

LEICESTERSHIRE

JOINT STRATEGIC NEEDS ASSESSMENT

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Long term conditions

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1 INTRODUCTION

Long-term conditions refers to a group of illnesses that, at present, cannot be cured but can be controlled by medication and other therapies. Once diagnosed with a long-term condition, a patient's life is forever altered. However, by supporting patients with a long-term condition to manage their condition and their risk factors, the NHS and social care can support the patient to attain better health outcomes and quality of life, slow disease progression and reduce disability.

There are a large group of diseases that are considered to be long-term conditions. Within this section there is an overview of the common long term conditions that are managed largely within primary care and are recorded on GP registers.

The Quality and Outcomes Framework (QOF), is a voluntary annual reward and incentive programme for all GP surgeries in England and is part of the GP contract. GP participation rates are very high both nationally and in Leicestershire County and Rutland.

The QOF is not about performance management or recording prevalence of disease, but about incentivising and rewarding good practice¹. Therefore it should be noted that figures quoted from the QOF are *recorded* prevalence based on a voluntary system and not actual prevalence.

Please note that the prevalences in the following chapter are based on the same populations used for estimated prevalences, to enable a direct comparison between the two and therefore identify unmet need. QOF disease prevalence using the nationally reported populations is available in the primary care chapter, and it should be noted that because of the different populations used the figures in the two chapters will differ.

In 2009/10 and 2010/11 NHS Leicestershire County and Rutland had a significantly higher recorded prevalence (compared with the national average) of:

- Hypertension
- Cancer
- Asthma
- Heart failure
- Atrial fibrillation
- Chronic kidney disease

In 2010/11 the following additional conditions were recorded as having a significantly higher prevalence in NHS LCR:

- Depression
- Smoking indicators
- Patients at risk of cardiovascular disease (recorded as Cardiovascular Disease: Primary Prevention)

In 2009/10 and 2010/11 NHS Leicestershire County and Rutland had a significantly lower recorded prevalence (compared with the national average) of:

- Coronary heart disease
- Chronic obstructive pulmonary disease
- Hypothyroid disease
- Mental health
- Obesity

In 2010/11 the following additional conditions were recorded as significantly lower recorded prevalence:

- Stroke
- Epilepsy
- Learning disability (age 18+)
- Palliative care
- Diabetes

This chapter provides information on the estimated prevalence of long term conditions. Looking only at the numbers of patients currently being treated for a disease does not show the true prevalence and impact on the population's health. At any given time there may be many people who have a disease but are not aware of it because they have not yet been diagnosed.²

Prevalence models provide estimates of underlying prevalence derived from population statistics and scientific research on the risk factors for each disease. The models can also be used to support case-finding by identifying those areas where detection rates are low and targeting enhanced diagnostic activity on them².

Estimated prevalence data reported in this chapter are from the Association of Public Health Observatories (APHO) national disease prevalence models.

This chapter of the JSNA reviews the following long term conditions in detail:

- Cardiovascular disease (including hypertension, coronary heart disease and stroke)
- Diabetes
- Chronic obstructive pulmonary disease
- Complex long term neurological conditions

2 KEY ISSUES AND GAPS

In 2010/11 NHS Leicestershire County and Rutland had a significantly higher recorded prevalence (compared with the national average) of:

- Hypertension
- Cancer
- Asthma
- Heart failure
- Atrial fibrillation
- Depression
- Chronic kidney disease
- Smoking indicators
- Cardiovascular Disease: Primary Prevention

Hypertension

- In LCR 17.2% of the adult population are recorded as having hypertension or around 1 adult in every 6. This is significantly higher than the national prevalence rate of 16.6% and a 0.7% increase on the recorded prevalence in 2009. Between 2007 and 2009 there were 130 premature deaths (before the age of 75 years) from hypertensive disease³, the majority of these will be due to stroke.
- National models of disease prevalence estimate that the actual prevalence of hypertension in LCR is 29.9% of the adult population. This is equivalent to 171,272 people with hypertension and suggests that 75,040 adults are undiagnosed.
- It is anticipated that the prevalence of hypertension nationally and locally will continue to increase slowly in the future. The estimated prevalence of hypertension is modelled to increase to 30.6% in 2015 (184,128 people) and 31.6% by 2020 (198,633 people). This is an overall increase of 16% in the number of people living with hypertension by 2020.

CHD

- In LCR 4.0% of the adult population or 1 adult in every 25 are recorded as having coronary heart disease (CHD). Between 2007 and 2009 there were 439 premature deaths from coronary heart disease (146 per year) (before the age of 75 years)⁴.
- National models of disease prevalence estimate that the actual prevalence of CHD in Leicestershire County and Rutland is 5.1% of the adult population. This is equivalent to 28,981 people with coronary heart disease and suggests that 6,460 adults are undiagnosed.
- It is anticipated that the prevalence of coronary heart disease nationally and locally will continue to increase slowly in the future. The estimated prevalence of CHD in LCR is modelled to increase to 5.5% in 2015 (33,009 people) and 5.8% by 2020 (36,851 people). This is an overall increase of 27% in the number of people living with CHD by 2020.

Stroke

- In LCR 2.0% of the adult population, or 1 adult in every 50, have been diagnosed with stroke. Between 2007 and 2009 there were 248 premature deaths from stroke (83 per year) (before the age of 75 years)⁵.
- National models of disease prevalence estimate that the actual prevalence of stroke in LCR is 2.3% of the adult population. This is equivalent to 13,409 people with stroke and suggests that 1,966 adults are undiagnosed.
- It is anticipated that the prevalence of stroke nationally and locally will continue to increase slowly in the future. The estimated prevalence of stroke in LCR is modelled to increase to 2.6% in 2015 (15,579 people) and 2.8% by 2020 (17,313 people). This is an overall increase of 29% in the number of people living with stroke by 2020.

Diabetes

- In LCR 5.3% of the adult population, or 1 adult in every 20 has been diagnosed with diabetes. This is significantly lower than the national prevalence rate of 5.5%, and a 0.5% increase on the recorded prevalence in 2009.

- National models of disease prevalence estimate that the actual prevalence of diabetes in LCR is 7.0% of the adult population. This is equivalent to 39,609 people with diabetes and suggests that 9,737 adults in Leicestershire are undiagnosed.
- It is anticipated that the prevalence of diabetes nationally and locally will continue to increase significantly in the future. The estimated prevalence of diabetes in LCR is modelled to increase to 7.7% in 2015 (45,558 people) and 8.3% by 2020 (51,195 people). This is an overall increase of 29% in the number of people living with diabetes by 2020.

COPD

- In LCR 1.8% of the adult population, or almost 2 adults in every 100, have been diagnosed with COPD. This is significantly lower than the national prevalence rate of 2.0% and a 0.2% increase on the recorded prevalence in 2009. Between 2007 and 2009 there were 660 deaths from bronchitis, emphysema and other chronic obstructive pulmonary disease in NHS LCR (230 per year)⁶.
- National models of disease prevalence estimate that the actual prevalence of chronic obstructive pulmonary disease in Leicestershire County and Rutland is 2.7% of the adult population (Table 1). This is equivalent to 15,504 people with chronic obstructive pulmonary disease and suggests that 5,531 adults, over a third of these individuals, are undiagnosed
- It is anticipated that the prevalence of COPD nationally and locally will continue to increase slowly in the future. Whilst the estimated prevalence of COPD is modelled to remain the same at 2.7% in 2015, it is anticipated that this will equate 16,484 people, accounting for population growth. The estimated prevalence is 3.8% by 2020 (17,933 people). This is an overall increase of 16% in the number of people living with chronic obstructive pulmonary disease by 2020.

Long term neurological conditions (LTNC)

- In LCR in 2010/11 there were 3,811 people in LCR recorded with epilepsy (3,633 Leicestershire, 178 Rutland), this is a prevalence of 0.7% of population, significantly lower than the England average of 0.8%

3 **CARDIOVASCULAR DISEASE**

Cardiovascular disease (CVD) includes many health conditions that affect your:

- heart,
- blood vessels, such as arteries
- blood circulation (flow of blood around your body)

Examples of CVD include:

- atherosclerosis (build-up of fatty deposits on the walls of arteries, which narrows and hardens them)
- coronary heart disease (angina and heart attack) caused by atherosclerosis in the arteries supplying the heart muscle
- stroke
- heart failure
- peripheral arterial disease (problems with the blood supply to your legs and arms)
- hypertension
- deep vein thrombosis or DVT (blood clots in the legs)⁷

Cardiovascular disease, remains the most common cause of death, contributing to almost one-third (32%) of all deaths registered in 2010. However, the overall downward trend in cardiovascular disease death rates has continued. Between 2000 and 2010, they fell by 40% (to 2,018 deaths per million population) for males and by 38% (to 1,269 deaths per million population) for females⁸.

The risk factors for cardiovascular disease fall into the three main categories^{9,10} below, but there is also a strong association with low income and social deprivation leading to significant health inequalities.

- a) Lifestyle factors which account for 80% of cardiovascular disease are:
 - Smoking
 - Unhealthy diets
 - Physical inactivity
 - Harmful use of alcohol
- b) Other modifiable (treatable) factors are:
 - Hypertension (high blood pressure)
 - High blood fats (hyperlipidaemia)
 - Diabetes
 - Stress
- c) Irreversible factors are:
 - Age – there is an increasing risk of cardiovascular disease in individuals over the age of 55 years
 - Male gender
 - Family history of cardiovascular disease
 - Ethnicity – people from African Caribbean and Asian ethnic groups are at a higher risk of developing cardiovascular disease compared to other groups

3.1 The level of need in the population

This section specifically reviews the impact of coronary heart disease, hypertension and stroke as individual contributors to cardiovascular disease in the population.

Hypertension

It is estimated that there are approximately 13 million people with hypertension (high blood pressure) in England. In GP practices across Leicestershire County and Rutland 96,232 patients have been registered with hypertension; a prevalence of 17.2% of the adult population, or around 1 adult in every 6 (Table 2). This is significantly higher than the national prevalence rate of 16.6% and a 0.7% increase on the recorded prevalence in 2009. Given the older than average population in Leicestershire County and Rutland a higher prevalence of hypertension might be expected as the chances of having high blood pressure increase with age¹¹. (see demographics chapter for more information on the age of the population).

A higher recorded prevalence may also indicate that a higher proportion of disease is being diagnosed locally than nationally. To understand whether this is the case Table 2 also provides estimated prevalence data from the APHO national disease prevalence model for hypertension.

Between 2007 and 2009 there were 130 deaths from hypertensive disease in NHS Leicestershire County and Rutland (43 per year) that occurred prematurely (before the age of 75 years)¹².

The level of need relating to hypertension in the population of Leicestershire County and Rutland is illustrated in the hypertension factsheet. Data is also available in the JSNA core data set at LSR-Online.

Table 2: GP registered counts of hypertension and estimated prevalence

District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register Hypertension	Recorded Prevalence (16+)	Population	Estimated Hypertension	Estimated Prevalence (16+)
England	45,005,438	7,460,497	16.6%	42,511,740	12,964,321	30.5%
Leicestershire County and Rutland	559,278	96,232	17.2%	572,940	171,272	29.9%
Leicestershire	530,643	90,604	17.1%	540,560	161,083	29.8%
Rutland	28,635	5,628	19.7%	32,380	10,189	31.5%

Source: Quality and Outcomes Framework 2010/11 and APHO Model 2010

Coronary Heart Disease

Coronary heart disease is the term that describes what happens when the blood supply to the heart is blocked or interrupted by a build-up of fatty substances in the coronary arteries. This process is known as atherosclerosis and the fatty deposits are called atheroma¹³.

If the coronary arteries become narrow due to a build-up of atheroma, the blood supply to the heart will be restricted. This can cause angina (chest pains). If a coronary artery becomes completely blocked, it can cause a heart attack (myocardial infarction)¹³.

Coronary heart disease is the leading cause of death in England and Wales³⁷. In GP practices across Leicestershire County and Rutland, 22,571 patients have been recorded with coronary heart disease; a prevalence of 4.0% of the adult population, or 1 adult in every 25 (Table 3).

Between 2007 and 2009 there were 439 deaths from coronary heart disease in NHS Leicestershire County and Rutland (146 per year) that occurred prematurely (before the age of 75 years)¹⁴.

The level of need relating to coronary heart disease in the population of Leicestershire County and Rutland is illustrated in the CHD factsheet. Data is also available in the JSNA core data set (pages 26 to 29) at LSR-Online.

The mortality rate from coronary heart disease has decreased significantly between 1993 and 2009 from 771 deaths per 100,000 population in 1993 to 211 per 100,000 in 2009. However, the prevalence of CHD is predicted to continue to increase due to the aging population and improved survival rates.

Table 3: GP recorded counts of coronary heart disease and estimated prevalence

District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register CHD	Recorded Prevalence (16+)	Population	Estimated CHD	Estimated Prevalence (16+)
England	45,005,438	1,877,518	4.2%	42,511,740	2,408,986	5.7%
LCR	559,278	22,571	4.0%	572,940	28,981	5.1%
Leicestershire	530,643	21,218	4.0%	540,560	27,499	5.1%
Rutland	28,635	1,353	4.7%	32,380	1,532	4.7%

Source: Quality and Outcomes Framework 2010/11 and APHO Model 2010

Stroke

A stroke is a serious medical condition that occurs when the blood supply to part of the brain is cut off. If the supply of blood is restricted or stopped, brain cells begin to die. This can lead to brain damage and possibly death.

There are two main causes of strokes:

- ischaemic (accounting for over 80% of all cases): the blood supply is stopped due to a blood clot
- haemorrhagic: a weakened blood vessel supplying the brain bursts and causes brain damage

There is also a related condition known as a transient ischaemic attack (TIA), where the supply of blood to the brain is temporarily interrupted, causing a 'mini-stroke'. TIAs should be treated seriously as they are often a warning sign that a stroke is coming.

In 2010 stroke was ranked as the second leading cause of death in England and Wales, previously third in 2009³⁷. In GP practices across Leicestershire County and Rutland 11,443 patients have been diagnosed with stroke; a prevalence of 2.0% of the adult population, or 1 adult in every 50.

Between 2007 and 2009 there were 248 deaths from stroke in NHS Leicestershire County and Rutland (83 per year) that occurred prematurely, before the age of 75 years¹⁵.

Table 4: GP recorded counts of stroke and estimated prevalence

District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register Stroke	Recorded Prevalence (16+)	Population	Estimated Stroke	Estimated Prevalence (16+)
England	45,005,438	944,099	2.1%	42,511,740	1,062,524	2.5%
Leicestershire County and Rutland	559,278	11,443	2.0%	572,490	13,409	2.3%
Leicestershire	530,643	10,720	2.0%	540,560	12,708	2.4%
Rutland	28,635	723	2.5%	32,380	701	2.2%

Source: Quality and Outcomes Framework 2010/11 and APHO Model 2010

3.1 Current services in relation to need

The rate of emergency admissions for CHD (154.7 admissions per 100,000 population) and stroke (86.3 per 100,000 population) in LCR are both significantly lower than the England average (205.3 and 104.2 respectively)¹⁶.

For patients who have myocardial infarction reperfusion, the median call to treatment time in LCR is higher than the national average for both thrombolysis (62 minutes compared to 58) and angioplasty (130 compared to 112)¹⁶.

The proportion of stroke patients who are discharged home may be seen as a measure of the level of disability suffered by stroke patients (i.e. with a lower level of disability patients are more likely to be able to live at home). The proportion of stroke patients discharged home in LCR (72.0%) is significantly lower than the England average (78.5%)¹⁶.

Expenditure on CHD and cerebrovascular disease in LCR is similar to the national average, however, the cost of statins relative to the local CHD population was lower than the national average.

3.2 Projected service use and outcomes in 3-5 years and 5-10 years

Hypertension

It is anticipated that the prevalence of hypertension nationally and locally will continue to increase slowly in the future. The estimated national prevalence of 30.5% is expected to rise to 31.4% in 2015 and 32.3% by 2020¹⁷.

The estimated prevalence of hypertension across Leicestershire County and Rutland is modelled to increase to 30.6% in 2015 (184,128 people) and 31.6% by 2020 (198,633 people). This is an overall increase of 16% in the number of people living with hypertension by 2020.

Coronary Heart Disease

It is anticipated that the prevalence of coronary heart disease nationally and locally will continue to increase slowly in the future. The estimated national prevalence of 5.7% is expected to rise to 5.9% in 2015 and 6.2% by 2020⁴⁵.

The estimated prevalence across Leicestershire County and Rutland is modelled to increase to 5.5% in 2015 (33,009 people) and 5.8% by 2020 (36,851 people). This is an overall increase of 25% in the number of people living with coronary heart disease by 2020.

Stroke

It is anticipated that the prevalence of stroke nationally and locally will continue to increase slowly in the future. The estimated national prevalence of 2.5% is expected to rise to 2.6% in 2015 and 2.7% by 2020⁴⁵.

The estimated prevalence of stroke across Leicestershire County and Rutland is modelled to increase to 2.6% in 2015 (15,579 people) and 2.8% by 2020 (17,313 people). This is an overall increase of 25% in the number of people living with stroke by 2020.

3.3 Evidence of what works

Reports of studies conducted in the US, Europe and New Zealand consistently suggest that 50–70 per cent of the decrease in cardiac deaths can be attributed to improvements in major risk factors, such as smoking, cholesterol and blood pressure¹⁸. An additional 25–50 per cent of the fall in CHD mortality is otherwise attributable to progress in modern technological treatments, such as thrombolysis, aspirin, angiotensin converting enzyme inhibitors, statins and coronary bypass surgery.

Unal *et al* (2005)¹⁹ investigated how much of the decline in CHD mortality observed in England and Wales is attributable to medical and surgical treatment and how much to changes in known risk factors. The results suggest that 58 per cent of CHD mortality decline in England and Wales is attributable to reductions in the major risk factors and that the remaining 42 per cent is due to increased treatment of individuals, including secondary prevention.¹⁹

3.4 User views

In 2009/10 NHS Leicestershire County and Rutland carried out engagement on stroke and heart attack as part of the East Midlands wide engagement on major trauma.

Following this engagement, improvement work is now underway in prevention, acute care, rehabilitation and long-term self-management for patients with cardiovascular disease. These plans will also ensure 'care closer to home' by providing continuing care and rehabilitation in the community. The pathway for transient ischaemic attacks (also known as 'mini strokes') in Leicester, Leicestershire and Rutland has been redesigned to provide a seven-day, one-stop service and 24/7 treatment to tackle blood clots.

In 2009/10 a questionnaire on long term care plans was sent out to the public of Leicestershire and Rutland through NHS Leicestershire County and Rutland's website, the membership scheme, UHL membership and through a press release. An email of

the questionnaire link was also sent to GP Practices business managers to upload onto the surgery's website.

Overall the feedback was that:

- Personalised care plans should be delivered by a specialist provider or my GP
- Plans should be a paper version which you own and are trusted to look after and take with you to appointments
- We have received a lot of feedback asking for more local contact pages, especially for those living in North West Leicestershire where some of the local amenities are not in Leicestershire

Feedback informed the development and delivery of long term care plans.

3.5 Equality impact assessments

The service needs of individuals with cardiovascular disease has been assessed in relation to deprivation and the six equality strands, Ethnicity, Gender, Age, Disability, Religion and Belief and Sexual Orientation using information derived from the Equality Impact Assessment National Stroke Strategy²⁰ and the Coronary Heart Disease National Service Framework⁹.

Deprivation

Cardiovascular disease is associated with socioeconomic deprivation with an increased risk in the most deprived groups compared to the least deprived groups, even after adjusting for the impact of various risk factors. Health care interventions are required to address this inequality at the individual level and the delivery of population level interventions is also required to tackle the complexities around the impact of socioeconomic deprivation²¹.

Ethnicity

There is ethnic variation in the prevalence of cardiovascular disease with individuals in African-Caribbean communities experiencing a higher prevalence of hypertension and stroke, whilst individuals from South Asian communities have a higher prevalence of coronary heart disease. Interpretation services and written information in appropriate languages need to be made available to those for whom English is not their first language.

Gender

The lifetime burden of cardiovascular disease is greater in women because of their longevity and their increased risk of stroke over the age of 75. Women are more likely to be under-diagnosed and less likely to be optimally treated. South Asian men are more likely to develop cardiovascular disease at a younger age.

Age

Whilst the prevalence of cardiovascular disease increases with age, younger individuals can be affected, for example nationally 10,000 strokes a year occur in individuals under the age of 55 years and 1,000 under the age of 30 years. Therefore service provision will need to meet the needs of younger individuals affected by cardiovascular disease.

Disability

Patients with cardiovascular disease may experience a varying range of disability that may severely impact on their functionality. All services should identify the need for accessible venues / locations.

Individuals with severe learning difficulties, cognitive impairment or mental health conditions should be assessed to ensure that there is adequate service provision to meet the needs of these diverse groups, as due to lifestyle factors they may at increased risk of cardiovascular disease. Availability of information (written and verbal) in a variety of formats would also support the delivery of equitable services for individuals with learning disabilities.

Religion and belief

The significance of religious belief and festivals will need to be considered for service provision.

Sexual Orientation

Some studies have shown disparities in chronic disease risk linked to sexual orientation^{22, 23} Conron et al²² found that bisexuals and lesbians were more likely than heterosexuals to report risk factors for cardiovascular disease. Sexual minorities were more likely than heterosexuals to smoke, and lesbians were more likely to be obese. A further study by Case et al²³ also found that lesbians also had a higher prevalence of several risk factors for CVD, including higher body mass index (BMI) and elevated prevalence of current smoking. Unmet need and service gaps.

a) Hypertension

National models of disease prevalence estimate that the actual prevalence of hypertension in Leicestershire County and Rutland is 29.9%% of the adult population (Table 2). This is equivalent to 171,272 people with hypertension and suggests that 75,040 adults are undiagnosed.

b) Coronary Heart Disease

National models of disease prevalence estimate that the actual prevalence of coronary heart disease in Leicestershire County and Rutland is 5.1% of the adult population (Table 3). This is equivalent to 28,981 people with coronary heart disease and suggests that 6410 adults are undiagnosed.

c) Stroke

National models of disease prevalence estimate that the actual prevalence of stroke in Leicestershire County and Rutland is 2.3% of the adult population (Table 4). This is equivalent to 13,409 people with stroke and suggests that 1,966 adults are undiagnosed. Between 2007 and 2009 there were 248 deaths from stroke in NHS Leicestershire County and Rutland (83 per year) that occurred prematurely, before the age of 75 years.

3.6 Recommendations for commissioning

Commissioning for prevention, early detection and treatment of CVD is a priority. The NHS Health Check programme is an attempt at this nationally. The Health Check Programme aims to help prevent heart disease, stroke, diabetes and kidney disease. Everyone between the ages of 40 and 74, who has not already been diagnosed with one of these conditions, will be invited (once every five years) to have a check to assess their risk of heart disease, stroke, kidney disease and diabetes and will be given support and advice to help them reduce or manage that risk.²⁴

Appropriate treatment in primary care is important, and the effectiveness of primary care treatment needs to be maximised e.g. by auditing services.

3.7 Recommendations for needs assessment work

Outcomes orientated equity audit is required.

4 DIABETES

Diabetes is a long-term condition caused by too much glucose, a type of sugar, in the blood. If a diabetic's blood sugar becomes too low they may experience hypoglycaemia, this is when the glucose level is so low that the body does not have enough energy to carry out its activities. If a diabetic's blood glucose levels become too high, they may experience hyperglycaemia. If it is not treated, hyperglycaemia can lead to diabetic ketoacidosis, which can eventually cause unconsciousness and even death.²⁵

If diabetes is not treated, it can lead to many different health problems. Large amounts of glucose can damage blood vessels, nerves and organs. Even a mildly raised glucose level that does not cause any symptoms can have damaging effects in the long term. Complications include: heart disease and stroke, nerve damage, retinopathy (damage to the retina at the back of the eye), kidney disease, foot problems, including foot ulcers, sexual dysfunction and miscarriage and stillbirth. Type 2 diabetes occurs because your body is unable to produce enough insulin or because the cells in your body do not respond properly to insulin.²⁵

Diabetes is a common life-long health condition and it can affect infants, children, young people and adults of all ages. There are three main types of diabetes; Type 1 Diabetes, Type 2 Diabetes and gestational diabetes. Type 1 diabetes develops when the insulin-producing cells in the body have been destroyed and the body is unable to produce any insulin. Type 2 diabetes develops when the body can still make some insulin, but it is either insufficient or ineffective. Gestational diabetes is a type of diabetes that occurs in some women during pregnancy only and usually resolves once the baby is born. However, there is an increased risk that these women could develop Type 2 diabetes later in life.

In 2010 it was estimated that there are 3.1 million people (16 years and over) with diagnosed and undiagnosed diabetes in the England. This is equivalent to approximately 7.4% (5.3%-10.8%)¹ of the population in this age group²⁶.

There are a number of key factors/risks associated with diabetes²⁷,

- Age is a key factor in diabetes prevalence. Type 1 diabetes tends to be diagnosed in childhood but the prevalence of Type 2 diabetes increases steadily after the age of 45 years
- Genetic inheritance is a major determinant of diabetes
- Diabetes prevalence is higher in areas experiencing deprivation. People living in the most deprived neighbourhoods in England are 56% more likely to have diabetes than those living in the least deprived neighbourhoods
- People from Black and Minority Ethnic groups are more likely to have diabetes and tend to develop the condition at younger ages
- The risk of Type 2 diabetes is 13 times greater in women who are obese; this risk is 5 times greater in men who are obese
- Women who are obese are at increased risk of gestational diabetes during pregnancy²⁸

¹As with all estimates there is a degree of uncertainty around the figure quoted. Lower and upper uncertainty values provide a range within which it is plausible that the true prevalence of diabetes lies.

- Physical activity improves glucose metabolism, reduces body fat and lowers blood pressure and via these mechanisms reduces the risk of diabetes²⁹. It is estimated that physical inactivity accounts for 10% - 16% of all Type 2 diabetes²⁹

4.1 The level of need in the population

In GP practices across Leicestershire County and Rutland, 29,872 patients have been diagnosed with diabetes; a prevalence of 5.3% of the adult population, or 1 adult in every 20 (

Table 5). This is significantly lower than the national prevalence rate and a 0.5% increase on the recorded prevalence in 2009.

Table 5: GP Registered Counts (16+) of diabetes mellitus

District	Recorded Prevalence			Estimated Prevalence	
	List Size (16+)	Disease Register Diabetes	Recorded Prevalence (16+)	Estimated Diabetes	Estimated Prevalence (16+)
England	45,005,438	2,455,937	5.5%	3,099,853	7.4%
Leicestershire County and Rutland	559,278	29,872	5.3%	39,609	7.0%
Leicestershire	530,643	28,418	5.4%		
Rutland	28,635	1,454	5.1%		

Source: Quality and Outcomes Framework 2010/11, Association of Public Health Observatories (2010) APHO Diabetes Prevalence Model for England.

Health outcomes for diabetics in Leicestershire County and Rutland have remained consistently better than the national average, with lower mortality rates, hospitalisation and incidence of complications³⁰.

The distribution of recorded diabetics across Leicestershire County and Rutland is shown in Table 6. There has been an increase in the prevalence rates across all local authority districts since the previous reports in 2009 but no change in the district with the highest prevalence rate, Oadby and Wigston. However the highest percentage change occurred in Hinckley and Bosworth where there was a 15% increase in the prevalence of diabetes. It should be noted that the actual contributors to the increased prevalence are complex and not entirely due to improved diagnosis and recording of diabetes.

Table 6: GP Registered Counts (16+) of diabetes mellitus by District 2010/11

District	List Size 16+	Number on QOF Diabetes Register (age 16+)	Diabetes Age-Specific Prevalence (age 16+)
Blaby CD	75,932	4,103	5.40%
Charnwood CD	147,045	7,949	5.41%
Harborough CD	67,714	3,032	4.48%
Hinckley and Bosworth CD	76,359	4,140	5.42%
Melton CD	33,932	1,825	5.38%
North West Leicestershire CD	82,269	4,606	5.60%
Oadby and Wigston CD	47,391	2,763	5.83%
Rutland UA	28,635	1,454	5.08%
NHS LCR	559,278	29,872	5.34%
ENGLAND	45,005,438	2,455,937	5.46%

■ Highest District Prevalence
■ Lowest District Prevalence

Source: Quality and Outcomes Framework 2010/11

The level of need relating to diabetes in the population of Leicestershire County and Rutland is illustrated in the diabetes factsheet.

Data is also available in the JSNA core data set (pages 23 and 24) at LSR-Online and the Diabetes Community Health Profile produced by The National Diabetes Information Service

(http://yhpho.york.ac.uk/diabetesprofiles/PDF2011/5PA_Diabetes%20Profile.pdf)

4.1 Current services in relation to need

The majority of diabetes care is provided in General Practice.

The test that is used to measure blood glucose levels is known as the HbA1c test. HbA1c is a form of haemoglobin, the chemical that carries oxygen in red blood cells, which also has glucose attached to it³¹. NICE guidance recommends that adequately controlled glucose concentrations are measured as HbA1c protein at a level of < 7.5%

In Leicestershire County & Rutland PCT 69.2% of all people with diabetes aged 17 years and older have a HbA1c of 7.5 or less. This is statistically significantly higher than PCTs with populations with similar diabetes risk factors and statistically significantly higher than England as a whole.³²

Analysis of total spending on diabetes care compared to HbA1c outcomes shows that Leicestershire County & Rutland PCT is not statistically different from England in spending and not statistically different from England in terms of outcomes.³²

4.2 Projected service use and outcomes in 3-5 years and 5-10 years

It is anticipated that the prevalence of diabetes nationally and locally will continue to increase significantly in the future. The estimated national prevalence of 7.4% is expected to rise to 8.0% in 2015 and 8.5% by 2020²⁶.

The estimated prevalence across Leicestershire County and Rutland is 7.0% in 2010 (39,609 people). This is modelled to increase to 7.7% in 2015 (45,558 people) and 8.3% by 2020 (51,195 people). This is an overall increase of 29% in the number of people living with diabetes by 2020²⁶.

4.3 Evidence of what works

NICE guidelines provide detailed guidance on the diagnosis and management of both type 1³³ and type 2 diabetes³¹.

Key priorities for the management of Type 2 diabetes include structured education, nutritional advice and recommendations on advice around setting target glycated haemoglobin (HbA1c) and insulin therapy programmes.³¹

Key recommendations for the management of Type 1 diabetes are provided in detail for children and young people and adults separately.³³

4.4 User views

In 2009/10 the PCTs engagement team, in line with the seldom heard groups strategy, targeted sub-groups within the seldom heard groups, which included diabetics in the Asian community.

A survey on the 2010/11 spending plans for Leicestershire County and Rutland indicated that the respondents ranked improving diabetes care as the fourth most important health priority, preceded by reducing health inequalities (first), improving cancer care (second) and improving cardiovascular care (third)³⁴.

In 2010/11 the PCT engagement team consulted with members of the public to raise awareness of the effects of smoking with particular reference to diabetes and to discuss eye disease in general in relation to diabetes. The evaluation of the event indicated that 100% of attendees stated that they were better informed.

4.5 Equality impact assessments

Services are required for people with diabetes from childhood through to old age, including early management of type 1 diabetes, targeted prevention and early detection and management of type 2 diabetes. The service needs of individuals has been assessed in relation to deprivation and the six equality strands, Ethnicity, Gender, Age, Disability, Religion and Belief and Sexual Orientation using information derived from the National Diabetes Audit 2009 -10³⁵.

Deprivation

In Type 1 diabetes there is no association of prevalence with social deprivation, however Type 2 diabetes is strongly associated with social deprivation. The prevalence of Type 2 diabetes is greater in the most deprived quintile. The effect of

deprivation on the prevalence of Type 2 diabetes is most pronounced in the 16 to 55 years age range. The National Audit³⁵ found that the prevalence of Type 2 diabetes in individuals under the age of 55 in the most deprived quintile is more than twice the prevalence of individuals in this age range in the least deprived quintile. This may reflect lifestyle differences in exercise, diet and weight.

Ethnicity

The recorded ethnicity of individuals with Type 1 diabetes is similar to the national profile, whereas Type 2 diabetes is strongly associated with ethnicity. Individuals from Black and Ethnic Minority Groups such as African-Caribbean and South East Asian have increased prevalence of diabetes. Type 2 diabetes is up to six times more common in people of South Asian descent and up to three times more common amongst those of African and African-Caribbean origin³⁶. Adequate access to written and verbal information in appropriate languages is required to support increased use of available services.

Gender

National Diabetes Audit³⁵ data suggests that most males who would be expected to have diabetes have been identified on GP disease registers, but that fewer women (particularly those over 40 years old) have been identified. This means that women over 40 with undiagnosed diabetes, could be disadvantaged by service changes as they would not benefit from them as much as those who have been identified.

Age

The prevalence of all diabetes increases with age and Type 2 diabetes, in particular, is strongly associated with age. There is a difference between predicted and diagnosed prevalence of diabetes, especially in younger age groups. This suggests that a much higher percentage of older people than younger people are being diagnosed promptly, although the actual number of undiagnosed cases is greater in the 55-69 years age group. Age can impact on completion of the annual recommended tests in the management for diabetes, with younger people less likely to have a complete assessment regime.

Children and young people who are in transition between primary and secondary education or in transition between paediatric and adult health services are particularly vulnerable to adverse affects caused by changes in services.

Disability

All services should identify the need for accessible venues / locations and make provision for individuals with learning disabilities and mental health problems. It should be noted that due to lifestyle factors, and in some cases medication, these individuals may have high prevalence of diabetes, but low access to services. Availability of information (written and verbal) in a variety of formats would also support the delivery of equitable services for individuals with learning disabilities.

Religion and belief

The significance in relation to food, religious festivals and the requirement to fast will need to be considered for service provision.

Sexual Orientation

A neutral impact is anticipated within this equity strand.

4.6 Unmet need and service gaps

National models of disease prevalence estimate that the actual prevalence of diabetes in Leicestershire County and Rutland is 7.0% of the adult population (

Table 5). This is equivalent to 39,609 people with diabetes and suggests that 9,737 adults in Leicestershire are undiagnosed.

4.7 Recommendations for commissioning

As it is estimated that the number of people living with diabetes across Leicestershire County and Rutland will increase by around 29% by 2020²⁶, services must be commissioned to accommodate this increase in demand.

NICE guidelines suggest that structured education is an integral part of diabetes care and that structured education should be offered to every person and/or their carer at and around the time of diagnosis, with annual reinforcement and review.³¹ Therefore it is imperative that sufficient and appropriate patient education is commissioned across LCR to meet the need of diabetes patients.

4.8 Recommendations for needs assessment work

Outcomes orientated equity audit is required.

5 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic obstructive pulmonary disease (COPD) is not a single disease and includes the following respiratory conditions that reduce the effectiveness of the lungs:

- Chronic bronchitis.
- Emphysema.
- Chronic obstructive airways disease.
- Chronic airflow limitation.
- Some cases of chronic asthma.

In 2010 chronic obstructive pulmonary disease was the fourth most common cause of death in England and Wales³⁷. Over the past 10 years there has been an average of 25,000 deaths per year from this disease. There are approximately 899,000 people in England diagnosed with chronic obstructive pulmonary disease³⁸. However it is estimated that over 2 million individuals have undiagnosed chronic obstructive pulmonary disease³⁹.

Smoking is the major preventable cause of chronic obstructive pulmonary disease, 87% of all deaths from this condition are estimated to be attributable to smoking⁴⁰. There are other risk factors associated with chronic obstructive pulmonary disease, mainly arising from long-term exposure to occupational chemicals, fumes and dust. It is estimated that occupational exposure accounts for approximately 15% of chronic obstructive pulmonary disease prevalence⁴¹.

The key groups with risk factors associated with chronic obstructive pulmonary disease include:

- Current and ex-smokers
- Adults and children exposed to environmental tobacco smoke
- Occupational exposure to dust and chemicals, which may primarily impact on male manual workers
- Previous diagnosis of asthma
- Maternal smoking which may affect foetal lung development and decrease lung function in early childhood⁴²
- Individuals with a genetic predisposition to chronic obstructive pulmonary disease
- Chronic obstructive pulmonary disease prevalence is higher in areas experiencing deprivation. People living in the most deprived neighbourhoods in England are 3 times more likely to have chronic obstructive pulmonary disease than those living in the least deprived neighbourhoods⁴³.

5.1 The level of need in the population

In GP practices across Leicestershire County and Rutland, 9,973 patients have been diagnosed with chronic obstructive pulmonary disease; a prevalence of 1.8% of the adult population, or almost 2 adults in every 100 (Table 7). This is significantly lower than the national prevalence rate of 2.0% and a 0.2% increase on the recorded prevalence in 2009.

Table 8: GP Registered Counts of chronic obstructive pulmonary and estimates of chronic obstructive pulmonary disease

District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register COPD	Recorded Prevalence	Population	Estimated COPD	Estimated Prevalence (16+)
England	45,005,438	898,889	2.0%	42,511,740	1,532,999	3.6%
Leicestershire County and Rutland	559,278	9,973	1.8%	572,940	15,504	2.7%
Leicestershire	530,643	9,441	1.8%	540,560	14,759	2.7%
Rutland	28,635	532	1.9%	32,380	745	2.3%

Source: Quality and Outcomes Framework 2010/11 and APHO Model 2010

The distribution of recorded chronic obstructive pulmonary disease across Leicestershire County and Rutland is shown in Table 9. There has been an increase in the prevalence rates across all local authority districts since the previous report in 2009 but no change in the district with the highest prevalence rate, Oadby and Wigston.

Table 10: GP registered counts (16+) of chronic obstructive pulmonary and estimates of chronic obstructive pulmonary by District

District	Recorded Prevalence			Estimated Prevalence		
	List Size 16+	Disease register COPD	Recorded Prevalence (age 16+)	Population	Estimated COPD	Estimated Prevalence (16+)
Blaby CD	75,932	1,288	1.7%	77,480	2,014	2.6%
Charnwood CD	147,045	2,404	1.6%	142,540	3,461	2.4%
Harborough CD	67,714	1,116	1.6%	68,480	1,590	2.3%
Hinckley and Bosworth CD	76,359	1,407	1.8%	88,880	2,451	2.8%
Melton CD	33,932	597	1.8%	41,300	1,129	2.7%
North West Leicestershire CD	82,269	1,790	2.2%	75,720	2,349	3.1%
Oadby and Wigston CD	47,391	839	1.8%	46,160	1,766	3.8%
Rutland UA	28,635	532	1.9%	32,380	745	2.3%
NHS LCR	559,278	9,973	1.8%	572,940	15,504	2.7%
England	45,005,438	898,989	2.0%	42,511,740	1,532,999	3.6%

Source: Quality and Outcomes Framework 2010/11 and APHO Model 2010

Between 2007 and 2009 there were 660 deaths from bronchitis, emphysema and other chronic obstructive pulmonary disease in NHS Leicestershire County and Rutland (220 per year)⁴⁴.

The level of need relating to chronic obstructive pulmonary disease in the population of Leicestershire County and Rutland is illustrated in Factsheet 2. Data is also available in the JSNA core data set (pages 34 and 35) at LSR-Online.

5.2 Current services in relation to need

- Patients with COPD should be prescribed inhaled and oral therapies in a primary care setting, in accordance with NICE guidelines.⁴⁶ Currently there is a mismatch between prescribing and disease severity with in particular many patients with mild disease being prescribed inappropriately high doses of long acting bronchodilators and high dose of inhaled steroids. Services are currently working to reduce the high level of inhaled steroids being prescribed.

- In patients in whom there is a suspicion of COPD micro spirometry is performed (or hand held spirometry). If the results of this confirm the suspicion of COPD then this should be confirmed by full spirometry with reversibility.
- Patients with COPD who meet appropriate criteria should be offered an effective, timely and accessible multidisciplinary pulmonary rehabilitation programme.⁴⁶

5.3 Projected service use and outcomes in 3-5 years and 5-10 years

It is anticipated that the prevalence of chronic obstructive pulmonary disease nationally and locally will continue to increase slowly in the future. The estimated national prevalence of 3.6% is expected to rise to 3.7% in 2015 and 3.8% by 2020⁴⁵.

The estimated prevalence across Leicestershire County and Rutland is modelled to increase slightly to 2.7% by 2015 (16,484 people), accounting for population growth, by 2010 this is estimated to be 2.9% by 2020 (17,933 people). This is an overall increase of 19% in the number of people living with chronic obstructive pulmonary disease by 2020.

5.4 Evidence of what works

NICE quality standards in terms of COPD treatment⁴⁶ recommend that:

- People with COPD have one or more indicative symptoms recorded, and have the diagnosis confirmed by post-bronchodilator spirometry carried out on calibrated equipment by healthcare professionals competent in its performance and interpretation.
- People with COPD have a current individualised comprehensive management plan, which includes high-quality information and educational material about the condition and its management, relevant to the stage of disease.
- People with COPD are offered inhaled and oral therapies, in accordance with NICE guidance, as part of an individualised comprehensive management plan.
- People with COPD have a comprehensive clinical and psychosocial assessment, at least once a year or more frequently if indicated, which includes degree of breathlessness, frequency of exacerbations, validated measures of health status and prognosis, presence of hypoxaemia and comorbidities.
- People with COPD who smoke are regularly encouraged to stop and are offered the full range of evidence-based smoking cessation support.
- People with COPD meeting appropriate criteria are offered an effective, timely and accessible multidisciplinary pulmonary rehabilitation programme.
- People who have had an exacerbation of COPD are provided with individualised written advice on early recognition of future exacerbations, management strategies (including appropriate provision of antibiotics and corticosteroids for self-treatment at home) and a named contact.

- People with COPD potentially requiring long-term oxygen therapy are assessed in accordance with NICE guidance by a specialist oxygen service.
- People with COPD receiving long-term oxygen therapy are reviewed in accordance with NICE guidance, at least annually, by a specialist oxygen service as part of the integrated clinical management of their COPD.
- People admitted to hospital with an exacerbation of COPD are cared for by a respiratory team, and have access to a specialist early supported-discharge scheme with appropriate community support.
- People admitted to hospital with an exacerbation of COPD and with persistent acidotic ventilatory failure are promptly assessed for, and receive, non-invasive ventilation delivered by appropriately trained staff in a dedicated setting.
- People admitted to hospital with an exacerbation of COPD are reviewed within 2 weeks of discharge.
- People with advanced COPD, and their carers, are identified and offered palliative care that addresses physical, social and emotional needs.

5.5 Equality impact assessments

The service needs of individuals with Chronic Obstructive Pulmonary Disease have been assessed in relation to deprivation and the six equality strands, Ethnicity, Gender, Age, Disability, Religion and Belief and Sexual Orientation based on the current draft of the national equality impact assessment for chronic obstructive pulmonary disease⁴⁷.

Deprivation

Chronic Obstructive Pulmonary Disease is closely associated with levels of deprivation and individuals within deprived groups have a higher rate of hospital admission and readmission for this condition. Planning of services and discharge from hospital needs to account for individual social circumstances⁴³.

Ethnicity

Chronic obstructive pulmonary disease affects all ethnic groups, but it is noted that there is a higher prevalence in South East Asian groups, Bangladeshi men in particular due to a high smoking prevalence within this group. It was also noted that Bangladeshi women also have a higher prevalence of chronic obstructive pulmonary disease due to exposure to environmental tobacco smoke within the home. The impact of smoking equally applies to children with these households.

National recommendations are for increased awareness of chronic obstructive pulmonary disease and the promotion of smoking cessation within Black and minority ethnic communities with a particular emphasis on South East Asian groups. Adequate access to written and verbal information in appropriate languages is required to support increased use of available services.

Gender

Historically there has been gender differences in the prevalence of chronic obstructive pulmonary disease, with men, particularly routine and manual workers, being disproportionately affected as a result of smoking prevalence and occupational

exposure. However, more recently the prevalence rates appear to be increasing steadily in women but have reached a plateau in men⁴⁸. National recommendations indicate targeted programmes should be introduced to address these issues.

Age

Chronic obstructive pulmonary disease is a condition which generally affects people over the age of 45, and rarely those under 40, who have a history of smoking⁴⁹. Any service for chronic obstructive pulmonary disease should be available to all patients with this diagnosis regardless of age, but due to the nature of the condition will mainly see older people.

Disability

Patients with mild chronic obstructive pulmonary disease may not be 'disabled' by the condition, but those with a moderate to severe condition may have physical symptoms and breathlessness which affects their functionality. Transport should be provided for patients who have mobility problems, to enable access to services.

Individuals with severe learning difficulties, cognitive impairment or mental health conditions should be assessed to ensure that there is adequate service provision to meet the needs of these diverse groups.

Religion and belief

The significance of religious festivals will need to be considered for service provision.

Sexual Orientation

A neutral impact is anticipated within this equity strand.

5.6 Unmet need and service gaps

National models of disease prevalence estimate that the actual prevalence of chronic obstructive pulmonary disease in Leicestershire County and Rutland is 2.7% of the adult population (Table 11). This is equivalent to 15,504 people with chronic obstructive pulmonary disease and suggests that 5,531 adults, over a third of these individuals, are undiagnosed.

5.7 Recommendations for commissioning

Clinical Commissioning Groups are looking to prioritise COPD in terms of ensuring the following services are adequately commissioned:

- Spirometry testing in primary care
- Appropriate prescribing in primary care
- Pulmonary rehabilitation services. There is a need to harmonise service provision between the acute and community trusts in order to provide the most effective and efficient service.

5.8 Recommendations for needs assessment work

Outcomes orientated equity audit is required.

6 COMPLEX LONG TERM NEUROLOGICAL CONDITIONS

A Long Term Neurological Condition (LTNC) results from injury, damage to, or disease of the nervous system (brain, spinal cord, peripheral or autonomic nervous system). A third of visits to GPs and a fifth of all acute hospital admissions are related to neurological conditions. An estimated 350,000 people with neurological conditions in the UK need help with their daily activities and around 850,000 people care for someone with such a condition.⁵⁰

There are many types of LTNCs and people's experiences, disease course, needs for services and support varies significantly.

LTNCs can be categorised as those that are:

- Of sudden onset - i.e. stroke
- Intermittent and unpredictable conditions i.e. multiple sclerosis (MS), epilepsy,
- Progressive conditions i.e. motor neuron disease (MND) or Parkinson's disease (PD) where deterioration over time may lead to increased need for services
- Stable conditions such as cerebral palsy

The most common LTNC are:

- **Stroke** (further information on stroke is available in the cardiovascular disease chapter).
- **Epilepsy** is the most prevalent neurological condition. It is intermittent and unpredictable which can affect people of all ages; however It is most often diagnosed before the age of 18 or after the age of 65.
- **Multiple sclerosis** is a progressive condition often diagnosed at a young age 20 – 40 where relapses and remissions in early stages can lead to marked variation in the care needed.
- **Parkinson's disease** is progressive condition mainly diagnosed at an older age
- **Motor neurone disease** is a rapidly progressive condition that can affect people of all ages; however, most people are diagnosed over the age of 40, with the highest incidence occurring between the ages of 50-70 years
- **Acquired brain injury** is a sudden onset condition with varying levels of recovery which can affect anyone at any age. In terms of traumatic brain injury (TBI), the two age groups at higher risk are 0-4 year olds with mainly birth related injury and 15 to 19 year olds.

LTNCs can cause physical, sensory, cognitive, communication and psychosocial problems for the affected individual.

It is likely, therefore, that a person with a neurological condition will require a range of agencies and services over time, to support their independence including health and social care, voluntary and independent sector input as well as services such as transport, housing, employment, education, benefits and pensions.

The requirement for services and support will vary due to fluctuating symptoms, differing levels of disability and rates of disease progression. Caring for those with LTNCs can be very demanding, both physically and emotionally, and carers can experience high levels of stress and mental health issues e.g. depression and anxiety and may also be adversely financially affected.

6.1 The level of need in the population

Epilepsy

The only long term neurological condition that is recorded locally is epilepsy which is recorded by GPs on the Quality and Outcomes Framework (QOF). In 2010/11 the GP recorded prevalence of LTNC was:

- 3,811 people in LCR with epilepsy (3,633 Leicestershire, 178 Rutland)
- 0.7% of population, significantly lower than the England average of 0.8%

Multiple Sclerosis

NICE guidance on Multiple sclerosis (MS)⁵¹ suggests that MS is diagnosed in 3.5 to 6.6 people per 100,000 of the population each year, equivalent to about 20 to 50 new diagnoses each year in LCR. Prevalence is between 100 to 120 per 100,000⁵¹ of the population, equivalent to about 700 to 800 people with MS in LCR.

Motor Neurone Disease

Motor neurone disease (MND) affects around 2 in every 100,000 people each year in England⁵². If there is a similar incidence of MND in LCR we might expect around 14 cases per year. Most cases first develop in people in their late 50s or early 60s. Motor neurone disease is slightly more common in men than women.

Parkinson's Disease

Modelled prevalence figures from a NICE cost-impact report on Parkinson's Disease (PD)⁵³ indicate that PD occurs in 0.17% of the general population ranging from 0% in younger ages to 1.26% in those over 80. Applying these figures to the LCR population would suggest that over 1300 people in LCR have PD.

6.2 Current services in relation to need

Most services for long term neurological conditions are provided by generic services rather than specific services. This makes identifying service useage more difficult.

6.3 Projected service use and outcomes in 3-5 years and 5-10 years

The ageing population is likely to increase the prevalence of long term neurological conditions in LCR, particularly Parkinson's disease the prevalence of which increases with age.

6.4 Evidence of what works

The National Service Framework for Long-term conditions recommends the following quality requirements for those with long-term neurological conditions;

- A person-centred service

- Early recognition, prompt diagnosis and treatment
- Emergency and acute management
- Early and specialist rehabilitation
- Community rehabilitation and support
- Vocational rehabilitation
- Providing equipment and accommodation
- Providing personal care and support
- Palliative care
- Supporting family and carers
- Caring for people with neurological conditions in hospital or other health and social care settings

6.5 User views

In 2010/11 the PCTs carried out the following relevant engagement activities:

CFS (Chronic Fatigue Syndrome) and ME (Myalgic Encephalomyelitis). In 2010/11 a local task and finish group engaged with ME Positive (the local user group) and collated feedback on the current service and views on what a future service should look like.

The main recommendations from this engagement were:

- more GP engagement on CFS/ME to ensure better diagnosis within primary care
- a neurological rather than a psychological pathway for CFS/ME patients
- improved availability of alternative therapies
- a personalised approach to the management of the condition and symptoms.

A proposed pathway was also developed by the group with recommendations for a redesigned service. The current service specification was examined and suggestions were made based on direct patient experiences.

6.6 Unmet need and service gaps

Reliable local data on the prevalence of long term neurological conditions in LCR is a significant gap.

6.7 Recommendations for commissioning

Services for long term neurological conditions should be commissioned in line with Department of Health National Service Framework for long-term conditions.⁵⁰

6.8 Recommendations for needs assessment work

Further work needs to be done to estimate the need in LCR in terms of LTNC.

7 DATA FACTSHEETS

CVD factsheet

- GP registered count of CVD (QOF) and estimates of CVD (APHO model) 2010
- Modelled estimates of prevalence of CVD for PCTs in England by age, gender and ethnicity
- Modelled estimates of prevalence of CVD for NHS LCR 2010-2020
- Directly standardised mortality rates for CVD by IMD 2010
- Years of life lost due to mortality from CVD aged under 75, 2007-09
- Mortality from all circulatory diseases by PCT 2007-09

CHD Factsheet:

- GP registered count of CHD (QOF) and estimates of CHD (APHO model) 2010
- Modelled estimates of prevalence of CHD for PCTs in England 2010
- Modelled estimates of prevalence of CHD for NHS LCR 2010-2020
- Directly age standardised mortality rates for CHD 1993/95-2007/09
- Mortality from hypertensive disease (ICD10 I20-I25) Peer PCTs

Hypertension Factsheet:

- GP registered count of Hypertension (QOF) and estimates of Hypertension (APHO model) 2010
- Modelled estimates of prevalence of Hypertension for PCTs in England 2010
- Modelled estimates of prevalence of Hypertension for NHS LCR 2010-2020
- Directly age standardised mortality rates for hypertensive disease 1993/95-2007/09
- Mortality from hypertensive disease (ICD10 I20-I15) Peer PCTs
- Mortality rates by PCT quintiles

Stroke Factsheet:

- GP registered counts of stroke (QOF) 2010/11 and estimates of stroke (APHO model) 2010
- Modelled estimates of prevalence of stroke for PCTs in England 2010
- Modelled estimates of prevalence of stroke for NHS LCR 2010-2020
- Directly age standardised mortality rates for stroke 1993/95-2007/09
- Mortality from stroke (ICD10 I60-I69) Peer PCTs
- Mortality rates by PCT quintiles

Diabetes Factsheet:

- GP registered counts of diabetes (QOF) 2010/11 and estimates of diabetes (APHO model) 2010
- Emergency hospital admissions – diabetic ketoacidosis and coma 2002/03 – 2009/10 (E10-E14)
- Estimated number of people aged 16+ with diagnosed and undiagnosed diabetes 2010-2030
- Directly age standardised mortality rates for diabetes 1993/95-2007/09
- Mortality from diabetes (ICD10 E10-E14) Peer PCTs
- Mortality rates by PCT quintiles

COPD Factsheet:

- GP registered counts of COPD (QOF) 2010/11 and estimates of COPD (APHO model) 2010
- Modelled estimates of prevalence of COPD for PCTs in England 2010
- Modelled estimates of prevalence of COPD for NHS LCR 2010-2020
- Directly age standardised mortality rates for COPD 1993/95-2007/09
- Mortality from COPD (ICD10 J40-J44) Peer PCTs

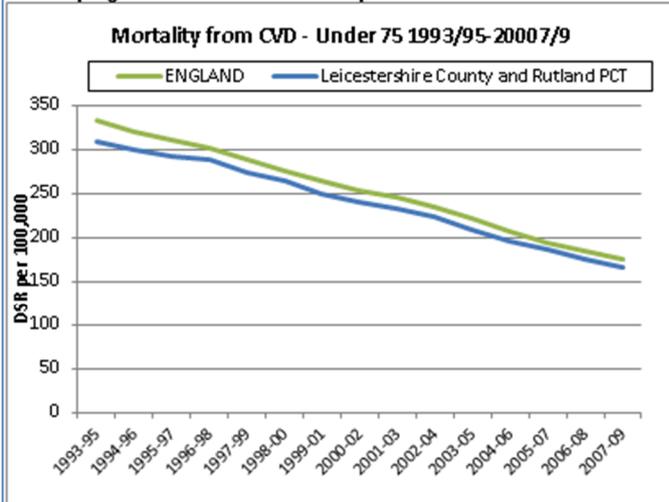
JSNA Refresh 2012 - Long term conditions - CVD

GP Registered counts of Cardiovascular Disease (QOF), 2010/11 and estimates of CVD (APHO model) 2010

District	Recorded Prevalence			Estimated prevalence		
	List Size (16+)	Disease Register CVD	Recorded Prevalence (16+)	Population	Estimated CVD	Estimated Prevalence (16+)
England	45,005,438	663,243	1.5%	42,511,740	2,827,782	6.7%
Leicestershire County and Rutland	559,278	8,197	1.5%	572,940	35,112	6.1%
Leicestershire	530,643	7,740	1.5%	540,560	33,191	6.1%
Rutland	28,635	457	1.6%	32,380	1,921	5.9%

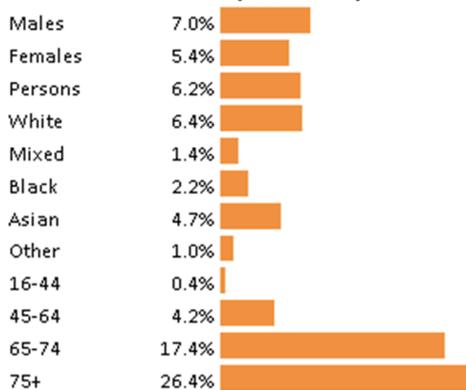
Source: QOF 2010/11 and APHO Mi (CVD APHO model defined as has had CVD including angina, heart attack or stroke)

Directly Age Standardised Mortality Rates for CVD 1993-2009 All Persons



Source: NHS IC Indicator Portal - (www.indicator.ic.nhs.uk or nww.indicator.ic.nhs.uk)

Modelled estimates of prevalence of CVD for PCTs NHS Leicestershire County and Rutland, 2010



Source: ERPHO, November 2008

Modelled estimates of prevalence of CVD for NHS Leicestershire County and Rutland

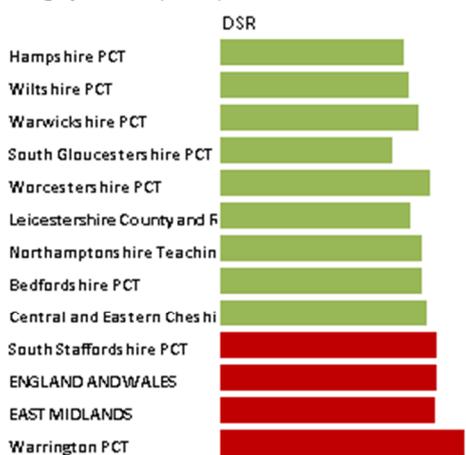
	2010	2015	2020
Persons with CVD	35,557	40,265	44,815
Persons prevalence of CVD	6.2%	6.7%	7.1%
Absolute Growth		4,708	9,258
Relative Growth		13.2%	26.0%

Source: Eastern Region Public Health Observatory, November 2008

Mortality from all circulatory diseases (ICD10 I00-199):

Directly age-standardised rates (DSR)

All ages, 2007-09 (Pooled)



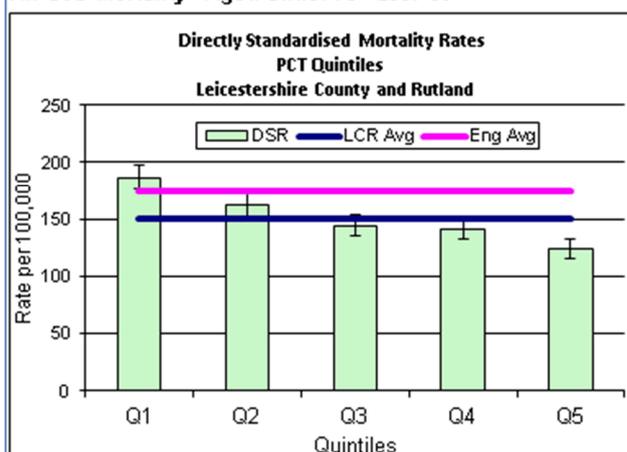
Significance compared to England

Significantly higher

Not significant

Significantly lower

All CVD Mortality - Aged Under 75 - 2007-09



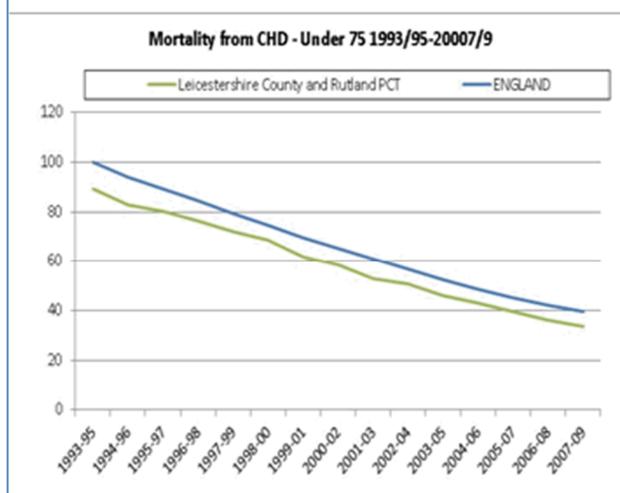
Source: NHS LCR. Public Health Baseline Data 2007-09

JSNA Refresh 2012. Long Term Conditions - Topic - CHD

GP Registered counts of Coronary Heart Disease (QOF), 2010/11 and estimates of CHD (APHO model) 2010

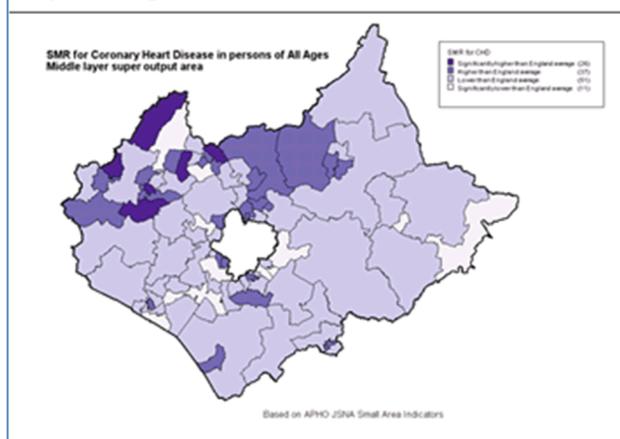
District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register CHD	Recorded Prevalence (16+)	Population	Estimated CHD	Estimated Prevalence (16+)
England	45,005,438	1,877,518	4.2%	42,511,740	2,408,986	5.7%
LCR	559,278	22,571	4.0%	572,940	28,981	5.1%
Leicestershire	530,643	21,218	4.0%	540,560	27,499	5.1%
Rutland	28,635	1,353	4.7%	32,380	1,532	4.7%

Source: QOF 2010/11 and APHO Model 2010



Source: Compendium

Map showing SMR for CHD for LCR



SMR-Standardised Mortality Rate

Modelled estimates of prevalence of CHD for NHS LCR

	2010	2015	2020
Persons with CHD	29,492	33,009	36,851
Persons prevalence of CHD	5.1%	5.5%	5.8%
Absolute Growth		3,517	7,359
Relative Growth		11.9%	25.0%

Source: Eastern Region Public Health Observatory, November 2008

Modelled estimates of prevalence of CHD for PCTs in England

NHS Leicestershire County and Rutland, 2010

Males	6.3%
Females	4.0%
Persons	5.2%
White	5.3%
Mixed	0.9%
Black	1.5%
Asian	3.8%
Other	0.7%
16-44	0.3%
45-64	4.8%
65-74	13.4%
75+	18.7%

Source: Eastern Region Public Health Observatory, November 2008

Mortality from coronary heart disease (ICD10 I20-I25): Directly age-standardised rates (DSR)

All ages, 2007-09 (Pooled)

	Deaths	DSR
Hampshire PCT	4976	Green
Wiltshire PCT	1751	Green
Warwickshire PCT	1931	Green
South Gloucestershire PCT	901	Green
Worcestershire PCT	2213	Green
Leicestershire County and Rutland PCT	2667	Green
Northamptonshire Teaching PCT	2352	Green
Bedfordshire PCT	1500	Blue
Central and Eastern Cheshire PCT	2009	Blue
South Staffordshire PCT	2567	Blue
ENGLAND AND WALES	228262	Blue
EAST MIDLANDS	19285	Red
Warrington PCT	1006	Red

Significance compared to England

Significantly higher

Not significant

Significantly lower

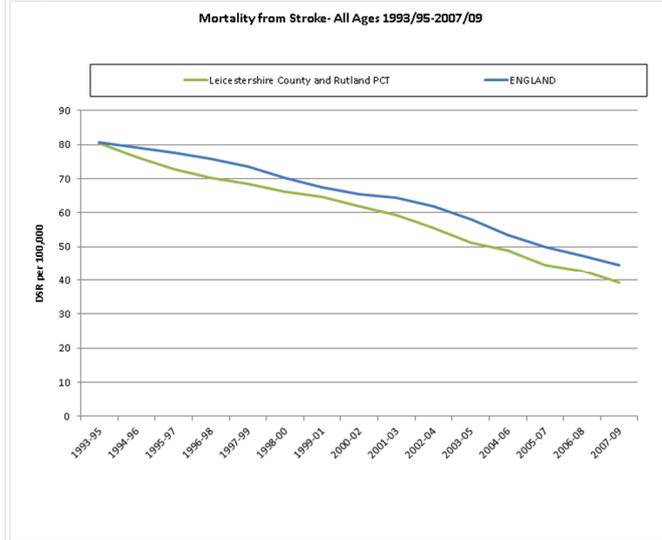
JSNA Refresh 2012 - Long Term Conditions - Stroke

GP Registered counts of Stroke (QOF), 2010/11 and estimates of Stroke (APHO model) 2010

District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register Stroke	Recorded Prevalence (16+)	Population	Estimated Stroke	Estimated Prevalence (16+)
England	45,005,438	944,099	2.1%	42,511,740	1,062,524	2.5%
Leicestershire County and Rutland	559,278	11,443	2.0%	572,490	13,409	2.3%
Leicestershire	530,643	10,720	2.0%	540,560	12,708	2.4%
Rutland	28,635	723	2.5%	32,380	701	2.2%

Source: QOF 2010/11 and APHO Model 2010

Directly Age Standardised Mortality Rates for Stroke 1993-2009 All Persons



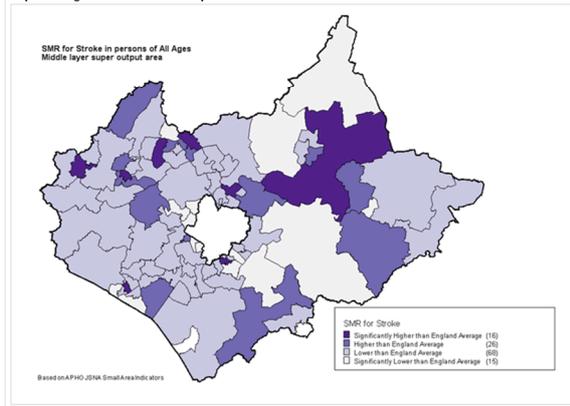
Source: NHS IC Indicator Portal (www.indicator.ic.nhs.uk or nwi.indicator.ic.nhs.uk)

Modelled estimates of prevalence of Stroke for NHS Leicestershire County and Rutland

	2010	2015	2020
Males with Stroke	6,965	7,943	8,891
Males prevalence of Stroke	2.5%	2.7%	2.9%
Females with Stroke	6,885	7,636	8,422
Females prevalence of Stroke	2.4%	2.5%	2.7%
Persons with Stroke	13,850	15,579	17,313
Persons prevalence of Stroke	2.4%	2.6%	2.8%

Source: Eastern Region Public Health Observatory, November 2008

Map showing Standardised Mortality Rate for Stroke



Modelled estimates of prevalence of Stroke for PCTs in England

NHS Leicestershire County and Rutland, 2010

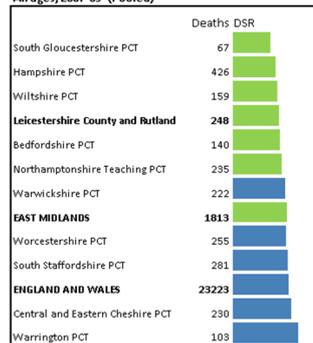
Males	2.5%
Females	2.4%
Persons	2.4%
16-44	0.3%
45-64	1.7%
65-74	5.9%
75+	10.4%

Eastern Region Public Health Observatory, November 2008

Mortality from Stroke (ICD10 I60-I69):

Directly age-standardised rates (DSR)

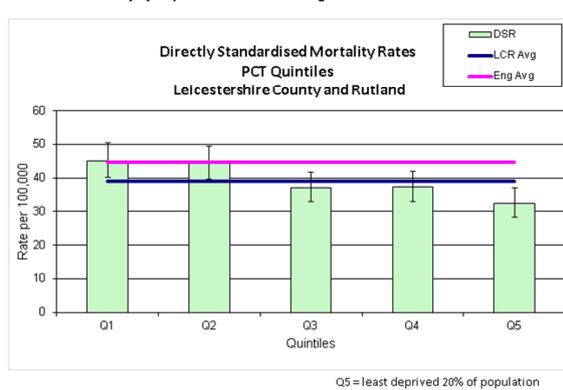
All ages, 2007-09 (Pooled)



Significance compared to England

Significantly higher	Red
Not significant	Blue
Significantly lower	Green

All Stroke Mortality by Deprivation Quintile - All Ages - 2007-09



Q5 = least deprived 20% of population

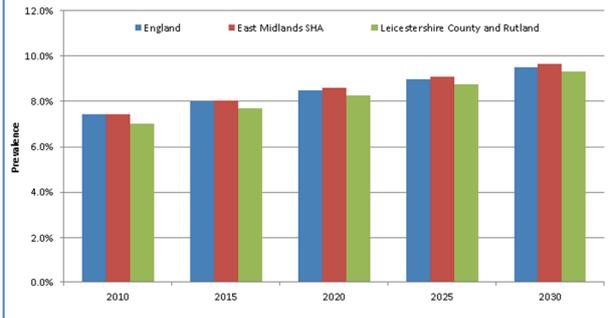
GP Registered counts of Diabetes (QOF).

2010/11 and estimates of Diabetes (APHO model) estimates 2010

District	Recorded Prevalence			Estimated Prevalence	
	List Size (16+)	Disease Register Diabetes	Recorded Prevalence (16+)	Estimated Diabetes	Estimated Prevalence (16+)
England	45,005,438	2,455,937	5.5%	3,099,853	7.4%
Leicestershire County and Rutland	559,278	29,872	5.3%	39,609	7.0%
Leicestershire	530,643	28,418	5.4%		
Rutland	28,635	1,454	5.1%		

Source: QOF 2010/11 and APHO Model 2010 estimates

Estimated prevalence of people aged 16+ with diagnosed and undiagnosed Diabetes



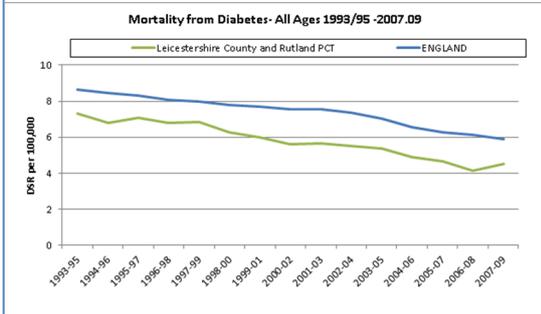
Source: APHO Model 2010-2030 estimates

Years of life lost due to mortality from diabetes, Aged Under 75, 2007-09

Crude Rates	Males			Females			Persons		
	Rate	Lower	Upper	Rate	Lower	Upper	Rate	Lower	Upper
England	4.70	4.45	4.95	3.20	2.99	3.41	3.95	3.79	4.12
East Midlands	6.55	5.67	7.42	4.63	3.86	5.40	5.59	5.01	6.17
Leicestershire County & Rutland	4.05	1.96	6.13	1.61	0.61	2.61	2.84	1.68	4.00
Leicestershire	4.29	2.08	6.50	1.70	0.65	2.76	3.00	1.77	4.24
Rutland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: NHS Indicator Portal (www.indicator.ic.nhs.uk or www.indicator.ic.nhs.uk)

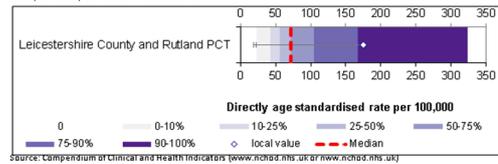
Directly Age Standardised Mortality Rates for Diabetes 1993-2009 All Persons



Source: NHS Indicator Portal (www.indicator.ic.nhs.uk or www.indicator.ic.nhs.uk)

Emergency Hospital Admissions: Diabetic Ketoacidosis and Coma

2002/03-2009/10 - ICD 10 codes: E10-E14



Modelled estimates of prevalence of Diabetes for NHS LCR

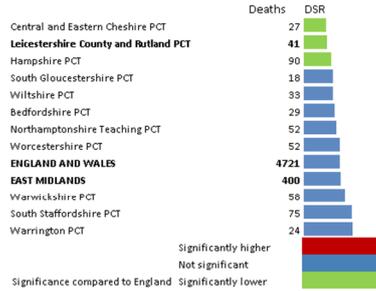
	2010	2015	2020
Persons with Diabetes	39,609	45,558	51,195
Persons prevalence of Diabetes	7.0%	7.7%	8.3%
Absolute Growth		5,949	11,586
Relative Growth		15.0%	29.3%

Source: APHO model estimates

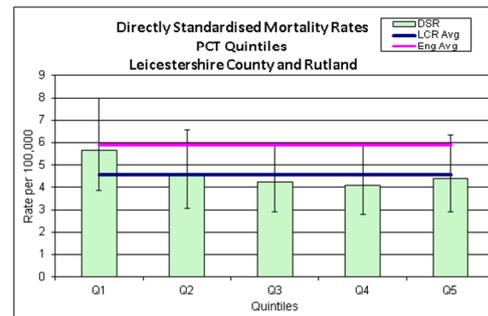
Mortality from Diabetes (ICD10 E10-E14):

Directly age-standardised rates (DSR)

Aged Under 75, 2007-09 (Pooled)



All Diabetes Mortality - All Ages - 2007-09



Source: NHS LCR, Public Health Baseline Data 2007-09

Q1 = most deprived 20% of population
Q5 = least deprived 20% of population

JSNA Refresh 2012 - Long Term Conditions - COPD

GP Registered counts of COPD (QOF), 2010/11 and estimates of COPD (APHO model) 2010

District	Recorded Prevalence			Estimated Prevalence		
	List Size (16+)	Disease Register COPD	Recorded Prevalence	Population	Estimated COPD	Estimated Prevalence (16+)
England	45,005,438	898,889	2.0%	42,511,740	1,532,999	3.6%
LCR	559,278	9,973	1.8%	572,940	15,504	2.7%
Leicestershire	530,643	9,441	1.8%	540,560	14,759	2.7%
Rutland	28,635	532	1.9%	32,380	745	2.3%

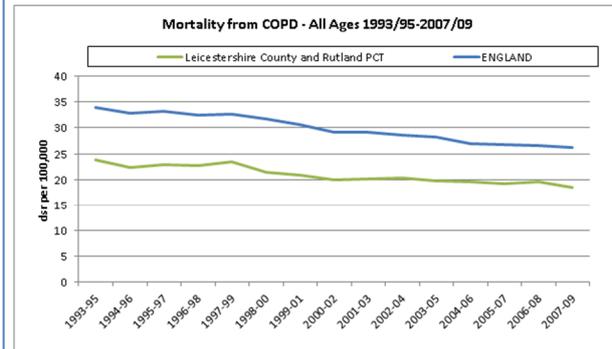
Source: QOF 2010/11 and APHO Model 2010

Modelled estimates of prevalence of COPD for PCTs in England
NHS Leicestershire County and Rutland, 2010

Males	3.3%
Females	2.0%
Persons	2.6%
White	2.7%
Black	2.2%
Asian	1.5%
16-44	0.8%
45-64	2.9%
65-74	5.7%
75+	6.4%

Eastern Region Public Health Observatory, November 2008

Directly Age Standardised Mortality Rates for COPD 1993-2009 All Persons



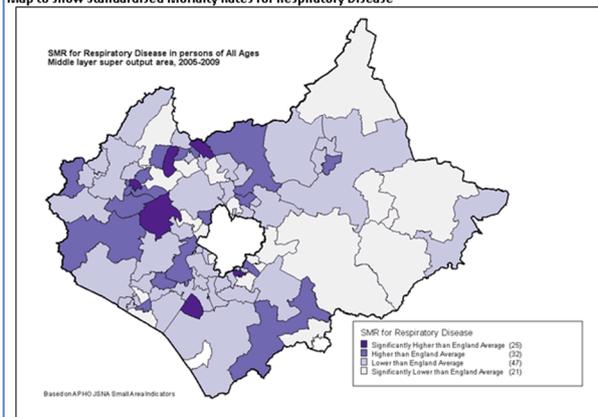
Source: Compendium of Clinical and Health Indicators / Clinical and Health Outcomes Knowledge Base (www.nchod.nhs.uk or www.nchod.nhs.uk)

Modelled estimates of prevalence of COPD for NHS LCR

	2010	2015	2020
Males with COPD	9,258	10,210	11,175
Males prevalence of COPD	3.3%	3.4%	3.6%
Females with COPD	5,821	6,274	6,758
Females prevalence of COPD	2.0%	2.1%	2.1%
Persons with COPD	15,079	16,484	17,933
Persons prevalence of COPD	2.6%	2.7%	2.9%

Source: Eastern Region Public Health Observatory, November 2008

Map to show Standardised Mortality Rates for Respiratory Disease



Mortality from COPD (ICD10 J40-J44):

Directly age-standardised rates (DSR)

All Ages, 2007-09 (Pooled)

PCT	Deaths	DSR
Leicestershire County and Rutland PCT	660	2.7%
South Gloucestershire PCT	243	2.7%
Wiltshire PCT	502	2.7%
Worcestershire PCT	617	2.7%
Warwickshire PCT	581	2.7%
Hampshire PCT	1493	2.7%
South Staffordshire PCT	716	2.7%
Northamptonshire Teaching PCT	729	2.7%
Central and Eastern Cheshire PCT	603	2.7%
Bedfordshire PCT	460	2.7%
EAST MIDLANDS	5644	2.7%
ENGLAND AND WALES	71804	2.7%
Warrington PCT	253	2.7%

Significance compared to England

Significantly higher
Not significant
Significantly lower



8 REFERENCES

- ¹ The Information Centre, Quality and Outcomes Framework. <http://www.ic.nhs.uk/statistics-and-data-collections/audits-and-performance/the-quality-and-outcomes-framework/the-quality-and-outcomes-framework-2010-11>
- ² Association of Public Health Observatories: Disease prevalence models - <http://www.apho.org.uk/DISEASEPREVALENCEMODELS>
- ³ The NHS Information Centre for Health and Social Care (2011) Mortality from hypertensive disease (ICD10 I10 - I15) <https://indicators.ic.nhs.uk/webview/> [accessed 23rd November 2011]
- ⁴ The NHS Information Centre for Health and Social Care (2011) Mortality from coronary heart disease (ICD10 I20-I25) <https://indicators.ic.nhs.uk/webview/> [accessed 23rd November 2011]
- ⁵ The NHS Information Centre for Health and Social Care (2011) Mortality from stroke (ICD10 J40-J44) <https://indicators.ic.nhs.uk/webview/> [accessed 23rd November 2011]
- ⁶ The NHS Information Centre for Health and Social Care (2011) Mortality from bronchitis, emphysema and other COPD (ICD10 J40-J44) <https://indicators.ic.nhs.uk/webview/>
- ⁷ NHS Choices: What is cardiovascular disease? <http://www.nhs.uk/chq/pages/2603.aspx?categoryid=87&subcategoryid=877>
- ⁸ Office of National Statistics (2011) *Statistical Bulletin: Deaths registered in England and Wales by cause 2010* http://www.ons.gov.uk/ons/dcp171778_239518.pdf [accessed 17th November 2011]
- ⁹ Department of Health (2000) *National Service Framework for Coronary Heart Disease* http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4057526.pdf [accessed 18th November 2011]
- ¹⁰ Department of Health (2007) *National Stroke Strategy* http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_081059.pdf [accessed 18th November 2011]
- ¹¹ NHS choices: High blood pressure (hypertension) - [http://www.nhs.uk/conditions/blood-pressure-\(high\)/pages/introduction.aspx](http://www.nhs.uk/conditions/blood-pressure-(high)/pages/introduction.aspx)
- ¹² The NHS Information Centre for Health and Social Care (2011) Mortality from hypertensive disease (ICD10 I10 - I15) <https://indicators.ic.nhs.uk/webview/> [accessed 23rd November 2011]
- ¹³ <http://www.nhs.uk/conditions/coronary-heart-disease/pages/introduction.aspx#disease/pages/introduction.aspx>
- ¹⁴ The NHS Information Centre for Health and Social Care (2011) Mortality from coronary heart disease (ICD10 I20-I25) <https://indicators.ic.nhs.uk/webview/> [accessed 23rd November 2011]
- ¹⁵ The NHS Information Centre for Health and Social Care (2011) Mortality from stroke (ICD10 J40-J44) <https://indicators.ic.nhs.uk/webview/> [accessed 23rd November 2011]
- ¹⁶ SEPHO; Cardiovascular disease PCT profile for Leicestershire County and Rutland. http://www.emcardiacandstrokenetwork.nhs.uk/images/stories/documents/5PA_CVD_Profile_-_LCR.pdf
- ¹⁷ Eastern Public Health Observatory (2008) Modelled estimates and projections for COPD, CHD, Hypertension and Stroke in England <http://www.erpho.org.uk/viewResource.aspx?id=17905> [accessed 23rd November 2011]
- ¹⁸ Treatment of circulatory disease in the NHS Measuring trends in hospital costs and output Adriana Castelli and Peter C Smith, Centre for Health Economics, University of York September 2007
- ¹⁹ Unal B, Critchley JA and Capewell S (2005). 'Modelling the decline in coronary heart disease deaths in England and Wales, 1981–2000: comparing from primary prevention and secondary prevention'. *British Medical Journal*, vol 331, p 614–19
- ²⁰ Department of Health (2007) *Equality Impact Assessment National Stroke Strategy* http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_081052.pdf [accessed 23rd November 2011]
- ²¹ Jhund, Pardeep S. (2010) *Socioeconomic deprivation and cardiovascular disease*. PhD thesis. University of Glasgow <http://theses.gla.ac.uk/2213/01/2010jhundphd.pdf> [accessed 23rd November 2011]
- ²² Conron KJ, Mimiaga MJ, Landers SJ. A population-based study of sexual orientation identity and gender differences in adult health. *Am J Public Health*. 2010 Oct;100(10):1953-60. Epub 2010 Jun 1.
- ²³ Case P, Austin SB, Hunter DJ, Manson JE, Malspeis S, Willett WC, Spiegelman D. Sexual orientation, health risk factors, and physical functioning in the Nurses' Health Study II. *J Womens Health (Larchmt)*. 2004 Nov;13(9):1033-47.
- ²⁴ NHS Healthchecks - <http://www.healthcheck.nhs.uk/Default.aspx>
- ²⁵ NHS Choices – Diabetes - <http://www.nhs.uk/conditions/diabetes-type2/pages/introduction.aspx>
- ²⁶ Association of Public Health Observatories (2010) APHO Diabetes Prevalence Model for England. Yorkshire and the Humber Public Health Observatory <http://www.yhpho.org.uk/resource/view.aspx?RID=81090> [accessed 8th November 2011]
- ²⁷ Diabetes National Support Team (2006) *Diabetes Key Facts* Yorkshire and the Humber Public Health Observatory
- ²⁸ National Collaborating Centre for Women's and Children's Health (2008) *Diabetes in pregnancy management of diabetes and its complications from preconception to the postnatal period*. National Institute of Health and Clinical Excellence <http://www.nice.org.uk/nicemedia/live/11946/41320/41320.pdf> [accessed 9th November 2011]
- ²⁹ World Health Organisation (2002) *The World Health Report 2002 – Reducing Risks, Promoting Healthy Life* http://www.who.int/whr/2002/en/whr02_en.pdf [accessed 9th November 2011]

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- ³⁰ The National Diabetes Information Service (2011) *Diabetes Community Health Profile – An Overview Leicestershire County and Rutland* Diabetes Health Intelligence: Yorkshire and the Humber Public Health Observatory http://yhpho.york.ac.uk/diabetesprofiles/PDF2011/5PA_Diabetes%20Profile.pdf [accessed 9th November 2011]
- ³¹ National Institute for Clinical Excellence: Type 2 diabetes the management of Type 2 diabetes: May 2008. <http://www.nice.org.uk/nicemedia/pdf/CG66NICEGuideline.pdf>
- ³² Yorkshire and Humber PHO: Diabetes Diabetes Community Health Profile - An Overview Leicestershire County & Rutland PCT. 2009 - http://yhpho.york.ac.uk/diabetesprofiles/pdf/5PA_Diabetes%20Profile.pdf
- ³³ National Institute of Clinical Excellence: Type 1 diabetes: diagnosis and management of type 1 diabetes in children, young people and adults. 2004.
- ³⁴ NHS Leicestershire County and Rutland Duty to Report Overview for 2009-10
- ³⁵ The NHS Information Centre (2011) National Diabetes Audit 2009 -10 http://www.ic.nhs.uk/webfiles/Services/NCASP/Diabetes/200910%20annual%20report%20documents/National_Diabetes_Audit_Executive_Summary_2009_2010.pdf [accessed 16th November 2011]
- ³⁶ Department of Health (2001). *National service framework for diabetes* www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/Browsable/DH_4096591[accessed 16th November 2011]
- ³⁷ Office for National Statistics (2011) Deaths registered in England and Wales 2010, by cause http://www.ons.gov.uk/ons/dcp171778_239518.pdf [accessed 17th November 2011]
- ³⁸ The NHS Information Centre for Health and Social Care (2011) Quality and Outcomes Framework 2010/11 http://www.ic.nhs.uk/webfiles/publications/002_Audits/QOF_2010-11/England_Level_tables/QOF1011_National_Clinical.xls [accessed 17th November 2011]
- ³⁹ Shahab L, Jarvis MJ, Britton J et al. Chronic obstructive pulmonary disease: Prevalence, diagnosis and relation to tobacco dependence of chronic obstructive pulmonary disease in a nationally representative population sample. *Thorax* 2006; 61(12):1043-1047
- ⁴⁰ The NHS Information Centre (2011) Statistics on Smoking: England, 2011 http://www.ic.nhs.uk/webfiles/publications/003_Health_Lifestyles/Statistics%20on%20Smoking%202011/Statistics_on_Smoking_2011.pdf [accessed 17th November 2011]
- ⁴¹ Trupin L, Earnest G, San Pedro *et al* (2003) The occupational burden of chronic obstructive pulmonary disease. *European Respiratory Journal* 22;462-469
- ⁴² Gilliland FD, Berhane K, McConnell R *et al* Maternal smoking during pregnancy, environmental tobacco smoke exposure and childhood lung function. *Thorax* 2000; 55:271-276
- ⁴³ Simpson CR, Hippisley-Cox J & Sheikh A (2010) Trends in the epidemiology of chronic obstructive pulmonary disease in England: a national study of 51804 patients *Brit J Gen Pract* July 2010;e277-284 doi:10.3399/bjgp10x514725 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2894402/pdf/bjgp60-e277.pdf> [accessed 17th November 2011].
- ⁴⁴ The NHS Information Centre for Health and Social Care (2011) Mortality from bronchitis, emphysema and other COPD (ICD10 J40-J44) <https://indicators.ic.nhs.uk/webview/>
- ⁴⁵ Eastern Public Health Observatory (2008) Modelled estimates and projections for COPD, CHD, Hypertension and Stroke in England <http://www.erpho.org.uk/viewResource.aspx?id=17905> [accessed 23rd November 2011]
- ⁴⁶ National Institute for Clinical Excellence: COPD quality standard. 2011. - <http://www.nice.org.uk/media/714/EC/COPDQualityStandard.pdf>
- ⁴⁷ Department of Health (2010) *Consultation on a Strategy for Services for Chronic Obstructive Pulmonary Disease (COPD) in England Draft Equality Impact Assessment* http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_112990.pdf [accessed 18th November 2011]
- ⁴⁸ Burney, P. and Jarvis, D. *The burden of COPD in the UK*. NHS National Library for Health: Respiratory Specialist Library, 2006
- ⁴⁹ Halbert RJ, Isonaka S, George D, Iqbal, A Interpreting COPD prevalence estimates: what is the true burden of disease?. *Chest*, 2003; 123(5):1684-92.)
- ⁵⁰ National Service Framework for Long Term Conditions: DH 2005 at http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_410536_9.pdf
- ⁵¹ The National Collaborating Centre for Chronic Conditions. Multiple Sclerosis: National clinical guideline for diagnosis and management in primary and secondary care - <http://www.nice.org.uk/nicemedia/live/10930/46699/46699.pdf>
- ⁵² NHS Choices: Motor Neurone Disease: <http://www.nhs.uk/conditions/motor-neurone-disease/pages/introduction.aspx>
- ⁵³ National Institute for Clinical Excellence: Parkinson's Disease: diagnosis and management in primary care. National cost-impact report 2006 - <http://www.nice.org.uk/nicemedia/live/10984/30093/30093.pdf>
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