Annual Report of the Director of Public Health on the health of the people of Lincolnshire 2015

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Introduction

Last year the annual report on the health of the people of Lincolnshire focussed on the major causes of premature mortality; that is people who die under the age of 75 years. The report highlighted three major findings. Firstly, that for six of the seven major causes of premature mortality, the numbers of deaths were decreasing, even though they are still too high. It is also worth pointing out that around half of this reduction is the result of preventive measures and about half results from improvements to the effectiveness and quality of care. Secondly, it demonstrated the presence of geographical disparity. So, for nearly all the main causes and in nearly all population groups, premature mortality is highest in the Lincolnshire East Clinical Commissioning Group area, which are broadly speaking, East Lindsey and Boston Borough. Finally, the one cause of premature mortality which is getting worse is liver disease. There has been some progress on the recommendations made in last year's report and this progress is reported on Page 5. This is being written in late December 2015 and so the full extent of the commissioning intentions of Clinical Commissioning Groups and the County Council are not yet clear. It is likely that more progress will happen over the next year.

I am so concerned about the increase in preventable liver disease that this year's report concentrates solely on this issue. We describe liver disease, its stages and causes, its patterns and associations, its facts and figures. Following that, the three main causes; obesity, alcohol and hepatitis, are covered in a chapter each. We finish with some recommendations but chief among them must be that we see some sustained investment in liver disease prevention and treatment, and the development of effective pathways of care for people with liver disease and its causes. This reflects the joint contributions of prevention and treatment to conditions where progress has been made and maximises our chances of success. I hope that next year's commissioning plans will address these needs.

I want to thank those public health staff who have contributed to this report, in some cases hugely, and hope that you will find much of it of interest and use again this year.

Dr Tony Hill
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Contents

Progress against last year's recommendations

In my 2014 Director of Public Health's Annual Report, I made a series of recommendations. I would like to use this opportunity to provide an update on progress against these. I am aware that a wide range of organisations are involved in leading and supporting the implementation of the recommendations and this report is intended to provide information on some of this work rather than a comprehensive overview.

Recommendations	Update
Multi-agency work in Lincolnshire should continue to address lifestyle and behavioural factors, such as smoking, obesity, physical inactivity and alcohol and substance misuse.	A range of organisations (for example, local authorities, NHS and voluntary organisations) commission and provide healthy lifestyles services, for example tobacco control/ smoking cessation service, physical activity, cooking and growing classes, weight management, substance misuse service and wellbeing and independence.
The number of brief interventions given across organisations in Lincolnshire should be increased, whilst ensuring that Making Every Contact Count (MECC) is systematically embedded. This will enable advice and intervention to be provided opportunistically and where appropriate, and will allow health messages to reach more individuals more often. This will also improve signposting across organisations, and improve the public's experience.	MECC has developed in many organisations in Lincolnshire during the past year. A number of organisations have signed the Memorandum of Understanding and are therefore committed to providing annual feedback on how MECC has been implemented within their organisations. A comprehensive training programme has taken place, which has resulted in several hundred frontline staff receiving MECC training.
Where appropriate, lifestyle interventions should be tailored to individuals with specific conditions and early indications of disease.	Health improvement interventions engage the general population for primary prevention and support adults with existing physical and mental health conditions for secondary and tertiary prevention benefits, for example, smoking cessation service for adults with long term medical conditions (LTCs) like cardiovascular disease, stroke and chronic obstructive pulmonary disease (COPD), and exercise referral programmes for people with diabetes. Wellbeing Service is provided to help older people to be independent in their own home and avoid social isolation. The stop smoking service specification has been changed to focus on particular groups, for example, pregnant women and people with a mental health problem.
Partners should work together to facilitate the early identification of risk factors through increased uptake of periodic NHS health checks. Although health check uptake is above the national level, participation figures remain low. Work is needed at primary care and county level to offer health checks to the eligible population, and to encourage uptake of appointments.	During 2014/15, the overall uptake of the NHS Health Check programme in Lincolnshire was 55%, slightly reduced from the previous year (57.7%) although still higher than the uptake for England as a whole at 48%. A countywide audit is underway which will assist general practices with the correct recording of NHS Health Check data, ensure the assessments are being carried out correctly and offer advice on improving uptake rates. Good practice from general practices with a high uptake will be shared with all the practices and Clinical Commissioning Groups (CCGs). Quarterly NHS Health Check performance reports are shared with general practices and CCGs.

Recommendations	Update
It must be ensured that individuals identified by the health check as having, or being at risk of developing medical conditions, like cardiovascular disease and stroke, which are related to premature deaths (i.e. death before the age of 75 years) are appropriately followed up in general practice, and that they receive appropriate lifestyle and pharmacological interventions or onward referral.	The NHS Health Check service specification includes the requirement to carry out a risk assessment, communicate the risk and manage the risk by sign posting/referring to services and pharmacological interventions. Phase One of the NHS Health Check audit is to ensure that patient data is recorded correctly, high risk patients are placed on the high risk register, followed up appropriately and referred to lifestyle services. Phase Two of the audit is planned to be rolled out in 2016/17 and will concentrate on follow up for patients identified with cardiovascular disease.
Work should be undertaken with CCGs to increase the number of people on specific disease registers, such as the COPD register, closing the gaps between the number of people who suffer from long term conditions (LTCs) and those recorded on disease registers. This could include raising public awareness of signs and symptoms, encouraging those living with conditions to enquire whether they are on a GP disease register, and workforce development, such as more training for staff in primary care in order to increase the proportion of people receiving early and accurate diagnoses.	As part of the delivery of CCG plans, there have been a number of Quality, Innovation, Productivity and Prevention (QIPP) initiatives to ensure that people, who need to be, are on disease registers and receive the appropriate management, for example, in relation to atrial fibrillation. Proactive care is part of the Lincolnshire Health and Care (LHAC) programme and self-care for people with long term conditions is an integral part of this.
Work should be done to improve the management of LTCs. Many people with diseases, such as COPD, report that it limits their daily living, particularly when they have an exacerbation of their disease. GP practices should work with pharmacies to ensure that patients are targeted for Medicines Use Reviews, as this can improve management of LTCs. Commissioners must ensure that they are commissioning high quality services targeted at LTCs, including nurse-led community teams and rehabilitation programmes.	As part of the delivery of CCG plans, a range of interventions are commissioned and provided to support people with LTCs, for example, respiratory and diabetic services. With improved survival rates, cancer is becoming recognised as a long term condition and services are being developed to support people to reduce their risk of reoccurrence. Medicines Use Reviews take place as part of the Community Pharmacy Contractual Framework. Lincolnshire County Council commissions a range of services which can help people with a long term conditions to manage their condition, for example, the smoking cessation service.
Systematic care pathways are required for LTCs, in line with the Lincolnshire Joint Health and Wellbeing Strategy. The use of care pathways developed elsewhere, such as 'Map of Medicine' for COPD, should be increased to support timely diagnosis and effective treatment.	The management of LTCs is a key part of the mid-term review of the Joint Health and Wellbeing Strategy for Lincolnshire. Across Lincolnshire, some pathways of care have been reviewed and developed, for example, in relation to diabetes. There has been some use of 'Map of Medicine' across the Lincolnshire CCGs.
Lincolnshire Public Health should work closely with Clinical Commissioning Groups to deliver the Lincolnshire Tobacco Control Strategy, assisting tobacco users to quit.	Lincolnshire Tobacco Control Strategy has a number of strands, which includes helping tobacco users to quit. A range of partners deliver the strategy, which includes providing a stop smoking service. CCGs have been engaged in the mobilisation process for the new stop smoking service provision.

Recommendations	Update
Lincolnshire Public Health should continue to promote the benefits and opportunities available for physical activity across all age ranges of the population.	There are a range of physical activity programmes across Lincolnshire, which provides opportunities to adults across all ages to become and remain physically active. Lincolnshire Public Health also supports other organisations, like district councils and CCGs, to jointly bid for funding from various sources to develop physical activity programmes in their local areas.
Work should continue through specific initiatives, and with partners such as NHS England, to further improve the uptake of cancer screening programmes.	Lincolnshire has a jointly chaired (with NHS England) Screening Health Improvement Board which is well attended by a number of stakeholders. The Board focuses on improving uptake in cancer screening programmes and involves numerous initiatives in a focused action plan, particularly targeted to specific geographical areas.
There should be further focus on early cancer diagnosis through work with health professionals and the public. NHS commissioners should continue to work with providers of healthcare to enable people to receive the best outcomes in cancer treatment and care.	Actions to promote the need to be vigilant for the potential signs of cancer are having a positive impact and the number of two week wait referrals is continuing to rise. This is challenging providers throughout Lincolnshire to deliver the required level of capacity to meet the growing demand for two week wait appointments and subsequent treatments. New and improved ways of working are being developed to ensure that patients are treated in accordance with the constitutional standards. This includes one stop diagnostic appointments, direct access by GPs and streamlined pathways. These measures have shown improvement in performance. For example, United Lincolnshire Hospitals NHS Trust (ULHT) is currently on track to deliver the 62-day cancer standard (Source: Lincolnshire Health Scrutiny Committee report on Lincolnshire recovery programme, January 2016)
Monitoring of suicide and death by undetermined causes across the county should continue; the resulting evidence enabling us to work better with partners to address causes, and deliver interventions and pathways that could save lives. This should include the development of a suicide surveillance system, incorporating appropriate information sharing and reporting.	A project has been developed to improve the surveillance of suicides that take place in the county. This has involved working with Coroners to provide information on potential suicide risk factors, such as, history of mental health and bereavement. The information from the surveillance system will help inform future work on preventing suicides. The Lincolnshire Choosing Life Group has been replaced with a high level multi agency Suicide Prevention Steering Group, which is developing a county-wide suicide prevention action plan.
More people should be trained through the SafeTALK and ASIST programmes, working closely with commissioned providers and raising awareness of how to talk to someone who you think might be at risk of suicide.	The SafeTALK and ASIST programmes have continued but had limited access from communities in Lincolnshire. In order to promote suicide awareness, work is ongoing to identify further resources and good practice.
Lincolnshire Public Health should work with a full range of organisations to create an action plan for suicide prevention, working together to better provide people with the help they need, and making sure that frontline staff have the skills and information to help people at risk.	The newly formed Suicide Prevention Steering Group has a range of organisations involved, for example, the Police and the voluntary sector. The group is developing a local action plan, in line with the recommendations in the National Preventing Suicide in England Strategy. The action plan will be informed, in some part, by the Lincolnshire Mental Illness Health Needs Assessment.

Recommendations	Update
The proportion of 'at risk' patients receiving pneumococcal vaccination should be increased. It is important that the individuals at greatest risk, including smokers, substance misusers and those with LTCs receive the pneumococcal vaccination. Both the development of initiatives to engage vulnerable groups and working with service providers to raise awareness of the importance of PPV vaccination could contribute to this.	A working group is to be established to improve the uptake of all the vaccination/immunisation programmes. This will involve Lincolnshire County Council, CCGs, NHS England and service users.
Local data sharing on road collisions should be improved, particularly around trend and causation data, to supplement intelligence gained from Stats19, and allow a more accurate picture to be drawn. Stats19, the Department for Transport's collision statistics, are generally believed to under-report the number of road collisions, however, an accurate understanding is crucial in identifying and directing effective road safety interventions.	Lincolnshire Road Safety Partnership (LRSP), which is a multi-agency partnership, maintains a countywide road collision database. LRSP has developed a 10-year (2015-2025) Road Safety Strategy with the objective of continuing to reduce the number of people killed or seriously injured on Lincolnshire's roads. Its priorities are reviewed annually following analysis of collision trends and causation factors.
A home safety assessment scheme which targets vulnerable families should be commissioned, as it is recognised that many do not purchase home safety equipment. This could include providing targeted home safety assessments in partnership with Lincolnshire Fire and Rescue, home safety equipment installation for those financially unable to purchase equipment themselves, and high quality 'home safety' education.	There is an agreement between Public Health, Children's Services and Fire and Rescue to ensure that the most vulnerable children and families in the county have access to a Safer Homes Service, which may include the fitting of home safety equipment. The scheme will be promoted to staff and partners working with vulnerable under 5's and their families. Children's Centres will promote home safety through activities in the community. Public Health will offer home safety training workshops to staff and partner agencies.
Public awareness of liver disease, its causes, and associated risks to life and quality of life should be improved. If people chose to follow a healthy lifestyle of not smoking, maintaining a healthy weight, being physically active and not drinking excessively, they can potentially add 14 years of chronological age at death.	The decision to have liver disease as the focus of this year's DPH Annual Report will help to raise the awareness of liver disease.
The multi-agency Alcohol and Drug Strategy should be implemented, including primary prevention and systematic use of brief interventions, such as NHS Health Checks.	A multi-agency strategy is being implemented as part of the Community Safety work of Lincolnshire County Council. Alcohol awareness and advice is embedded in the MECC programme. The preparation of a tender for a newly commissioned alcohol and drugs treatment service includes the requirement to provide education and training for professionals in the county.
Further analysis on liver disease in Lincolnshire should be carried out to inform public health prevention and early intervention work, building on the evidence base of the Alcohol Health Needs Assessment.	The production of this Annual Report has resulted in further analysis being carried out in relation to liver disease to enable a better understanding on how this condition affects the Lincolnshire population.

Executive Summary

1. Liver Disease
Liver disease is a general term that describes a reduced functioning of the liver. Some types of liver disease are inherited, but most are caused by preventable factors like alcohol, obesity and infection.

Rates of liver disease in the United Kingdom (UK) are rising, but in the rest of Europe they are falling. Liver disease is one of the top five contributors to premature mortality in Lincolnshire.

Liver disease does not usually cause obvious signs or symptoms until damage to the liver is quite advanced (often too advanced to be cured). For most patients, this means that the disease is only detected by tests.

The liver has a tremendous capacity to regenerate during the early stages of liver disease. However, once liver scarring has occurred this cannot be reversed. It is therefore important that we take action to address the causes of liver disease to prevent ill health and early death.

2. Epidemiology of Liver Disease in Lincolnshire
In Lincolnshire, between 2011 and 2014, there were a total of 1010 hospital admissions for liver disease. There are age, gender and ethnic variations in the rate of hospital admissions for liver disease. Ninety three percent of hospital admissions for liver disease in Lincolnshire between 2011 and 2014 were among people aged less than 75 years.

Further, around 100 people die due to liver disease in Lincolnshire annually. More than 75 of these deaths are among people under the age of 75.

Alcoholic liver disease is the major cause of deaths and hospital admissions due to liver disease. For women, in Lincolnshire, alcohol-related hospital admission rates have increased since 2010. For men, the rate increased up to 2012 and has since decreased to 2010 levels.

3. Causes of Liver Disease
The three main causes of preventable liver disease are alcohol consumption, obesity and viral hepatitis.

a. Alcohol
Current UK Government guidelines state that:

Women should not regularly drink more than 2-3 units a day
Men should not regularly drink more than 3-4 units a day

'Regularly' means drinking most days or every day [1].

In January 2016 a new proposed drinking guideline of no more than 14 units a week for men and women was announced [2]. This new guideline is currently out for consultation.

Excessive alcohol consumption, over time, above the current UK government guidelines limit, is the leading cause of liver disease in the UK.

Reducing levels of excessive alcohol consumption will lead to a reduction in alcohol-related liver disease. A range of policies are in place at a national and local level to help people to reduce their alcohol consumption and the harms associated with it.

The Lincolnshire Alcohol and Drug Strategy 2014-2019 identifies a number of ways in which action is being taken in Lincolnshire to reduce alcohol consumption and related health harms. This includes a range of services, including specialist treatment, like psychosocial and pharmacological interventions, which are provided by Addaction and the Drug and Alcohol Recovery Team (DART).

b. Obesity
The number of people who are overweight or obese has increased dramatically in almost all countries over the past 10 years. Obesity causes excess fat deposits within the liver which, over a period of time, can cause permanent liver damage. However, damage can be prevented and, in its early stages, can be reversed by weight-loss.

Tackling obesity has been a government priority for a number of years with a primary goal being a downward trend in the level of excess weight in adults and a sustained downward trend in the level of excess weight in children by 2020.

The number of people who are obese in Lincolnshire is above the average for England and the East Midlands. In Lincolnshire, a number of programmes provide help for people to lose weight or maintain a healthy weight. These programmes provide a comprehensive collection of services supporting people at various levels of overweight/obesity.

c. Viral Hepatitis
Hepatitis B virus and Hepatitis C virus are blood-borne viruses transmitted through contaminated blood and other bodily fluids. The body's response to the presence of a hepatitis virus over a long period of time may lead to permanent liver damage.

Short-term (acute) Hepatitis B and C infection may or may not cause visible symptoms. Some individuals recover without ever realising they have been infected.

A vaccine is available to prevent Hepatitis B transmission in high risk groups e.g. injecting drug users. No vaccine is available for Hepatitis C. In Lincolnshire, Hepatitis B vaccination and Hepatitis C testing are encouraged in high risk groups. Lincolnshire's two prisons also offer Hepatitis B vaccination and Hepatitis C testing.

4. Conclusion
Prevention and early treatment are keys to preventing end-stage liver disease. This includes prevention and early treatment of risk factors, for example, excessive alcohol consumption, obesity and viral hepatitis.

Chapter 1: Liver Disease

Key Points

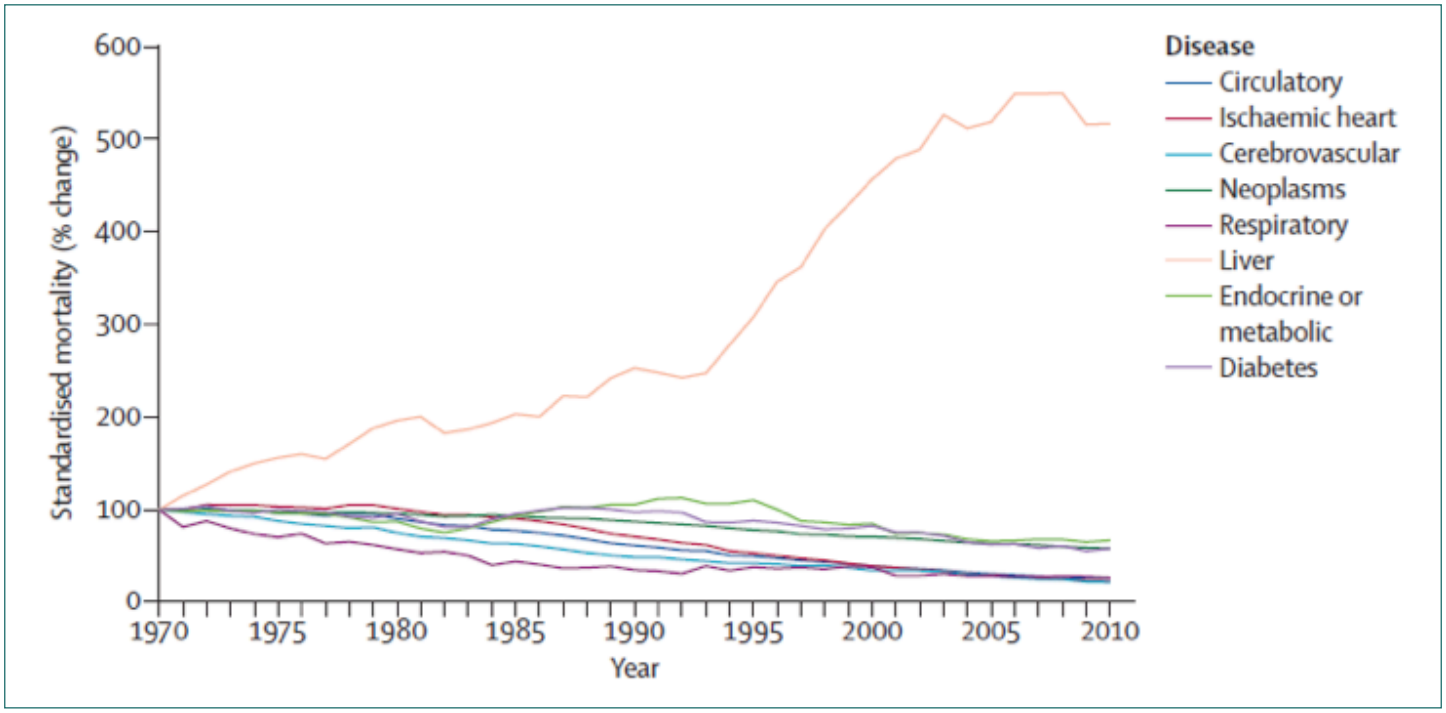
- Rates of liver disease in the UK are rising. In the rest of Europe they are falling.
- Liver disease is one of the top five contributors to premature mortality in Lincolnshire.
- There are three main causes of preventable liver disease:
- Alcohol
- Obesity
- Viral hepatitis
- The liver has a tremendous capacity to regenerate during the early stages of liver disease. However, once liver scarring has occurred this cannot be reversed.
- Liver disease does not usually cause obvious signs or symptoms until damage to the liver is quite advanced (often too advanced to be cured).
- Therefore, action to address the causes of liver disease is important for preventing ill health and early deaths from liver disease.

1.1 Introduction

The 2014 Director of Public Health Report for Lincolnshire identified liver disease as one of the five leading causes of deaths in people aged less than 75 years (premature deaths) in the county [1].

Unlike all other major causes of premature deaths in the United Kingdom (UK) which have fallen over the past half century, death rates from liver disease have shown a continuous rising trend (see Figure 1.1). The death rate from liver disease, across all age groups, has risen more than 400% since 1970. However, among those aged under the age of 65 years, this increase has been 500%. Comparative data from across Europe shows that this rise has not been seen in other European countries, highlighting the need to take action in the UK.

Figure 1.1: Trends in UK death rate, normalised to 100% in 1970



Source: Chart taken from The Lancet [2]; Data taken from the WHO-HFA database [3].

1.2 What is liver disease?

The liver performs many complex functions, such as fighting infections, removing toxins and other harmful chemicals from the body, synthesising proteins and producing chemicals required for digestion. Liver disease is a general term that describes a reduced functioning of the liver. Some types of liver disease are inherited, but most are caused by preventable factors like alcohol, obesity and infection.

1.3 What are the causes of liver disease?

There are three main causes of preventable liver disease:

- Alcohol
- Obesity
- Viral hepatitis (e.g. Hepatitis B and Hepatitis C)

Alcohol is the commonest cause of liver disease. Regular and heavy drinking over a period of time can put a strain on the liver, leading to liver damage. This is called alcohol-related liver disease (ARLD). In the UK, three-quarters of deaths from liver disease are related to excess alcohol consumption [4].

Obesity is the second commonest cause of preventable liver disease, which causes a build-up of fat in the liver. This is called non-alcoholic fatty liver disease (NAFLD) [5].

Viral hepatitis is the third commonest cause of preventable liver disease. Hepatitis B and C viruses can produce chronic inflammation of the liver and lead to severe liver complications. Viral hepatitis is a notifiable condition in England, which means that any new case must be reported to the local health protection team or the (district level) local authority.

An individual may have more than one cause of liver disease. For example, a person who is obese may also drink harmful amounts of alcohol over a long period of time or have viral hepatitis. So, it is likely that certain groups within the population are at an even greater risk of developing liver disease than those people exposed to just one cause of liver disease. However, we do not currently know how much having multiple risk factors increases the chance that someone will develop liver disease.

1.4 The stages of liver disease

There are three key stages in the development of liver disease.

Stage 1

When a person with a healthy liver is exposed to infection or toxins over a long period of time, fats can build up in the liver resulting in fatty liver disease. If preventive action is taken at this stage, the liver can return to normal. There are rarely any symptoms at this stage.

Stage 2

After lengthy exposure to an infection or toxin the liver can become inflamed. This is the second stage in the development of liver disease. Severe cases of inflammation can cause serious health problems and may even be fatal. Many people only discover their liver damage when the condition is at this critical stage. At this stage, liver disease may still be reversed by removing the toxin or curing the infection.

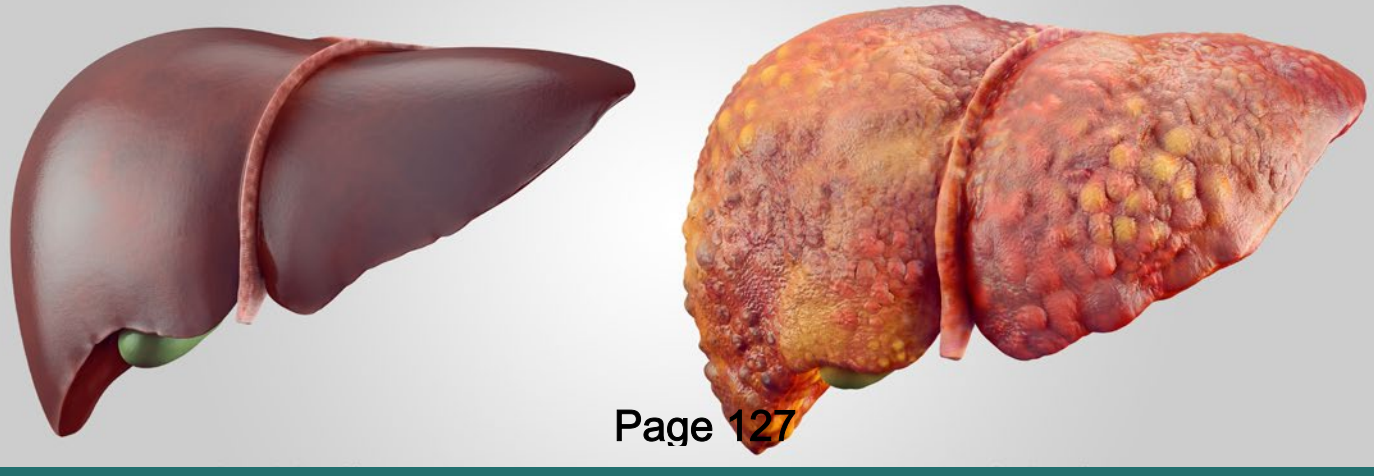
Stage 3

The final stage of liver disease is cirrhosis, which occurs when there is a significant scarring in the liver tissues. Generally, cirrhosis is not reversible but it is possible to prevent further damage by removal of the toxin. Over time, cirrhosis leads to liver failure and death. At this stage, liver transplantation is the final option for patients.

Liver disease does not usually cause obvious signs or symptoms until damage to the liver is quite advanced. For most patients, this means that the disease is only detected by tests. Once detected, the disease is often too advanced to be cured, which has a huge impact on outcomes for the patient (e.g. quality of life and death) and places a heavy burden on health services.

1.5 Prevention and treatment of liver disease

Comprehensive strategies are needed to reduce the causes of liver disease because early action can prevent permanent damage. A range of organisations have a role in preventing and treating liver disease, including national government, local authorities, the NHS, and the business sector (e.g. the alcohol and food industries). All these organisations need to work together constructively. National policies and Lincolnshire strategies to reduce alcohol consumption and obesity, and to prevent the transmission of viral hepatitis, are presented in Chapters 3 - 5 of this report.



Chapter 2: Epidemiology of Liver Disease in Lincolnshire

Key Points

- The age-standardised rate of hospital admissions for liver disease in Lincolnshire is 94.8/100,000. This is lower than the rate across England. Age standardised rates take into account how many young and old people are in the population.
- In Lincolnshire, 93% of hospital admissions for liver disease between 2010/11 and 2013/14 were among people aged less than 75 years.
- There are age, gender and ethnic variations in the rate of hospital admissions for liver disease.
- On average, around 100 people die due to liver disease in Lincolnshire annually. More than three quarters of those deaths are among people under the age of 75 years.
- Alcoholic liver disease is the major cause of deaths and hospital admissions due to liver disease.
- For women in Lincolnshire, alcohol-related hospital admission rates have increased since 2010. For men the rate increased up to 2012 and since then has fallen back to 2010 levels.

2.1 Introduction

Since the 1970s, deaths from liver disease across all age groups have increased by 400%, and among those younger than 65 years of age this rise has been 500% in the UK. The average age of death from liver disease is 59 years, compared with 82-84 years for those with heart disease, lung disease or stroke [6]. There is also a deprivation gradient with those in the most deprived fifth of the population being more than twice as likely to die from liver disease compared to those in the least deprived group in the UK [7].

In 2012, there were 600,000 people with liver disease in the UK and 57,682 admissions to hospital related to liver disease. Since 1970, the UK has seen a year-on-year increase in the number of admissions to hospital with end-stage liver disease, cirrhosis, or liver failure. This is in contrast to many other European countries, for example France, Italy and Spain, where there has been a decline in deaths from liver disease.

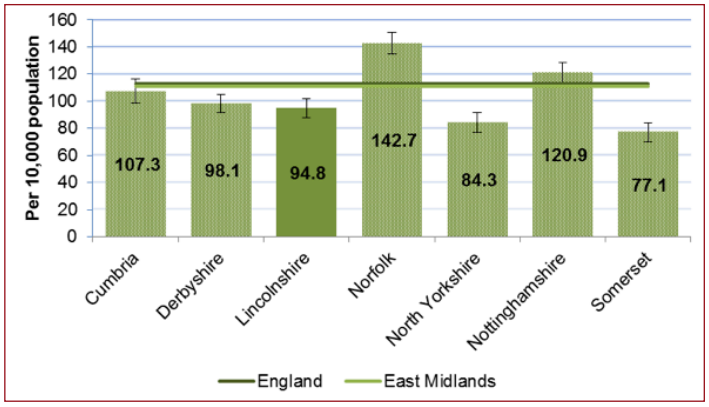
Three quarters of deaths from liver disease are alcohol related. However, liver disease due to obesity is increasing. Whilst relatively smaller, the burden of Hepatitis B and C is also growing, with annual deaths due to Hepatitis B and C having increased almost four-fold since 1996. Around 75% of people with Hepatitis B and C infections may not have any symptoms, making control of transmission difficult [8].

The exact regional prevalence of liver disease in the UK is unknown as there is no register for liver disease patients; instead, hospital admissions for liver disease are used as indicator of the burden of disease. It is important to remember that only cases requiring hospitalisation are captured by these statistics, which may vary due to differences in patient presentation and medical approaches. Further, the data reflects the number of hospital episodes and not individuals with the disease. This may over- or under-represent the true disease prevalence.

2.2 Prevalence of liver disease in Lincolnshire

Lincolnshire has a lower rate of hospital admissions for all liver disease (preventable and non-preventable) than England, as well as some of our statistical neighbours such as Norfolk and Nottinghamshire (see Figure 2.1) (see Appendix 1 for a description of the disease codes used to perform this comparison). Statistical neighbour is a term used to describe local authorities with similar characteristics, such as age profile, rurality or deprivation.

Figure 2.1: Directly age-standardised rate of hospital admissions due to liver disease/100,000 population, 2012/13



Source: Public Health England Liver Disease Profiles September 2015; http://fingertips.phe.org.uk/liver-disease.

In Lincolnshire, between 2011 and 2014 there were a total of 1010 hospital admissions due to liver disease (see Table 2.1). This includes patients of all ages for whom liver disease was recorded as a primary diagnosis for hospital admission. Some patients may have had multiple admissions during the year.

Table 2.1: Numbers of hospital admissions for liver disease by financial year, Lincolnshire GP-registered population, all ages

Type of liver disease	2011/12	2012/13	2013/14	3 years total
Alcoholic liver disease	130	140	170	430
Fibrosis and cirrhosis of liver	90	70	90	250
Liver cancer	40	60	40	140
Fatty liver disease	40	30	40	110
Hepatitis C infection	20	20	20	50
Chronic hepatitis	0	0	10	10
Hepatitis infection	10	0	0	10
Grand Total	310	330	360	1010

2.3 Demographic variations in admissions for liver disease in Lincolnshire

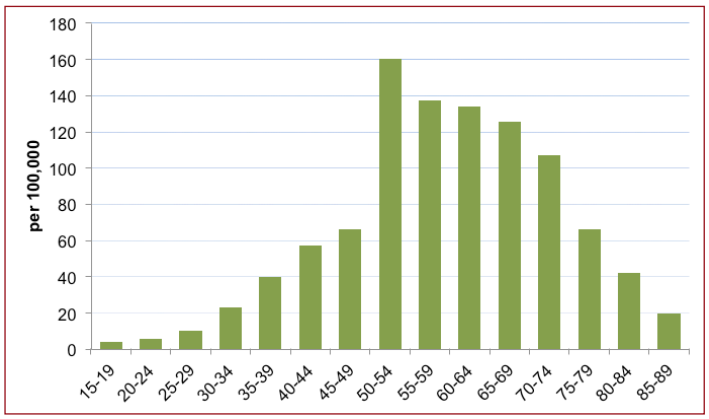
Rates of admission for different types of liver disease varied by age as follows (Figure 2.2):

- Hospital admission for alcohol related liver disease was highest in the 50-54 age group
- Admission rates for fatty liver disease were highest in those aged over 60 years
- Admissions for fibrosis and cirrhosis of the liver were high amongst patients aged between 55 and 74 years, which may reflect that this is a more advanced stage of disease progression
- Admission rates for liver cancer were highest in patients aged 65-69 years

Other demographic variations in hospital admissions for liver disease include the following:

- Males were twice as likely as females to be admitted to hospital for alcoholic liver disease.
- Males were more likely to be admitted for liver cancer, fibrosis and cirrhosis of the liver.
- 90% of patients admitted to hospital for liver disease were white British, 7% any other white background and the remaining 3% were from a range of other ethnic groups. This reflects the ethnic breakdown of the wider Lincolnshire population.

Figure 2.2: Age specific rate of hospital admission for liver disease, 2011/2-2013/14, Lincolnshire GP-registered patients

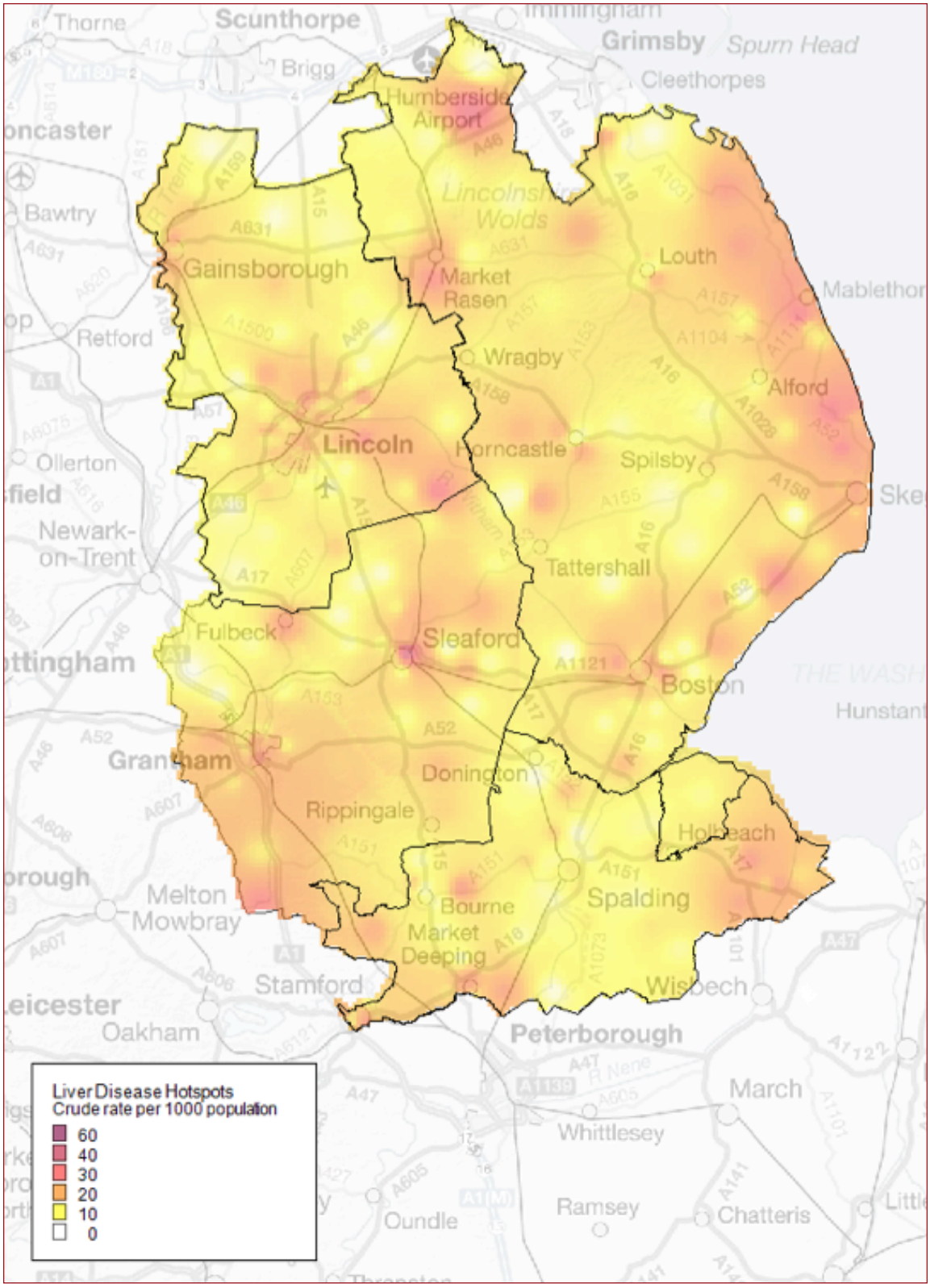


2.4 Geographical variations in hospital admissions for liver disease

Office of National Statistics uses Lower Super Output Areas (LSOA) to collect and publish small area statistics. Each LSOA has on an average about 1500 residents and 650 households.

In order to identify geographical areas that have higher rates of ill-health resulting from liver disease, hospital admissions rates for the period 2011/12 to 2013/14 were mapped to LSOAs. Ranks were assigned to LSOA based on these calculated rates. The results were divided into five categories based on the rank. The results are shown in Figure 2.3, where the darkest colour on the map represents the top 20% of areas in Lincolnshire with highest rates of hospital admissions for liver disease. Rates are highest along the East Coast of the county, and in small pockets around Lincoln, Sleaford and Grantham.

Figure 2.3: Liver disease 'hot spots' in Lincolnshire based on analysis of hospital admissions data (2011/12 – 2013/14) by place of patient residence



Source: HSCIC, Hospital Episodes Statistics (HES) Copyright © 2014, re-used with the permission of The Health & Social Care Information Centre. All rights reserved.
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2.5 Deaths from liver disease in Lincolnshire

On average, around 100 people die due to liver disease in Lincolnshire each year. More than three quarters of these deaths are among people aged less than 75 years old.

The number of deaths from liver disease in the Lincolnshire GP-registered population from 2011-2014 are presented in Table 2.2. Alcoholic liver disease was the most commonly recorded cause of death amongst those with liver disease, followed by fibrosis and cirrhosis of the liver, and liver cancer.

Men were twice as likely as females to die from alcoholic liver disease. There were few deaths from hepatitis recorded in Lincolnshire. The numbers were too small to be included in the table.

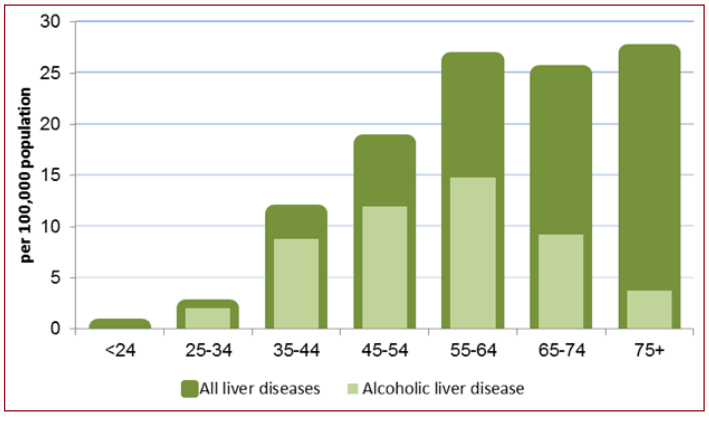
Table 2.2: Number of deaths from liver disease by disease type and year of death registration, all ages, Lincolnshire GP-registered population. (All numbers are rounded to the nearest 10; due to rounding, numbers may not add up to total)

Underlying cause of death	2011	2012	2013	2014
Alcoholic liver disease	40	60	40	30
Fibrosis and cirrhosis of liver	20	40	20	20
Liver cancer	20	10	20	10
Fatty liver disease	10	0	10	0
Total	**100**	**110**	**90**	**70**

Source: HSCIC, Primary Care Mortality Database.

In Lincolnshire, death rates from liver disease generally increase with age. However, deaths from alcoholic liver disease follow a slightly different pattern; the death rate for this cause is highest in people aged 55-64 years old. Figure 2.4 illustrates this, showing deaths rates for all liver disease and alcoholic liver disease at different ages. Death rates from liver disease are highest in the most deprived areas in England.

Figure 2.4: Age specific death rates from liver disease, 2011-13, Lincolnshire GP-registered population



Source: HSCIC, Primary Care Mortality Database

2.6 Alcohol-related liver disease

Alcoholic liver disease accounts for the largest number of liver disease deaths and hospital admissions.

Geographical Variations in Hospital Admissions from liver disease

To compare geographical variations in hospital admissions for liver disease across the four Lincolnshire Clinical Commissioning Groups (CCGs), admission rates for alcoholic liver disease were calculated using 2013 European Standard Population to account for differences in age profiles between the areas. This data does not represent all liver disease admissions, but alcoholic liver disease accounts for almost half of admissions over the 3-year period 2011-2013.

South West Lincolnshire CCG had the highest rate of hospital admissions due to alcoholic liver disease (see Figure 2.5). However the rate of alcohol-specific hospital admissions South West Lincolnshire CCG is significantly lower than admissions from other Lincolnshire CCGs (see Figure 2.6). This result is unexpected because we might have expected rates of hospital admissions due to alcoholic liver disease to be higher in Lincolnshire East and Lincolnshire West CCGs areas where hospital admissions for alcohol specific causes are highest.

There are a number of possible explanations for this. Firstly, alcohol-specific conditions include those conditions where alcohol is causally implicated in all cases of the condition; for example, alcohol-related liver cirrhosis, alcohol-induced behavioural disorders, etc. Therefore the different definitions may produce different findings because alcoholic liver disease is only one of many conditions included in data on alcohol-specific conditions, and many of these other conditions occur much more frequently than alcoholic liver disease.

Secondly, hospital admission rates are based on the number of admissions rather than individual patients. So the high rates in South West Lincolnshire CCG may have been caused by multiple admissions of a small number of patients. In contrast, alcohol-specific hospital admissions are the result of person-based analysis; therefore each patient is only counted once within a financial year period.

Finally, whilst adjusting for age and sex helps us to get nearer to comparable populations between areas, migration between areas can confuse matters. In Lincolnshire there is a high level of migration. Older people move to the east coast to retire and so the area in which people now live is not necessarily the area that influenced their health across the life course. This may mean that even after adjusting for age and gender, rates of hospital admissions for alcoholic liver disease in Lincolnshire East CCG are better than we might have expected given the deprivation levels in the area. Similarly, Lincoln is an urban area with more deprivation. However, as the young people who migrate to Lincoln have better levels of health than is normal for the city, this may skew the figures.

In summary, although South West Lincolnshire CCG has the highest rate of alcoholic liver disease in Lincolnshire, it is not possible to unpick exactly why rates are highest in this area without access to individual level data.

Figure 2.5: Alcoholic-liver disease, age standardised hospital admissions rates/100,000 population by CCG (GP-registered population), all ages, 3-years' pooled data

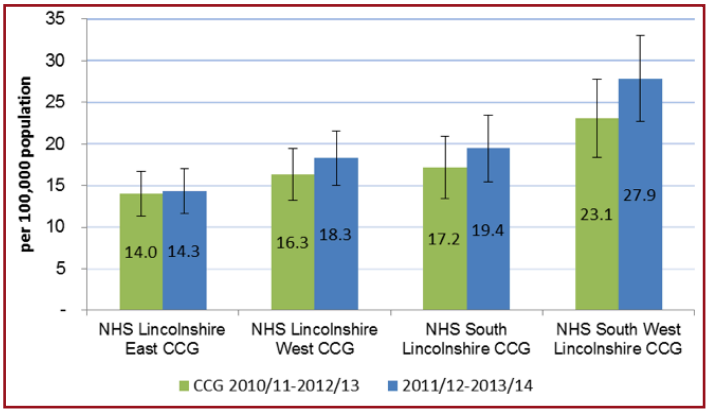


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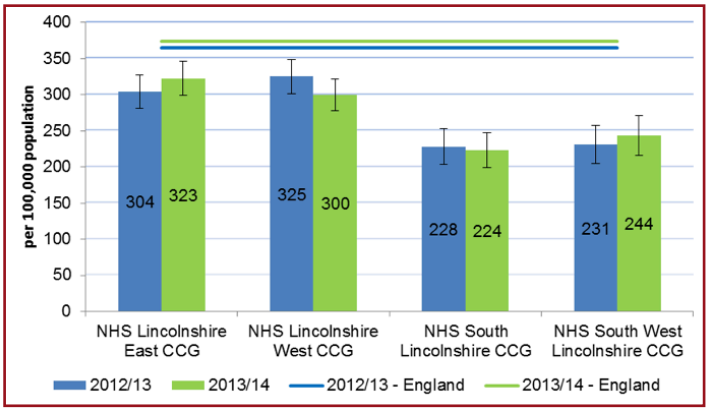
Figure 2.6: Directly age standardised hospital admission rates for alcohol-specific conditions by CCG and financial year, all ages



Source: Public Health England, Local Alcohol Profiles for England, September 2015; http://fingertips.phe.org.uk/profile/local-alcohol-profiles

Trends in Hospital Admissions over Time

The 5-year trend in hospital admissions for alcohol-related liver disease in Lincolnshire and England is shown in Table 2.3. This rate includes hospital episodes where the primary or any secondary diagnoses are an International Classification of Diseases (ICD) alcohol-attributable alcoholic liver disease code.

Table 2.3: Admission episodes for alcohol-related alcoholic liver disease conditions, directly age-standardised rate per 100,000 population by financial year and gender

	England		Lincolnshire	
Financial year	Female	Male	Female	Male
2009/10	53.9	124.7	32.4	80.7
2010/11	57.5	137.3	37.9	82.2
2011/12	60.8	140.5	36.6	85.5
2012/13	61.4	142.2	32.7	83.9
2013/14	65.8	147.1	37.0	81.7

Source: Public Health England, Local Alcohol Profiles for England, September 2015; http://fingertips.phe.org.uk/local-alcohol-profiles

Across the 5-year period, the rate of hospital admissions in Lincolnshire has been lower than the national level for both males and females. For women in Lincolnshire, rates have fluctuated but show a general trend towards increasing over time, from 32.4 to 37.0 per 100,000 between 2009-10 and 2013-14. For men in Lincolnshire, the rate increased from 80.7 to 85.5 between 2009-10 and 2011-12, before decreasing to a level similar to that in 2009-10 by 2013-14.

These fluctuations in alcohol-related liver disease are likely to reflect a national trend of rising alcohol consumption in the 1990s and 2000s, which has since fallen slightly [9].

Whilst rates of alcohol-related liver disease in Lincolnshire are lower than the England average, liver disease remains an important contributor to premature mortality in Lincolnshire.

Chapter 3: Causes of Liver Disease – Alcohol

Key Points

- Excessive alcohol consumption over time is the leading cause of liver disease in the UK.
- People may be more vulnerable to harmful alcohol consumption due to a range of factors such as their gender, socio-economic status, relationship status and environment (e.g. alcohol pricing and availability policies).
- The Government published its latest Alcohol Strategy in March 2012. It focuses on preventing alcohol-related harm by reducing the number of people drinking excessively and making "less risky" drinking the norm, through local and national action.
- The Lincolnshire Alcohol and Drug Strategy 2014-2019 identifies a number of ways in which action is being taken in Lincolnshire to reduce alcohol consumption and related health harms.
- A range of psychosocial and pharmacological interventions are provided by Addaction and the Drug and Alcohol Recovery Team in Lincolnshire for adults who require specialist alcohol treatment services.

3.1 Introduction

Excessive alcohol consumption is the leading cause of liver disease in the UK. This chapter gives an overview of excessive alcohol consumption, how it causes liver disease, who are most at risk of liver damage due to excessive alcohol consumption and how common excessive alcohol consumption is in Lincolnshire. It also gives a brief description of the national policy and local strategy to reduce excessive alcohol consumption, and the local alcohol prevention and treatment services available within Lincolnshire.

3.2 What is excessive drinking?

The current UK Government drinking guidelines state that:

- Women should not regularly drink more than 2-3 units a day.
- Men should not regularly drink more than 3-4 units a day.

'Regularly' means drinking most days or every day [1].

In 2012 the Government announced a review of the drinking guidelines to be led by the Chief Medical Officer [12]). This review was completed in 2015 and new proposed guidelines were announced in January 2016. The proposed new guideline is a weekly guideline for men and women who drink regularly or frequently (people who drink most weeks) [2]:

- You are safest not to drink regularly more than 14 units per week, to keep health risks from drinking alcohol to a low level.
- If you do drink as much as 14 units per week, it is best to spread this evenly over 3 days or more. If you have one or two heavy drinking sessions, you increase your risks of death from long term illnesses and from accidents and injuries.

The proposed new guideline is currently out for consultation until 1st April 2016.

Figure 3.1 provides a guide of how many units are in different drinks.

Many people drink within the current drinking guidelines. However, in 2012, 55% of men and 53% of women in England reported exceeding this guideline, including 31% of men and 24% of women who drank more than twice the recommended amount [13]. Excessive alcohol consumption is defined as regular and heavy drinking above the UK government guidelines.

Figure 3.1: Unit guide per drink type [13]

Source: Help4Addiction
http://help4addiction.co.uk/resources/about-alcohol/alcohol-facts/alcohol-unit-guide

3.3 How does excessive alcohol consumption cause liver disease

The liver carries out many important functions in the body, one of which is to break down ethanol (a toxin) to allow it to be removed. Excessive alcohol consumption over time can

put a strain on the liver, leading to damage called alcohol-related liver disease (ARLD). Initially the damage is reversible, but with continued drinking the damage can become permanent. This damage is called liver cirrhosis. If a person stops drinking at this stage, they can prevent further damage. However, if they continue to drink, it can lead to liver failure. For individuals who continue to drink excessively after they have developed cirrhosis, there is only a 50% chance of living another five years [14].

3.4 Who is most at risk of excessive alcohol consumption?
There is a wide range of individual and societal risk factors for excessive alcohol consumption [15]. The greater number of vulnerabilities a person has, the more likely they are to develop liver disease [16].

People may be more vulnerable to excessive alcohol consumption depending on:

- **Gender:** The prevalence of harmful and dependent drinking is higher among men than women (9% of men and 4% of women show signs of alcohol dependence) [17].
- **Age at first drink:** The age at which a young person starts drinking and their pattern of drinking during adolescence can increase the risk of developing alcohol dependence in later life [18] [19]. Looked after children are at particularly high risk of alcohol misuse [20]
- **Socio-economic status:** People of higher socio-economic status are more likely to drink alcohol, and more likely to drink above the government guidelines [21]. But, people of higher socio-economic status are less likely to experience alcohol-related harm [22].
- **Marginalisation:** Alcohol consumption and related harm is high among homeless people [23]. Excessive drinking is also high among men and women prisoners – those who report daily drinking drink an average of 20 units per day [17].
- **Pricing and availability policies:** Societies that have more stringent pricing and taxation strategies for alcohol, that place greater restrictions on marketing of alcohol products, and that seek to limit in some way the availability of alcohol (e.g. through restrictions on purchasing age, density of outlets and opening hours), in general have lower levels of alcohol consumption and alcohol-related harm [24]
- **Genetic markers:** There are a number of genetic factors that influence how the body responds to alcohol [25]. Genetics can also influence other characteristics (e.g. personality traits) that are linked to certain drinking patterns [26].

Understanding the main vulnerabilities for excessive alcohol consumption can help us to target preventive strategies and treatment towards those groups in society who have the greatest need.

3.5 Excessive alcohol consumption in Lincolnshire
Alcohol consumption at a national level is measured through a combination of sales data and national surveys (e.g. the Health Survey for England). Regional patterns of alcohol consumption are not measured directly and therefore a range of negative outcomes attributed to alcohol (e.g. alcohol-specific deaths and hospital admissions) are used to estimate the prevalence of excessive alcohol consumption at lower geographical levels. Local alcohol profiles are produced by Public Health England, which enable comparisons of negative alcohol-related outcomes between areas.

In 2011-2013, across a range of health measures (e.g. alcohol-specific deaths and alcohol-specific hospital admissions), Lincolnshire had better outcomes than both the East Midlands and England (see Table 3.1) [27].

Table 3.1: Alcohol-specific deaths and hospital admissions in England, East Midlands and Lincolnshire, 2011-13 [27]

	Alcohol-specific deaths (rate/100,000)	Alcohol-specific hospital admissions (rate/100,000)
England	11.9	374
East Midlands	11.7	318
Lincolnshire	8.3	282

Source: Public Health England, Local Alcohol Profiles for England, September 2015; http://fingertips.phe.org.uk/local-alcohol-profiles

Table 3.2: Alcohol-specific deaths and hospital admissions in Lincolnshire districts, 2011-13 [28]

	Alcohol-specific deaths (rate/100,000)	Alcohol-specific hospital admissions (rate/100,000)
East Lindsey	7.7	322
West Lindsey	7.7	238
North Kesteven	4.0	194
South Kesteven	9.8	255
Lincoln	15.0	432
South Holland	5.6	212
Boston	8.7	344

Source: Public Health England, Local Alcohol Profiles for England, September 2015; http://fingertips.phe.org.uk/local-alcohol-profiles

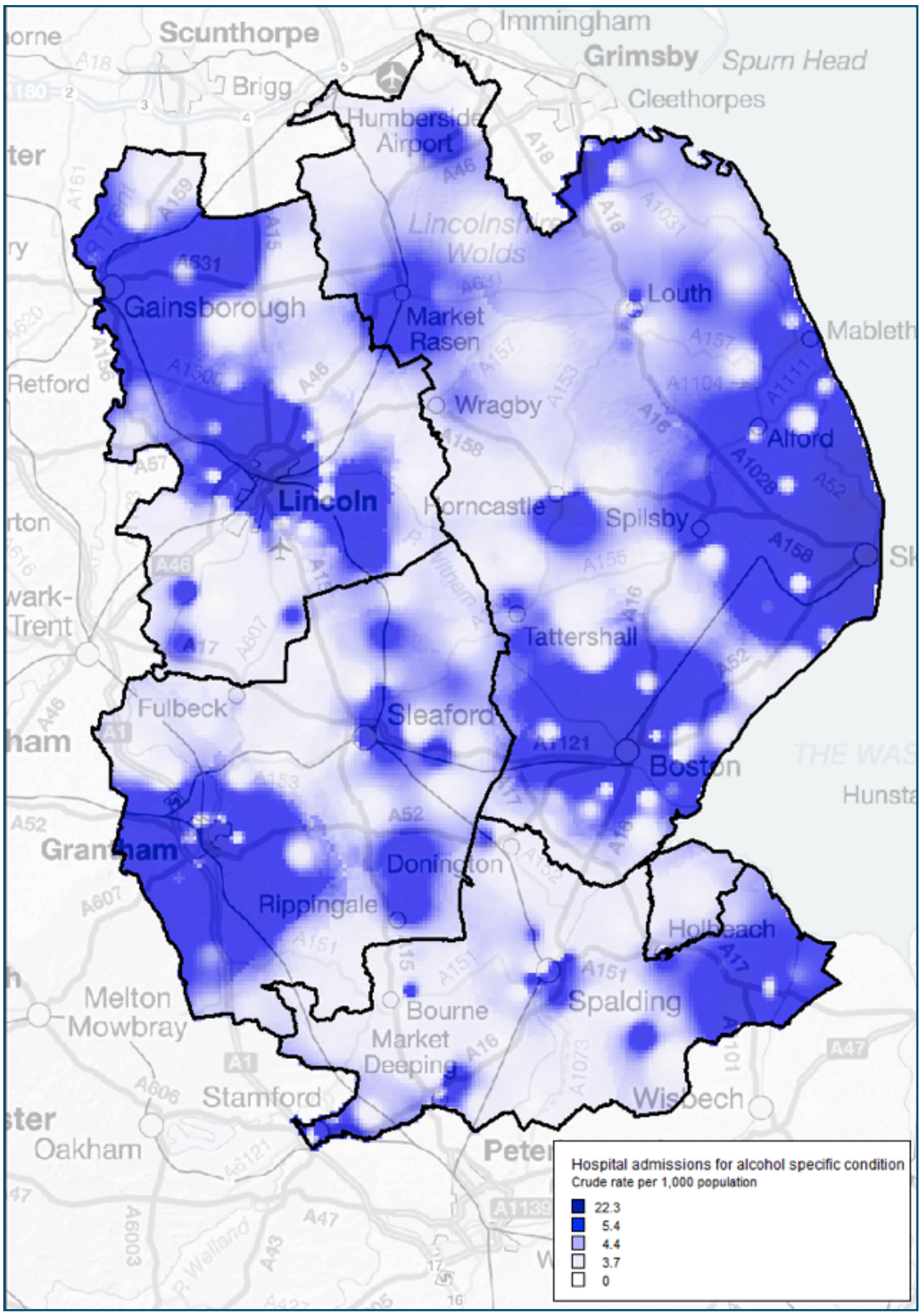
Comparing across districts, the alcohol-specific death rate is lower than the Lincolnshire average in East Lindsey, North Kesteven, South Holland and West Lindsey (see Table 3.2). Death rates are much higher than average in Lincoln. District level alcohol-specific hospital admission rates are below average for Lincolnshire in West Lindsey, North Kesteven, South Kesteven and South Holland. Again, alcohol-specific hospital admission rates are above the county average in Lincoln.

Rates of alcohol-specific hospital admissions in Lincolnshire are mapped across the county in Figure 3.2. The data includes hospital admissions where an alcohol-specific condition is recorded as a primary or secondary diagnosis. This map highlights areas in which rates of alcohol-specific hospital admissions are high (darker blue equals higher rates). In particular, the more deprived areas along the East coast of Lincolnshire and the larger built up areas (e.g. Lincoln and Boston) have higher levels of alcohol-specific hospital admissions.

3.6 National policy to reduce excessive alcohol consumption

Alcohol-related liver disease (ARLD) develops over time as a result of excessive alcohol consumption. We need to reduce excessive alcohol consumption in the population to prevent ARLD.

Figure 3.2: Hot spot map of alcohol-specific hospital admissions in Lincolnshire



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The most recent Government Alcohol Strategy was published in March 2012 [29]. The strategy focuses on preventing alcohol-related harm by reducing the number of people drinking excessively and making "less risky" drinking the norm, both through local and national action. Following consultation on the Alcohol Strategy, the key policies focus on strengthening mandatory licensing conditions, challenging the alcohol industry to encourage responsible drinking and supporting local authorities to take action locally [30].

The National Institute for Health and Care Excellence (NICE), which provides national guidance to improve health and social care, has published a briefing for local authorities recommending actions they can take to implement the national strategy locally. This includes influencing where alcohol is sold through planning regulations, ensuring licensed premises operate responsibly, enforcing laws on underage sales, commissioning alcohol treatment services and being responsible for the assessment of alcohol as part of the NHS Health Check programme [31]. In Lincolnshire, responsibility for some of these functions is at district council level (e.g. planning regulations and enforcing laws on underage sales) and others at county council level (e.g. treatment services and the Health Check programme).

3.7 Helping people to reduce their alcohol consumption

In England a range of population and individual level actions are being taken to help people to reduce their alcohol consumption [31]. Population wide approaches can:

- reduce the number of people who start to drink excessively;
- help those who are not in contact with services to drink less; and
- help those who have been advised to drink less by building an environment that encourages and supports less risky drinking.

Individual approaches are also important to help people to become aware of the risks of their drinking and to minimise or prevent further harm.

A mechanism for engaging with individual drinkers is Making Every Contact Count (MECC). MECC is a national strategy based on the premise that all organisations with a responsibility for health, wellbeing, care and safety have an opportunity to impact on people's mental and physical wellbeing. It is about using every opportunity to talk to individuals about improving their health and wellbeing, influencing lifestyle and health behaviours.

The Department of Health [32] has issued guidance recommending a range of treatment services for adults who drink excessively. These include [33]:

- Alcohol information, screening and brief advice for hazardous and harmful drinkers, delivered by non-specialists within a range of settings (e.g. GPs, A&E, social care)
- Open access and outreach services that provide alcohol advice, assessment and extended brief interventions in a range of settings
- Community-based, specialised alcohol assessment and treatment including prescribing, psychosocial therapy and support within a care plan, specialised drug and alcohol practitioners and input from medical staff
- Residential, specialised alcohol assessment and treatment including prescribing, psychosocial therapies, support and aftercare, delivered by medical staff who specialise in substance misuse

Psychosocial interventions are those that focus on the social and psychological factors that influence behaviour. NICE recommends that psychological interventions should be used in the treatment of harmful drinkers and people with mild alcohol dependence, with the intervention focused specifically on alcohol-related cognitions, behaviour, problems and social networks [34]. Evidence-based psychological treatments supported by NICE are:

- Cognitive behavioural therapy;
- Behavioural therapies focused on alcohol-related problems;
- Social network and environment-based therapies;
- Behavioural couple's therapy on alcohol-related problems and their impact on relationships.

Pharmacological or drug-based interventions can be used to support people with moderate or severe alcohol dependence to stay alcohol-free following successful withdrawal from alcohol. Drugs are currently available which have the following effects:

- Reduce the reward associated with alcohol consumption;
- Stabilise the chemical imbalance caused by alcohol withdrawal;
- Create an acute sensitivity to ethanol and result in unpleasant side-effects from drinking.

Pharmacological interventions should only be used if supported by psychosocial interventions.

NICE has also developed a treatment pathway for alcohol use disorders that incorporates prevention and diagnosis and management within a single overarching framework [35].

3.7 Local strategy and services

Broad, evidenced-based approaches to reducing alcohol consumption and hence improving liver health are identified in Improving Liver Health in the East Midlands by Public Health England [36]. These include primary prevention (such as DPHs responding to licensing decisions in their local areas and managing the availability of alcohol), identification and brief advice to people who are at risk of or who are experiencing harm as a result of their drinking, hospital-based alcohol services, and a comprehensive treatment system to support those who are dependent on alcohol to recover from their alcohol misuse.

The Lincolnshire Alcohol and Drug Strategy 2014-2019 [37] identifies a number of ways in which action is being taken in Lincolnshire to reduce alcohol consumption and alcohol related health harms. Promoting responsible drinking is a core theme of the strategy and is enacted through programmes such as:

- School-based alcohol-harm and drug misuse education programmes;
- The Blue Light Project; and
- Increasing support for raising the topic of alcohol consumption within the Making Every Contact Count (MECC) programme.

Addaction and the Drug and Alcohol Recovery Team currently provide a range of psychosocial and pharmacological interventions for adult drinkers who require specialist alcohol treatment services in Lincolnshire. Young Addaction provides holistic services for children and young people who are under 19 years of age. Young people's services are outreach driven to enable engagement with young drinkers in an appropriate environment.

The diversity of stakeholders involved in the interventions described above, including schools, the police, the local authority, substance misuse services and all healthcare professionals (within MECC), highlight the important role that organisations have, to work together to address alcohol related liver disease.

Chapter 4: Causes of Liver Disease – Obesity

Key Points

- The number of people who are overweight or obese has increased dramatically in almost all countries over the past 10 years.
- Obesity causes excess fat deposits within the liver which, over a period of time, can cause permanent liver damage. However, damage can be prevented and, in its early stages, reversed by weight-loss.
- A number of individual, societal and environmental factors act across individuals' lives to increase their risk of becoming overweight or obese.
- The number of people who are obese in Lincolnshire is above the average for England and the East Midlands.
- Tackling obesity has been a government priority for a number of years with a primary goal being a downward trend in the level of excess weight in adults and a sustained downward trend in the level of excess weight in children by 2020.
- In Lincolnshire, public health and local authority, health-care services, education and several commercial organisations recognise and promote the need to encourage healthier diet and increased levels of physical activity in adults and children.

4.1 Introduction

The number of people who are overweight or obese has increased dramatically in almost all countries over the past decade. Obesity is now widely recognised as an important public health issue. In England, almost seven in ten men and six in every ten women are overweight or obese [38]. This chapter outlines what obesity is and how it may add to the growing burden of liver disease.

4.2 How are overweight and obesity defined?

The World Health Organisation (WHO) defines being overweight or obese as an accumulation of excess fat that could cause serious physical and psychological health problems [39]. In adults, obesity is most frequently defined through a person's body mass index (BMI). BMI is the ratio of a person's weight in kilograms (kg) to their height in meters squared (m^2) [40]. For example, an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9.

$$\textbf{BMI} = 70\ \text{kg} / (1.75\ \text{m}^2) = 70 / 3.06 = 22.9$$

For adults having a BMI of greater than 25 and less than 30kg/m^2 means you are overweight and having a BMI of greater than or equal to 30 kg/m^2 means you are obese.

Children's BMI may be measured differently using reference growth charts.

4.3 What makes us put on excess weight?

At its simplest, overweight and obesity are caused by a long-term energy imbalance where the energy (calories) we consume exceeds the calories we expend. In reality, this balance is influenced by a complex web of factors [41] (Figure 4.1).

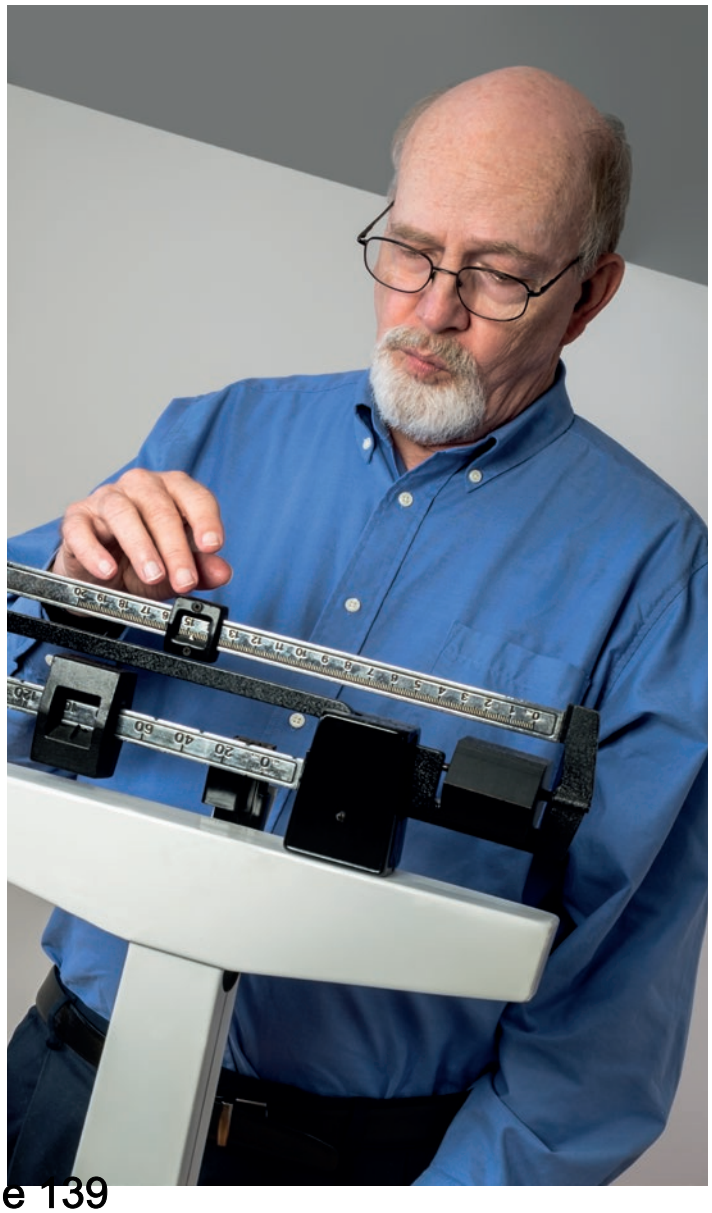
The key contributing factors for being overweight or obese are:

- **Individual food consumption:** The quality, quantity and frequency of food consumption all influence our heath. Increasing portion size and over-consumption of high-fat, high-sugar foods that contain lots of energy but few nutrients, as well as high energy drinks (e.g. fizzy drinks, sports drinks and fruit juice) has led to the consumption of excess calories.
- **Individual psychology:** How we perceive our own and others body size; our food habits; and how we respond to stress and other emotions all impact food consumption.
- **Physical activity:** Levels of occupational, domestic and recreational activity are all key contributing factors that can influence our ability to maintain weight.
- **Food environment:** The food environment covers a broad spectrum of factors that may influence individual food intake. These factors range from food marketing and promotional offers to the links between obesity and exposure to fast food outlets [42].
- **Societal:** Social norms and the socio-cultural value of food, media consumption, education and peer pressure are all social factors that may influence both individual and population decisions relating to food intake.
- **Physical environment:** The infrastructure and environment around us may also encourage or discourage activity and thus influence our behaviour. For example, a decision to cycle to work may be influenced by road safety, air pollution and the provision of workplace facilities for bike storage and showering.

Figure 4.1: An overview of the complex web of factors contributing to increasing levels of obesity in the UK

Government Office for Science: Tackling obesity: Future Choices Project Report 2nd editio

Interacting with these factors is a small number of genetic markers that make individuals more prone to obesity [43]. However, in all but a small number of cases, it is the influence of our environment and how we respond to it that determines our risk of becoming obese [44].



4.4 Obesity in Lincolnshire

The number of people, in Lincolnshire, who are obese, is above the average for England and the East Midlands.

In 2014/15 in Lincolnshire, according to the National Child Measurement Programme (NCMP), 8.5% of children in Reception and 19.4% of children in Year 6 were obese. While trends in the UK have shown signs of decline over the last seven years, Lincolnshire rates of obesity have, until recently, increased (see Figure 4.2).

In adults, the prevalence of overweight and obesity is again higher than in either the East Midlands or England (see Figure 4.3). At CCG level, Lincolnshire CCG's are ranked amongst those with the highest prevalence of obesity (see Table 4.1). Comparison between CCGs is not possible as confidence in the data is limited by differences in reporting practices. There are no significant differences between the levels of obesity in adults in different districts.

At a national level, higher levels of obesity in adults are linked with greater deprivation. This could not be assessed on a local level in adults; however, in Lincolnshire, a similar relationship was found between obesity levels in children and deprivation at a population level.

Figure 4.2: National child measurement programme: obesity levels in Lincolnshire compared with national levels

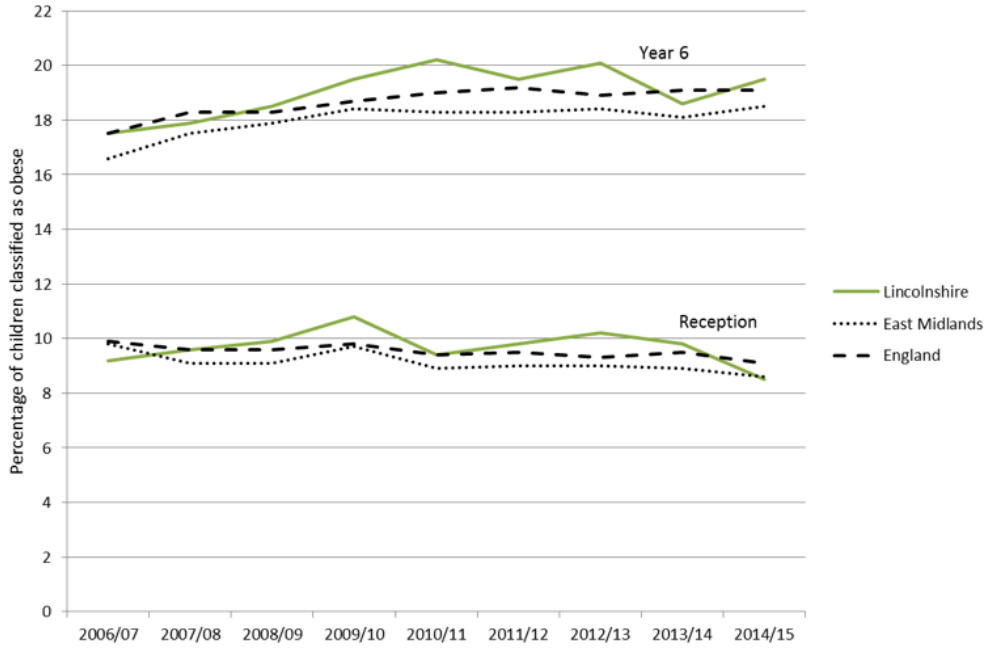


Figure 4.3: Percentage of population who are overweight or obese from the Public Health Outcomes Framework

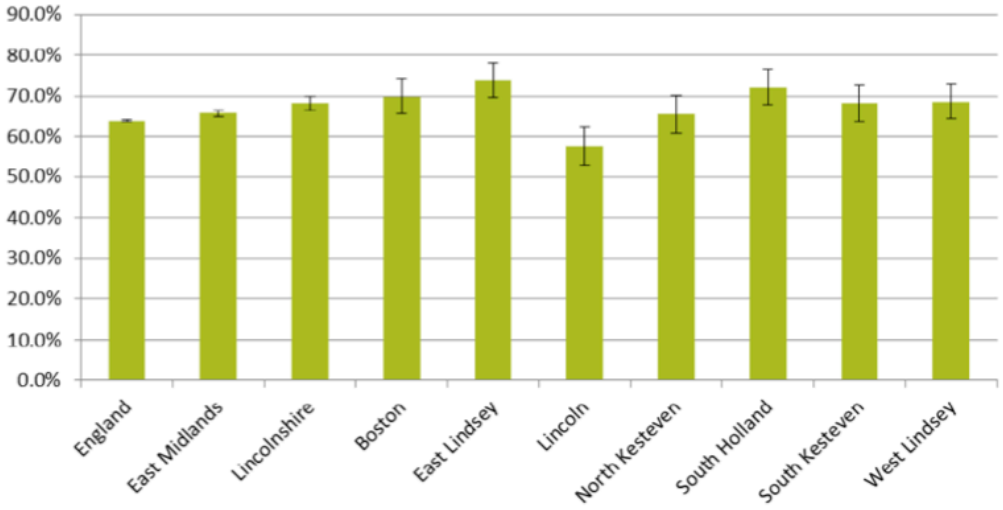


Table 4.1: Obesity prevalence and ranking of Lincolnshire CCGs from QOF Obesity Register Data

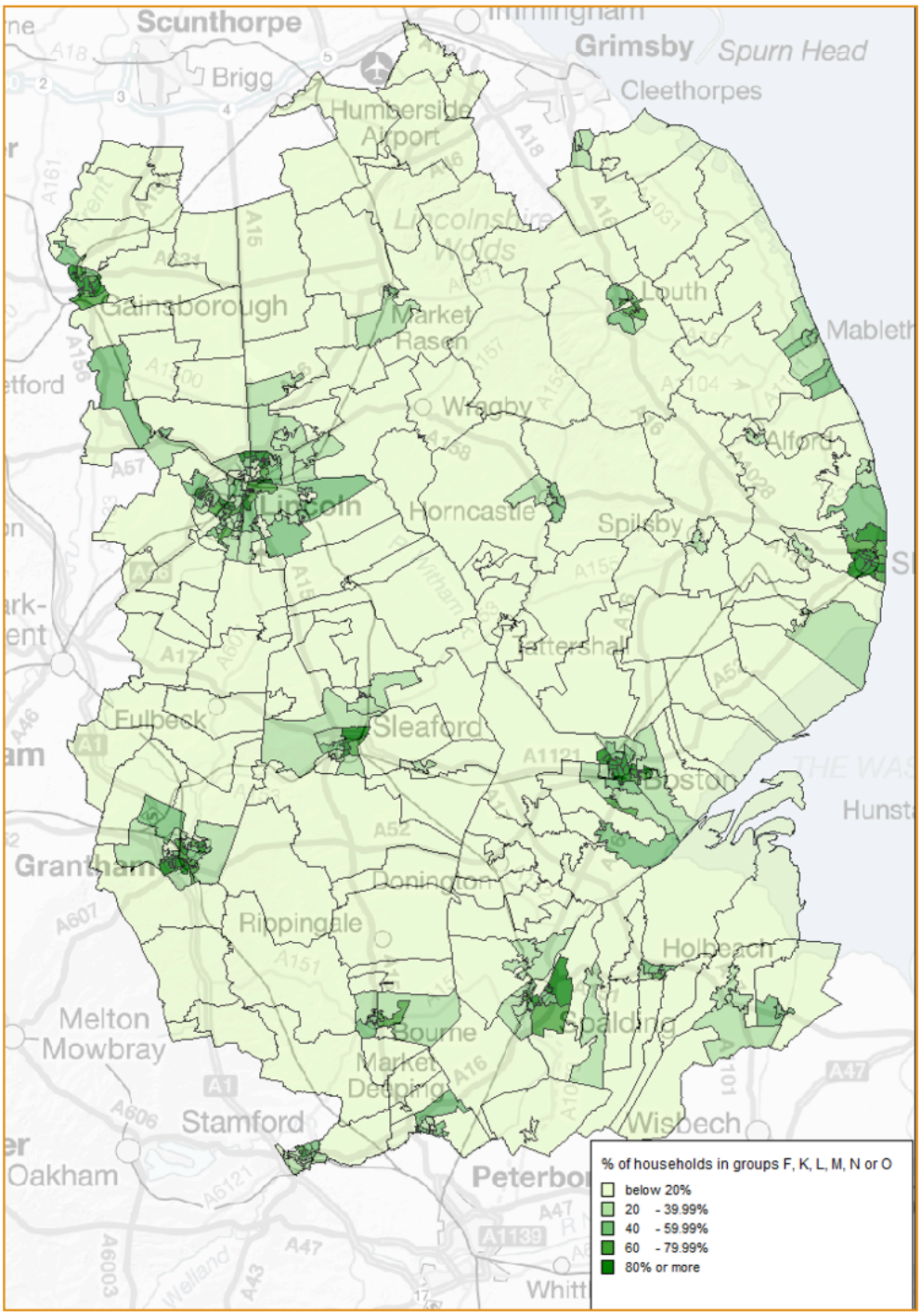
CCG	Prevalence from QOF	Rank (of 211 CCGs)	Percentage Rank & Position Comment
Lincolnshire East CCG	13.5%	26	Highest 12% - within the top sixth of CCGs for obesity prevalence (from QOF data)
Lincolnshire West CCG	13.0%	42	Highest 20% - within the top fifth of CCGs for obesity prevalence (from QOF data)
South Lincolnshire CCG	12.3%	56	Highest 26% - Just outside the top quarter of CCGs for obesity prevalence (from QOF data)
South-West Lincolnshire CCG	12.2%	58	Highest 27% - Just outside the top quarter of CCGs for obesity prevalence (from QOF data)

Source: Quality Outcomes Framework

4.5 Risk factors for obesity in Lincolnshire

In a 2013/14 survey conducted by Sport for England, 55.8% of Lincolnshire's adult (16+yr) population questioned were considered to be undertaking sufficient physical activity with 29% considered inactive. These are similar to the England averages (56.0% and 28.3% respectively). The same survey estimated 49.8% of people in Lincolnshire consume five or more portions of fruit and/or vegetables a day. This is slightly lower than the England average (51.4%). Modelled data suggests that 36% of Lincolnshire households fall within the 'at risk' group for obesity (Figure 4.4).

Figure 4.4: Concentration of 'high risk' group for obesity as a percentage of households by Lower Super Output Area (LSOA)



Source: Experian - Mosaic Public Sector 2015

4.6 How can obesity damage the liver?

Obesity causes excess fat deposits within the liver, which, if remain unchecked, can cause permanent liver damage.

Fatty liver or non-alcoholic fatty liver disease (NAFLD) is relatively common in the obese population. In the early stages of NAFLD, a small amount of fat in the liver does not usually cause any symptoms. However, the presence of fat in the liver has been associated with an increased risk of stroke or heart attack [45]. A build-up of fat also makes the liver vulnerable to further injury, resulting in inflammation and scarring of the liver (Non-alcohol steatohepatitis

(NASH)). The accumulation of fat in liver cells, accompanied by inflammation and scarring (fibrosis), may lead to the cirrhosis of the liver and liver cancer.

4.7 What can we do to reduce non-alcoholic fatty liver disease (NAFLD)?

The early stages of non-alcoholic liver disease are reversible. Programmes that address unhealthy food habits, reduce weight and increase physical activity are all able to reduce the amount of fat in your liver. As most cases of NAFLD are linked to being obese or overweight, treatment and/or prevention of obesity is the key to reducing the prevalence of NAFLD.

Once NAFLD has progressed to scarring and cirrhosis, there is no cure. However, removing the cause of the liver disease (e.g. obesity) can help to prevent disease progression.

4.8 National policy to reduce obesity

The 2010-2015 Obesity and Healthy Eating Strategy targeted a downward trend in the level of excess weight in adults and a sustained downward trend in the level of excess weight in children by 2020. National programmes such as Change4Life and the Public Health Responsibility Deal have sought to help people make healthier choices and encourage responsible business via health education activities, food labelling and voluntary pledges from the food industry to reduce portion size and harmful ingredients.

Nationally, work continues to update guidelines including, most recently, recommendations to restrict intake of added sugar to less than 5% of total energy intake. Many of the suggested responses to this new challenge act at a national level [46], although a local authority pilot in Brighton and Hove has instigated a voluntary sugar sweetened beverage tax of 10p per item as part of a Sugar Smart City Campaign [47].

4.9 What are we doing in Lincolnshire to help you?

Collective work across public health and local authorities, health-care services, education and several commercial organisations in Lincolnshire recognises and promotes the need for a healthy diet and increased levels of physical activity, with the ultimate goal of reducing the prevalence of obesity in adults and children.

Childhood obesity and dietary habits are known to track into adolescence and adulthood making early prevention an important feature of obesity strategy. The National Childhood Measurement Programme identifies those whose weight may put them at risk of future weight-related issues in adulthood. Furthermore, health screening in adults via the NHS Health Check programme identifies those who may benefit from weight management advice. Collaborative work by CCGs is ongoing to provide specialist support to those with a BMI between 35kg/m2 and 45kg/m2. For individuals with a BMI of 45kg/m2 and above, who have other related illnesses (e.g. diabetes) and have not had success with behavioural interventions, surgery is considered as an effective intervention [48].

The latest (May 2014) obesity update of the Lincolnshire Joint Strategic Needs Assessment (JSNA) highlighted a number of actions including supporting the development of and improving accessibility to, weight management services. The JSNA update also suggested Lincolnshire County Council would look to maximise the contribution of the planning system and engage new partners across the commercial, corporate, and voluntary and public sectors to contribute to tackling obesity.

Chapter 5: Causes of Liver Disease – Viral Hepatitis

Key Points

- Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are blood borne viruses (BBVs) transmitted through contaminated blood and body fluids.
- The body's response to the presence of the virus over a long period of time may lead to permanent liver damage.
- Short-term (acute) Hepatitis B and C infection may or may not cause visible symptoms. Some individuals recover without ever realising they have been infected.
- A vaccine is available to prevent Hepatitis B transmission in high risk groups e.g. intravenous drug users.
- No vaccine is available for Hepatitis C.
- In Lincolnshire, Hepatitis B vaccination and Hepatitis C testing is encouraged alongside adult substance misuse services. Lincolnshire's two prisons also offer Hepatitis B vaccination and Hepatitis C testing.

5.1 What are Hepatitis B and C?

Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are blood borne viruses (BBVs) transmitted through contaminated blood and other body fluids. When infected, the virus is carried in the blood to the liver cells and creates copies of itself. In doing this, it interferes with the functions of the liver. The body's immune system reacts to combat and eliminate the infectious agent leading to inflammation.

The prevalence of chronic (long-term) Hepatitis B infection in the UK is estimated to be 0.3% (approximately 180,000 people). The rate of Hepatitis B infections appears highest in large city areas, likely due to the concentration of high-risk populations in these areas [49] (Figure 5.1).

Within the UK the most recent national estimates suggest that around 215,000 individuals are chronically infected with Hepatitis C (HCV) in the UK. Apart from 2010, the overall trend is of a year-on-year increase in the number of new Hepatitis C reports. This may be due, in part, to more complete reporting and/or more targeted testing of individuals. In 2014 there were 11,997 new Hepatitis reports in England and Wales [50].

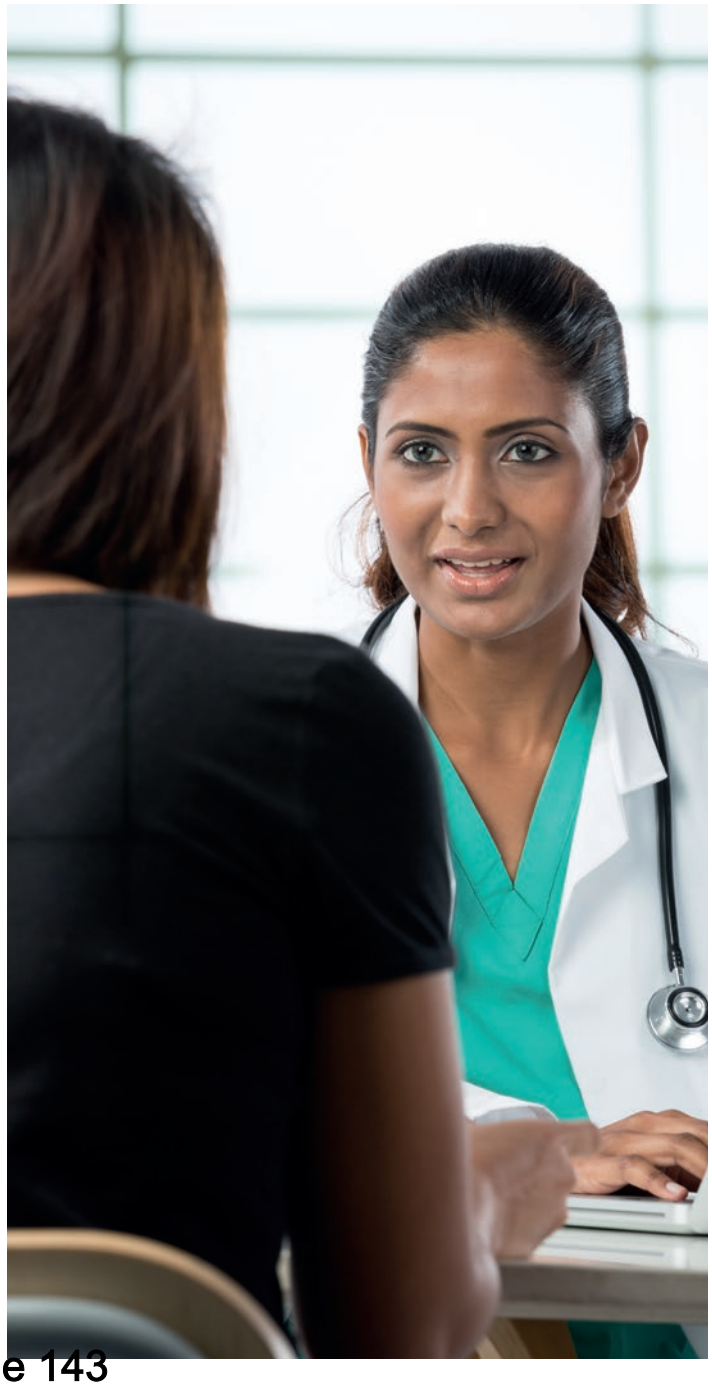
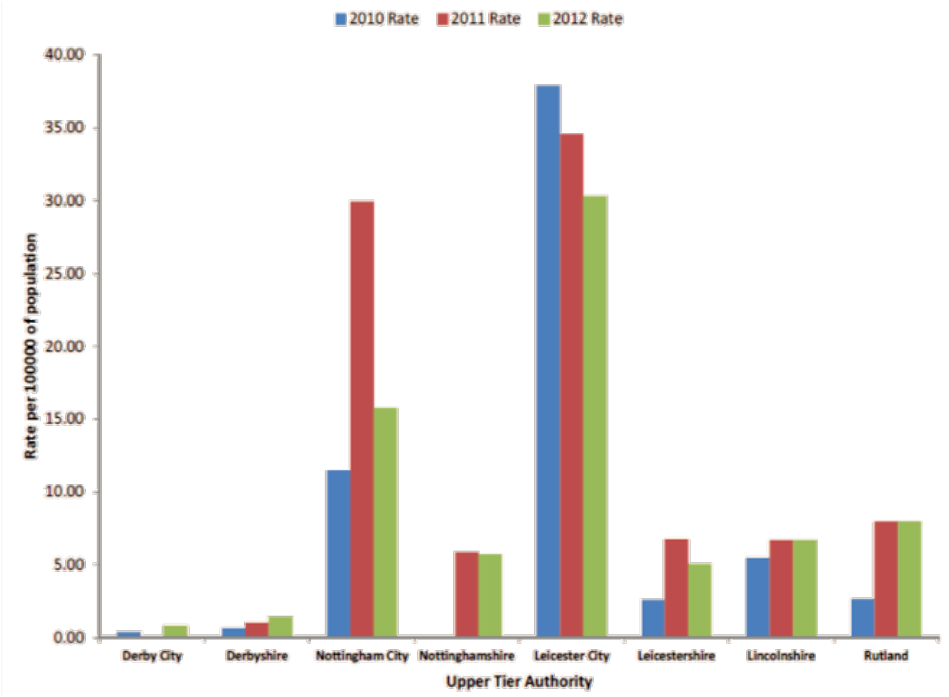


Figure 5.1: Rate per 100,000 of Hepatitis B by Upper Tier Authority, PHE East Midlands Centre area 2010-2012 [49]



Data source: LabBase Interrogated for East Midlands data locally. Population data obtained from ONS mid-year estimates.

5.2 What are the consequences of Hepatitis B and C?
Long-term (chronic) infection with either Hepatitis B virus or Hepatitis C virus over a number of years can cause significant liver damage leading to scarring of the liver (cirrhosis) and, in some cases, liver cancer.

Acute (short-term) Hepatitis B and C infections may or may not cause visible symptoms. Some individuals recover without ever realising they have been infected. Where symptoms do appear, they can present as mild to severe fatigue, loss of appetite, depression or anxiety, poor memory or concentration and pain or discomfort in the liver.

The majority of Hepatitis B infections are acute with only 10% of adults going on to develop chronic infection [51]. The risk of developing chronic Hepatitis B infection depends on the age at which infection is acquired with chronic infection most likely in children [51]. Of those adults with chronic Hepatitis B infection, 20% go on to experience scarring of the liver (cirrhosis) with one in ten of these going on to develop cancer [52].

Approximately 15-20% of infected people clear a Hepatitis C infection within six months. Of those who develop chronic Hepatitis C infection, approximately 20-30% will go on to develop cirrhosis within 20 years (Table 5.1) [53].

Table 5.1: Estimated proportion of HCV disease states in 2013 in Lincolnshire and predicted disease burden in these individuals in 2023 (based on 3% of chronic cases being treated)

Disease state (HCV)	2013	2023
Mild	763	506
Moderate	415	348
Cirrhotic	56	55
End stage disease	20	21
Died (all causes)		207
Sustained virologic response		118

Source: PHE Hepatitis C Commissioning Toolkit

5.3 Who is at greatest risk of infection of Hepatitis B and C?
Box 5.1 lists the risk factors for acquiring Hepatitis B and C. The rate of Hepatitis C infection within the East Midlands is highest in those aged 25-44 and is higher in males than females.

5.4 Can Hepatitis B and C be prevented and treated?
Through the prevention of infection and the treatment of chronic infections, the vast majority of long-term liver damage caused by viral hepatitis is preventable. Testing and early identification of Hepatitis B and C infection are keys to preventing further liver damage for the patient and also stopping further transmission of the disease.

An effective vaccine is available against Hepatitis B but not

Hepatitis C. Hepatitis B vaccination is offered to those at greatest risk, such as children born to Hepatitis B positive mothers, those who change sexual partners frequently and people who inject drugs [36]. The Hepatitis B vaccine consists of a series of three injections over several months. This can make it difficult for those with chaotic lifestyles such as injecting drug users, or individuals who are homeless, and therefore an accelerated schedule can be adopted.

Curative treatments for chronic Hepatitis B infection are not yet available, but treatments do exist to control the infection and in doing so can lead to a reversal in liver disease and a reduced risk of infecting others. Effective treatments exist for Hepatitis C and now offer a 90% and above cure rate with few side effects and shorter treatment duration. The active identification of Hepatitis C positive individuals is important for both harm reduction and treatment programmes to be effective.

Box 5.1: Risk groups for Hepatitis B and Hepatitis C. Adapted from [54].

Groups at increased risk of Hepatitis B compared with the general UK population include:

- People born or brought up in a country with an intermediate or high prevalence (2% or greater) of chronic 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.
- Babies born to mothers infected with Hepatitis B.
- People who have ever injected drugs.
- Men who have sex with men.
- Anyone who has had unprotected sex, particularly people who have had multiple sexual partners, people reporting unprotected sexual contact in areas of intermediate and high prevalence, people presenting at sexual health and genitourinary medicine clinics, people diagnosed with a sexually transmitted disease, commercial sex workers.

Groups at increased risk of Hepatitis C compared with the general UK population include:

- People who have ever injected drugs.
- People who received a blood transfusion before 1991 or blood products before 1986, when screening of blood donors for Hepatitis C infection, or heat treatment for inactivation of viruses were introduced.
- People born or brought up in a country with an intermediate or high prevalence (2% or greater) of chronic Hepatitis C. For practical purposes this includes all countries in Africa, Asia, the Caribbean, Central and South America, Eastern and Southern Europe, the Middle East and the Pacific islands.
- Babies born to mothers infected with Hepatitis C.
- Prisoners, including young offenders.
- Looked-after children and young people, including those living in care homes.
- People living in hostels for the homeless or sleeping on the streets.
- HIV-positive men who have sex with men.
- Close contacts of someone known to be chronically infected with Hepatitis C.

5.5 What's happening in Lincolnshire?

In Lincolnshire, Addaction and Drug and Alcohol Recovery Team are commissioned to deliver adult substance misuse services. Addaction is also commissioned to deliver a young person's service. All three services currently have resource sites based in Lincoln, Grantham and Boston but also work from satellite sites across the county.

A key preventative intervention for both Hepatitis B and C transmission is needle exchange. In Lincolnshire, this programme is provided at the Addaction centres in Lincoln, Grantham and Boston but also in 16 pharmacies to provide additional cover across our rural county. Additionally, the following services are provided for Hepatitis B and C separately.

Hepatitis B

Lincolnshire's Hepatitis B vaccination programme sits alongside substance misuse services and prisons in the region. Across the East Midlands, testing also occurs in a number of primary care services (e.g. GP practices, Prison services, Accident and Emergency, and drug dependency services) and secondary care services (e.g. fertility services, paediatric services and specialist liver services).

Data collection methods make interpretation of trends and geographical variation in the vaccination coverage in prisons, difficult and this is being addressed nationally. The latest reports suggest that over 50% of prisoners are vaccinated within a month of arrival at HMP North Sea Camp and just under 15% at HMP Lincoln. However, detail of the number of prisoners arriving at each prison, who have already had the vaccination, is unknown.

Of those starting new episodes of specialist drug treatment in Lincolnshire, who are, or have previously been injecting drug users, 3.9% were offered and accepted Hepatitis B testing in contrast to 21.3% nationally. Just over half (56.9%) of these individuals went on to start vaccination treatment for Hepatitis B and 38.5% went on to finish the course [55].

The number of women receiving antenatal screening steadily increased in the East Midlands between 2005 and 2011. In Lincolnshire, in 2012, 6380 women were screened. This continues to be an important proactive step in the prevention of new infection in new born babies.

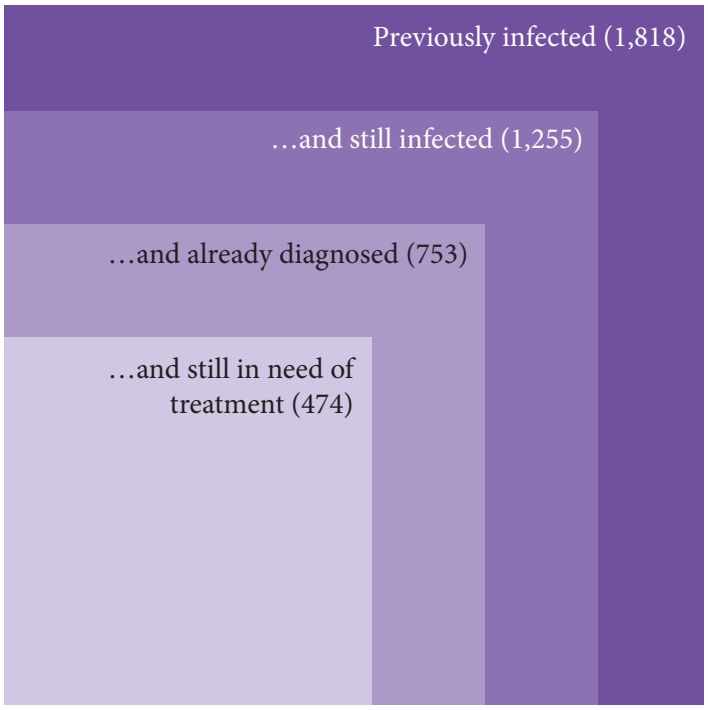
Hepatitis C

There is no vaccine for Hepatitis C. Therefore early detection of infection and treatment are important to prevent permanent liver disease and further transmission. In England, during 2011, it is estimated that 3% of those with Hepatitis C infection were in treatment.

Of those starting new episodes of specialist drug treatment in Lincolnshire, who are, or have previously been injecting drug users, 21.1% accepted Hepatitis C testing in comparison to 44.1% nationally. However, in Lincolnshire, 100% of these were converted into actual Hepatitis C tests unlike nationally where the conversion rate is 72.8%.

Within county data on prevalence of Hepatitis C and treatment need is not available; however, a PHE commissioning tool has provided estimates by stage of diagnosis and treatment (see Figure 5.2). Currently, Hepatitis C testing occurs within a number of primary and secondary care services across the county (Table 5.3).

Figure 5.2: Number of people infected with Hepatitis C in Lincolnshire by stage of diagnosis in 2013 [53]



Source: PHE Hepatitis C Commissioning Toolkit

Table 5.2: Hepatitis C commissioning/provider map

Service		Provider
Testing Services	Substance Misuse Services	Drug and Alcohol Recovery Team
	Substance Misuse Services	Addaction
	Prison Services	HMP Lincoln - healthcare arm = Nottinghamshire Healthcare
	Prison Services	HMP North Sea Camp - healthcare arm = Nottinghamshire Healthcare
	Immigration Removal centre	IRC Morton Hall - healthcare provided by G4S
	Genito-Urinary Medicine clinics and Sexual Health clinics	Lincolnshire Community Health Services (NHS) Trust
	Specialist primary care based sexual health services	Newmarket Practice, Louth and Beechfield Surgery, Spalding
	GP Practices	Over 100 sites across Lincolnshire
	Occupational Health	Various public and private sector
	Secondary Care depts. E.g. maternity; haematology	United Lincolnshire Hospitals NHS Trust (ULHT)
	Lab Testing	Pathlinks
Treatment Services	Boston Pilgrim Hospital	ULHT
	Lincoln County Hospital	ULHT
	HMP Lincoln (Healthcare Dept.)	Nottinghamshire Healthcare NHS Trust
Hep C Drugs	Hep C drugs funding	ULHT

Chapter 6: Recommendations

A range of recommendations have been identified to tackle liver disease in Lincolnshire. A number of organisations across the county can play an important role in delivering these recommendations. This includes the local authority, district councils, CCGs, health and social care providers, the community and voluntary sector and the general population.

Data and Intelligence

1. Mechanisms for collecting more comprehensive data on liver disease should be explored. For example, investigating whether liver disease can be recorded in primary care data.
2. Lincolnshire organisations should play an active role in the East Midlands Liver Programme Group, which is led by Public Health England's East Midlands Centre. This will help in learning from our regional partners about best practice in addressing liver disease.

Awareness

3. National campaigns aimed at increasing the awareness of liver disease should be supported locally.
4. There is a need for stakeholders to work jointly to raise awareness of links between obesity, excessive alcohol consumption and liver disease amongst the local population, particularly in areas with high rates of liver disease-related hospital admissions.
5. There is a need to work with Health Education England to improve the awareness of health professionals on the causes of, and treatments for, liver disease, as well as the importance of early detection.

Early Detection and Treatment

6. Stakeholders should work together to facilitate early identification of risk factors for Liver disease through continued action to improve the participation of individuals in NHS Health Checks, at a GP and county level.
7. Health checks are a potential intervention point for those at risk of liver disease. It must be ensured that individuals, who are identified as having relevant risk factors, are followed up in general practice, provided appropriate onward referral or, where referral is no longer available, provided a brief intervention by their GP practice (e.g. advice on dietary improvement and/or weight-loss).
8. Hepatitis B screening for migrant populations should be improved through local measures, for example primary care registrations and new-registrant screening for new migrants from medium and high prevalence countries.
9. The uptake of Hepatitis B vaccination by individuals at high risk of exposure to the disease should be increased.
10. Rates of diagnostic testing for Hepatitis C should be increased among individuals at high risk of the disease, in order to detect disease early and to commence treatment.
11. The specialist alcohol and substance misuse services should support people to reduce problematic alcohol consumption. This should include links with hospitals to identify and support people who might benefit from such specialist support.
12. The alcohol treatment services within local authority commissioning of substance misuse services should be of high quality and outcome based.

Strategy and Policy

13. The Health and Wellbeing Board should take leadership in prevention, early identification and treatment of liver disease, as recommended by the Chief Medical Officer.
14. Lincolnshire organisations should advocate for evidence based national policies to reduce excessive alcohol consumption, for example health and wellbeing to become a 5th licensing objective.
15. Lincolnshire organisations should advocate for governmental regulations to reduce sugar and saturated fat content in food and drink that are informed by evidence, for example Public Health England recommended policy actions to reduce sugar intake.
16. A multi-agency obesity and overweight reductions strategy should be developed.
17. There is a need to continue to integrate public health across local authority departments to ensure public health is considered in areas such as planning and licensing, for example, using local planning powers to support play and active travel.
18. There is a need to explore innovative legislative, planning and environmental actions to improve the health of the local population, for example learning from 'Reducing the Strength' in Ipswich and Brighton's 'Sugar Smart City' policy.

Appendix 1: Calculating Rates of Liver Disease

Comparing liver disease rates between countries and regions

To compare rates of liver disease between Lincolnshire and other counties and regions, age standardised rates were calculated using International Classification of Disease Version 10 (ICD-10) codes for all liver-related conditions (e.g. preventable and non-preventable disease). Age standardisation is a process through which differences in age profiles between different areas can be accounted for. The ICD10 codes included were B15-B19, C22, I81, I85, K70-K77, T86.4. Only the primary diagnosis code was used to identify admissions.

Local prevalence of preventable liver disease

To better understand the prevalence of preventable liver disease locally, detailed analyses for Lincolnshire were limited to the following preventable liver diseases (International Classification of Diseases 10 or ICD10 codes):

- Fibrosis and cirrhosis of liver (K74)
- Selected liver cancers (e.g. liver cell carcinoma) (C220)
- Chronic heptatis (K73)
- Alcoholic liver disease (K70)
- Non-alcohol fatty liver disease (NAFLD) (K760)
- Hepatitis B (B16, B180-181)
- Hepatitis C (B171, B182)

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