

The Burden of Disease in Lincolnshire

The Director of Public Health Annual Report 2019



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Foreword



It is a great pleasure to present my first annual report as the Director of Public Health (DPH) for Lincolnshire. This report covers the period of mid 2018 through to 2019 as a transition year from the previous DPH, Tony McGinty. I would like to pass on my thanks to Tony for doing an excellent job and supporting me in my new post. I also want to thank the team who did a lot of the work on this report. Although this is the DPH report, it is very much a team effort and I am immensely grateful to everyone who has contributed.

In this, my first report, I very much wanted to describe the health and illness experienced in Lincolnshire, but in a different way. This is important for two reasons. Firstly, as the new DPH I want to fully understand the diseases that are causing death and disability in the county, in order to tackle them. Secondly, the health and care system has become a victim of its own success. Over the past 50 years, we have seen a fundamental shift in how we support people with disease. Conditions that would once have killed are now treated as chronic diseases and people can expect to live a long time with multiple conditions. But the way we describe disease at a population level is still very much focussed on what people die from. We talk about mortality rates or life expectancy.

We need to change how we measure illness at a population level to reflect the changes that we are experiencing. We need to refocus on how we can help people to live for as long as possible in good health – “healthy life expectancy”.

For the first time at a Lincolnshire level, the Global Burden of Disease (GBD) gives us an opportunity to describe illness and mortality using a standard measure. For the first time we can ask ourselves does cancer cause more ill health and years of life lost than heart disease? For the first time we can measure just how big an impact mental ill-health has on the people of the county and compare that to the impact of early deaths from stroke. This is the challenge we have tackled in this report. And it has thrown up a few surprises.

Whilst measuring ill-health and mortality in a different way is important, acting on the causes of the ill-health is vital. I have included a section in the report describing how we can address these causes. I have also included a section on the key risk factors that drive the burden of disease. I will work with partners across the county to tackle the causes and risk factors. I will report back on progress in the DPH report for 2020.

Finally, we have produced some videos to accompany this report. I would be interested in comments on whether you find these helpful and useful in describing the findings we report here, which can be emailed to PublicHealthDivision@lincolnshire.gov.uk



**Derek Ward,
Director of Public Health**

1. Introduction

An individual's view of their own health and the impacts of illness is very personal. It is influenced by a wide range of factors including the support of friends and families, the health and care services they receive, and the wider environment within which they experience their illness. In contrast, measures of overall population health or illness must be objective and numerical in nature in order to understand patterns and trends, to benchmark geographic areas or cohorts of the population, and to evaluate the impact of interventions and services on health outcomes.

Most commonly, these measures are based upon the causes of death and measures of premature mortality within the population. Over the last 100 years in England, medical breakthroughs and improved living conditions and behaviours have seen people living longer than ever before. However since 2011, improvements in mortality rates and life expectancy have slowed (Source: [Public Health England](#)). The current life expectancy at birth (2015-17) in Lincolnshire is 79.4 years for males and 82.9 years for females, broadly similar to the England values of 79.6 years

and 83.1 years respectively (Source: [Public Health England](#)).

Nationally, the leading cause of death has also changed over time, with a decrease of around 50% in deaths from heart disease and stroke over the last 15 years, and increases in Alzheimer's, dementia and suicide (Source: [Public Health England](#)). In Lincolnshire, the leading causes of death in under 75s are cancer (41%), cardiovascular disease (CVD) (24%) and respiratory disease (9%). In the 75 plus population they are CVD (29%), cancer (22%), then respiratory disease (14%), with CVD and cancer switching positions between these two age groups. (Source: Civil Registration data)¹

Although mortality-based measures are useful in understanding causes of death and inequalities in life expectancy, they do not describe the impacts of living with ill-health, or conditions which may severely limit everyday life but which do not necessarily cause early death. Measuring healthy life expectancy goes some way to bridging this gap. Healthy life expectancy describes the number of years a person can expect to live in good health, without disability or

1. Civil Registration Data, 2018/19, NHS Digital

life limiting illness. In Lincolnshire, healthy life expectancy at birth for males is 61.7 years and for females is 62.4 years. Looked at another way, this means that men can expect to live for 17.7 years with one or more serious health conditions before they die and women will live for more than two decades (20.5 years) before they die. Nationally the difference is 16.2 years in males and 19.3 years in females. (Source: [Public Health England](#))

Keeping people fit and healthy for as long as possible is important to the individual, the economy and wider society. Ill-health causes disengagement with the labour market and with activities such as volunteering and caring roles. This impacts upon personal income, self-worth and can result in isolation, which themselves contribute further to ill-health, as well as meaning that others, including public services, may need to fill the gap. Measures of health which consider years lived with ill-health and disability, as well as life expectancy, start to describe the 'burden' of disease.

The [NHS Long Term Plan](#) sets out how the NHS will strengthen its contribution

to prevention and health inequalities and make improvements in quality and outcomes across a number of major conditions. The Plan highlights how the Global Burden of Disease (GBD) study has guided the renewed prevention priorities (for example, smoking and obesity) and the major conditions to tackle (for example, cancer and cardiovascular disease).

The GBD was created in 1991 and is devised through epidemiological research. The aim is to produce measurable and comparable health outcome data, known as Disability-Adjusted Life Years (DALYs). DALYs are calculated by adding together the number of years lost due to premature mortality (YLL) and the number of years lived with a disability (YLD), using a standard life expectancy age, in this instance derived from Japanese life expectancy.

In 2016, local authority data for GBD was introduced, making it possible to compare Lincolnshire nationally and globally. The data in this report is from the most recent iteration in 2017.

2. Lincolnshire's Burden of Disease

The GBD is divided into four tiers of hierarchy, with level 1 being the broadest grouping and level four breaking conditions down into specific illnesses recognised in the International Classification of Disease (ICD) Version 10. An example for ischaemic stroke is shown below:

- Level 1 – non communicable disease
- Level 2 – cardiovascular disease
- Level 3 – stroke
- Level 4 – ischemic stroke

For this report, level 3 data is used as this provides policy makers and health professionals with sufficiently detailed, but meaningful and robust, intelligence upon which to make decisions.

2.1 Mortality (Years of Life Lost)

Years of life lost (YLL) is the estimated difference between age at death and standard life expectancy. For a whole population it is generally presented as a rate per 100,000 people so that data can be compared for areas with different sized populations.

In Lincolnshire, the rate of all cause, age and sex YLL is higher than regionally and nationally. Whilst it decreased from 21,001 per 100,000 people in 1990 to 14,893 per 100,000 in 2012, the trend reversed, increasing to 15,932 per 100,000 by 2017. This can be seen in Figure 1.

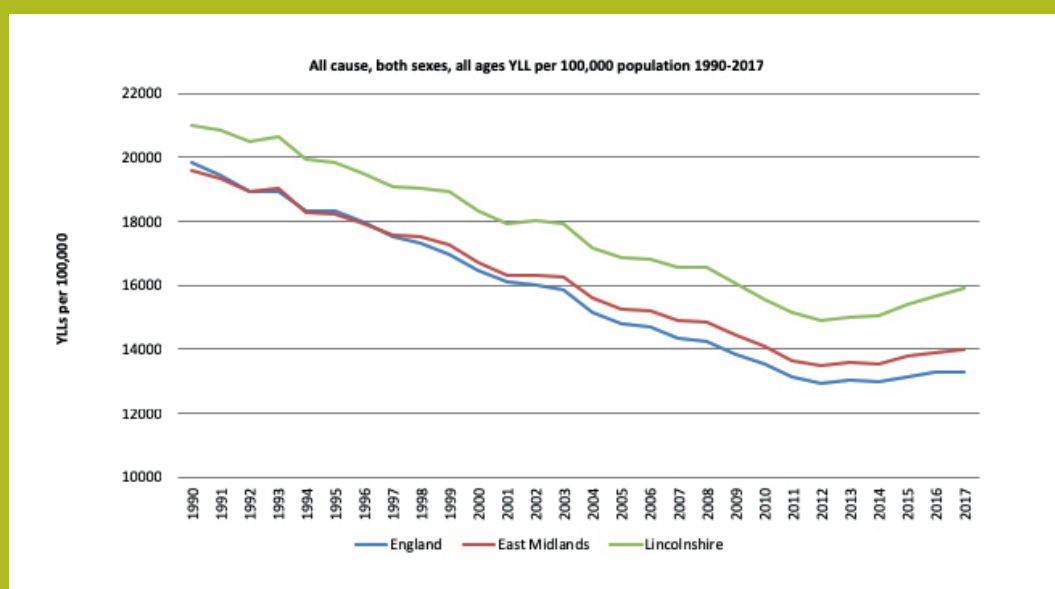


Figure 1: All Cause, Age and Sex YLL per 100,000 People, 1990 – 2017

Table 1: Main Causes of YLL in Lincolnshire, 2017, and Percentage Change over Time
All age and sex YLL per 100,000 people

Condition	Rate	Percentage	YLL	% Change from 1990	% Change from 2010
Ischemic heart disease	2,331	14.6%	17,737	-60.1%	-2.4%
Lung cancer	1,161	7.3%	8,833	-16.2%	2.5%
Stroke	933	5.6%	7,092	-46.6%	-3.6%
Chronic obstructive pulmonary disease (COPD)	909	5.7%	6,917	11.7%	6.5%
Alzheimer's	906	5.7%	6,894	58.4%	14.1%
Lower respiratory infection	628	3.9%	4,778	-0.2%	11.6%
Colorectal cancer	591	3.7%	4,493	-18.0%	1.4%
Breast cancer	486	3.1%	3,701	-30.5%	1.3%
Self-harm	370	2.3%	2,814	-15.4%	10.2%
Pancreatic cancer	353	2.2%	2,689	28.8%	9.1%

Table 1 shows, that in 2017, ischemic heart disease (IHD) was by far the highest cause of YLL in Lincolnshire. In terms of change, a negative figure shows a decrease in YLL and a positive one shows an increase. The main conditions that result in YLL have remained largely unchanged since the GBD was first published, with the exception of Alzheimer's disease, which has increased and been in the top five conditions from 2002 onwards. Since

1990, YLL from ischemic heart disease has decreased by over 60% however Alzheimer's has increased by nearly the same proportion. There are also some differences between males and females; for example, the rate for Alzheimer's in females is much higher, at 4,204 per 100,000, than in males, where it is 2,690 YLLs per 100,000. YLL for lung cancer is higher in males, at 5,819 per 100,000, than it is in females, at 3,644 per 100,000.

2.2 Morbidity (Years Living with Disability)

Years living with disability (YLD) is calculated by multiplying the prevalence of each cause and its consequences, by a disability weighting, corrected for comorbidity. Local data on YLD are more difficult to evaluate because they are similar for many important conditions across local areas, and uncertainty around weights also reduces the accuracy of YLD. (Source: [The Lancet](#)). Despite these limitations, for the first time, YLD allows us to compare the burden of disease across

different conditions using a standard measure. It also allows us to compare how much burden of disease is due to people living with disabling conditions to how many years of life are lost from those conditions.

YLD shows a steady increase from 13,117 per 100,000 people in 1990 to 14,788 per 100,000 people in 2017, and Lincolnshire's rate is increasing more quickly than regionally and nationally, as shown in Figure 2.

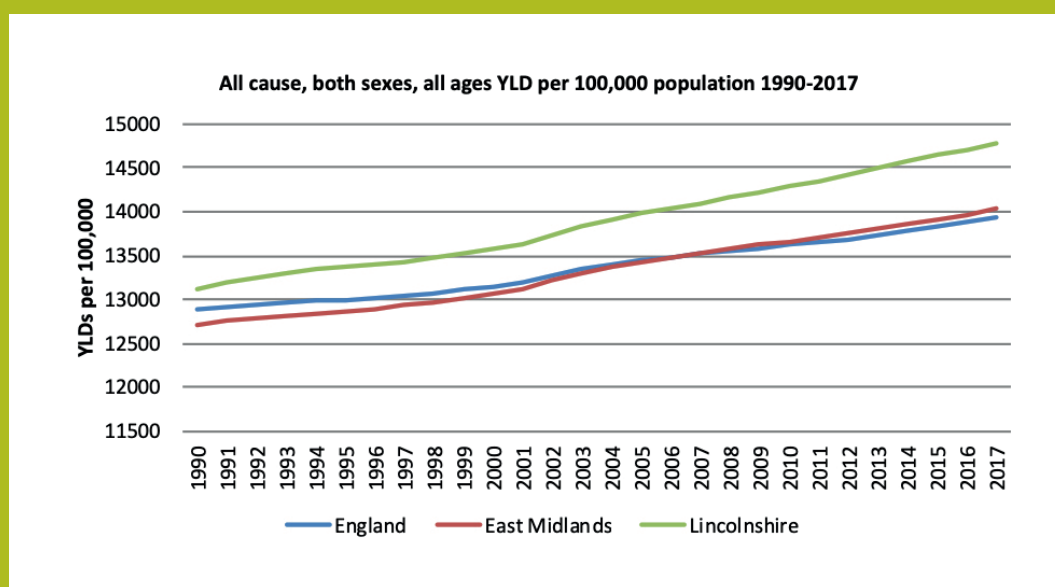


Figure 2: All Cause, Age and Sex YLD per 100,000 People, 1990 – 2017

Table 2 shows the main causes of YLD in Lincolnshire and the percentage change from 1990 - 2017. The top five conditions are unchanged since 1990, but again there are some interesting differences between males

and females, for example, diabetes is the second highest cause of YLD in males (666 per 100,000) but only the eighth highest in females (554 per 100,000).

Table 2: Main Causes of YLD in Lincolnshire, 2017, and Percentage Change over Time
All age and sex YLL per 100,000 people

Condition	Rate	Percentage	YLDs	% Change from 1990	% Change from 2010
Low back pain	1,932	13.1%	14,702	18.7	6.4%
Headache disorders	881	6.0%	6,705	-1.7%	-1.3%
Depressive disorders	718	4.9%	5,459	-4.4%	0.1%
Neck pain	714	4.8%	5,429	32.5%	6.4%
Age-related hearing loss	628	4.2%	4,780	27.9%	6.6%
Diabetes	608	4.1%	4,628	77.6%	21.5%
Chronic Obstructive Pulmonary Disease (COPD)	585	4.0%	4,450	32.9%	-4.0%
Falls	569	3.8%	4,326	39.2%	8.8%
Anxiety disorders	407	2.8%	3,093	-0.4%	-1.3%
Oral disorders	388	2.6%	2,952	-6.9%	9.0%

2.3 Overall Burden of Disease

Disability-adjusted life years (DALYs) compare the overall burden of disease in populations, viewing mortality and morbidity in equal measure and underpinning the GBD. DALYs are calculated by adding together the number of years

lost due to premature mortality (i.e. years of life lost) and the number of YLD, as shown in Figure 3. They can also be used to compare the burden of individual diseases and conditions in the population.

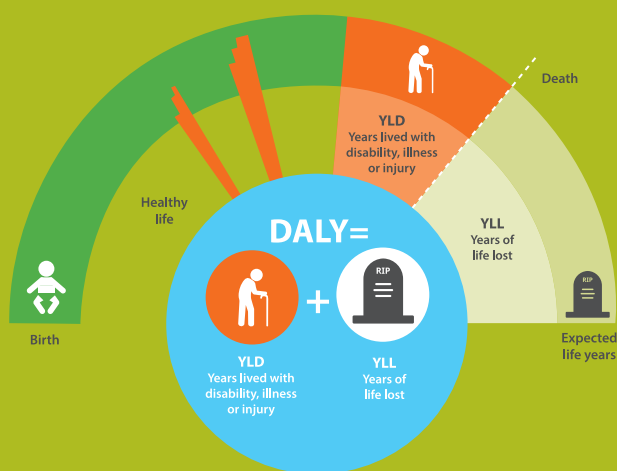


Figure 3: Measure of Disease Burden (DALYs)
Source: [Public Health England](#)

Since inception of the GBD in 1990, Lincolnshire's DALY rate has slowly reduced from 34,117 per 100,000 people, to 29,307 per 100,000 in 2012. However, the trend started to reverse and in 2017, Lincolnshire had a DALY rate of 30,721 per 100,000

people, higher than the East Midlands and England, as shown in Figure 4. This equates to a total of nearly a quarter of a million (233,716) DALYs experienced by the people of Lincolnshire in 2017.

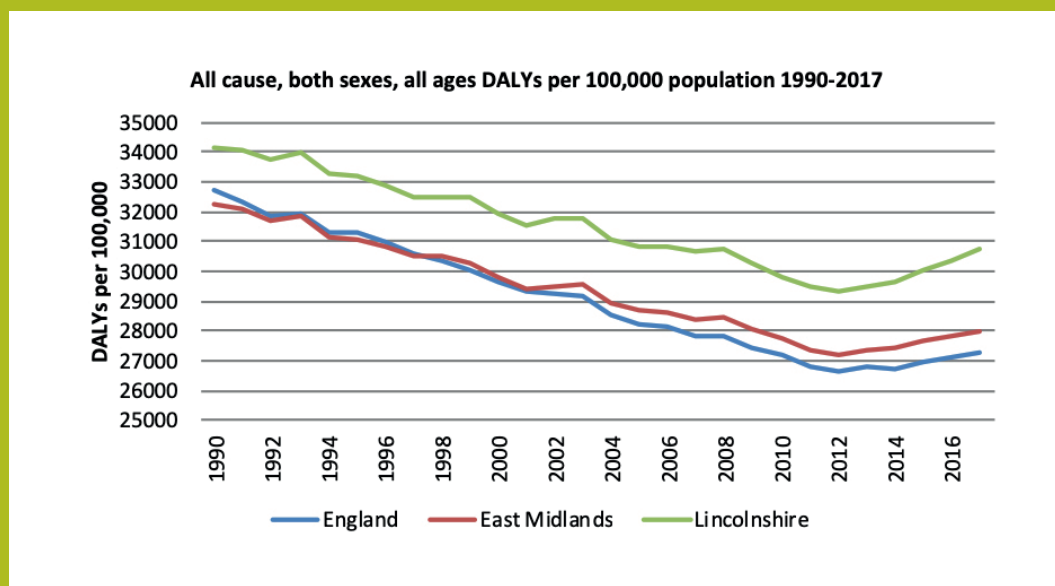


Figure 4: All Cause, Age and Sex DALYs per 100,000 People, 1990 – 2017

The main causes of DALYs in Lincolnshire and the percentage change from 1990-2017 and 2010-2017 are provided in Table 3.

In 2017 the greatest cause of DALYs in Lincolnshire was IHD with 2,455 per 100,000 people. This accounts for 8% of

all Lincolnshire DALYs. The top five causes of DALYs have remained unchanged in Lincolnshire since the GBD began in 1990; however there have been decreases in lung cancer, stroke and ischemic heart disease. Increases have been seen in low back pain and COPD.

Table 3: Main Causes of DALYs in Lincolnshire, 2017, and Percentage Change over Time
All age and sex YLL per 100,000 people

Condition	Rate	Percentage	DALYs	% Change from 1990	% Change from 2010
Ischemic heart disease	2,455	8.0%	18,678	-59.0%	-2.1%
Low back pain	1,932	6.3%	14,702	18.7%	6.4%
Chronic obstructive pulmonary disease (COPD)	1,494	4.9%	11,367	19.1%	2.1%
Stroke	1,212	4.0%	9,221	-38.8%	0.3%
Lung cancer	1,183	3.6%	9,004	-15.6%	2.7%
Alzheimer's	1,309	3.7%	8,666	55.4%	13.2%
Headache disorders	881	2.9%	6,705	-1.7%	-1.3%
Diabetes	763	2.5%	5,805	23.6%	16.7%
Depressive disorders	718	2.4%	5,459	-4.4%	0.1%
Neck pain	714	2.31%	5,429	32.5%	6.4%

Again, there are some differences between the sexes. Notably, males have more than double the number of DALYs for ischemic heart disease (3,379 per 100,000) than females (1,581 per 100,000), and whilst low back pain is the second highest cause of DALYs overall, it is the highest cause in females (2,100 per 100,000).

In order to understand the causes of all conditions, GDB data is best depicted in a treemap, as shown in Figure 5. This uses colour representation: blue - all non-communicable diseases; red - communicable, maternal, neonatal, and nutritional diseases and injuries; and green - external causes. **Page 55**

The shade variation further represents how much each condition has changed since 1990, with a darker shade indicating an increase in the condition. The area of the rectangle denotes the total burden of the condition in Lincolnshire.

The treemap shows that the Lincolnshire burden is largely comprised of non-communicable diseases (in blue) with a smaller proportion of communicable, maternal, neonatal, and nutritional diseases and injuries. The greatest burden is seen to be a non-communicable disease, IHD, and this is a very similar picture to nationally.

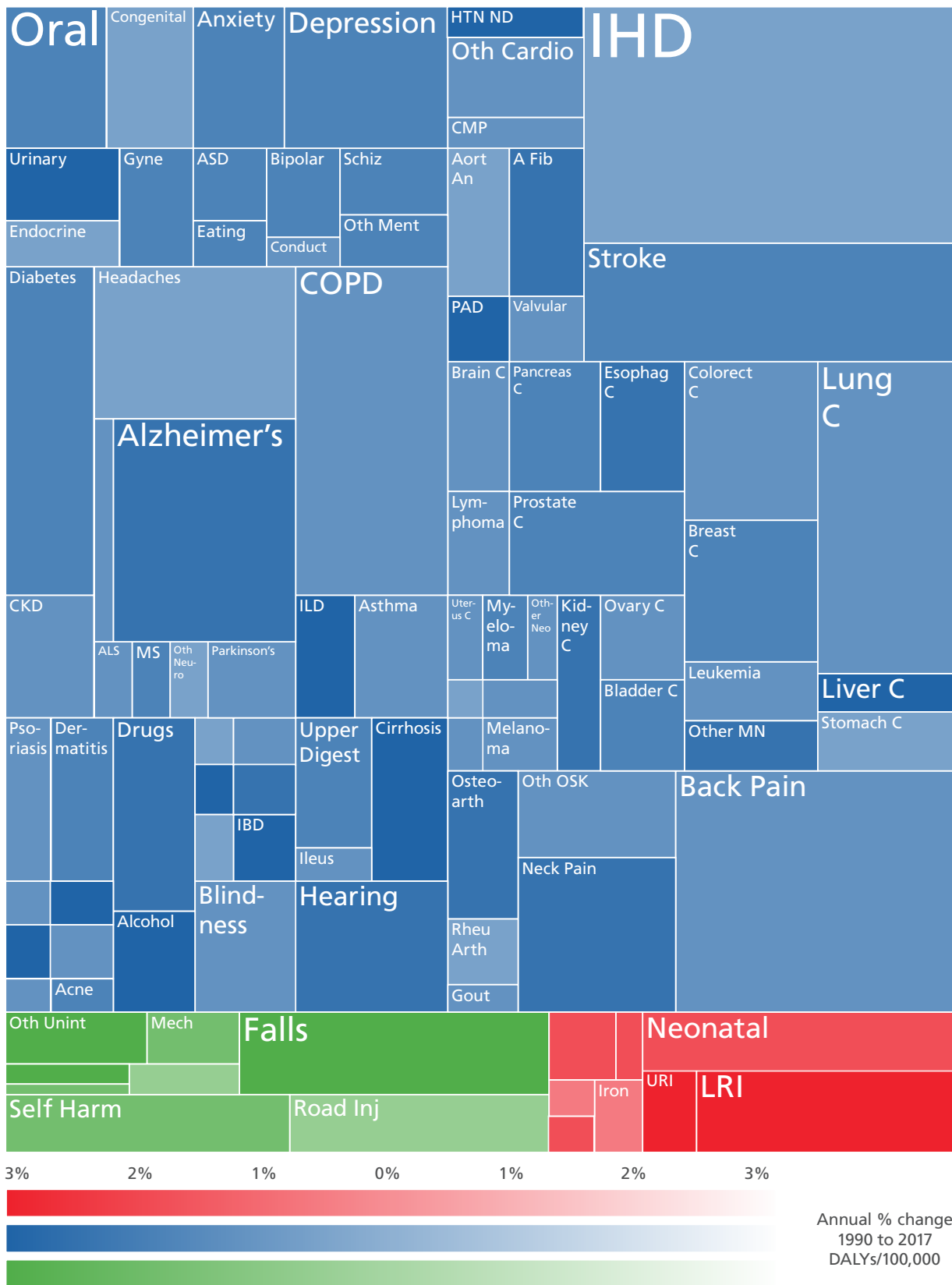


Figure 5: Level 3 GBD data for Lincolnshire, All age and sex DALYs, 2017

2.4 Risk Factors for Disease Burden

The GBD analyses risk factor exposure and attributable risk across three broad areas: behavioural, environmental and metabolic risks. Table 4 shows the specific risks that

are within each category. It should be noted that not all disease burden has an attributable risk.

Table 4: Risk factor breakdown		
Behavioural	Metabolic	Environmental
Malnutrition, dietary risk, tobacco, alcohol use, unsafe sex, drug use, low physical activity, domestic violence and childhood maltreatment	High blood pressure, high fasting glucose plasma, high body mass index, high cholesterol, impaired kidney function and low bone mineral density	Air pollution, Unsafe water, unsafe sanitation, handwashing, occupational risks and other

For the overall burden of disease, the majority of Lincolnshire's risk factor exposure and attributable risk is classified as 'behavioural' at just over 50%. This

is important in shaping prevention and intervention activities. Figure 6 shows the total number of DALYs (in 2017) for the three main risk factors.

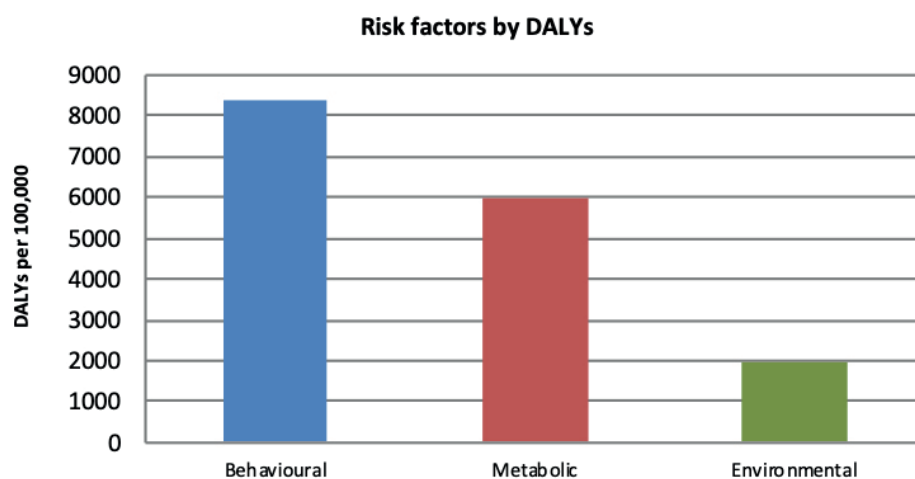


Figure 6: Total DALYs by Risk Factor for Lincolnshire, 2017

DALYs can be attributed to one risk factor or to a number of combined risk factors, and Figure 7 shows a more detailed picture. For attributable risk factors in DALYs, behavioural factors have the highest proportion of the risk attributable burden,

with just over 40%. Next highest is metabolic factors alone, followed by risk that is attributable to behavioural and metabolic factors combined. Only 6.9% of DALYs have been attributed to environmental factors alone.

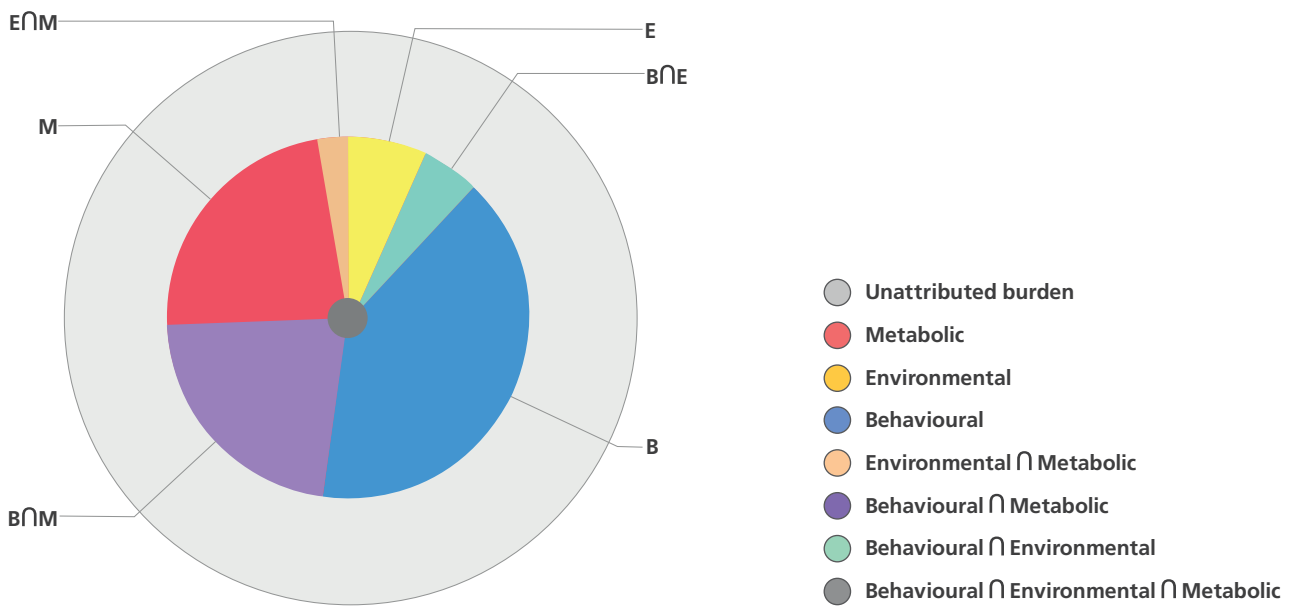


Figure 7: All Cause, Age and Sex DALYs Attributable to Risk Factors, 2017

It should be noted that only 40% of the burden of disease for DALYs has been attributed to any risk factor for many different reasons, such as a lack of research and the limitations of the modelling used. The grey circle around the chart represents the amount of unattributed risk.

With CVD being the main cause of DALYs in Lincolnshire, a similar in depth analysis has been carried out for this condition. Figure 8 shows that behavioural and metabolic risk factors combined are the primary drivers of this condition. It also shows that the unattributable risk is considerably lower for CVD than for all causes of DALYs, due to the amount of research that is available on the condition.

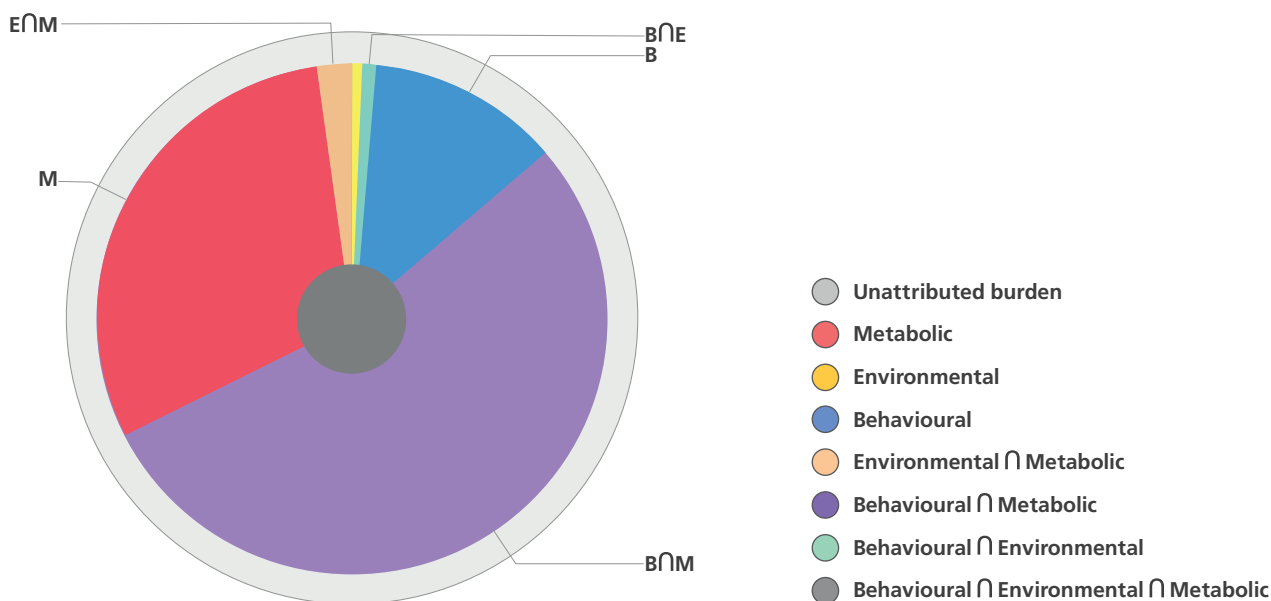


Figure 8: Cardiovascular Disease, all Age and Sex DALYs Attributable to Risk Factors, 2017

Examining individual risk factors more specifically; Figure 9 shows a breakdown of the greatest specific risk factors and their impact on burden of disease. The top five risk factors for DALYs in Lincolnshire are smoking, high blood pressure, high body mass index, high fasting plasma glucose and high cholesterol. Just these five factors account for 40% of all attributable risk, equating to 12,266 DALYs per 100,000 people, and 94,316 DALYs for the population in total.

Whilst the number of DALYs attributed to smoking in Lincolnshire has reduced by nearly half (47.9%) since 1990, it still remains the greatest risk factor (at 3,488 DALYs per 100,000 people). Smoking is the largest contributor to cancer, CVD and respiratory disease. For CVD alone, the greatest individual risk factor is high blood pressure.

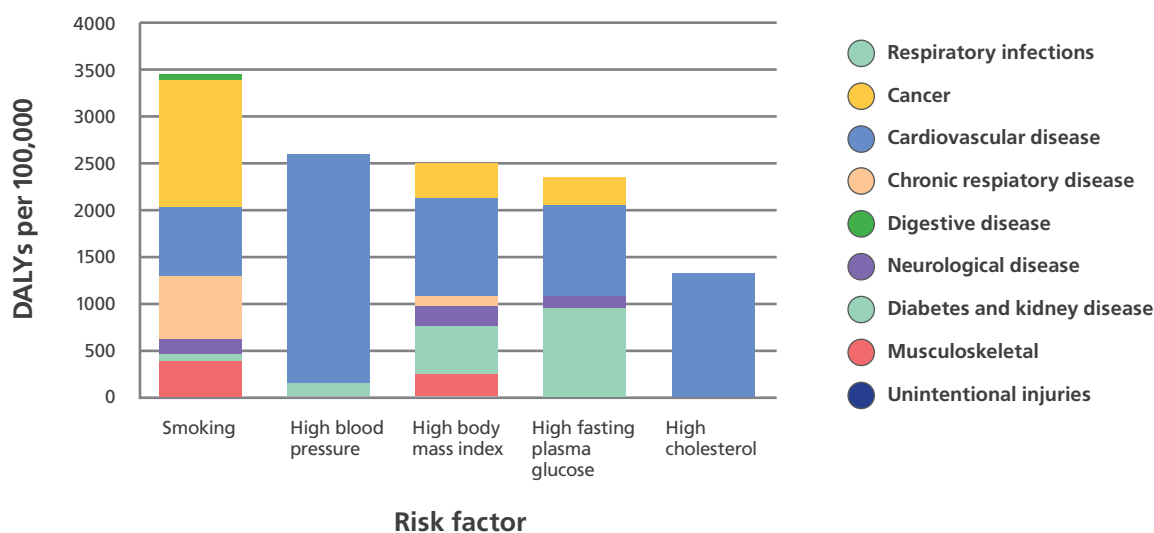


Figure 9: Attributable Risk Factors and their Impact on Burden of Disease, Lincolnshire, 2017

3. Implications of the GBD Study for the Health and Care System in Lincolnshire

The GBD study provides a unique perspective on health and identifies the need to address those conditions that not only contribute to the main causes of mortality, but are also causing the greatest overall burden of disease.

Whilst life expectancy has increased for the people of Lincolnshire, those extra years of life are not always spent in good health. An increasing proportion of people are living with multiple long term conditions, some for decades. There is a national ambition to improve healthy life expectancy, whilst closing the gap between the richest and poorest (Source: [Dept. of Health and Social Care](#)). The gap between overall life expectancy and healthy life expectancy has been identified as the 'window of need' and the aim of preventative interventions is to extend the period of healthy life expectancy, therefore reducing this window of need (Source: [Public Health England](#)).

Having an understanding of the risk factors that contribute to the disease burden enables interventions to be focussed on these, using the evidence on interventions that will have most impact. The GBD shows the contribution that addressing behavioural, metabolic and environmental/occupational risk factors can make in reducing the conditions which cause the greatest burden to our population. It will require a radical approach to prevention to have a real impact on reducing the occurrence of problems in the first place and, when they do arise, to support people to manage them as effectively as possible. This new approach is a key element of the national NHS Long Term Plan which is reflected in the development of the Lincolnshire Long Term Plan. The

[NHS Long Term Plan](#) has a commitment to prevention, with a move away from a system that simply treats illness, into one that helps to keep people healthier for longer. Smoking, obesity, diet, alcohol and air pollution are some of the public health priorities in the plan.

The Lincolnshire GBD data does not enable identification of health inequalities at the local level, however the overall GBD data does show inequalities that take place across England and those areas experiencing poorer health, lower life expectancy and earlier onset of chronic disease and disability (Source: [Public Health England](#)). The [Lincolnshire Joint Strategic Needs Assessment \(JSNA\)](#) provides additional intelligence on health inequalities across many of the diseases causing the greatest burden for example, diabetes, CVD and COPD, as well as on the main risk factors, for example, smoking and physical inactivity.

The changing epidemiology evidenced in the GBD study presents a challenge to health and social care systems. The GBD identifies some conditions where the burden of disease has increased, for example, musculoskeletal (MSK) conditions (back and neck pain), Alzheimer's and diabetes. A fundamental shift is required in the system to support population level interventions to address the causes and effects of these conditions, which may have previously received less focus. The development of new Integrated Care Systems (ICS) provide opportunities to develop a system wide approach to prevention and health and social care provision for those conditions causing the greatest burden within our population.

The Joint Health and Wellbeing Strategy (JHWS) for Lincolnshire aims to inform and influence decisions about the commissioning and delivery of health and social care services. This helps to ensure that they are focused on the needs of the people who

use them and tackle the factors that affect everyone’s health and wellbeing. The aims, themes and priorities of the JHWS, as shown in Figure 10, all support actions to address the main causes of disease burden for the Lincolnshire population.

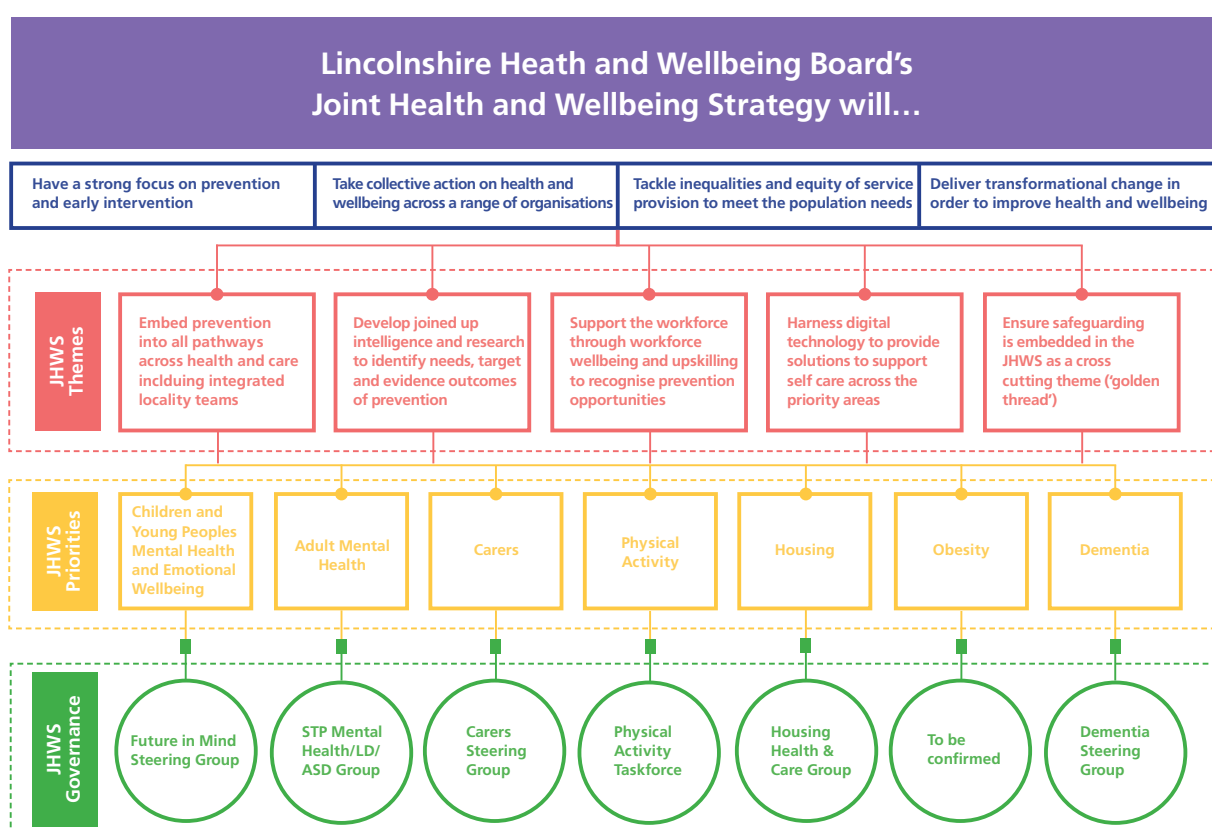


Figure 10: Overview of Lincolnshire’s Joint Health and Wellbeing Strategy (2018)

3.1 Addressing the Causes of Disease Burden

3.1.1 Cardiovascular Disease

CVD (heart disease and stroke) continues to dominate in the GBD and shows the need for ongoing systematic programmes to reduce CVD risk factors, especially behavioural (for example, smoking) and metabolic (for example, high blood pressure). Whilst given less of a focus in this annual report, the importance of addressing environmental risk factors is also essential, for example, air quality.

Whilst mortality from CVD has almost halved over recent decades, it still causes a quarter of all deaths. The condition is strongly associated with health inequalities, and those living in England's most deprived areas are almost 4 times more likely to die prematurely from CVD than those in the least deprived. There are a number of contributing factors associated with CVD, many of which are considered modifiable lifestyle risks, including, high blood pressure (hypertension), smoking, high cholesterol, obesity, physical inactivity, excessive alcohol consumption and a poor diet. The impact of CVD on the health and social care sector is significant. The [NHS Rightcare CVD prevention pathway](#) is an evidence-based, prevention and treatment pathway that identifies a number of high impact interventions in addition to cross cutting interventions to prevent CVD. Some of these include:

- Maximise NHS Health Check uptake and follow up.
- Embed CVD prevention within health and wellbeing initiatives.
- Challenge unwarranted variation and drive quality improvement in detection and management of the high risk

conditions, for example high blood pressure

- Ensure interventions and referral pathways specifically target communities with historically poorer outcomes.

Further information is available in the [JSNA Cardiovascular Disease topic](#).

3.1.2 Musculoskeletal Conditions

MSK conditions, for example, low back pain and neck pain, together cause the greatest disease burden in Lincolnshire. There are multiple risk factors that can increase susceptibility to MSK problems, including age, being overweight or obese, lack of physical activity and smoking. Two factors that often coincide are increasing age and reduced physical activity.

The evidence for providing cost-effective interventions for preventing and treating MSK conditions is overwhelming (Source; [Public Health England](#)), and includes:

- Physical Activity – The [Chief Medical Officer](#) has set guidelines for physical activity. Adults should aim to be active daily and should include muscle strengthening activities on at least two days a week, but any strengthening activity is better than none.
- Maintain a healthy weight and balanced diet – This can reduce the risks of developing conditions such as back pain and osteoarthritis of the knee.
- Smoking - Smoking has a negative impact on bone mineral density.

Further information is available in the [JSNA Musculoskeletal \(MSK\) Conditions topic](#).

3.1.3 Chronic Obstructive Pulmonary Disease

COPD is a progressive disease, with symptoms including breathlessness and persistent coughs, and is a leading cause of disease burden in Lincolnshire. Like many long term conditions, it is known that there is a proportion of the population living with COPD, but not yet diagnosed. Smoking is the biggest risk factor for COPD.

A number of the [NHS Rightcare pathways support work on COPD](#). This includes a number of opportunities, for example, in relation to early detection/accurate diagnosis of COPD and long term condition management. In addition to detection, management and treatment, prevention is essential, which includes interventions in relation to physical activity, smoking and air quality.

Further information is available in the [JSNA Chronic Obstructive Pulmonary Disease topic](#).

3.1.4 Alzheimer's disease

Alzheimer's disease is the most common cause of dementia, affecting around six in every 10 people with dementia. Alzheimer's may also occur with other types of dementia, such as vascular dementia (Source: [Alzheimer's Research UK](#)). Some of the risk factors for Alzheimer's are the same as for CVD. Therefore addressing some of the behavioural (e.g. smoking) and metabolic preventative interventions for CVD (e.g. management of high blood pressure), will also address the prevention of Alzheimer's disease.

Further information is available in the [JSNA Dementia topic](#).

3.1.5 Headaches

A headache is a common symptom associated with many conditions. Headaches can be categorized into primary headaches, which are not associated with an underlying condition, for example, tension type headaches and migraines; and secondary headaches which occur as a result of other causes, for example, trauma, infection. The majority of headaches are primary. Most people self-manage their headaches but it is one of the most common reasons for primary care consultations (Source: NICE).

Although limited, some information on headaches is provided in the [JSNA Neurological Conditions topic](#).

3.1.6 Depression

Depression is characterised by persistent low mood and/or loss of pleasure in most activities and a range of associated emotional, cognitive, physical, and behavioural symptoms. The cause of depression is unknown but is likely to result from complex interaction of biological, psychological, and social factors. Depression can exacerbate the pain, disability, and distress associated with a range of physical diseases. Depression can impair a person's ability to function for example, in employment and relationships (Source: NICE). The [NHS Every Mind Matters](#) resource provides some tips on how to look after our mental health and wellbeing.

Further information on depression is provided in the [JSNA Mental Health \(Adults\) topic](#).

3.2 Addressing the Risk Factors

The identification of risk factors linked to disease burden emphasises the importance of a broad approach to enable behavioural, metabolic and environmental risks to be addressed. Interventions for one risk factor will address multiple causes of disease burden, for example, addressing high blood pressure will impact on heart disease, stroke and Alzheimer's. There is a need for an approach that prevents the onset of risk factors/disease (primary prevention), whilst also diagnosing and managing risk factors/disease (secondary and tertiary prevention).

Apart from smoking, metabolic factors account for the leading causes of overall DALYs. High blood pressure is second to smoking.

3.2.1 Smoking

Smoking remains the greatest single contributor to health inequalities, accounting for half the difference in life expectancy between those living in the most and least deprived communities. Lincolnshire's smoking prevalence in adults is gradually reducing and continues to mirror the trend across England. There are geographic differences across the county in terms of prevalence and diseases/deaths attributable to smoking, along with inequalities relating to factors such as deprivation, mental health and pregnancy.

A range of interventions are needed to address the health consequences of smoking. These include prevention (particularly in young people and pregnant women), supporting people to quit, eliminating the variation in smoking rates (for example, the higher rate amongst people with a serious mental illness) and effective enforcement.

Further information is available in the [JSNA Smoking Reduction in Adults](#) topic.

3.2.2 Physical Inactivity

Physical inactivity contributes to many diseases and premature deaths, including heart disease, strokes, diabetes and certain cancers. Regular physical activity can help to prevent and manage many chronic conditions and has an important role in good mental health. Within the county's adult population, Lincolnshire is identified as one of the most inactive areas in England. The [Blueprint for Creating a More Active Lincolnshire](#) focuses on four main areas that will have the greatest potential to change physical activity levels across Lincolnshire.

Further information is available in the [JSNA Physical Activity](#) topic.

3.2.3 High Blood Pressure (hypertension)

High blood pressure is amongst the top risk factors for years of life lost in England. It is the second highest attributable risk factor causing overall burden of disease in Lincolnshire. Improving the detection and treatment of hypertension is one of the [national ambitions to prevent CVD](#). Achieving these ambitions requires a whole system approach across Local Authorities, Clinical Commissioning Groups, General Practice, Pharmacists and Community settings.

Nationally, those in the most deprived communities are 30% more likely to have high blood pressure. It is essential that interventions to reduce a person's risk of developing high blood pressure continue to take place across the health and care system, i.e. primary prevention. This includes interventions on diet, alcohol, weight, physical activity and smoking.

The role of secondary prevention, detecting disease and risk factors to prevent deterioration, is critical. Optimally managing people with identified high blood pressure is a key intervention for CVD prevention. The ['Size of the Prize in CVD Prevention in Lincolnshire'](#) identifies the heart attacks and strokes averted, and money saved, by optimizing treatment in hypertension.

Initiatives like, ['Know your Numbers!'](#) (the Blood Pressure UK awareness campaign), encourages adults to know their blood pressure and take the necessary actions to maintain healthy blood pressure. Promotion of this campaign across the health and social care system can help to achieve the CVD prevention ambitions.

The [NHS Rightcare CVD Prevention Pathway](#) identifies interventions across a number of the leading risk factors, including hypertension. High Value Interventions include identifying and targeting people with possible undiagnosed and untreated hypertension. Maximising the NHS Health Check Programme uptake and follow up is a key intervention.

4. Conclusion

For the first time we have been able to use Global Burden of Disease methodology to create new intelligence, helping us to understand the greatest burdens of disease in Lincolnshire. This has allowed us to compare the impacts of diseases and conditions that people die from, with those that people can live with for many years.

The picture which has emerged is one which is recognised, in part. Whilst life expectancy has increased, the period of time that people live with disabilities has also increased. The biggest killers are ischaemic heart disease, lung cancer, stroke, and COPD. However, close behind these is Alzheimer's, accounting for nearly 6% of all Years of Life Lost in Lincolnshire. When it comes to Years Lived with Disability the picture is very different. Low back pain, headache disorders, depressive disorders, neck pain and age related hearing loss are the top five causes. Diabetes and COPD also rank highly, as do falls, anxiety disorders, and oral disorders.

When premature mortality and disability data are combined to compare the overall burden of disease, the greatest single burden in Lincolnshire is ischaemic heart disease, and

second is lower back pain. However, when lower back pain and neck pain are combined they become the greatest cause of Disability Adjusted Life Years in Lincolnshire.

So whilst heart disease and cancers are the big killers, lower back and neck pain (MSK), mental health issues and Alzheimer's disease are all key challenges we have to tackle at a Lincolnshire level because of their overall impact.

A fundamental shift is needed to refocus our shared efforts, requiring an emphasis on prevention and early detection, and informed by evidence of the most common risk factors driving ill-health. Unsurprisingly, the single greatest risk factor is smoking, and other key factors are high blood pressure, high body mass index and high cholesterol, which are all risks that we can do something about and which we have discussed in this report.

We will use the Health and Wellbeing Board and the NHS Long Term Plan to tackle the causes and risks of illness in Lincolnshire, and will report back on our progress in next year's Director of Public Health report.

