.rcem.ac.uk/Shop-Floor/Clinical%20Guidelines/College%20Guidelines/
49. College of Policing. Injury surveillance: using A&E data for crime reduction. Guidance for police analysts and practitioners.2014 June 2015. Available from: http://www.college.police.uk/About/What-do-we-offer/Documents/RR-851-CoP_AE_Guidance_report_final.pdf.

50. University of Sussex. Dry January leads to less drinking all year round. 2014 [June 2015]. Available from: http://www.sussex.ac.uk/broadcast/read/27612.
51. Moyer A, Finney J, Swearingen C, Vergun P. Brief interventions for alcohol problems:a meta-analytic review of controlled investigations in treatment-seeking and non-treatment-seeking populations. . Addiction. 2002;97:279-92.
52. Matrix Insight. Brief interventions delivered in GP surgeries to reduce problem drinking. 2009 [May 2015]. Available from: http://help.matrixknowledge.com/interventions/docs/HE%20Intervention%20Report%203.pdf.
53. NICE. Alcohol use disorders: preventing harmful drinking [PH24]. 2010 [June 2015]. Available from: http://www.nice.org.uk/guidance/ph24/chapter/recommendations.
54. The Alcohol Academy. Clarifying alcohol brief interventions: 2013 update. 2013 [May 2015]. Available from: http://www.alcoholacademy.net/uploads/Clarifying%20brief%20interventions_%20Academy%20briefing%20paper%20June%202010(2).pdf
55. PHE. PHE Alcohol Learning Resources. [June 2015]. Available from: http://www.alcohollearningcentre.org.uk/eLearning/IBA/platforms/ALC/.
56. SIPS. [May 2015]. Available from: http://sips.iop.kcl.ac.uk/contactus.php#.
57. PHE. PHE Alchol Learning Resources. Alcohol IBA. [May 2015]. Available from: http://www.alcohollearningcentre.org.uk/eLearning/IBA/.
58. Touquet R, Patton A. Alcohol misuse: Positive response. Alcohol Health Work for every acute hospital saves money and reduces repeat attendances. . Emergency Medicine Australasia. 2006;18:103-7.
59. Moriarty K. Alcohol Care Teams: reducing acute hospital admissions and improving quality of care. 2014. NICE Quality and Productivity: Proven Case Study.2014 May 2015. Available from: http://arms.evidence.nhs.uk/resources/qipp/29420/attachment
60. UKATT Research Team. Cost effectiveness of treatment for alcohol problems: findings of the randomised alcohol treatment trial UK. BMJ. 2005;331:544.
61. Porter K. Bristol 'Streetwise-Street Drinkers Evaluation, unpublished. 2013.
62. Ward M, Holmes M. Alcohol Concern's Blue Light Project. Working with change resistant drinkers. The project Manual.2014 June 2015. Available from: http://www.alcoholconcern.org.uk/wp-content/uploads/2015/01/Alcohol-Concern-Blue-Light-Project-Manual.pdf.
63. Cecchini M, Devaux M, Sassi F. Assessing the impacts of alcohol policies: a microsimulattion approach. OECG Health Working Papers [Internet]. 2015 June 2015; 80. Available from: http://dx.doi.org/10.1787/5js1qwkvx36d-en.
64. WHO. Hepatitis B 2015 [June 2015]. Available from: http://www.who.int/csr/disease/hepatitis/whocdscsrlyo20022/en/index1.html.
65. Cochrane A, Hickman M, Evlampidou I, Irish C, Ingle S, Collins P, et al. Service evaluation and surveillance of hepatitis B case finding and secondary care engagement among migrant populations in Bristol. Report 1.2015 June 2015. Available from: http://www.apcrc.nhs.uk/library/evaluation_reports/documents/hepatitis_b_service_evaluation_report_casefinding_only.pdf.
66. NICE. Hepatitis B (chronic): diagnosis and management of chronic hepatitis in children, young people and adults. NICE guidelines [CG165]. 2013 June 2015. Available from: http://www.nice.org.uk/Guidance/CG165.
67. Chu C. Natureal history of chronic hepatitis B virus infection in adults with emphasis on the occurrence of cirrhosis and hepatocellular carcinoma. J Gastroenterol Hepatol. 2000;15(suppl):e25-30.
68. PHE. Acute hepatitis B (England): annual report for 2013.2013 May 2015. Available from:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/348576/hpr3314_hbv13.pdf.
69. PHE. Data tables of the Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in People Who Inject Drugs. 2014 May 2015. Available from: https://www.gov.uk/government/statistics/people-who-inject-drugs-hiv-and-viral-hepatitis-monitoring.
70. PHE. Data tables of the Unlinked Anonymous Monitoring Survey of HIV and Hepatitis in People Who Inject Drugs. People who inject image and performance enhancing drugs.2014 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/326898/UAM_Survey_data_tables_2014_IPED.pdf.
71. Evlampidou I, Hickman M, Irish C, Cochrane A. High risk of hepatitis B virus infection and unmet case-finding need among migrants in Bristol, UK: a cross-sectional study. Lancet. 2014;384:S31.
72. Cochrane A, Evlampidou I, Irish C, Ingle S, Hickman M. Hepatitis B infection prevalence by country of birth in migrant populations in a large UK city. Journal of Clinical Virology. 2015;68:79-82.
73. Allaby M. Screening for hepatitis B and hepatitis C among ethnic minorities born outside the UK. A report for the National Screening Committee. 2010 June 2015. Available from: www.screening.nhs.uk/policydb_download.php?doc=89.
74. PHE. Hepatitis B workook. 2014.
75. PHE. PHE Infection Reports 2014. 2014 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/345716/hpr2914_senthep.pdf.
76. PHE Infection Reports 2014. 2014. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/345716/hpr2914_senthep.pdf.
77. PHE. National Antenatal Infections Screening Monitoring (NAISM). 2014 May 2015. Available from: https://www.gov.uk/government/publications/national-antenatal-infections-screening-monitoring-annual-data-tables.
78. PHE. KPI reports 2013-14.2014 June 2015. Available from: http://www.screening.nhs.uk/kpi.
79. HSCIC. NHS Immunisation Statistics, England 2013-14.2014 May 2015. Available from: http://www.hscic.gov.uk/catalogue/PUB14949/nhs-immu-stat-eng-2013-14-rep.pdf
80. Revolving Doors Agency. Revolving Doors Prisoners - what works?2011 May 2015. Available from: http://www.revolving-doors.org.uk/documents/revolving-door-prisoners-what-works/.
81. PHE. Improving testing rates for blood-borne viruses in prisons and other secure settings.2014 June 2015. Available from: https://www.gov.uk/government/publications/improving-testing-rates-for-blood-borne-viruses-in-prisons-and-other-secure-settings.
82. PHE. Shooting Up: Infections among people who inject drugs in the UK 2012. An update November 2013. 2013 May 2015. Available from: http://legacytools.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317140236856.
83. Matthews C, Gloucestershire County Council. Epidemiological health needs assessment for hepatitis B and C in Gloucesershire.2014 May 2015. Available from: http://www.gloucestershire.gov.uk/mobile/CHttpHandler.ashx?id=62870&p=0.
84. BASHH. UK national Guidelines on safer sex advice. 2012. Available from: http://www.bashh.org/documents/4452.pdf. .

85. Cochrane A, Hickman M, Evlampidou I, Irish C, Ingle S, Collins P, et al. Service evaluation and Surveillance of Hepatitis B Case Finding and Secondary Care Engagement among Migrant Populations in Bristol. Report 3 – contact tracing. . 2015.
86. Cochrane A. Service evaluation and surveillance of hepatitis B case finding and secondary care engagement among migrant populations in Bristol. Report 2. 2015.
87. Jones L, Atkinson A, Porcellato L, Bates G, McCoy E, Beynon C, et al. A systematic review of qualitative research on the views, perspectives and experiences of hepatitis B and C testing among practitioners and people at greatest risk of infection. 2012 June 2015. Available from: http://www.nice.org.uk/guidance/ph43/evidence/hepatitis-b-and-c-ways-to-promote-and-offer-testing-evidence-review-12.
88. Jones L, Bates G, McCoy E, Beynon C, McVeigh J, Bellis M. A systematic review of the effectiveness and cost-effectiveness of interventions aimed at raising awareness and engaging groups who are at increased risk of hepatitis B and C infection.2012 June 2015. Available from: http://www.nice.org.uk/guidance/ph43/evidence/hepatitis-b-and-c-ways-to-promote-and-offer-testing-evidence-review-22.
89. NICE. PH 43: Hepatitis B and C: ways to promote and offer testing to people at increased risk of infection. 2010 June 2015. Available from: https://www.nice.org.uk/guidance/ph43/chapter/appendix-c-the-evidence
90. Chien Y JC, Kuo H, Chen C. Nationwide hepatitis B vaccination program in Taiwan: effectiveness in the 20 years after it was launched. Epidemiologic Reviews 2006. 28: 126–35. Epidemiologic Reviews. 2006;28:126-35.
91. WCRF. Diet, nutrition, physical activity and liver cancer. 2015 May 2015. Available from: http://www.wcrf.org/sites/default/files/Liver-Cancer-2015-Report.pdf. .
92. JCVI. Minute of the meeting on 1 October 2014. 2014 June 2015. Available from: https://app.box.com/s/iddfb4ppwkmtjusir2tc. .
93. Weaver T, Metrebian N, Hellier J, Pilling S, Charles V, Little N, et al. Use of contingency management incentives to improve completion of hepatitis B vaccination in people undergoing treatment for heroin dependence: a cluster randomised trial. Lancet. 2014;384(9938):153-63.
94. Keel PF, J; Edwards G; et al., editor Home delivered dried blood spot testing - assessing the impact on screening uptake for household contacts of hepatitis B infected pregnant women. Five Nations Health PRotection Conference; 2013; Dublin.
95. Thakur V, Guptan RC, Malhotra V, Basir SF, Sarin SK. Prevalence of hepatitis B infection within family contacts of chronic liver disease patients--does HBeAg positivity really matter? The Journal of the Association of Physicians of India. 2002;50:1386-94.
96. Departments of Health, Children Schools and Families, Ministry of Justice, Youth Justice Board, Home Office. Improving Health, Supporting Justice - a consultation. A strategy for improving health and social care services for people subject to the criminal justice system.2007 June 2015. Available from: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Consultations/Liveconsultations/DH_080816?IdcService=GET_FILE&dID=154893&Rendition=Web.
97. Ministry of Justice. Safety in Custody Statistics England and Wales, Deaths in prison custody to December 2014, Assaults and Self-harm to September 2014 2014 June 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/368370/safety-in-custody-2014.pdf.
98. Offender Health Research Network. An evaluation of the reception screening process used within prisons in England and Wales. 2008 May 2015. Available from: http://www.ohrn.nhs.uk.

99. PHE. Hepatitis B in residential/boarding schools. Supporting information for managing incidents.2012 June 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/343547/HPA_Hepatitis_B_Boarding_School_Guidance.pdf.
100. Wong V, Ip H, Reesink H, Lelie P, Reerink-Brongers E, Yeung C, et al. Prevention of the HBsAg carrier state in newborn infants of mothers who are chronic carriers of HbsAg and HBeAg by administartiion of hepatitis B vaccine and hepatitis B immunoglobulin. Lancet. 1984;1(8383):921-6.
101. Liu L, Wang H, et al. Long term follow up of recombinant and plasma derived hepatitis B vaccines in infants born to HBsAg carrier mothers. Virus Information Exchange Newsletter, 1991.
102. Poovorawan Y, Snapavat S, Chumdempadetsuk S, Safary A. Long term efficacy of hepatitis B vaccine in infants born to hepatitis B e antigen positive mothers. Paediatric Infectious Disease Journal. 1992;11(10):816-21.
103. Lee C, Gong Y, Brok J, Boxall E, Gluud C. Effect of hepatitis B immunisation in newborn infants of mothers positive for hepatitis B surface antigen: systematic review and meta-analysis. BMJ. 2006;332:328.
104. Edmunds J, Ramsay M. The estimated cost-effectiveness of vaccination in infants born to hepatitis B virus positive mothers2009 May 2015. Available from: http://www.nice.org.uk/guidance/ph21/documents/reducing-differences-in-the-uptake-of-immunisations-economic-analysis-3--full-report2.
105. Sloan D, Ramsay M, Prasad L, Gelb D, Teo C. Prevention of perinatal transmission of hepatitis B to babies at high risk: an evaluation. Vaccine. 2005;23:5500-8.
106. Losonsky G, Waterman S, Stephens I, Mahoney F, Armstrong P, Gumpper K, et al. Hepatitis B vaccination of premature infants: a reassessment of current recommendations for delayed immunization. Pediatrics. 1999;103:E14.
107. Beasley R, Stevens C, Shiao I, Meng H. Evidence against breastfeeding as a mechanism for vertical transmission of hepatitis B. . Lancet. 1975;2(7938):740-1.
108. Edmunds JR, M. The estimated cost-effectiveness of vaccination in infants born to hepatitis B virus positive mothers. NICE, 2009 September 2009. Report No.
109. Van der Meer A, Veldt B, Feld J, Wedemeyer H, Dufour J, Lammert F. Association between sustained virological response and all-cause mortality among patients with chronic hepatitis C and advanced hepatis fibrosis. . JAMA. 2012;308(24):2584-93.
110. Lattimore S, Irving W, Collins S, Penman C, Ramsay M. Using surveillance data to determine treatment rates and outcomes for patients with chronic hepatitis C virus infection. . Hepatology. 2014;59:1343-50.
111. PHE. Hepatitis C workbook. . 2014 2014. Report No.
112. PHE. Hepatitis C in the UK: 2014 report2014 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337115/HCV_in_the_UK_2014_24_July.pdf.
113. Hay G, Gannon M, MacDougall J, Millar T, Eastwood C, McKeganey N. Local and national estimates of the prevalence of opiate use and/or crack cocaine use (2004/05) In Singleton, N., Murray, R. and Tinsley, L. (Eds.) Measuring different aspects of problem drug use: methodological developments. Online Report OLR 16/06. London. Home Office.2006 June 2015.
114. PHE. Estimates of the Prevalence of Opiate Use and/or Crack Cocaine Use, 2011/12 2012 [May 2015]. Available from: http://www.nta.nhs.uk/facts-prevalence.aspx.
115. Hope V. Presentation to National Intelligence Network meeting on the health harms associated with drug use. Centre for Infectious Disease Surveillance and Control, PHE.2014 May 2015. Available from: http://www.nta.nhs.uk/uploads/presentations-nin-040614.pdf.

116. Datta S, Horwood J, Hickman M, Sharp D. Case-finding for hepatitis C in primary care: a mixed-methods service evaluation. . Br J Gen Pract. 2014;64:76.
117. HCV Action. HCV action. 2015.
118. NHS England. Service Specification for hepatitis C networks. 2014 [April 2015]. Available from: https://www.engage.england.nhs.uk/consultation/specialised-services-policies/user_uploads/hep-c-netwrk-serv-spec.pdf.
119. Harris R, Thomas B, Griffiths J, Costella A, Chapman R, Ramsay M, et al. Increased uptake and new therapies are needed to avert the rising hepatitis C-related end stage liver disease in England: Modelling the predicted impact of treatment under different scenarios. Journal of Hepatology. 2014;61(3):530-7.
120. Martin N, Foster G, Vilar J, Ryder S, Cramp M, Gordon F, et al. HCV treatment rates and sustained viral response among people who inject drugs in seven UK sites: real world results and modelling of treatment impact. J Viral Hepat. 2015;22(4):399-408.
121. Rhodes T, Treloar C. The Lived Experience of Hepatitis C and its Treatment among injecting drug users: qualitative synthesis. Qualitative Health Research. 2009;19(9):1321-34.
122. Ellard J. There is no profile it is just everyone.: The challenge of targeting hepatitis C education and prevention message to the diversity of current and future injecting drug users. International Journal of Drug Policy. 2007;18(3):225-34.
123. Craine N, Parry J, O'Toole J, D'Arcy S, Lyons M. Improving blood borne viral diagnosis; clinical audit of the uptake of dried blood spot testing offered by a substance misuse service. . Journal of Viral Hepatitis. 2009;16(3):219-22.
124. Tompkins C, Wright N, Jones L. Impact of a positive hepatitis C diagnosis on homeless drug users: A qualitative study. . British Journal of General Practice. 2006;55:263-8.
125. Hickman M, McDonald T, Judd A, Nichols T, Hope V, Skidmore S, et al. Increasing the uptake of hepatitis C virus testing among injecting drug users in specialist drug treatment and prison settings by using dried blood spots for diagnostic testing: a cluster randomized controlled trial. Journal of Viral Hepatitis. 2008;15(4).
126. Munoz-Plaza C, Strauss S, Astone J, Des Jarlais D, Hagan H. Drug treatment programs as sites of opportunity for the delivery of hepatitis C prevention education: Client and staff perspectives. . Journal of Drug Issues. 2004;34(4):861-78.
127. Wright N, Tomkins C, Jones L. Exploring risk perception and behaviour of homeless injecting drug users diagnosed with hepatitis C. . Health & Social in the Care Community. 2005;13(1):75-83.
128. Martin N, Hickman M, Miners A, Hutchinson S, Taylor A, Vickerman P. Cost-effectiveness of HCV case-finding for people who inject drugs via died blood testing in specialist addiction services and prisons. BMJ Open. 2013;3(8)::e003153.
129. Miners A, Martin N, Ghosh A, Hickman M, Vickerman P. Assessing the cost-effectiveness of finding cases of hepatitis C infection in UK migrant populations and the value of further research. Journal of Viral Hepatitis. 2013;21(9):616-23.
130. PHE. Treat addiction, cut crime. How treatment and recovery services reduce drug-related offending 2012 [June 2015]. Available from: http://www.nta.nhs.uk/uploads/vfm-crimepresentationvfinal.pdf.
131. Turner K, Hutchinson S, Vickerman P, Hope V, Craine N, Palmateer N, et al. The impact of needle and syringe provision and opiate substitution therapy on the incidence of hepatitis C virus in injecting drug users: pooling of UK evidence. Addiction. 2011;106:1978-88.
132. Tilson H, Aramrattana A, Bozette S, Celentano D, Falco M, Hammett T, et al. Preventing HIV infection among injecting drug users in high risk countries: an assessment of the evidence. Washington DC: Institute of Medicine; 2007.

133. ECDC, EMCDDA. Evidence for the effectiveness of interventions to prevent infections among people who inject drugs, Part 1: Needle and syringe programmes and other interventions for preventing hepatitis C, HIV and injecting risk behaviours.2011 May 2015. Available from: http://www.emcdda.europa.eu/attachements.cfm/att_145115_EN_ECDC-EMCDDA%20Part%201%20-%20complete%20-%20Web.pdf.
134. NICE. PH52: Needle and syringe programmes2014 May 2015. Available from: https://www.nice.org.uk/guidance/ph52.
135. ECDC, EMCDDA. Evidence for the effectiveness of interventions to prevent infections among people who inject drugs, Part 2: Drug Treatment for preventing hepatitis C, HIV and injecting risk behaviour.2011 May 2015. Available from: http://www.emcdda.europa.eu/attachements.cfm/att_145116_EN_ECDC-EMCDDA%20Part%202_web.pdf.
136. Yeung C, Lee H, Chan W, Jiang C, Chang S, Chuang C. Vertical transmission of hepatitis C virus: current knowledge and perspectives. World Journal of Hepatology. 2014;6(9):643-51.
137. European Paediatric Hepatitis C Virus Network. A significant sex-but not elective Cesarean section-effect on mother-to-child transmission of hepatitis C virus infection. The Journal of Infectious Diseases. 2005;192(11):1872-9.
138. Mast E, Hwang L, Seto D, Nolte F, Nainan O, Wurtzel H, et al. Risk factors for perinatal transmission of hepatitis C virus (HCV) and the natural history of HCV infection acquired in infancy. The Journal of Infectious Diseases. 2005;19(11):1880-9.
139. European Monitoring Centre for Drugs and Drug Addiction. United Kingdom drug situation: annual report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2010 May 2015. Available from: http://www.emcdda.europa.eu/publications/country-overviews/uk.
140. Hickman M, Higgins V, Hope V, Bellis M, Tilling K, Walker A, et al. Injecting drug use in Brighton, Liverpool, and London: best estimates of prevalence and coverage of public health indicators. J Epidemiol Community Health. 2004;58(9):766-71.
141. Cusick L, Martin A, May T. Vulnerability and involvement and in drug use and sex work. 2003 [June 2015]. Available from: http://www.researchgate.net/profile/Anthea_Martin/publication/238070172_Vulnerability_and_involvement_in_drug_use_and_sex_work/links/0deec525eb6dde7dee000000.pdf.
142. Melrose M. Fractured transitions: Disadvantaged young people, drug taking and risk. The Journal of Community and Criminal Justice. 2004;51:327-41.
143. Advisory Council on the Misuse of Drugs. Hidden harm – responding to the needs of children of problem drug users. 2003 [May 2015]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/120620/hidden-harm-full.pdf.
144. Ward J, Henderson Z, Pearson G. One problem among many: drug use among care leavers in transition to independent living 2003 [June 2015]. Available from: http://www.drugsandalcohol.ie/5584/1/Home_Office_Research_Study_260_One_problem_among_many.pdf.
145. Department of Education. Outcomes for children looked after by local authorities in England as at 31 March 20142013 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/264385/SFR50_2013_Text.pdf.
146. Sitole M, Silva M, Spooner L, Comee M, Malloy M. Telaprevir versus boceprevir in chronic hepatitis C: a meta-analysis of data from phase II and III trials. Clin Ther. 2013;35(2):190-7.

147. Cooper C, Druyts E, Thorlund K, Nachega J, El Khoury A, O'Regan C, et al. Boceprevir and telaprevir for the treatment of chronic hepatitis C genotype 1 infection: an indirect comparison meta-analysis. Ther Clin Risk Manag. 2012;8:105-30.
148. NICE. NICE technology appraisal guidance [TA253]. Boceprevir for the treatment of genotype 1 chronic hepatitis C. 2012 [June 2015]. Available from: https://www.nice.org.uk/guidance/ta253/resources.
149. NICE. NICE technology appraisal guidance [TA252]. Telaprevir for the treatment of genotype 1 chronic hepatitis C. 2012 [June 2015]. Available from: https://www.nice.org.uk/guidance/ta252/resources.
150. NICE. Sofosbuvir for treating chronic hepatitis C [TA330] 2015 [June 2015]. Available from: https://www.nice.org.uk/guidance/ta330/chapter/4-Consideration-of-the-evidence#/genotypes-4-5-and-6.
151. Martin N, Hickman M, Hutchinson S, Goldberg D, Vickerman P. Combination interventions to prevent HCV transmission among people who inject drugs: modeling the impact of antiviral treatment, needle and syringe programs, and opiate therapy. Clinical Infectious Diseases. 2013;57(suppl 2):S39–45.
152. Wedemeyer H, Duberg A, Buti M, Rosenberg W, Frankova S, Esmat G, et al. Strategies to manage hepatitis C virus (HCV) disease burden. Journal of Viral Hepatitis. 2014;21(suppl 1):60-89.
153. Nobili V, Pinzani M. Paediatric non-alcoholic fatty liver disease. . Gut. 2010;59(5):561-4.
154. Feldstein AE CP, Treeprasertsuk, S Benson JT, Enders FB, Angulo P. The natural history of non-alcoholic fatty liver disease in children: a follow-up study for 20 years. . Gut. 2009;58:1538-44.
155. Lilford R, Bentham L, Girling A, Litchfield I, Lancashire R, Armstrong D, et al. Birmingham and Lambeth Liver Evaluation Testing Strategies (BALLETS): a prospective cohort study. . Health Technol Assess. 2013;17(i–xiv):1-307.
156. David K, Kowdley K, Unalp A, Kanwal F, Brunt E, Schwimmer J, et al. Quality of life in adults with non-alcoholic fatty liver disease: baseline data from the non-alcoholic statohepatitis clinical research network. Hepatology. 2009;49(6):1904-12.
157. Dixon J, Bhathal P, O'Brien P. Weight loss and non-alcoholic fatty liver disease: falls in gamma-glutamyl transferase concentrations associated with histoligical improvements. Obes Surg. 2006;16:1278-86.
158. Stratopoulos C, A P, Terzis I, Spiliadi C, Dimitriades G, Komesidou V, et al. Changes in liver histology accompanying massive weight loss after gastroplasty for morbid obesity. . Obes Surg. 2005;15(8):1154-60.
159. NICE advice. Body mass index thresholds for intervening to prevent ill health among black, Asian and other minority ethnic groups2014. Available from: https://www.nice.org.uk/advice/lgb13.
160. PHE. The economic burden of obesity.2010 May 2015. Available from: http://www.noo.org.uk/uploads/doc/vid_8575_Burdenofobesity151110MG.pdf.
161. PHE. Local Authorities - Education 2015 [May 2015]. Available from: http://www.noo.org.uk/LA/impact/education.
162. PHE. Obesity and alcohol: an overview.2012 May 2015. Available from: http://www.noo.org.uk/uploads/doc/vid_14627_Obesity_and_alcohol.pdf.
163. Butland B, Jebb S, Kopelman P, McPherson K, Thomas S, Mardell J, et al. Tackling obesities: future choices – project report (2nd Ed). Foresight Programme of the Government Office for Science. 2007.
164. NHS England. NHS five year forward view. 2014 May 2015. Available from: http://www.england.nhs.uk/ourwork/futurenhs/. .

165. HSCIC. Health Survey for England 2013 – trend tables. 2013 May 2015. Available from: http://www.hscic.gov.uk/article/2021/Website-Search?productid=16572&q=health+survey+for+england&sort=Relevance&size=10&page=1&area=both#top.
166. PHE. Local Authority Adult Excess Prevalence Data. 2015 [May 2015]. Available from: http://www.noo.org.uk/visualisation. .
167. PHE. Health Inequalities.2015 May 2015. Available from: https://www.noo.org.uk/NOO_about_obesity/inequalities.
168. HSCIC. National Child measurement Programme, 2013/14 school year.2014 May 2015. Available from: www.hscic.gov.uk/catalogue/PUB16070.
169. Mummad R, Kasturi K, Chennareddygari S, Sood G. Effect of Bariatric Surgery on Nonalcoholic Fatty Liver Disease: Systematic Review and Meta-Analysis. . Clinical Gastroenterology and Hepatology. 2008;6(12):1396-402.
170. Physical activity return on investment tool.2014. Available from: https://www.nice.org.uk/about/what-we-do/into-practice/return-on-investment-tools/physical-activity-return-on-investment-tool.
171. Obesity data and tools. Weight management assessment tool.2015. Available from: https://www.noo.org.uk/visualisation.
172. map of medicine. Map of medicine. The pathway to improved care. 2014.
173. Department of Health. Developing a specification for lifestyle weight management services. Best practice guidance for tier 2 services. 2013 May 2015. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/14723/Weight_Management_Service.
174. NHS Commissioning Board. Clinical Commissioning Policy: complex and specialised obesity surgery.2013 May 2015. Available from: http://www.england.nhs.uk/wp-content/uploads/2013/04/a05-p-a.psf.

9. Appendix

Appendix 1 – ICD codes for liver disease, individual liver causes, liver cancer, percentage change in mortality compared to other common diseases, Years of Life Lost from causes other than liver disease.

All liver disease:

ICD-10 code	Description
B15	Acute hepatitis A
B16	Acute hepatitis B
B17	Other acute viral hepatitis
B18	Chronic viral hepatitis
B19	Unspecified viral hepatitis
C22	Malignant neoplasm of liver and intrahepatic bile ducts
I81	Portal vein thrombosis
I85	Oesophageal varices
K70	Alcoholic liver disease
K71	Toxic liver disease
K72	Hepatic failure, not elsewhere classified
K73	Chronic hepatitis, not elsewhere classified
K74	Fibrosis and cirrhosis of liver
K75	Other inflammatory liver diseases
K76	Other diseases of liver
K77	Liver disorders in diseases classified elsewhere
T864	Liver transplant failure and rejection

Liver Cancer:

ICD-10 code	Description
C220	Liver cell carcinoma
C221	Intrahepatic bile duct carcinoma
C222	Hepatoblastoma
C223	Angiosarcoma of liver
C229	Liver, unspecified

% change mortality common diseases:

ICD-10 code	Description
I20-I25	Ischaemic heart
I60-I69	Cerebrovascular
C00-C97	Neoplasms
I00-I99	Circulatory
J00-J99	Respiratory
E00-E90	Endocrine
E10-E14	Diabetes

Individual liver causes:

ICD-10 code	Description
K70	Alcoholic liver disease
K760	Non-alcohol related fatty liver disease
B15, B16, B17, B18, B19	Hepatitis
C22	Liver Cancer
C220	Hepatocellular carcinoma
B16, B18.0 and B18.1	Hepatitis B
B17.1 and B18.2	Hepatitis C

Hepatitis B	Deaths from hepatitis B related end-stage liver disease/hepatocellular carcinoma (classified by a cause of death mention of ICD codes B16 or B180-B181 and a cause of death mention of at least one of C220, I850, K704, K720, K721, K729, K767, R18)
Hepatitis C	Deaths from hepatitis C related end-stage liver disease/hepatocellular carcinoma (classified by a cause of death mention of ICD codes B171 or B182 and a cause of death mention of at least one of C220, I850, K704, K720, K721, K729, K767, R18)

YLL other causes:

ICD-10 code	Description
C50	Breast cancer
C18-C20	Colorectal cancer
F11-F19, X40-X44, X60-X64, Y10-Y14, Y85	Drug use disorder
I20-I25	Ischaemic heart disease
J10-J22, J40-J47	Lower respiratory infection
C33-C34	Lung cancer
V011, V021, V031, V041, V051, V061, V09-V89	RTA
X60-X84, Y10-Y34	Self harm
I60-I69	Stroke

Appendix 2 – NDTMS data collection methodology

In 2013/14 the methodology for grouping and counting people in treatment did so by an agreed hierarchy. There are three drug fields that record the most problematic substances an individual presents to treatment for. The previous rules for counting individuals meant that there was some potential for double counting, depending on which drug group you required to report on. This is illustrated below using the 2013/14 NDTM end of year figures.

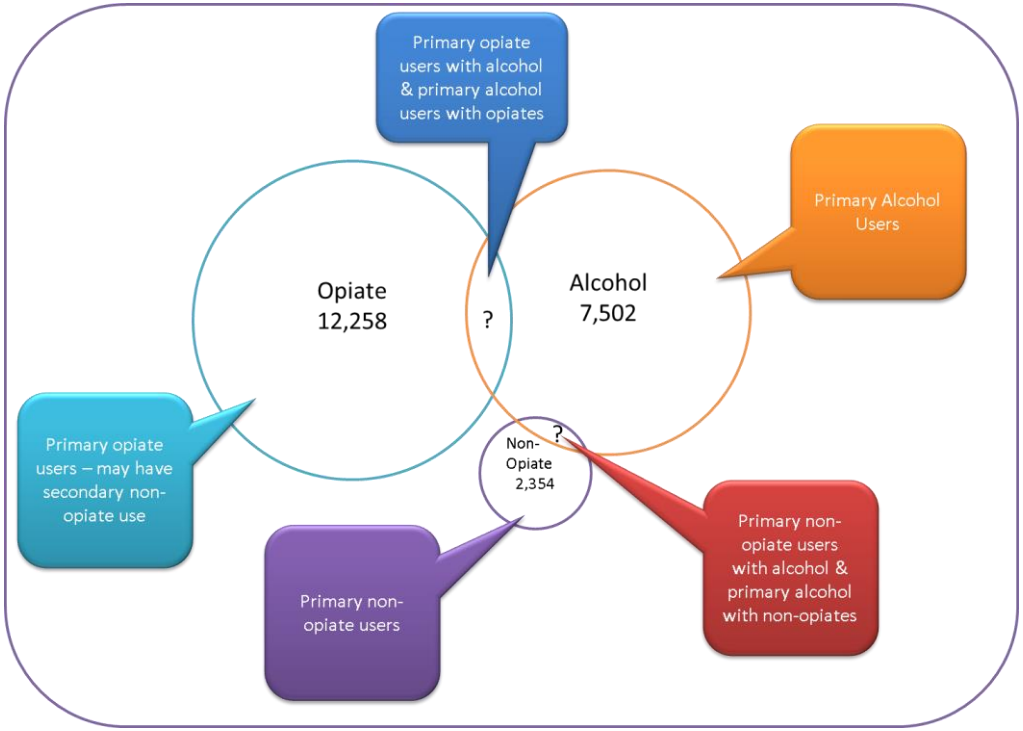


Figure 1.1: Historical reporting categories led to some individuals being reported more than once in the reporting framework. The data for this study has eliminated this by using mutually exclusive groupings shown in the next figure.

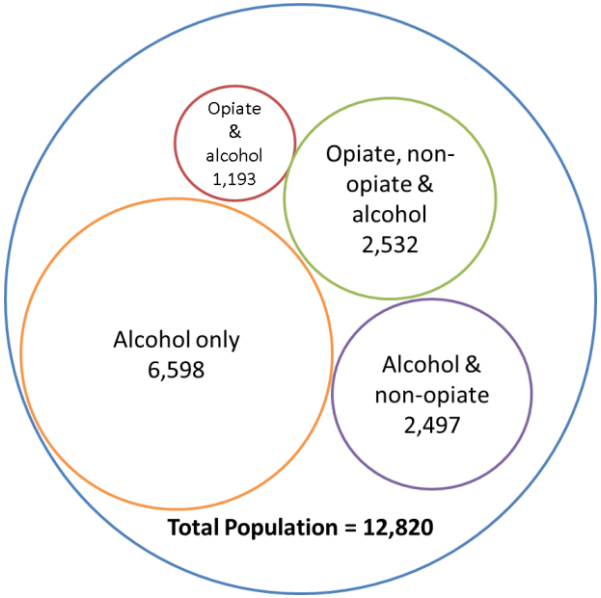


Figure 1.2 Four mutually exclusive groups have been used for this paper. This ensures that all individuals where alcohol is cited in the primary secondary or tertiary problem substance will be included in the data.

The Statistics in this report present information collected through the National Drug Treatment Monitoring System on clients that are receiving specialist interventions for alcohol and/or drug dependence. Specialist Treatment is one strand of both Government's Drug and Alcohol Strategies, which set out to address a wide range of health, social and criminal justice harms associated with substance misuse (including alcohol).

These statistics are used by government to monitor the national availability and effectiveness of alcohol treatment. They are reported by local treatment providers on a monthly basis and this data is regularly provided to providers and local service commissioners in the form of reports, diagnostic toolkits and Joint Strategic Needs Assessment documents to assist them to monitor their local response to the need for alcohol treatment, improve the outcomes of clients in treatment and to assist in service planning and assuring cost effectiveness and value for money.

More detail on the methodologies used to compile these statistics and the processes that are in place to ensure data quality can be found here – https://www.ndtms.net/NDTMSRelated.aspx?page=ns

Appendix 3 – Self-assessment alcohol stocktake, detail

The tables indicate the stocktake returns summarised and grouped for convenience utilising the following rating:

KEY
4 Fully implemented
3 Implemented in part - actions being progressed or update required
2 Implemented in part - actions being developed
1 further development required
0 Not progressed

Strategic leadership and planning

	Strategic Leadership and Planning								
	Needs assessment and data					Finance		Pathways	
	JSNA current with comprehensive Alcohol section	Commissioning informed by local evidence and linked strategies	Alcohol related hospital admission data collected and analysed	Specialist treatment data collected and analysed	Outcome focused commissioning	Investment across all partners commensurate with level of identified need	VfM approach utilising available tools	Information on pathways available to all concerned	pathways appropriate for current and future users
Partnership									
BaNES	3	3	4	4	4	3	3	3	3
Bristol	3	3	4	4	4	2	3	4	4
CloS	3	3	3	4	4	3	3	4	3
Devon	3	4	4	4	4	3	3	3	3
Gloucestershire	3	3	3	4	3	3	3	2	2
North somerset	3	3	3	4	4	3	3	3	3
Plymouth	3	4	4	4	4	3	4	4	4
Somerset	3	4	4	4	4	3	4	4	4
South Gloucestershire	3	4	4	4	4	3	4	4	4
Swindon	3	3	4	4	4	3	4	4	3
Torbay	3	2	4	4	4	4	3	3	4
Wiltshire	3	3	3	4	4	3	4	4	3

Population level actions

	Population level actions					
	Primary prevention					
	Local alcohol social marketing campaigns reflect national messages	Licensing policy utilises range of data	Hospital and ambulance data routinely shared to inform actions	Cumulative impact policy used appropriately	Compliance with Licensing conditions monitored, reviewed and enforced	The Responsibility Deal supported and additional local actions
Partnership						
BaNES	4	4	2	4	3	2
Bristol	4	3	3	4	4	1
CIoS	4	3	3	4	4	3
Devon	4	4	3	4	4	3
Gloucestershire	4	3	2	3	3	2
North somerset	3	3	3	4	4	2
Plymouth	4	3	2	4	4	3
Somerset	4	3	3	4	4	2
South Gloucestershire	4	4	3	4	4	2
Swindon	3	3	3	4	4	2
Torbay	3	4	4	4	4	1
Wiltshire	3	3	3	4	3	2

Targeted interventions

	Secondary prevention			
	Evidence-based alcohol IBA commissioned, monitored and evaluated	MECC includes alcohol IBA	IBA commissioned across a range of community and custodial settings	NHS Health Checks include alcohol IBA
Partnership				
BaNES	**3**	**3**	**3**	**4**
Bristol	**4**	**4**	**3**	**4**
CIoS	**4**	**3**	**4**	**4**
Devon	**3**	**3**	**4**	**4**
Gloucestershire	**3**	**2**	**3**	**4**
North somerset	**3**	**2**	**3**	**4**
Plymouth	**3**	**2**	**3**	**4**
Somerset	**4**	**3**	**3**	**4**
South Gloucestershire	**3**	**3**	**3**	**4**
Swindon	**3**	**2**	**3**	**4**
Torbay	**4**	**3**	**3**	**4**
Wiltshire	**3**	**3**	**3**	**4**

Specialist treatment

	Tertiary prevention							
	Integrated alcohol treatment and prevention available across conmmunity and custodial settings	capacity sufficient to address local needs	Highest risk groups targeted	Information routinely shared under appropriate governance arrangements	Treatment Services in all settings offer evidence-based, effective recovery-orientated interventions in line with NICE guidance and Quality Standards	range of recovery support inteventions and services available	outcomes monitored and analysed to inform planning	integrated pathways to ensure continuity of care between community and custodial settings
Partnership								
BaNES	**3**	**3**	**3**	**4**	**4**	**4**	**4**	**3**
Bristol	**3**	**3**	**3**	**4**	**4**	**4**	**4**	**3**
CIoS	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**3**
Devon	**4**	**3**	**4**	**4**	**4**	**4**	**4**	**4**
Gloucestershire	**3**	**3**	**3**	**3**	**4**	**4**	**4**	**3**
North somerset	**3**	**3**	**4**	**4**	**4**	**4**	**4**	**3**
Plymouth	**4**	**2**	**4**	**4**	**4**	**4**	**4**	**3**
Somerset	**4**	**3**	**4**	**4**	**4**	**4**	**4**	**3**
South Gloucestershire	**4**	**3**	**4**	**4**	**4**	**4**	**4**	**4**
Swindon	**3**	**3**	**4**	**4**	**4**	**4**	**4**	**3**
Torbay	**4**	**4**	**3**	**4**	**4**	**4**	**4**	**3**
Wiltshire	**4**	**3**	**4**	**4**	**4**	**4**	**4**	**4**

Appendix 4 – Details of alcohol liaison teams in district general hospitals in the South West

Name of Hospital Trust	Days cover	Hours per day covered	Engagement with 'Frequent flyers'	Service provides in-reach from the community service	Service provides rapid assessment, engagement and discharge planning
Gloucestershire Hospital Trust	5	9-5	✓	✓	✓
Great Western Hospital, Swindon	7	9-5 (Sunday 9-1)	✓	✓	✓
Musgrove Park Hospital	5	9-5	✓	✓	-
North Bristol Trust, Southmead	5	9-5	✓	✓	✓
North Devon District Hospital	5	9-5	✓	✓	✓
Plymouth Hospitals NHS Trust	5	9-5	✓	✓	✓
Royal Cornwall Hospital Trust, Truro	7	-	-	✓	-
Royal United Hospital Bath	6	9-7 (Saturday 9-1)	✓	✓	✓
Salisbury NHS Foundation Trust	5	9-5	✓	-	✓
Torbay and South Devon Health and Care NHS	5	9-5	✓	✓	✓
University Hospitals Bristol	5	9-5	✓	✓	✓
Weston Area Health Trust	5	9-5	-	-	✓
Yeovil Hospital	5	9-5	-	✓	-

Name of Hospital Trust	Remit of the service	Clinical champion	Staff groups within the team (Whole Time Equivalent)	WTE	Departments the team works with	Integrated working with primary care following discharge
Gloucestershire Hospital Trust	Alcohol only	Psychiatrist	Medical, nursing and addictions (currently 2.0 nursing , 1.0 addictions)	3.0	ED, acute admissions, all wards (especially gastro)	GP shared care for prescribing
Great Western Hospital, Swindon	Alcohol only	Medical and nursing (speciality not stated)	Nursing, addictions, support worker (currently 1.5 nursing, 1.25 support worker)	2.75	ED and throughout the hospital	Yes
Musgrove Park Hospital	Alcohol and drugs	No formal champion but Gastro consultant is v. engaged	Addictions and a support worker (temp- 1 year)	1.0+ 1.0 temp	ED, medical assessment unit, out patients including fracture clinic	No
North Bristol Trust	Alcohol only	Gastroenterologist	Nursing and addictions (currently 0.2 medical, 2.0 RMN/RGN)	2.2	All wards	No- refer patients to primary care
North Devon District Hospital	Alcohol and drugs	Pharmacist and psychiatrist	Nursing (currently2.0)	2.0	-	yes
Plymouth Hospitals NHS Trust	Alcohol only	Nurse Consultant Hepatologist	Nursing (currently 1.0)	1.0	Hepatology , gastrology, ED and other wards	Yes
Royal Cornwall Hospital Trust, Truro	Alcohol, drugs and mental health	Community Psychiatric Nurse	Medical, nursing, social work, addiction (-)	-	ED, Psychiatric Liaison, Gastroenterology	Only for priority cases
Royal United Hospital Bath	Primarily alcohol but includes drugs and dual	RMN	Nursing and addictions (-)	-	All departments	All depts but mainly gastro, ED, medical,

	diagnosis					surgical & mental liaison team
Salisbury NHS Foundation trust	Alcohol (drugs are referred on)	Hepatologist	Nursing (currently 1.0)	1.0	All but mainly Gastro and ED	No
Torbay and South Devon Health and Care NHS	Alcohol Only	Gastroenterologist	Nursing/ addictions and support worker (currently 2.0 nursing/addictions and 1.8 support worker)	3.8	ED, wards and outpatients	Yes
University Hospitals Bristol, BRI	Alcohol only	Not stated	Medical, nursing and addictions (currently 1.0 ward based and 1.0 ED based)	2.0	ED, Medical assessment unit, hepatology, other wards as needed	No, referral to other services/ outpatients
Weston Area Health Trust	Alcohol and mental health	CPN	Nursing (currently 1.2)	1.2	ED, Gastro unit, medical assessment unit	No
Yeovil Hospital	Alcohol and drugs	No formal champion but pain control sister is very engaged	Addictions	1.0	ED, Gastro unit, medical assessment unit	No

Name of Hospital Trust	Assessment tools used				Interventions provided					Emergency/ acute medical unit policies or care pathways are in place	Integrated working arrangements are in place with community alcohol outreach teams	Links are in place to support people with mental health needs
	AUDIT/ AUDIT-C/ FAST	SADQ	Motivational assessment	Other assessment	IBA	IBA training	Extended brief intervention	Medically assisted detox	Discharge planning/liaison			
Gloucestershire Hospital Trust	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓
Great Western Hospital, Swindon	✓	✓	-	✓	✓	✓	✓	✓	✓	-	✓	✓
Musgrove Park Hospital	✓	✓	-	-	✓	✓	✓	✓	✓	✓	-	✓
North Bristol Trust, Southmead	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
North Devon District Hospital	✓	✓	-	-	✓	✓	✓	-	✓	-	✓	✓
Plymouth Hospitals NHS Trust	✓	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
Royal Cornwall Hospital Trust, Truro	✓	-	-	-	-	-	-	✓	✓	-	✓	✓
Royal United Hospital Bath	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
Salisbury NHS Foundation Trust	✓	✓	-	-	✓	✓	-	-	✓	✓	✓	-
Torbay and South Devon Health and Care NHS	✓	✓	-		✓	✓	✓	✓	✓	✓	✓	✓
University Hospitals Bristol, BRI	✓	-	-	✓	✓	✓	✓	✓	✓	-	✓	✓
Weston Area Health Trust	✓	-	-	✓	✓	-	✓	-	✓	-	✓	✓
Yeovil Hospital	✓	✓	-	-	✓	-	✓	✓	✓	✓	-	✓

Name of Hospital Trust	Commissioning body	Outcomes reporting arrangements between local stakeholders
Gloucestershire Hospital Trust	Co commissioned (LA and CCG)	“Reporting received”
Great Western Hospital, Swindon	Local authority	“Public health support the contract management and therefore the outcomes of the service”
Musgrove Park Hospital	Local Authority	Somerset Drug and Alcohol Partnership ha overarching governance of the contract
North Bristol Trust, Southmead	Local authorities(Bristol and S. Glos)	Quarterly reporting between LA, PH and hospital and shared between Bristol and S. Glos
North Devon District Hospital	Local Authority	“Included in the main drug and alcohol service provider contract and reports in contract management meetings”
Plymouth Hospitals NHS Trust	Local authority	Contractual performance reports, progress updates are received by the alcohol programme board which includes LA, CCG
Royal Cornwall Hospital Trust, Truro	CCG and RCHT	None
Royal United Hospital Bath	Local authority	Alcohol liaison steering group monitors the service and outcomes chaired by a gastroenterologist, ED consultant with a wide range of BaNES and Wiltshire stakeholders
Salisbury NHS Foundation Trust	Local authority	Public Health report to CCG, Wiltshire Community Safety Partnership via the joint commissioning group for alcohol and drugs
Torbay and South Devon Health and Care NHS	Co commissioned (LA and CCG)	Quarterly reporting procedures provides information to the CCG
University Hospitals Bristol, BRI	LA and CCG	Annual reports, no formal links
Weston Area Health Trust	Co commissioned (LA and CCG)	Intermittent reporting
Yeovil Hospital	Local authority	Somerset Drug and Alcohol Partnership ha overarching governance of the contract

Appendix 5 – Modelled estimates of hepatitis C prevalence and burden by drug and alcohol teams

DAT	Estimated total infected population	Predicted numbers in disease state at 2023				Current number remaining diagnosed and untreated	Annual new diagnoses
		Mild/ Moderate	Cirrhotic or end stage	Died (all causes)	Sustained virologic response		
Bath and North East Somerset	687	323	29	78	45	186	33
Bristol, City of	2,717	1,275	114	309	176	734	131
Gloucestershire	1,605	753	68	183	104	433	78
North Somerset	686	322	29	78	45	185	33
South Gloucestershire	581	272	24	66	38	157	28
Swindon	607	285	26	69	39	164	29
Wiltshire	1,047	491	44	119	68	283	51
Cornwall and Isles of Scilly	1,398	656	59	159	91	377	68
Devon	1,985	931	84	226	129	536	96
Plymouth	1,522	714	64	173	99	411	74
Somerset	1,280	601	54	146	83	346	62
Torbay	520	244	22	59	34	140	25

Source: PHE hepatitis C annual report 2014 supporting charts

Appendix 6 – Estimated prevalence of opiate and/or crack users and injectors, estimates rate per 1,000 (15-64 year olds, 2011/12

Local Authority	15-64 population	Number of users (95% CI)				Rate per thousand population (95% CI)			
		OCU	Opiate	Crack	Injecting	OCU	Opiate	Crack	Injecting
Bath and North East Somerset	115,900	1,234 (997-1,730)	839 (727-1,524)	691 (445-1,288)	437 (342-638)	10.65 (8.61-14.92)	7.24 (6.28-13.15)	5.96 (3.84-11.12)	3.77 (2.95-5.50)
Bristol, City of	297,600	5,364 (4,913-5,982)	4,239 (3,770-4,733)	4,304 (3,598-4,944)	1,499 (1,226-1,757)	18.02 (16.51-20.10)	14.24 (12.67-15.90)	14.46 (12.09-16.61)	5.04 (4.12-5.90)
Cornwall and Isles of Scilly	335,100	1,882 (1,729-2,174)	1,751 (1,611-2,017)	542 (155-1,140)	920 (784-1,132)	5.62 (5.16-6.49)	5.23 (4.81-6.02)	1.62 (0.46-3.40)	2.75 (2.34-3.38)
Devon	463,600	2,200 (1,985-2,596)	2,095 (1,911-2,446)	809 (486-1,501)	1,266 (868-1,629)	4.75 (4.28-5.60)	4.52 (4.12-5.28)	1.75 (1.05-3.24)	2.73 (1.87-3.51)
Gloucestershire	386,300	2,644 (1,904-3,357)	2,290 (1,636-2,907)	1,425 (728-2,113)	714 (385-1,021)	6.85 (4.93-8.69)	5.93 (4.23-7.52)	3.69 (1.89-5.47)	1.85 (1.00-2.64)
North Somerset	125,600	989 (886-1,145)	907 (819-1,110)	521 (421-714)	418 (315-521)	7.87 (7.06-9.11)	7.22 (6.52-8.84)	4.15 (3.35-5.68)	3.33 (2.51-4.15)
Plymouth	172,500	2,084 (1,928-2,285)	2,063 (1,913-2,285)	526 (219-852)	1,070 (858-1,410)	12.08 (11.17-13.25)	11.96 (11.09-13.09)	3.05 (1.27-4.94)	6.20 (4.97-8.17)
Somerset	331,300	1,844 (1,689-2,054)	1,753 (1,604-1,952)	775 (285-1,365)	725 (634-863)	5.57 (5.10-6.20)	5.29 (4.84-5.89)	2.34 (0.86-4.12)	2.19 (1.91-2.61)
South Gloucestershire	172,200	896 (575-1,212)	768 (497-1,045)	692 (391-998)	198 105-338)	5.21 (3.34-7.04)	4.46 (2.88-6.07)	4.02 (2.27-5.79)	1.15 (0.61-1.96)
Swindon	141,800	1,147 (974-1,398)	1,068 (906-1,329)	607 (467-846)	525 (423-705)	8.09 (6.87-9.86)	7.53 (6.39-9.37)	4.28 (3.29-5.96)	3.70 (2.99-4.97)
Torbay	79,800	814 (734-963)	771 (696-908)	149 (53-292)	332 (269-448)	10.20 (9.19-12.07)	9.66 (8.72-11.38)	1.87 (0.66-3.66)	4.16 (3.37-5.61)
Wiltshire	302,800	1,140 (996-1,380)	1,066 (928-1,284)	653 (224-1,161)	478 (404-603)	3.76 (3.29-4.56)	3.52 (3.06-4.24)	2.16 (0.74-3.83)	1.58 (1.33-1.99)
National	34,991,400	293,879 (291,029-302,146)	256,163 (253,751-263,501)	166,640 (161,621-173,706)	87,302(85,307-90,353)	8.40 (8.32-8.63)	7.32 (7.25-7.53)	4.76 (4.62-4.96)	2.49 (2.44-2.58)

Opiates and/or crack cocaine, including those who inject either of these drugs. It does not include the use of cocaine in a powder form, amphetamine, ecstasy or cannabis, or injecting by people who do not use opiates or crack cocaine. Although many opiate and/or crack users also use these drugs it is very difficult to identify exclusive users of these drugs from the available data sources.

It must be stressed that these figures are estimates. They should always be interpreted in conjunction with their associated confidence intervals, which are specified in each table. The confidence intervals show the range within which there is a 95% certainty that the true value exists, though it is most likely to lie near the estimate itself. For a full description of the study's methodology please refer to the full report of the first sweep.(113) Source: (114)

Appendix 7 – Description of tier 1, 2, 3 and 4 services (May 2015)

	What the service offers	Who usually commissions service	Who would be referred to*	Examples	NICE/other guidance
Tier 1	Primary care and community advice (population, universal services)	Local Authority (to encourage healthy eating and physical activity)	Self-referral or directed by healthcare professional. For those with a healthy weight, overweight or obese.	• HENRY (early years parenting approach) • Change4Life (social marketing) • Brief interventions training (GP/health staff) • Staff training and awareness • Workplace Health • Food for Life (FFLP) /school meal service and uptake • Physicial activity programmes • UNICEF Baby Friendly	Local communities and obesity; PH42.
Tier 2	Primary care with community input (targeted lifestyle / weight management)	Local Authority	Self-referred or referred. Individuals assessed to have high or very high risks related to their body mass index and waist circumference (children and adults).	• Weight management programmes for children and young people eg MEND, SHINE, Weight Watchers, Slimming World. • Diabetes prevention/ management.	• Managing overweight and obesity in adults – lifestyle weight management services; PH53. • Managing overweight and obesity among children and young people: lifestyle weight management services; PH47. • Department of Health. Developing a specification for

					lifestyle weight management services. 2013.(173)
Tier 3	Primary or community care based multidisciplinary team to provide an intensive level of treatment input	Clinical Commissioning Groups	Obese adults with complex needs (BMI≥40kg/m^2 or BMI 35-4040kg/m^2 with co-morbidities). Children ≥98.8% on growth charts with comorbidities (varies by service)	Intensive, specialist service-targeted weight management service. All patients requesting bariatric surgery need to go to this service.$^{\alpha}$	NHS. Clinical Commissioning Policy: complex and specialised obesity surgery 2013.(174)
Tier 4	Specialised complex obesity services (including bariatric surgery)	Specialist Commissioning	Obese adults (referral through tier 3).$^{\beta}$ Most areas do not have service for children as very few are required, individual package would be developed.	Bariatric surgery services	NHS. Clinical Commissioning Policy: complex and specialised obesity surgery 2013.

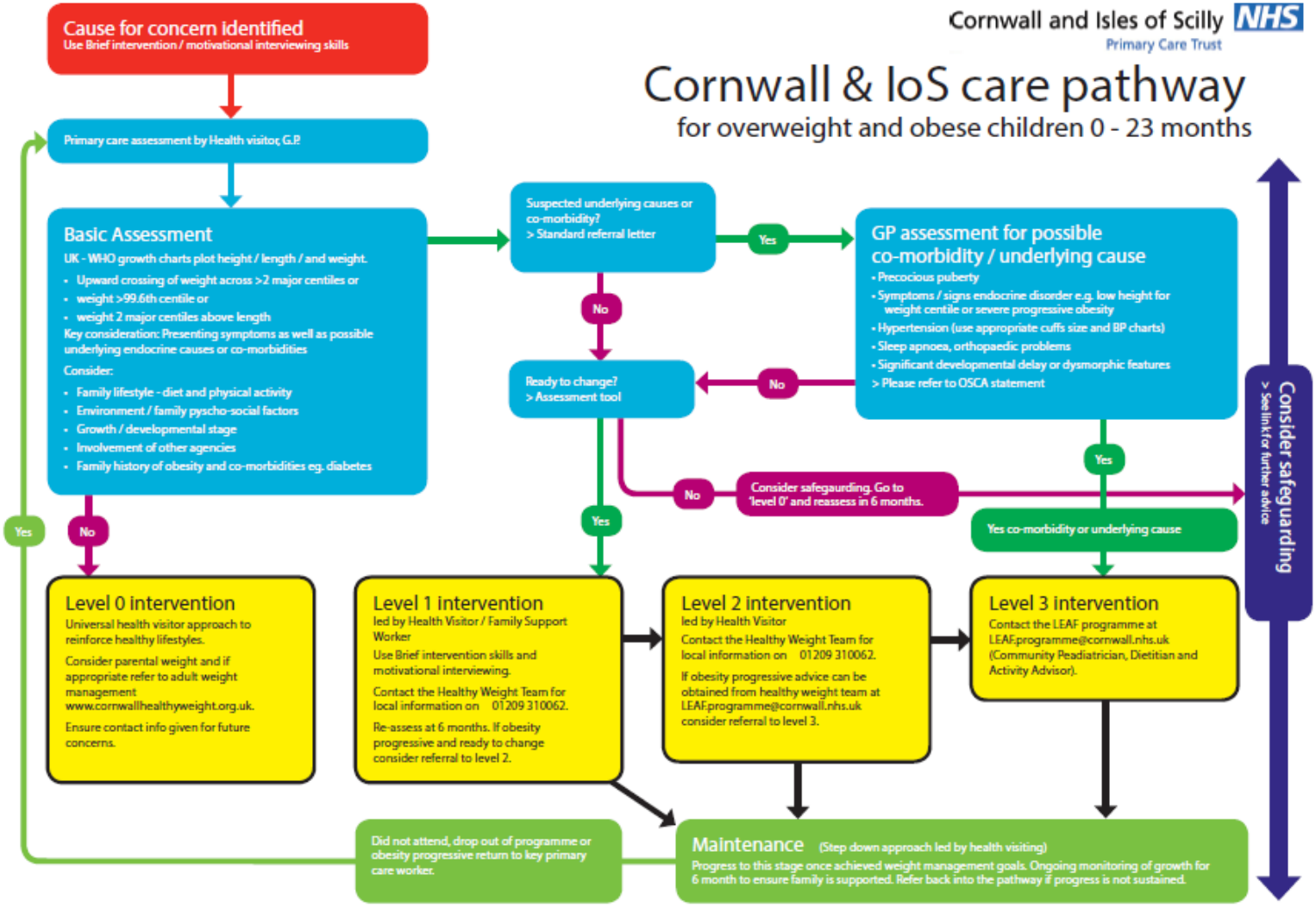
*Referral criteria vary by local area, with obesity care pathways having different eligibility criteria.

$^{\alpha}$ "Non-surgical tier 3 / 4 service will have as their role; education, dietary advice/support, enabling access to appropriate level of physical activity where not limited due to obesity related problems, exclusion of underlying contributory diseases, evaluation of co-morbidities and instigation of appropriate management plans, evaluation of patient's engagement with non-surgical methods, evaluation of psychological factors relevant to obesity, eating behaviour, physical activity and patient engagement."(174)

"Surgery will only be considered as a treatment option for people with morbid obesity providing all of the following criteria are fulfilled: the individual is considered morbidly obese with a BMI≥40kg/m^2, or 35-40kg/m^2 in the presence of other significant disease; formalised MDT led processes for the screening of co-morbidities and detection of other significant diseases; morbid/severe obesity for at least 5 years; recently received and complied with local specialist obesity service weight loss programme (non-surgical tier 3 / 4), for 12-24 months; evidence of attendance, engagement and full participation in non-surgical tier 3 / 4 service; assessed and referred by lead physician/clinician for specialist obesity weight loss MDT; patient has been unable to lose clinically significant weight during the period of intervention. The final decision on whether an operation is indicated should be made by the specialist hospital bariatric MDT. For all bariatric surgery candidates, an individual risk benefit evaluation will be done by the bariatric surgery MDT."(174)

Appendix 8 – Cornwall and Isles of Scille Child Obesity Pathways

https://www.cornwallhealthyweight.org.uk/professional/child-obesity-pathways/



LEAF (Lifestyles, Eating and Activity for Families) Programme, Cornwall

Purpose: To work with young children who had a very severe or extreme BMI (BMI >+3.5sd) and their families. We also see children with a BMI below +3.5sd if they have a related underlying cause or comorbidity eg Prader Willi Syndrome. We focus on behavioural change techniques to help families identify their own personalised plan to improve health outcomes, primarily BMI.

Objectives: To improve the BMI centile and lifestyle of children 6 years of age and under.
History of the project: We started seeing families in 2012. They typically work with us for 4-6 months, although this is sometimes extended to a year by discretion of the team, eg when families have struggled to engage but are now showing signs of readiness. We run a multidisciplinary clinic monthly and typically accept 20 new patients a year, running 4 sets of LEAF group sessions per year. We are a community focussed service delivering in local children's Centres across the county. When a family is unable to attend the group therapy we try to find other ways of working with them eg joint with their Health Visitor one-to-one.

Outcomes: We measure changes in BMI, energy from drinks (as a proxy measure for overall dietary change), activity, sedentary behaviour (using an accelerometer or questionnaire for younger children) and psychological factors (through the strength and difficulty questionnaires). We are seeing encouraging results for all outcomes.
High impact area: Healthy Weight and Healthy Nutrition (to include physical activity)

Funding: The Dietician (0.96 w.t.e.) and Community Paediatrician (3-4 sessions per month) are funded by Kernow CCG and the Activity Advisor (1/2 day per week) is funded by Public Health, Cornwall Council. We are supported by Cornwall council's Children's Centre through provision of rooms and crèche workers for the LEAF groups.

In addition we provide training and support to professionals working with children and young people who are overweight but do not meet our programme criteria. For example we deliver a one day course aimed at health professionals called 'a family focussed approach to obesity'. This allows us to have a greater impact on childhood obesity across Cornwall.

Appendix 9 – Referral pathway for investigation of abnormal Liver Function Tests – Plymouth Hospitals NHS Trust

South West Liver Unit
Level 7 Derriford Hospital
Plymouth PL6 8DH

Plymouth Hospitals NHS
NHS Trust

1

Referral Pathway for investigation of abnormal Liver Function Tests

Indications for referral

1. ALT raised for >4 weeks with negative non-invasive liver screen? Yes / No
2. Evidence of chronic liver disease:
   a. Physical stigmata of liver disease? Yes / No
   b. Imagingsuggestive of chronic liver disease? Yes / No
   c. AST / ALT ratio ≥ 0.8? Yes / No

Are any of the following present?

1. Hazardous or harmful drinking (AUDIT ≥8)? Yes / No
2. Features of the metabolic syndrome? Yes / No
3. Alternative diagnosis indicated from non-invasive liver screen? Yes / No
   (if yes please indicate on basis of blood tests below)

Suspected diagnosis? .....

Risk of progressive or advanced liver disease? (refer to table on page 3)

Low risk..... Intermediate Risk..... High Risk.....

Low risk patients can usually be managed in primary care. If a low-risk patient requires a hepatology assessment, please indicate the reasons below:

.....

.....

Intermediate and High risk patients will be accepted by Hepatology with the results of a liver / biliary tree ultrasound and non-invasive liver screen attached below:

Ultrasound date / report (within last 6 months):

.....

.....

.....

Blood Test results required (non-invasive liver screen):

(Most recent LFT / FBC)	(Within 1 year)	(Within 5 years, unless new risk factors)
ALT.....Hb.....	IgA.....IgG.....IgM.....	Ferritin.....Transferrin Saturation.....
AST.....Plts.....	ANA positive / negative	HBV Surface antigen positive / negative
ALP.....MCV.....	SMA positive / negative	Hepatitis C antibody positive / negative
Bil.....	AMA positive / negative	
Alb.....		
GGT.....		

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Guidelines on assessing, managing and referring patients with abnormal liver function tests and / or suspected liver disease in primary care

1. Red Flags.
   - Symptomatic patients with overt jaundice (bilirubin above 50) – refer via fast track jaundice clinic pathway (hyperlink)
   - Patients with Upper abdominal pain and/or weight loss – consider referral via 2ww Upper GI pathway
   - Other signs of liver decompensation – ascites, encephalopathy, bleeding. Use clinical judgement for urgent admission via Medical Assessment Unit or send referral for urgent outpatient appointment.

2. Abnormal LFTs Pattern recognition
   - Isolated raised bilirubin – commonly due to Gilbert's syndrome which occurs in 5% of the population, is benign and does not need referral. Check conjugated / unconjugated split to check the rise is unconjugated and exclude haemolysis (reticulocyte count, LDH, haptoglobins).
   - Cholestatic pattern – ALP raised significantly more than ALT. Consider bone causes of raised ALP (e.g. Paget's), raised GGT can help confirm a liver cause
   - Hepatitic pattern - raised ALT (and / or AST), although ALP may also be raised.

3. Questions to ask
   - Drugs, including herbal remedies
   - Alcohol (see toolkit for AUDIT tool)
   - Recreational drug use
   - Features of metabolic syndrome (see toolkit)
   - Ethnicity
   - Foreign travel

4. Possible Causes
   - Alcoholic Liver disease – Indicators: history, raised MCV and GGT, raised IgA, fatty liver on Ultrasound Scanning
   - Non-alcoholic fatty liver disease – Indicators: Fatty liver on USS, negative liver screen, raised BMI or waist circumference, Hypertension, Impaired fasting glucose or type 2 diabetes, raised triglycerides, low HDL cholesterol, raised IgA
   - Chronic Viral Hepatitis – Indicators: risk behaviours, origin from endemic countries, blood transfusion, positive serological markers
   - Primary Biliary Cirrhosis – Indicators: raised ALP (cholestatic), positive anti-mitochondrial antibodies (AMA), raised IgM, history of auto immune (thyroid) disease, fatigue and or itch may be present.
   - Primary Sclerosing Cholangitis – Indicators: raised ALP (cholestatic), history of inflammatory bowel disease

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- Auto-immune hepatitis – Indicators: positive antinuclear antibody (ANA) or Smooth muscle antibodies (SMA), raised IgG
- Haemochromatosis – Indicators: raised Ferritin and transferrin saturations, diabetes, joint pains

5. Request Ultrasound Scan of liver, biliary tree and pancreas
6. Arrange blood tests for 'non-invasive liver screen' (see toolkit)
7. Stratify the risk of having a progressive or advanced liver disease using the table below for guidance.

	Risk factors for progressive or advanced liver disease		
Indicator	Low Risk	Intermediate Risk	High Risk
Alcohol history Use AUDIT screening tool	Low risk AUDIT	*Harmful* or *hazardous* drinking ***without*** other indicators	*Harmful* or *hazardous* drinking ***plus*** another positive indicator
Number of Features of metabolic syndrome:	<2	≥2	≥3
Non-invasive liver screen: Hepatitis B and C serology ANA, SMA, AMA Immunoglobulins IgG, IgM, IgA Ferritin	All negative	Isolated positive autoantibodies or raised immunoglobulins	Any positive Hep B or C serology Positive ANA, SMA or AMA with raised IgG or IgM
AST / ALT ratio	<0.8	0.8 - 1.0	>1.0
Liver Ultrasound or other imaging modality	Normal liver appearances or Evidence of echo bright 'fatty' liver	Evidence of abnormal liver echo texture or fatty liver ***plus*** another intermediate risk indicator	Imaging evidence of cirrhosis
Management	Lifestyle intervention re alcohol, weight loss and exercise. Re assess annually	Refer for further evaluation and treatment. Lifestyle intervention re alcohol, weight loss and exercise	Refer for further evaluation and treatment.

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Toolkit for assessment of liver disease in Primary Care.

1. Alcohol History:

http://www.nhs.uk/Conditions/Alcohol-misuse/Pages/Diagnosis.aspx

The Alcohol Use Disorders Identification Test (AUDIT) incorporates questions about the quantity and frequency of alcohol use in adults. AUDIT compares favourably with other instruments in detecting risky drinking. Developed by the World Health Organization (WHO) for use in primary care settings to identify persons whose alcohol consumption has become hazardous or harmful. AUDIT take 2 MINUTES to administer and should be linked to a decision process that included brief intervention with heavy drinkers, or referral to specialized treatment for patients who show evidence of more serious alcohol involvement.

TOTAL SCORE INTERPRETATION:

A score of **8 or more** is associated with *harmful* or *hazardous* drinking.

A score of **13 or more** in women, and **15 or more** in men, is likely to indicate *alcohol dependence*.

2. Signs of chronic liver disease: jaundice, hepatomegaly, splenomegaly, spider naevi, palmer erythema, gynaecomastia, ascites, encephalopathy.

3. Features of the metabolic syndrome:
   a. Central obesity (waist circ ≥ 94 cm men, ≥ 80cm women).
   b. Impaired fasting glucose or Type 2 diabetes (>5.6 mmol/L).
   c. hypertension (>135/85 mmHg).
   d. hyperlipidaemia (triglycerides >1.7 mmol/L, or HDL cholesterol <1.0 mmol/ men, <1.3 mmol/L women).

4. Blood Tests: Non-invasive liver screen:

   Hepatitis B Virus serology, Hepatitis C virus serology
   Autoantibodies (ANA, SMA, AMA)
   Immunoglobulins (IgG, IgM, IgA)
   Ferritin
   AST (to calculate AST/ALT ratio)
   GGT

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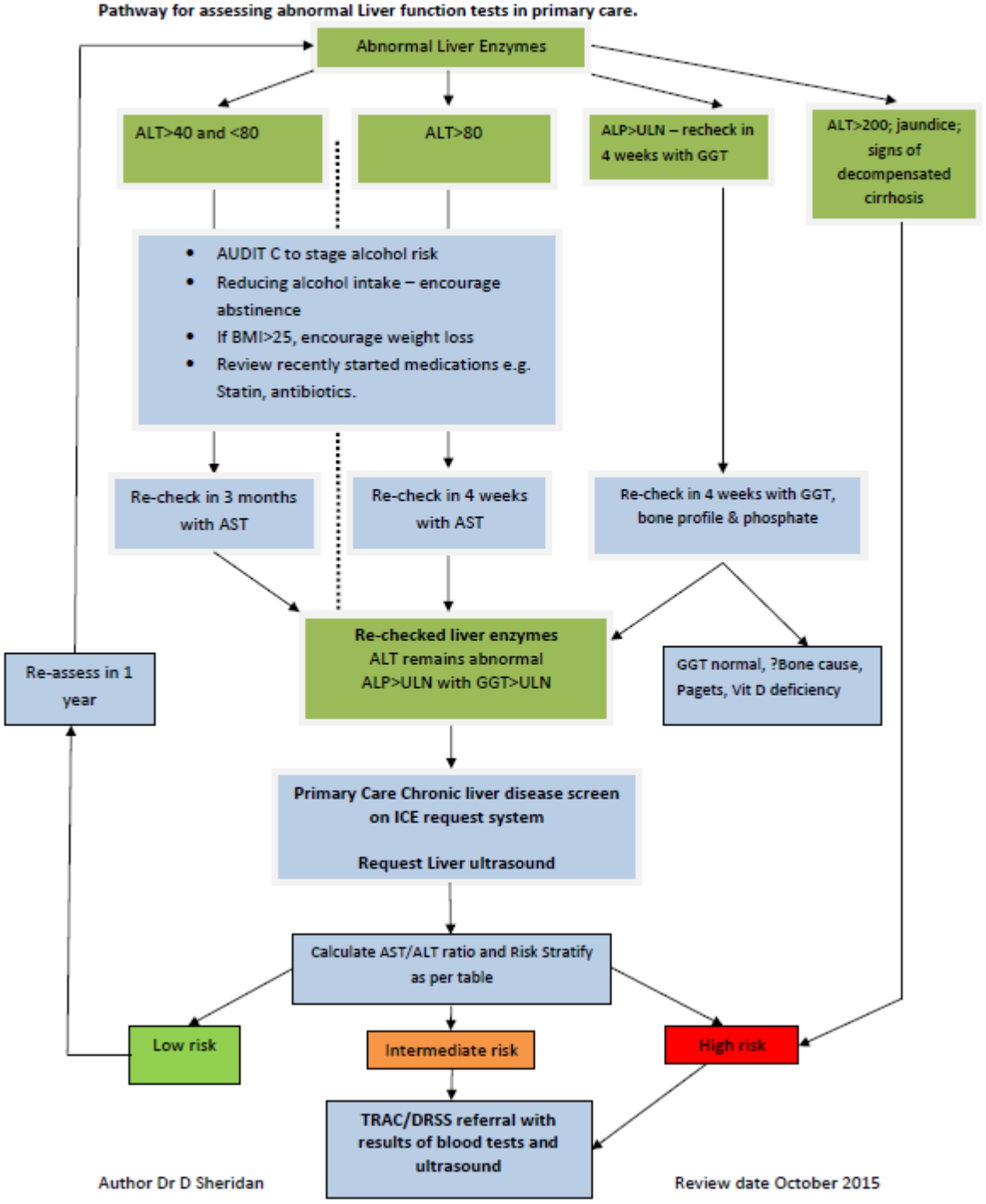
Pathway for assessing abnormal Liver function tests in primary care.



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Who to manage in Primary Care:

The following 'low risk' patients should be managed in primary care:

1. *Hazardous* or *Harmful* drinking without evidence of liver disease.
    - Consider referring the Hazardous drinker to the community alcohol team
2. Non-alcoholic fatty liver disease with low risk features.
    - Advised weight reduction and increase physical activity
    - Address other cardiovascular risk factors (suggest use QRISK2 http://qrisk.org/)
    - Recommend alcohol consumption with safe limits (<21 unit men, <14 units women)
    - Reassess liver disease risk annually

Who to refer:

The following ***intermediate*** and ***high risk*** patients should be referred to a Hepatologist, South West Liver unit, Derriford Hospital for further evaluation, to include Fibroscan, consideration of liver biopsy, variceal and hepatoma surveillance and further specific therapies.

1. *Hazardous* or *harmful* drinking with evidence of liver disease (alcoholic liver disease)
2. Non-alcoholic fatty liver disease with ***intermediate*** or ***high risk*** features
3. Suspected liver cirrhosis
4. All Auto immune liver disease (positive ANA, SMA, AMA)
5. All Viral hepatitis B and C
6. Suspected Haemochromatosis
7. Unexplained persistently abnormal LFTs for >3 months with negative liver screen.

NB. The results of a 'non-invasive liver screen' (see toolkit) and Ultrasound scan of liver, biliary tree and pancreas are *required* using the referral pathway (page 1) to avoid delays in triage.