

Diabetes

Introduction

Diabetes is a chronic disease that occurs when pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces, leading to hyperglycaemia (raised blood sugar). Hyperglycaemia, if uncontrolled, has a potential to cause severe damage to many of the body's organs and systems, by affecting nerves and blood vessels¹.

In the short term, hyperglycaemia can go entirely unnoticed or can cause symptoms of increased thirst, frequent urination, hunger or weight loss. However, it is its long-term complications, such as damage to the eyes, kidneys, nerves and cardiovascular system (causing heart attacks, stroke and impaired circulation) that are the main cause of morbidity and disability, or even mortality, in diabetes.

Studies have shown that good metabolic control, by keeping blood sugar within healthy limits, can delay or even prevent these complications.

Diabetes is one of the most common of all chronic medical conditions, and represents a significant problem for the health services. It is responsible for up to 5 years loss in life expectancy and is the commonest cause of amputations, blindness, and end-stage renal failure².

There are two main types of diabetes:

Type 1 diabetes (T1D) usually develops in childhood and adolescence and patients require lifelong insulin injections for survival.

Type 2 diabetes (T2D) usually, but not exclusively, develops in adulthood and is related to obesity, physical inactivity, and unhealthy diet. This is the more common type of diabetes (representing 90% of cases worldwide) and treatment may involve lifestyle changes and weight loss alone, oral medications or insulin injections. Rising rates of obesity and overweight in childhood have been linked to increase of T2D diagnosis in younger age groups.

About this briefing

The briefing is part of the Leicester JSNA and is intended to give an overview, based on current available information, of the issues involved and links to further sources of information. This briefing will be reviewed at least annually and we welcome your comments and suggestions for improvement. Please send your comments to Sandie.Harwood@leicester.gov.uk or telephone 0116 454 2023.

If you would like to join the JSNA email group and be kept up to date with changes and additions to the JSNA webpages, please contact Sandie Harwood: Sandie.Harwood@leicester.gov.uk

This briefing is not statement of policy of either Leicester City Council or Leicester City Clinical Commissioning Group, nor the Leicester Health and Wellbeing Board.

Another important type is **gestational diabetes**, which is a state of hyperglycaemia developing during pregnancy. If undetected and untreated, this condition may give rise to difficulties at birth (babies are commonly large for gestational age), premature birth, jaundice or low blood sugar in newborn babies of the affected mothers.

Diabetes care is typically complex and includes necessary lifestyle changes, pharmacological treatment, as well as controlling any side-effects of medical therapy. This makes self-monitoring and patient education crucial to effective disease management. There is convincing evidence that effective blood sugar control and reduction of risk factors for cardiovascular disease lead to significant improvement in outcome for patients.

Who's at risk and why?

Diabetes is a national health priority and is of a particular importance in Leicester, owing to its high prevalence locally. It is associated with significant morbidity and early mortality, and has a substantial impact on health care costs in the UK, accounting for 10% of the NHS budget for England and Wales.³

Although all adults are at risk of developing type 2 diabetes, some population groups are particularly affected¹. The main risk factors include:

- Age - type 1 diabetes is usually diagnosed in childhood whilst Type 2 diabetes is more prevalent in people aged 45 years and over (over 25 if you're South Asian).
- Family history - a close family member with diabetes (a parent, brother or sister).
- Obesity and overweight - waist size of over 80cm (31.5 inches) for women and 94 cm (37 inches) for men, or 89 cm (35 inches) for South Asian men.
- Ethnicity - South Asian, Chinese, African-Caribbean or black African origin (even if born in the UK). Diabetes prevalence is around 4 times higher in the South Asian population than the white population and tends to develop at a younger age.
- Certain medical conditions, such as cardiovascular disease, polycystic ovary syndrome (PCOS) in women, gestational diabetes or any women who had given birth to a baby of over 10 pounds, severe depression, schizophrenia or bipolar disorder, medication for these conditions can also be implicated.
- Impaired glucose metabolism, sometimes referred to as 'prediabetes', reflected in above normal average blood glucose concentration or abnormal blood glucose after fasting.

Deprivation - risk of diabetes is greater in the areas of higher socio-economic deprivation, which can be partly explained by higher levels of obesity and smoking and lower levels of physical exercise and consumption of fruit and vegetables.

The level of need in the population

Prevalence and Incidence

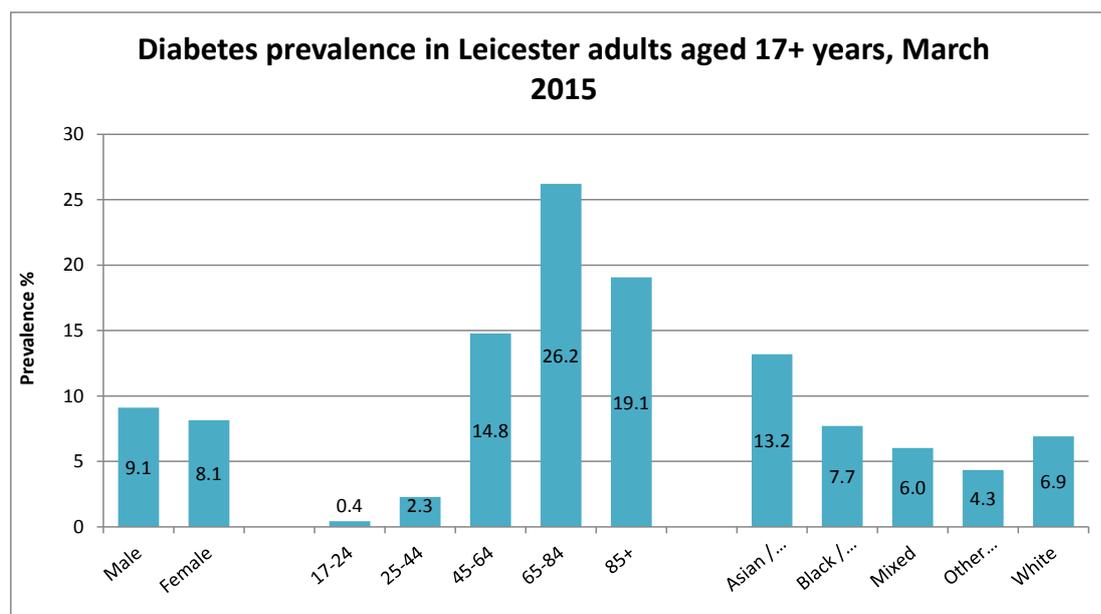
In March 2015, there were 26,432 patients registered on the primary care diabetes Quality and Outcomes Framework (QOF) registers across the 63 practices.

Based on GP register data, Leicester has a higher prevalence of diabetes in its adult population (over 17+ years) - 8.9% compared to 6.4% nationally⁴, with 93% of people with diabetes having T2D.

Approximately 22,000 (86%) of these patients are currently managed in primary care and the remaining patients are under the care of the acute service and Integrated Community Diabetic Service.

It is estimated that every year there are approximately 1,000 new cases of diabetes in Leicester City.

Figure 1: Diabetes prevalence in Leicester adults aged 17+ years, March 2015



Data: SystmOne, March 2015

Figure 1 above shows that diabetes prevalence in Leicester is:

- More common in older ages where around 1 in 4 people aged over 65 has diabetes;
- At a rate in the Asian population which is four times as high as in the White population, after adjusting for difference in age structure of these two populations.

Emergency hospitalisation:

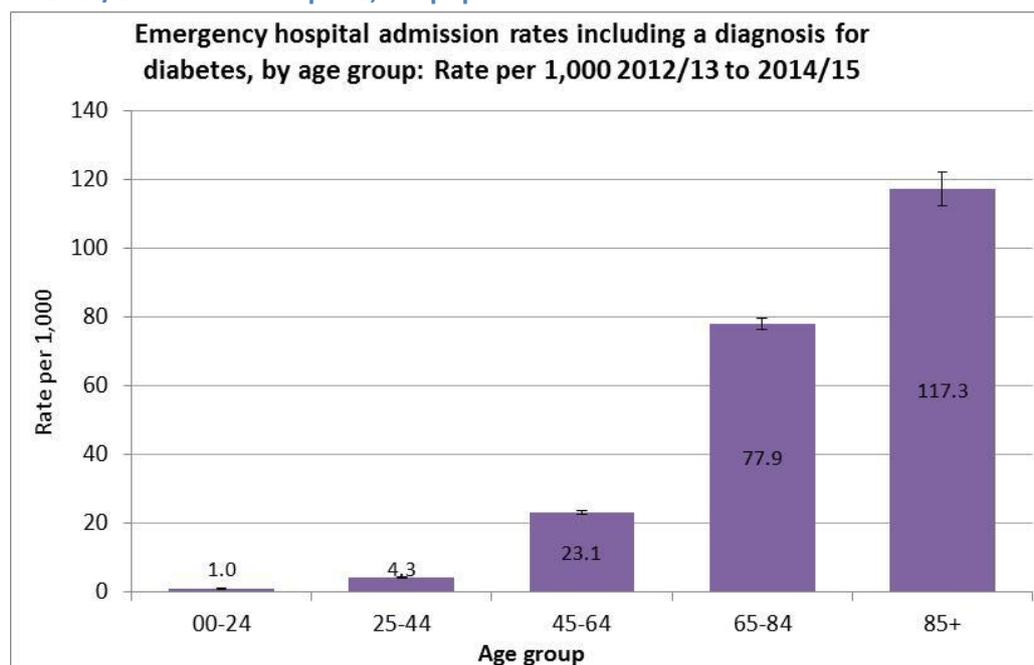
A proportion of patients with diabetes will inevitably require emergency hospitalisation at some point in their lives. However, there is increasing evidence that higher rates of such admissions, particularly when accompanied by readmissions (repeat emergency hospitalisation shortly after discharge) are an indicator of increased need for primary or specialist care in the community.

The latest available NHS benchmarking data (2012/13) indicate that the rate of emergency admission for diabetes in Leicester is very similar to the national average (30/100,000 population). However, there is a significant variation in rates across different population groups, linked to prevalence of risk factors for diabetes. Among over 6,000 diabetes emergency hospital admissions in 2014/15, the majority involved patients over 85 years of age, Asian or Asian British residents and those residing in areas of significant socio-economic deprivation.

Figures 2, 3 and 4 show emergency hospital admission rates, which include a diagnosis of diabetes, respectively by age group, ethnic group, level of deprivation and ward.

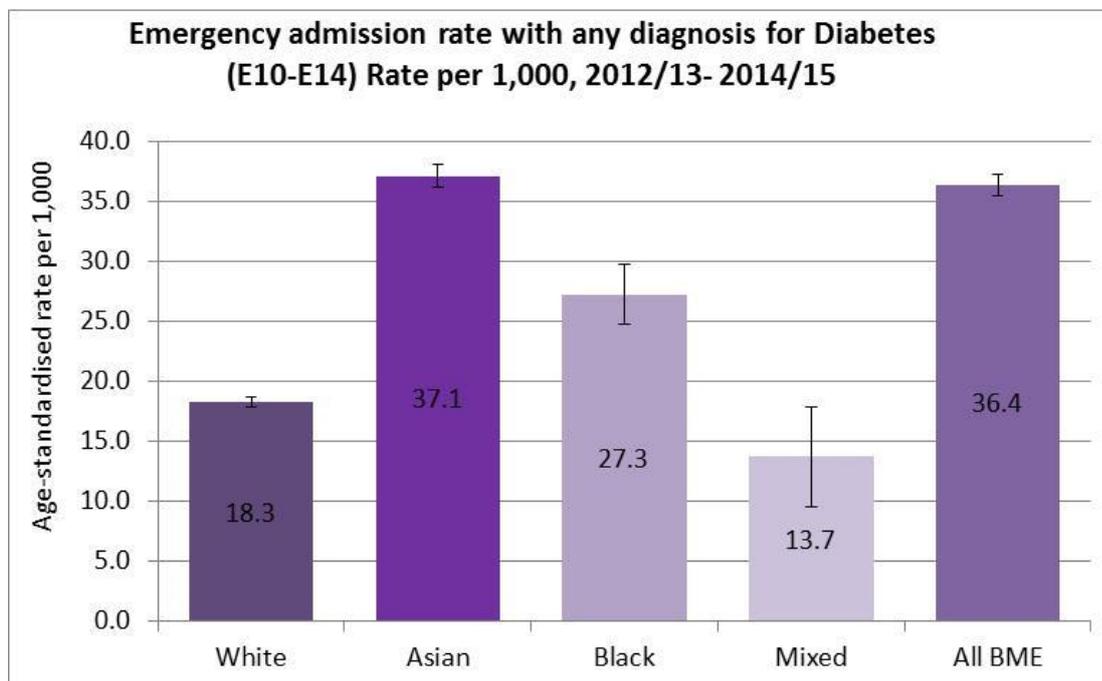
There is also a clear geographical pattern (Figure 5) of admission rates linked to high ethnicity (central Leicester) and high deprivation (western areas of the city).

Figure 2: Emergency hospital admission rates with a diagnosis of diabetes, by age group, 2012/13 to 2014/15: Crude rates per 1,000 population



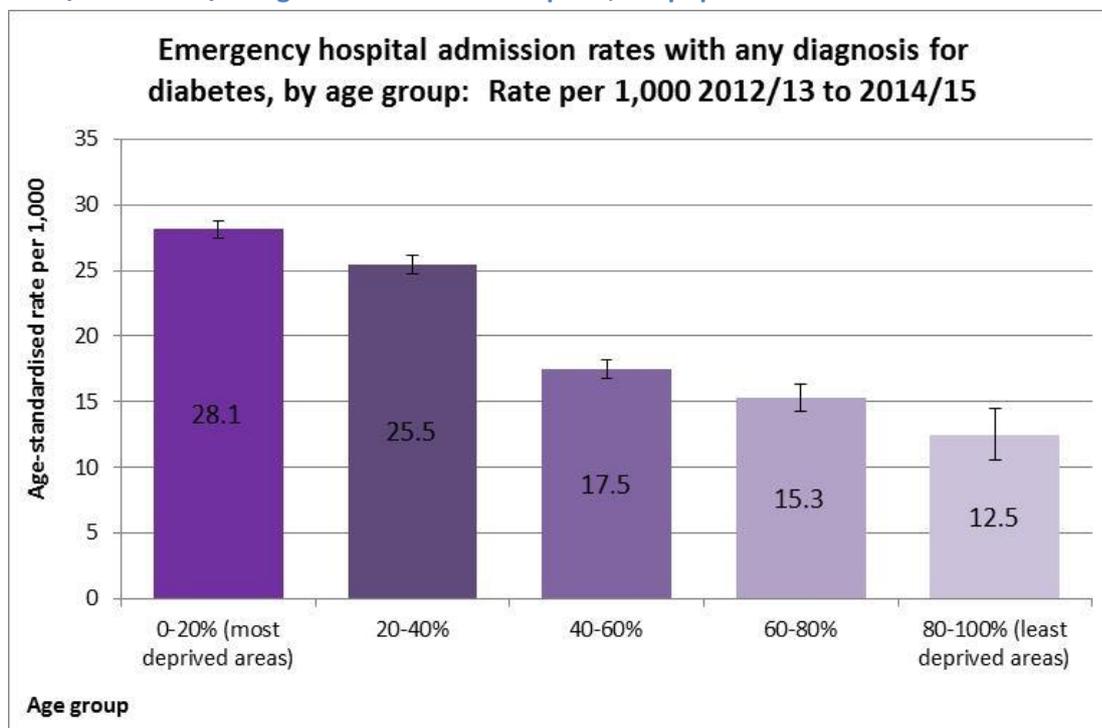
Source: Secondary Uses Service Inpatient data, ONS mid-year population estimates

Figure 3: Age-standardised emergency hospital admission rates with a diagnosis of diabetes, by ethnic group, 2012/13 to 2014/15: Age-standardised rates per 1,000 population



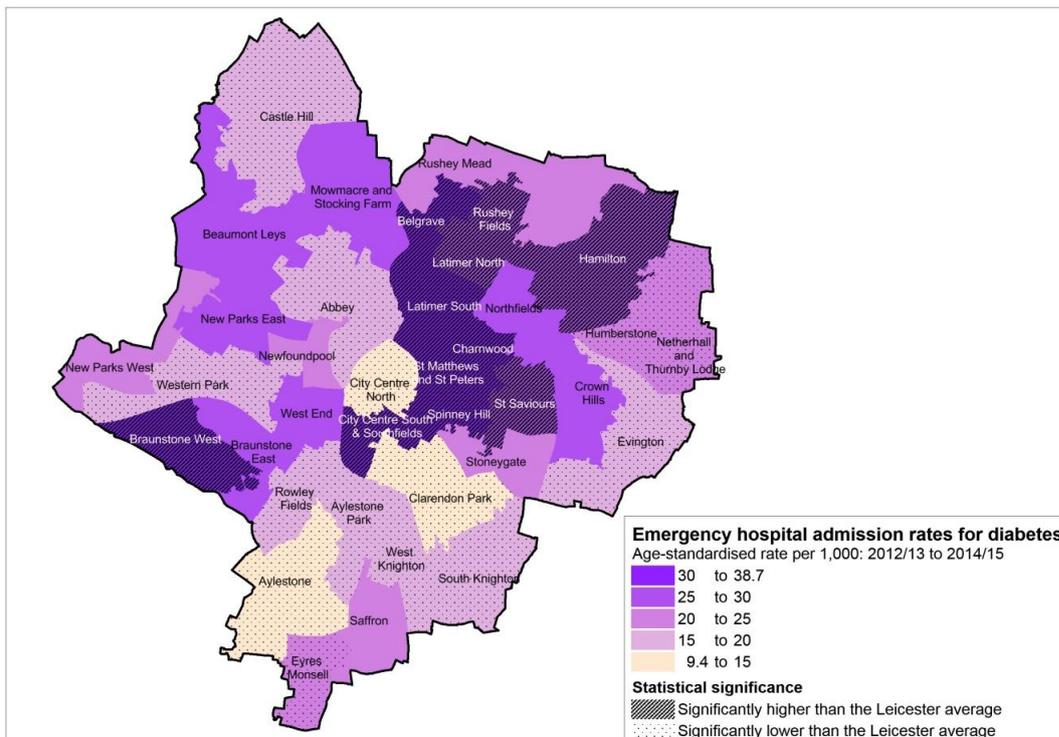
Source: Secondary Uses Service Inpatient data, ONS Census 2011 population estimates

Figure 4: Emergency hospital admission rates with a diagnosis of diabetes by level of deprivation, 2012/13 to 2014/15 Age standardised rates per 1,000 population



Source: Secondary Uses Service Inpatient data, ONS mid-year population estimates

Figure 5: Emergency hospital admission rates with a diagnosis of diabetes, 2012/13 to 2014/15
 Age standardised rates per 1,000 population



Source: Secondary Uses Service Inpatient data, ONS population estimates

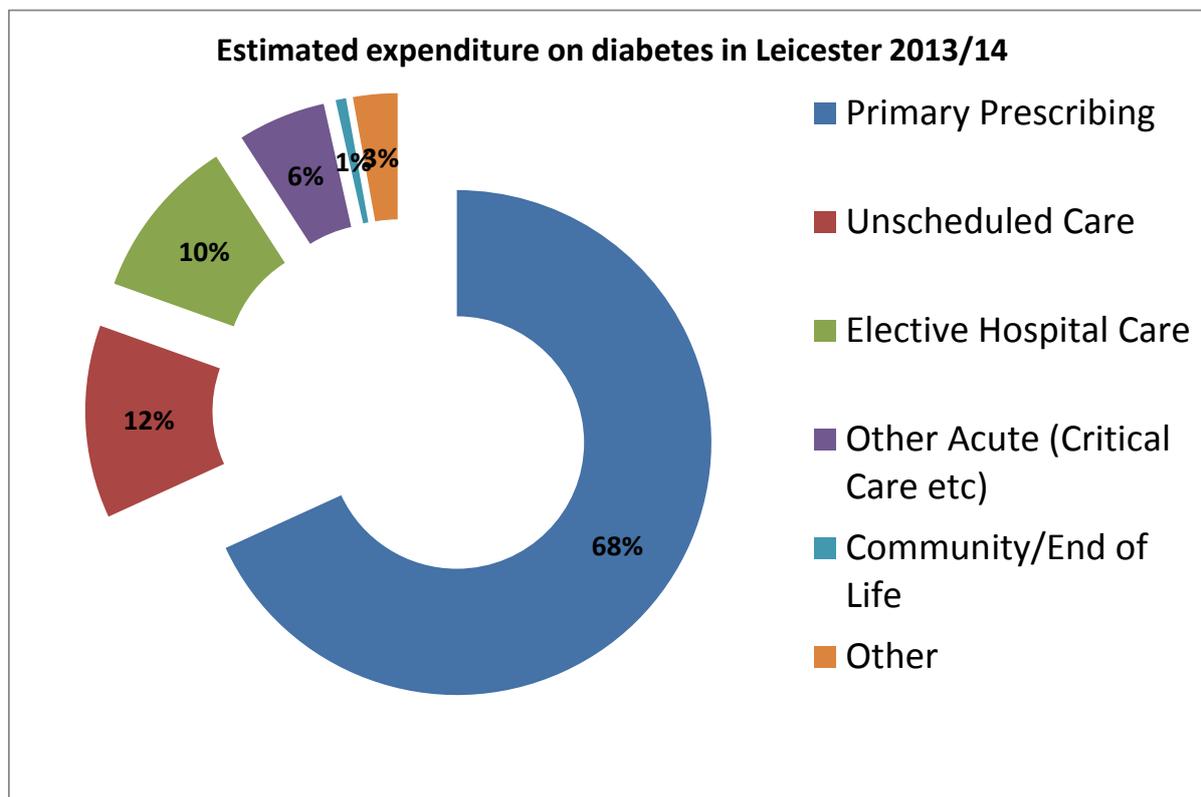
Mortality

There are around 30 deaths per year with an underlying cause of diabetes, around one-third in men and two-thirds in women.

Current services in relation to need

The majority of estimated spend on diabetes in Leicester is on primary prescribing, 68%, with 28% spent on secondary and critical care (Figure 6).

Figure 6. Distribution of spend on care for patients with diabetes in Leicester



Data: NHS Programme Budgeting

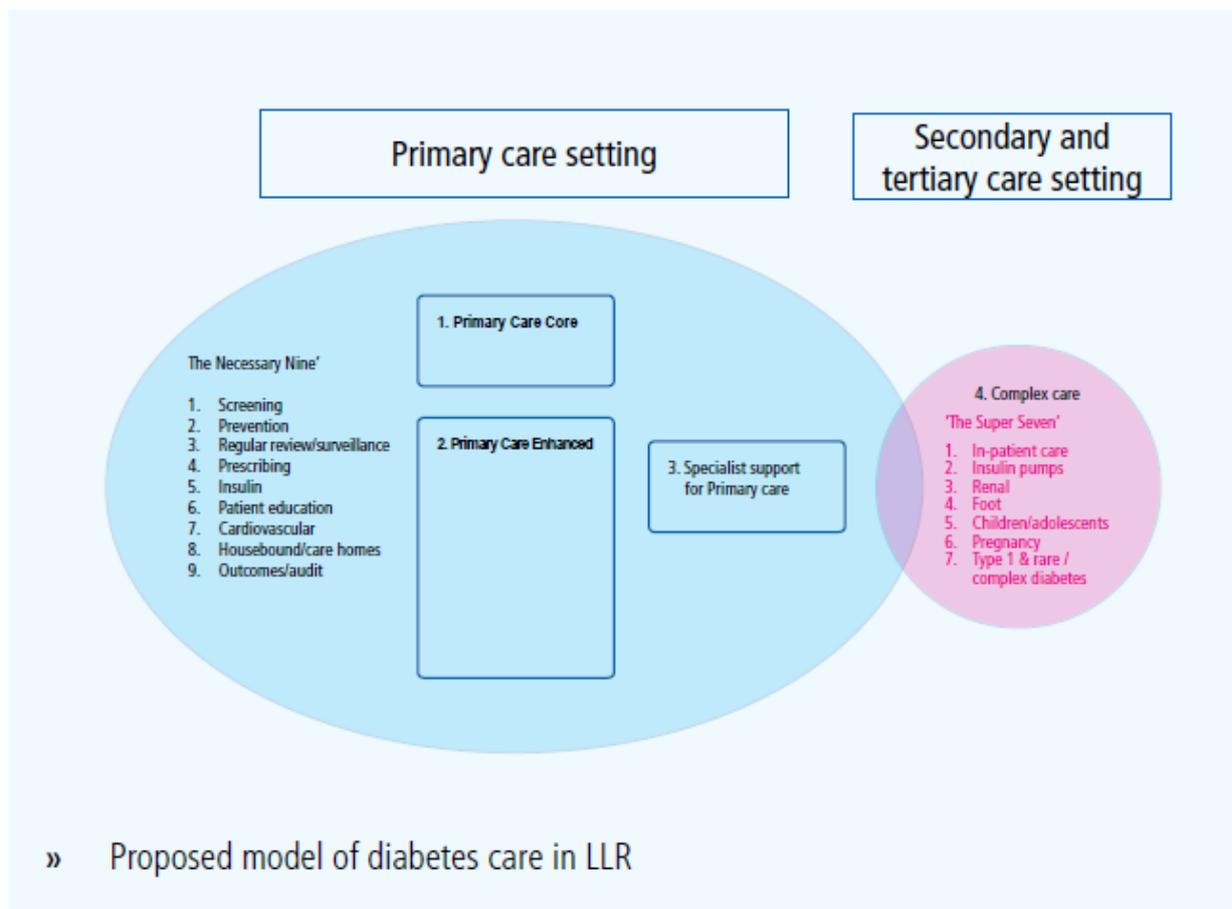
Management of diabetes

The Leicester City Clinical Commissioning Group (CCG) commissions a number of services for diabetes patients. The CCG and these services are working towards an agreed local agenda, “Transforming Diabetes Care” (April 2013), aimed at a number of highlighted challenges, such as:

- reducing clinical variation in general practice,
- improving uptake of patient education programmes,
- improving care and outcomes for patients with diabetes,
- delivering better in-patient care and
- reducing avoidable hospital admissions.

The report proposed the following model of diabetes care (Figure 7) with a large majority of care being delivered in primary care (‘Necessary Nine’), and specialist aspect (‘Super Seven’) delivered in secondary care.

Figure 7. Model of diabetes care diabetes in Leicester, Leicestershire and Rutland



Core General Medical Services and Primary Enhanced Care

The 'Necessary Nine' aspects of care include all those suitable for provision primarily in community settings by appropriately trained General Practitioners (GPs) and Practice Nurses (PNs). Among the core services are screening, prevention, review and surveillance, prescribing and audit. The enhanced care services include insulin treatment, patient education, cardiovascular risk reduction and care for housebound or care home patients.

While all practices provide the core service to a high standard, a number of practices will also aspire to offer an enhanced level of service for their patients, including:

- GLP1 (glucagon-like peptide-1) agonist initiation in type 2 diabetes. GLP-1 receptor agonists are a newer class of T2D drugs with lower risk of causing sudden fall in blood glucose, or hypoglycaemia;
- more intensive care for patients with poor control;
- proactive care for those at risk of hospital admissions and complications and
- actively managing discharge of patients who attend acute diabetes out-patient clinics.

The third component of primary care is the Integrated Community Diabetes Service which provides a specialist, community based support for complex patients who receive only core service from their GP.

Education Programmes

Improvements in diabetes care depend on effective education for both health professionals and patients. Local educational programmes include:

The EDEN: Diabetes Structure Education for Healthcare Professionals - a competency based education and mentorship programme, designed to ensure effective care for patients with complex diabetes in the community.

The Diabetes Structured Education Service – a patient centred diabetes education for adults with Type2 diabetes through supporting them in effective self-management of their condition, including addressing the person's health beliefs, optimising their metabolic control, addressing their cardiovascular risk factors, helping them to change their behaviour and improving their quality of life. The course has language/interpreting support.

Monitoring

For people diagnosed with diabetes, there are a number of measurements that should be regularly monitored, including blood pressure (BP), cholesterol levels and blood sugars. Regular monitoring is provided by in primary care and the performance of general practice in monitoring these measures is regularly assessed and benchmarked against national figures. Table 1 below shows the level of monitoring in Leicester GP practices in 2014/15.

Although monitoring of cholesterol, HbA1c levels and foot examinations seems to be better than the England rate, where patients are exempted from the intervention, monitoring of all interventions remains worse than the England rate.

Table 1: Percentage of diabetic patients monitored within the GP Practice, 2014/15

Intervention	Leicester		England	
	% achievement net of exceptions	% patients receiving intervention	% achievement net of exceptions	% patients receiving intervention
% Blood pressure reading is 150/90 mmHg or less (last 12 months)	89.3	86.0	91.3	86.6
% Blood Pressure reading is 140/80 mmHg or less (last 12 months)	74.8	70.0	78.0	71.2
% whose last measured total cholesterol is 5 mmol/l or less (last 12 months)	77.7	71.9	80.5	70.8
% with a diagnosis of nephropathy (clinical proteinuria) or micro-albuminuria treated with	83.4	70.8	92.6	81.2
% last IFCC-HbA1c is 59 mmol/mol or less in the preceding 12 months	69.7	64.2	69.8	60.4
% last IFCC-HbA1c is 64 mmol/mol or less in the preceding 12 months	76.4	71.2	77.5	68.4
% IFCC-HbA1c is 75 mmol/mol or less (last	85.2	80.8	86.9	79.3
% with a record of a foot examination and risk classification (last 12 months)	87.0	82.3	88.3	81.5
% newly diagnosed with diabetes referred to a structured education programme within 9 months (preceding 1 April to 31 March)	87.4	53.2	90.3	66.3
% influenza immunisation (preceding 1 August to 31 March)	92.6	76.6	94.4	77.6

Source: Quality Outcomes Framework 2014/15

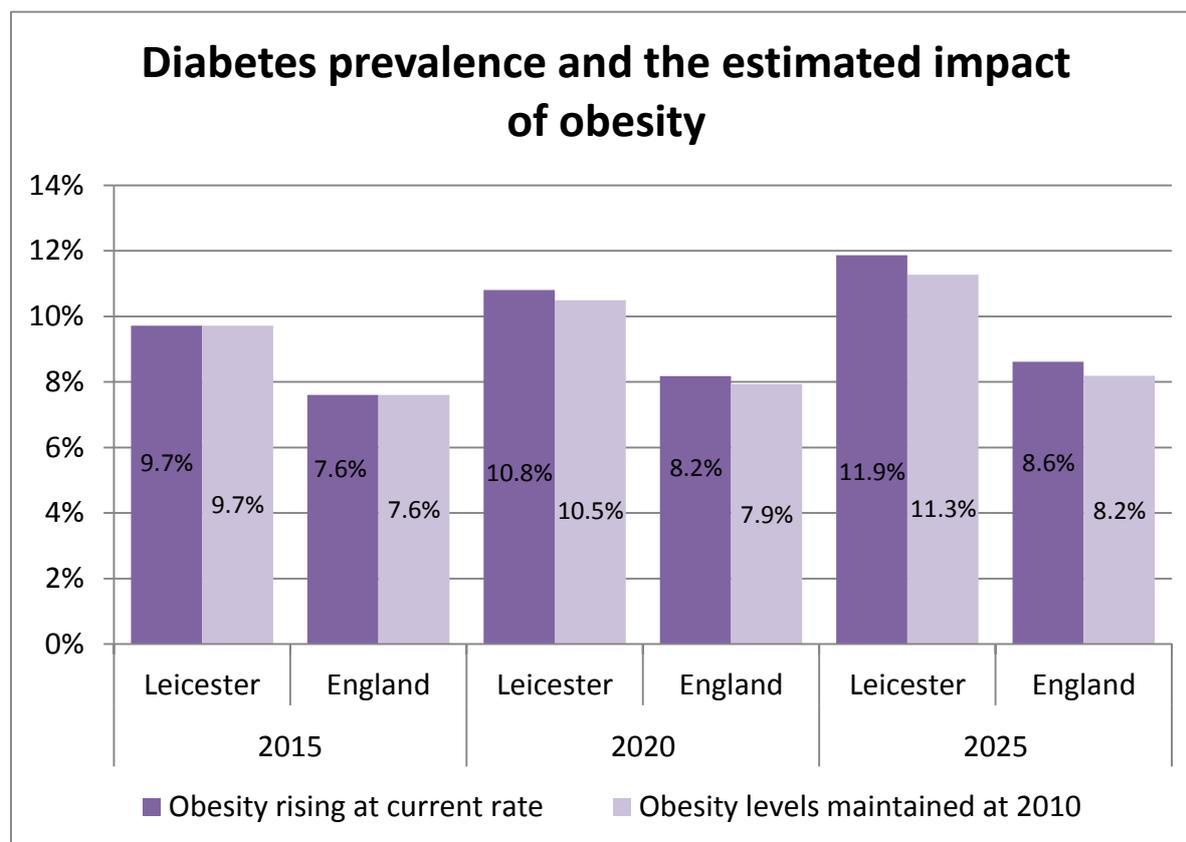
Significantly better than the England rate
Significantly worse than the England rate
Not significantly different to England

Projected services use and outcomes in 3-5 years and 5-10 years

Figure 8 below shows the estimated prevalence of diabetes in Leicester, compared to England and the impact of rise in obesity on forecasted prevalence diabetes⁵.

If current trends in population change and obesity persist, the total prevalence of diabetes in Leicester can be expected to rise to almost 12% in 2025. Across England, approximately a third of the projected rise in diabetes prevalence can be attributed to the increasing prevalence of obesity. If obesity levels in Leicester remained at 2010 rates, there would be nearly 1,700 fewer people with diabetes in 2025.

Figure 8: Estimates of diabetes prevalence and the impact of obesity



Source: Yorkshire and Humber Public Health Observatory:
<http://www.yhpho.org.uk/diabetesprevtale/default.aspx>

Unmet needs and service gaps

Unlike other disease areas, Leicester's detection of diabetes is more in line with predictive prevalence, with the GP registration rate now exceeding the epidemiological estimates derived from national prevalence data. It is thus likely that the majority of people with diabetes in Leicester have been diagnosed and are receiving care.

However, variation in hospital admission rates, particularly emergency hospitalisation, may be an indication of a need for further patient education and better support for clinicians to deliver more targeted care and develop and maintain their skills.

Recommendations for consideration by commissioners

Commissioners are recommended to:

- Work with all stakeholders to ensure main risk factors for diabetes are addressed through effective health improvement programmes, including action on obesity, diet and physical exercise programmes.
- Improve awareness of lifestyle factors in the development and management of diabetes in the general population and particularly in high-risk groups.
- Investigate and understand existing variation in care – particularly emergency hospitalisations.
- Work closely with Leicester's healthcare providers to develop and deliver effective education programmes to patients, their families and providers to ensure effective disease management.

Key contacts

Jeremy Bennett, Strategy and Implementation Officer, Leicester City CCG

Jeremy.bennett@leicestercityccg.nhs.uk

Hannah Hutchinson, Senior Implementation manager, Leicester City CCG

Hannah.hutchinson@leicestercityccg.nhs.uk

Helen Reeve, Principal Public Health Analyst, Leicester City Council

Helen.Reeve@Leicester.gov.uk

References

¹ NHS Choices: <http://www.nhs.uk/Conditions/Diabetes-type2/Pages/Introduction.aspx>

² National Service Framework for Diabetes. 2001. Department of Health.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/198836/National_Service_Framework_for_Diabetes.pdf

³ Cost of Diabetes. Diabetes UK. <http://www.diabetes.co.uk/cost-of-diabetes.html>

⁴ Quality outcomes framework, 2014-15: <http://www.hscic.gov.uk/qof>

⁵ Yorkshire and Humber Public Health Observatory: <http://www.yhpho.org.uk/diabetesprevtale/default.aspx>