

## Section 4: Burden of ill-health: general health

# Diabetes



a single version of the truth



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<a href="#">Healthy eating &amp; physical activity</a>	Children and young people
<a href="#">Cardiovascular disease (CVD)</a>	Burden of ill-health: general health
<a href="#">Long term conditions</a>	Burden of ill-health: general health
<a href="#">Obesity</a>	Health promotion and preventative services
<a href="#">Physical activity and healthy eating</a>	Health promotion and preventative services
<a href="#">Screening</a>	Health promotion and preventative services

## Edition

Edition	Version no.	Changes/Comments
2012/13	1	
2013/14	1	

## Outcome Frameworks Summary

The Public Health Outcomes Framework for England, 2013-2016<sup>1</sup> outlines the overarching vision for public health as “to improve and protect the nation’s health and wellbeing, and improve the health of the poorest fastest”. The NHS Outcomes Framework<sup>2</sup> set out how the improvement of healthcare outcomes for all will be the primary purpose of the NHS. The Clinical Commissioning Group Outcomes Indicator set (CCGOIS) measures the health outcomes and quality of care achieved by clinical commissioning groups<sup>3</sup>. The following indicators from these frameworks are relevant to this section.

Framework	Reference	Indicator
Public Health	1.16	Utilisation of green space for exercise/health reasons
Public Health	2.6	Excess weight in 4-5 and 10-11 year olds
Public Health	2.11	Diet
Public Health	2.12	Excess weight in adults
Public Health	2.13	Proportion of physically active and inactive adults
Public Health	2.17	Recorded diabetes
Public Health	2.21 (vii)	% offered diabetic retinopathy screening who attend a digital screening event
Public Health	2.22	Take up of the NHS Health Check programme – by those eligible
Public Health / NHS	4.4 / 1.1	Mortality from cardiovascular diseases
Public Health	4.12	Preventable sight loss
NHS	2	Health-related quality of life for people with long-term conditions
CCGOIS	1.1	Myocardial infarction, stroke & stage 5 kidney disease in people with diabetes
CCGOIS	2.2	People with diabetes who have received nine care processes
CCGOIS	2.2	People with diabetes diagnosed less than one year referred to structured education
CCGOIS	2.3	Complications associated with diabetes including emergency admission for diabetic ketoacidosis and lower limb amputation

## Executive summary

The Public Health importance of Diabetes is becoming increasingly recognised. Its prevalence both nationally and in Wiltshire is rising, and spending on diabetes care currently accounts for around 10% of the national NHS budget but is set to rise as the prevalence increases. Early diagnosis and subsequent patient education and careful management are vital to reduce morbidity and mortality from diabetes and its associated conditions. 9 NICE key care processes have been identified for comprehensive diabetes service provision, and Wiltshire's performance across these leaves room for improvement.

## Why this area is important

Diabetes is a chronic, progressive disease which can cause substantial morbidity and premature mortality. There are currently 2.5 million people in the UK living with Diabetes, and this figure is projected to rise to 5 million by 2025<sup>4</sup>.

90% of Diabetes is Type II, a preventable condition that develops typically in older people when the body's ability to make, or use, insulin is diminished. In contrast, Type I Diabetes develops in younger people under 40 and is not a preventable condition.

Diabetes places a heavy burden on UK health services, currently accounting for around 10% of the total NHS budget<sup>4</sup>, and around 19% of hospital inpatients at any one time. It has been estimated that 80% of diabetes related spend is on potentially preventable conditions<sup>5</sup>. Being overweight or obese is the main contributing factor for type 2 diabetes. In addition, having a large waist circumference increases the risk of developing type 2 diabetes:

- Men are at high risk if they have a waist circumference of 94–102 cm (37–40 inches). They are at very high risk if it is more than 102 cm.
- Women are at high risk if they have a waist circumference of 80–88 cm (31.5–35 inches). They are at very high risk if it is more than 88 cm.

Without careful management of diabetes involving good blood sugar control life expectancy can be reduced by between 6 to 20 years<sup>6</sup>. It is associated with 75,000 deaths annually<sup>7</sup>, and also leads to an increased risk of developing severe complications and co-morbidities, notably kidney failure, cardiovascular disease, amputations and blindness. These can impact hugely on quality of life, independence and people's ability to work. With early diagnosis and effective health education and management many complications are avoidable. However, late diagnosis is common and it is estimated that up to 50% of people with type II Diabetes show signs of complications upon diagnosis<sup>8</sup>.

The National Service Framework for Diabetes<sup>9</sup> was produced in 2001, and provided a vision for diabetes service development to 2013.

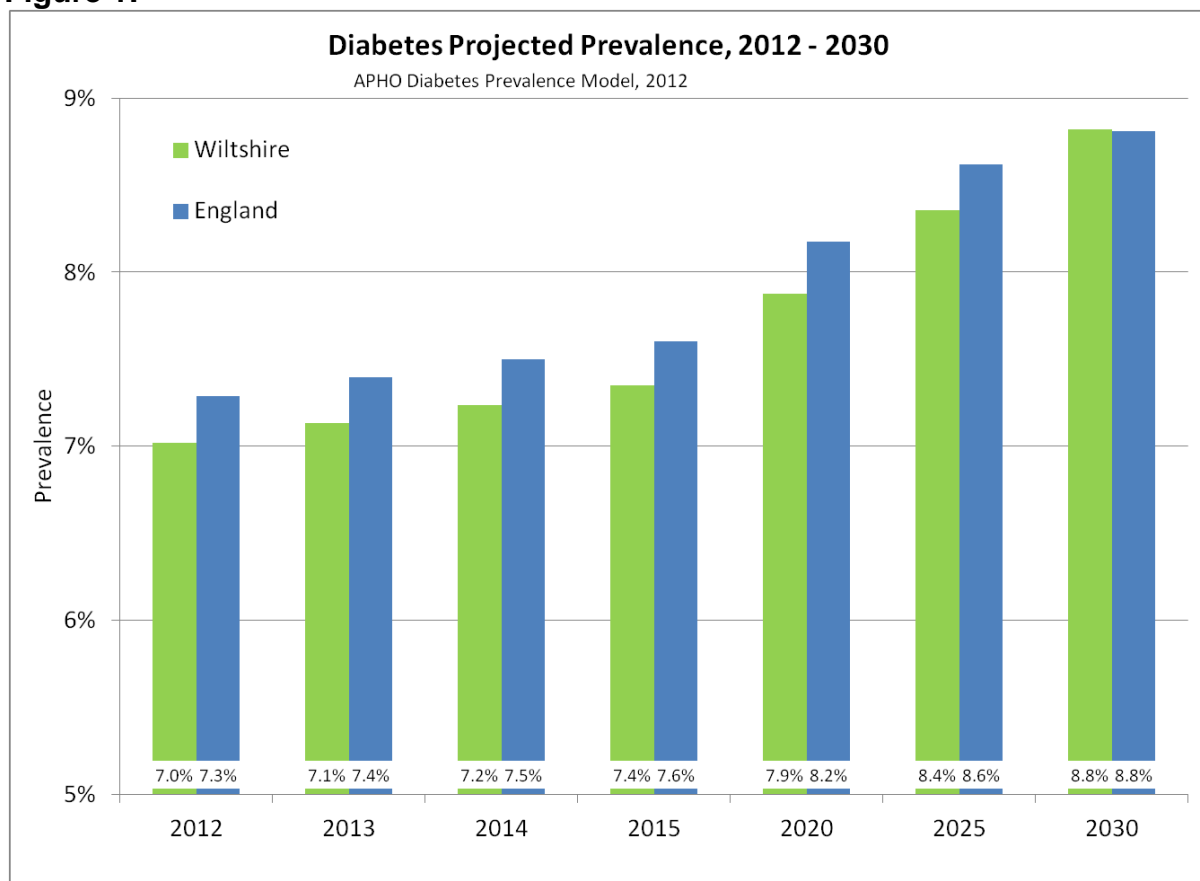
## What are the needs of the population?

In 2012/13, there were 20,860 people aged 17 or over living with Diabetes (type 1 or 2) in Wiltshire, representing 5.4% of the GP registered population\*<sup>10</sup>. In spite of Wiltshire's older population this is a lower prevalence than that found nationally (5.8%). Prevalence varied across GP Practices from 4.0% to 7.2%. Further investigation could reveal if this variation is explained by demographic differences across practice populations, or represents other factors, for example lifestyle differences or access to services.

However, the true prevalence to include those living with undiagnosed diabetes in Wiltshire is estimated to be 7.0%, and this is projected to rise<sup>11</sup>. This would mean there are 6,700 adults with undiagnosed Diabetes in Wiltshire. Figure 1 shows the projected total prevalence of diabetes in Wiltshire and England to 2030<sup>11</sup>. Prevalence in Wiltshire is projected to rise to 8.8%.

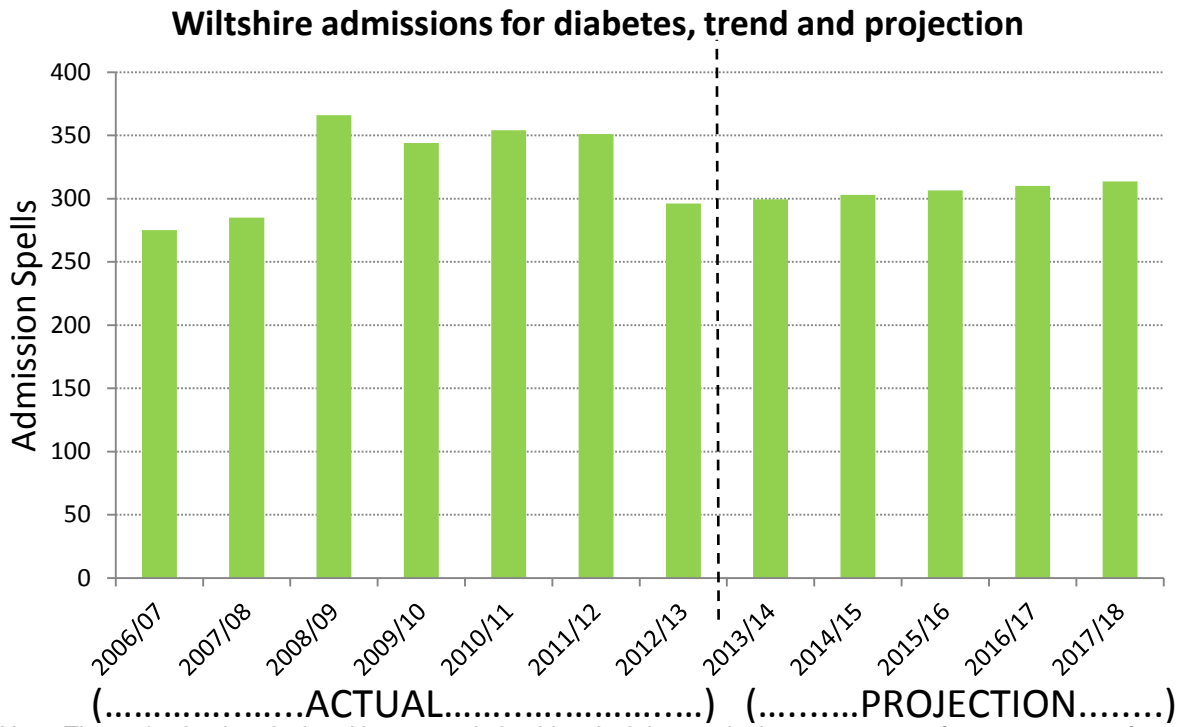
'Recorded Diabetes,' a prevalence measure, will constitute one of the new Public Health Outcomes Framework indicators.

**Figure 1:**



As Figure 2 shows, over 2006/07 to 2012/13 diabetes admissions increased by 7.6% in Wiltshire, from 275 to 296 admissions. Average length of stay per admission was 9.1 days. Mirroring prevalence, based on this trend admissions are projected to increase a further 17.5% by 2017/18, to reach 313 per year.

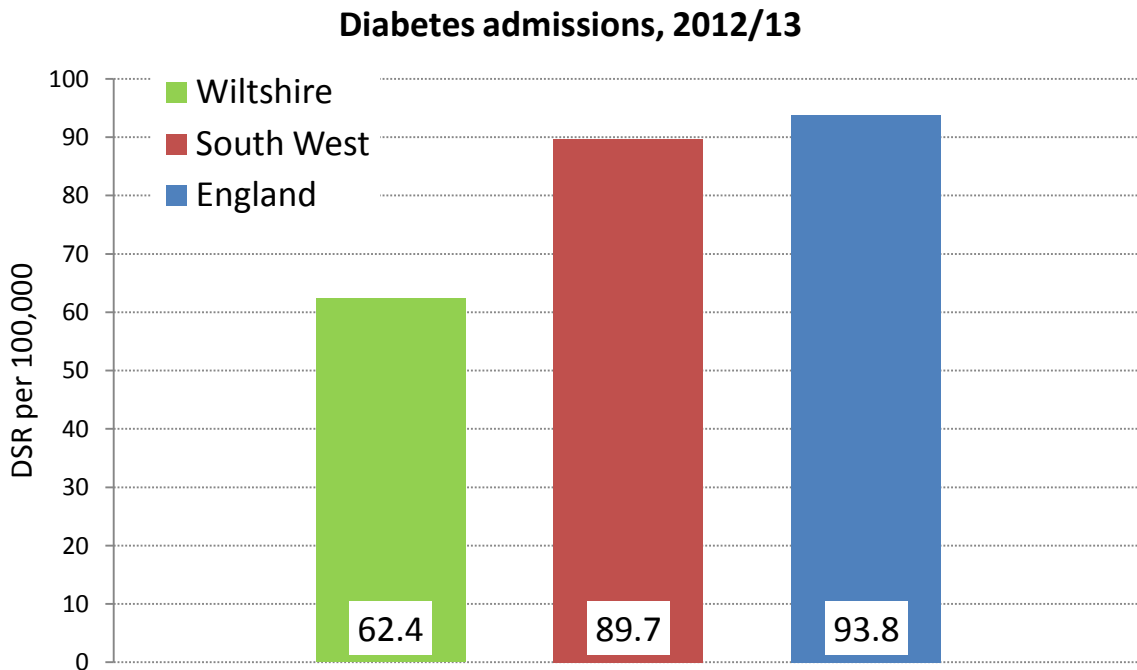
**Figure 2:**



*Note: The projection is calculated by extrapolating historical data and takes no account of past, present or future activities that may impact on its trajectory.*

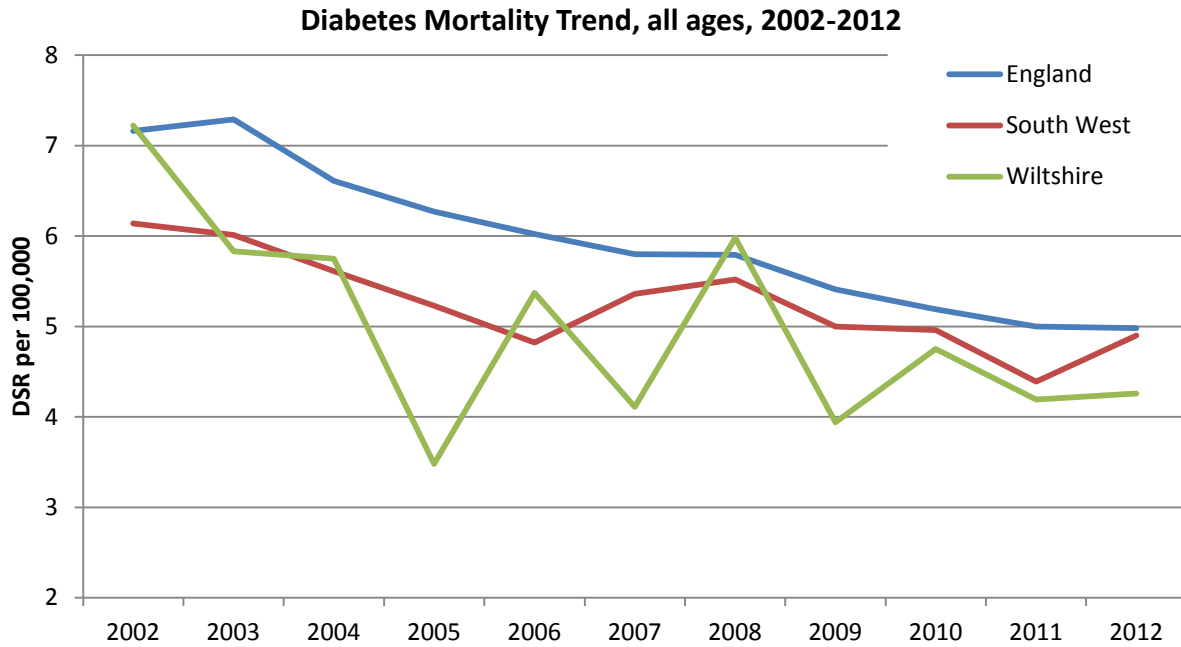
However, admissions in Wiltshire were lower over 2012/13 than either the South-West, or England (Figure 3).

**Figure 3:**



In 2012 36 people in Wiltshire died of diabetes. Diabetes mortality rates have fallen in Wiltshire, mirroring the trend observed in the South West and England (Figure 4).

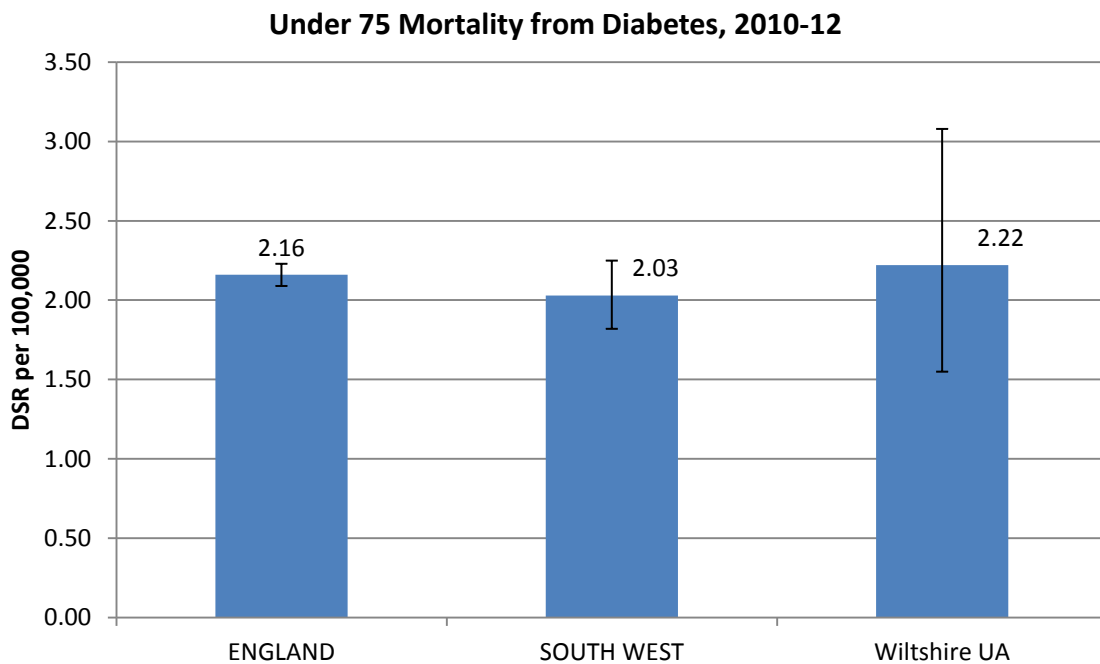
**Figure 4:**



Source: <https://indicators.ic.nhs.uk/>

Premature mortality rates in 2010/12 are similar to those of the South West and England (Figure 5)<sup>12</sup>.

**Figure 5:**



Source: <https://indicators.ic.nhs.uk/>

## Complications

Co-morbidities due to complications are a key challenge of diabetes management. Table 1 shows the standardised ratio of complications amongst diabetes patients in 2011-12, in Wiltshire compared to England for a range of conditions.

**Table 1: Standardised ratio of diabetic complications**

Complications	Wiltshire CCG	England & Wales	Expected
Stroke	148	134	As expected
Myocardial infarction	162	155	As expected
Angina	178	176	As expected
Heart Failure	182	173	As expected
Major Amputation	323	321	As expected
Renal replacement therapy	350	264	Higher than expected
Minor Amputation	511	437	As expected

In Wiltshire most complications are at expected levels. However, renal replacement therapy occurs more frequently than expected.

### Diabetic retinopathy

Retinopathy (damage to the retina of the eye) can affect anyone with diabetes, and people with diabetes are 25 times more likely to become blind than the general population<sup>13</sup>. As a result a national programme offers people eye screening upon diagnosis with diabetes, and every year thereafter. The performance of Wiltshire's screening service places it in the top national quintile<sup>14</sup>. Over 2011/12 93.0% of the eligible Wiltshire diabetic population received screening, higher than the South West (92.7%) and England (91.9%).

### Diabetic foot disease / amputations

From 2009/10 to 2011/12 there were 1,311 episodes of care for diabetic foot disease in the Wiltshire Clinical commissioning area. This represents a rate of 23.0 per 1,000 people aged 17 plus with diabetes, significantly higher than the England rate of 18.3 per 1,000. The amputation rate among this group was also statistically significantly higher in Wiltshire (3.2 per 1,000) than England (2.6 per 1,000). For further information see the Wiltshire Diabetes Foot Disease profile:

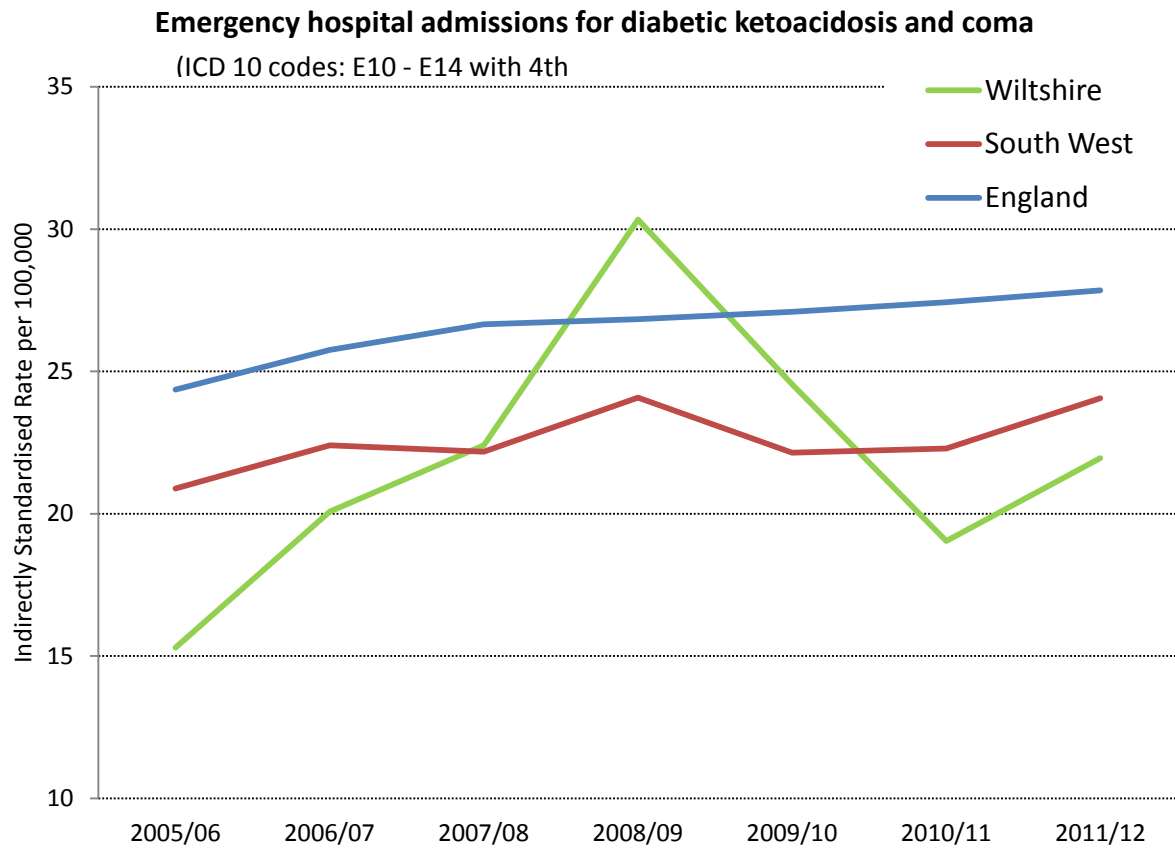
<http://www.yhpho.org.uk/diabetesprofilesfoot/default.aspx>

### Diabetic ketoacidosis and coma

Diabetic ketoacidosis and coma, caused by a shortage of insulin, are both potentially fatal consequences of type 1 diabetes, although they are preventable through effective management. Rates in Wiltshire seem to have fallen over recent years (Figure 7). They reached their highest in 2008/09 and were higher than in the South West, and both the South West and England. However, the differences observed are not statistically significant<sup>12</sup>.



**Figure 6:**



Source: <https://indicators.ic.nhs.uk/>

## Chronic kidney disease

Chronic kidney disease is a common complication of diabetes.

The kidney disease clinical commissioning group (CCG) profile for NHS Wiltshire CCG<sup>15</sup> presents a wide range of information on kidney disease in adults including:

- In 2011/12 there were 12,757 people aged 18 years and older included on the QOF CKD registers in Wiltshire CCG, this represents 3.4% of the 18+ CCG population which is lower than England (4.3%) and the South West (4.8%)<sup>16</sup>. The prevalence range across GP practices was from 0.2 to 7.0%. It is estimated that there are 14,410 people with CKD in the CCG who are currently undiagnosed.
- Wiltshire CCG improved to some degree across six of the eleven CKD and CKD-associated QOF clinical achievement indicators between 2010/11 and 2011/12. There is a wide variation in the achievement of these indicators at practice level within the CCG.
- It is estimated that the annual primary care expenditure directly attributable to CKD in Wiltshire CCG is £2,277,064 and the total direct cost of CKD in primary and secondary care is estimated to be £10,117,418.

For further information on kidney disease see the Atlas of Variation in Healthcare for People with Kidney Disease; this highlights 18 of the many potential indicators relating to kidney care: <http://www.rightcare.nhs.uk/index.php/atlas/kidneycare>

## Population at risk

Lifestyle factors are strongly associated with diabetes onset and progression. Obesity has been attributed to 47% of Type 2 diabetes in England, and low physical activity, poor diet and nutrition have all been linked with the disease. Deprivation is strongly linked with such factors, and diabetes prevalence has a strong socio-economic gradient from most to least deprived (Figure 8).

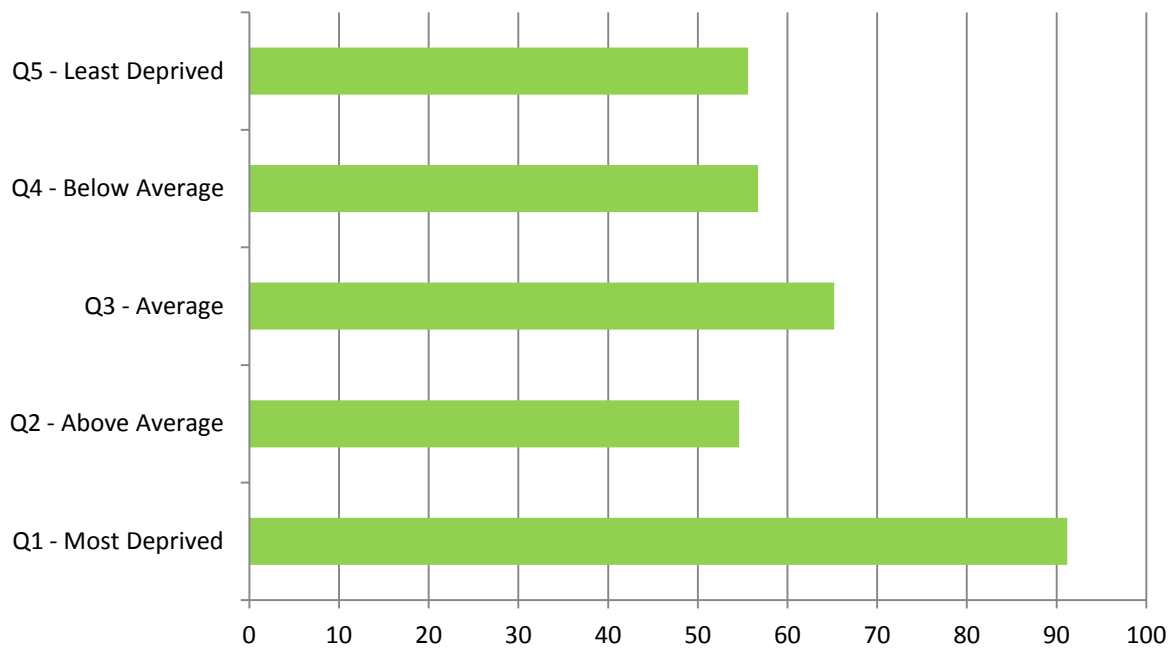
**Figure 7:****Standardised Admissions Ratio for Diabetes by Wiltshire Deprivation Quintile, 2012/13**

Figure 8 above shows the diabetes ratio for Diabetes standardised for age and sex. Even when looking at admission rates that have not been standardised the most deprived quintile has a much higher rate (89.2 per 100,000) than in the least deprived (51.6 per 100,000) over 2012/13.

In terms of risk factors those from black and Asian backgrounds are more likely to be diagnosed with diabetes than the general population. Age and family history are also associated.

Lifestyle change can delay or prevent the onset and progression of Type II diabetes, and early diagnosis and integrated care can reduce the impact and severity of diabetes and its complications. Therefore effective service provision and education for diabetes is vital, especially as Wiltshire's increasing prevalence means more and more people in the county will be living with the condition.

## Current service provision

Diabetes centres exist as the focus of multi-disciplinary integrated primary and secondary care in Wiltshire. All three acute trusts provide specialist services.

## Action for Diabetes

NHS England has set out a vision for how it wants the growing problem of diabetes to be tackled in 2014.

The new plan, [Action for Diabetes](#), outlines how it would like to see better prevention of Type 2 diabetes, earlier diagnosis of all diabetes, and support for people to manage their diabetes better and improve their quality of life.

### **The National Service Framework for Diabetes**

The National Service Framework for Diabetes<sup>17</sup> was produced in 2001, and provided a vision for diabetes service development to 2013. The document provided 9 recommended standards for the quality of diabetes services:

- 1) Prevention of Type 2 diabetes
- 2) Identification of people with diabetes
- 3) Empowering people with diabetes
- 4) Clinical care of adults with diabetes
- 5) Clinical care of children and young people with diabetes
- 6) Management of diabetic emergencies
- 7) Care of people with diabetes during admission to hospital
- 8) Diabetes and pregnancy
- 9) Detection and management of long term conditions

### **NHS Health Checks**

The NHS Health Checks programme is a national preventative programme which is intended to help people stay healthy for longer by providing an assessment of cardiovascular risk to all 40-74 year-olds. It also empowers patients by giving them information about their health, supporting lifestyle changes and offering early interventions if required. It offers a vital opportunity to identify people at-risk of developing Type 2 diabetes and refer them for further tests as necessary, and to provide them with simple, practical and realistic steps to help reduce their risk and stay healthy.

In Wiltshire, this service is provided by all GP practices. Everyone between the ages of 40 and 74 who has not already been diagnosed a cardiovascular conditions will be invited to have a check once every five years. In Wiltshire this means inviting around 30,000 people each year. In 2012/13 nearly 30,800 people were offered a Health Check and 48% of those invited completed a health check appointment<sup>18</sup>.

For further information on NHS Health Checks see the section on [Cardiovascular Disease](#) and the [NHS Health Checks Background Information Sheet](#).

### **NICE Recommended Care Processes**

NICE has developed quality standards guidance for diabetes, including the identification of 9 key care processes. The majority of these are coordinated by primary care. Effective management and provision of these care processes can increase life expectancy, improve quality of life and reduce complications.

The National Diabetes Audit (NDA) is published each year in October. In October 2013 the latest NDA was published which reflected the 2011/12 year. This allows us to compare and contrast Wiltshire's performance against other CCGs in England and

Wales. They publish data on how each CCG performs when checking these 9 key care processes. This latest data set has removed retinal screening from its figures for the first time so it has focussed on the remaining 8 care processes. In the provisional National diabetes audit 2011/12 only 56.8% of diabetics in Wiltshire received 8 care processes (excluding retinal screening), placing it 64<sup>th</sup> from bottom out of 211 CCGs<sup>19</sup>. Wiltshire's performance for individual processes is generally good when compared to the national median (Table 1).

Monitoring also take place to ensure patients achieve their NICE recommended treatment targets for glucose control and blood pressure. In 2011/12 in Wiltshire 20.4% of patients achieved all treatment targets, compared to 20.9% nationally. This places us in the 1<sup>st</sup> and 3<sup>rd</sup> quartile.

**Table 2. Percentage of patients receiving recommended care processes, 2009/10\***

	<b>% Receiving Process</b>	<b>National Quartile Ranking (1 = high performance)</b>
<b>Blood glucose level measurement</b>	(92.8%) 82.7%	1
<b>Blood pressure measurement</b>	(95.1%) 95.5%	3
<b>Cholesterol level measurement</b>	(92.7%) 92.3%	3
<b>Retinal screening (Serum Creatinine)</b>	(94.4%) 94.3%	4
<b>Foot and leg check</b>	(84.7%) 86.4%	3
<b>Kidney function testing (urine)</b>	(71.5%) 76.6%	2
<b>Weight check (BMI)</b>	(89.3%) 90.7%	3
<b>Smoking status check.</b>	(84.0%) 85.9%	2
<b>Eight care processes</b>	(2010/11: 56.1%) 2011/12: 56.8%	2

\*reproduced from National Diabetes Audit - 2009/10; 2010/11 and 2011/12 and England & Wales Summary 2010/11

### **Diabetes Education and Self management for ongoing and newly diagnosed (DESMOND)**

This programme is delivered in Salisbury and Warminster to type 2 diabetics. The course is a nationally delivered group of structured education programmes which meet the NICE criteria. <http://www.desmond-project.org.uk/>

### **Dose Adjustment for Normal Eating (DAFNE)**

To support those with type 1 diabetes in the South of the county; the DAFNE programme educates patients to further understand the interaction between carbohydrate consumption and insulin levels.

<http://www.diabetes.co.uk/education/dafne.html>

### **X-PERT**

X-PERT Diabetes is a structured education/self-management programme for people with diabetes that serves to help them self-manage their condition, and to implement the care processes identified by NICE Guidance (NICE, 2008). It is provided to the North-West of the county. <http://www.xperthealth.org.uk/>

### **Freedom 4 Life**

Similar to DAFNE this course provides educational support to those with type 1 diabetes for the North West of the county.

[http://www.bathdiabetes.org/index2.php?section\\_id=674](http://www.bathdiabetes.org/index2.php?section_id=674)

### **What do service users / the public think?**

A two year audit of the X-PERT programme was produced in 2013 (2011/13). Wiltshire participant satisfaction score was 96.7%, slightly above the all centre average for the programme of 95%. For the indicator 'Participant empowerment' Wiltshire scored 22.2% compared to the mean score for all centres of 22.9%<sup>20</sup>.

### **What works and what resources are there?**

**Diabetes Community Health Profile for Wiltshire** – this brings together a wide range of data on diabetes in adults into a single source for benchmarking.

<http://www.yhpho.org.uk/default.aspx?RID=8470>

**Healthy Weight, Healthy Lives: A Cross Government Strategy for England (2008) Department of Health**

[http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/PublicHealth/Healthimprovement/Obesity/DH\\_082383](http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/PublicHealth/Healthimprovement/Obesity/DH_082383)

**Diabetic Retinopathy Annual Report**

<http://diabeticeye.screening.nhs.uk/annualreports>

**State of the Nation 2013** – Diabetes UK report on the current diabetes landscape in the UK. [http://uk.sitestat.com/diabetes/website-uk/s?state-of-the-nation-2013-england&ns\\_type=pdf](http://uk.sitestat.com/diabetes/website-uk/s?state-of-the-nation-2013-england&ns_type=pdf)

**NICE Type II Diabetes National clinical guideline for management in primary and secondary care (update) (2008)**

<http://www.nice.org.uk/nicemedia/live/11983/40803/40803.pdf>

**YHPHO – Diabetes A to Z** – comprehensive list of diabetes resources, and links to both national and local data sources.

<http://www.yhpho.org.uk/default.aspx?RID=91596>

**Diabetes Footcare Activity Profiles** - The Diabetes Footcare Activity Profiles have been developed to provide information on the inpatient care of people with diabetes who are admitted to hospital for a range of footcare conditions including amputation:

<http://www.yhpho.org.uk/default.aspx?RID=116836>

**NHS Kidney Care:** A range of resources for kidney care in the UK.

<http://www.kidneycare.nhs.uk/resources/>

**NHS Health Checks Programme - NHS Diabetes and Kidney Care**

<http://www.healthcheck.nhs.uk/>

**The Atlas of Variation in Healthcare for People with Diabetes –** This provides a measure of performance for Wiltshire across an array of indicators related to diabetes, and provides a means of identifying unexplained variation in performance across different areas of the UK.

<http://www.rightcare.nhs.uk/index.php/atlas/diabetes/>

**The Atlas of Variation in Healthcare for People with Kidney Disease –** This provides a study of variation in kidney care in England.

<http://www.rightcare.nhs.uk/index.php/atlas/kidneycare>

**Diabetes Outcomes Versus Expenditure Tool (DOVE)** - this tool allows users to compare expenditure on diabetes care with clinical outcomes for a selected CCG, other CCGs with similar populations and all other CCGs. Spending on diabetes care can be compared to a number of outcomes at CCG level.

<http://www.yhpho.org.uk/default.aspx?RID=88739>

#### **The Sound Doctor**

An online education tool available to all Wiltshire patients to use as an adjunct to the education courses offered to all diabetics.

<http://www.thesounddoctor.org/>

## Challenges for consideration

- The prevalence of diabetes is projected to rise in Wiltshire to 7.4% by 2015, and this will place a substantial burden upon the health service due to the need for active management of the condition, and increased hospital admissions.
- Ensure equitable access for patient in terms of educational programmes and lifestyle interventions.
- How best to implement Public Health measures to prevent diabetes, and improve management and care for diabetes patients.
- Effective management, monitoring through NICE's 9 key care processes, and patient education is vital to prevent disease progression and to reduce complications.
- Only 56.8% of diabetics in Wiltshire received all 8 NICE key care processes over 2011/12, placing it in the second lowest national quintile. Reducing morbidity and mortality in the face of rising prevalence is a key challenge facing both the local and national health



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<sup>1</sup> Department of Health

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_132358](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_132358)

<sup>2</sup> NHS Outcomes Framework 2012/13, Department of Health, 2011.

<sup>3</sup> Clinical Commissioning Group Outcomes Indicator Set (CCGOIS) 20013/14, NHS Commissioning Board, December 2012. url: <http://www.nice.org.uk/aboutnice/cof/cof.jsp>

<sup>4</sup> State of the Nation, 2012. Diabetes UK. [http://uk.sitestat.com/diabetes/website-uk/s?state-of-the-nation-2012&ns\\_type=pdf](http://uk.sitestat.com/diabetes/website-uk/s?state-of-the-nation-2012&ns_type=pdf)

<sup>5</sup> Kerr, M. (2011). Inpatient Care for People with Diabetes - The Economic Case for Change. [http://www.diabetes.nhs.uk/areas\\_of\\_care/emergency\\_and\\_inpatient/](http://www.diabetes.nhs.uk/areas_of_care/emergency_and_inpatient/)

<sup>6</sup> Emerging Risk Factors Collaboration. Seshasai SR et al. Diabetes mellitus, fasting glucose, and risk of cause-specific death. N Engl J Med. 2011 Mar 3;364(9):829-41

<sup>7</sup> The Health and Social Care Information Centre. (2011). National Diabetes Audit Mortality Analysis. [http://www.ic.nhs.uk/webfiles/Services/NCASP/Diabetes/200910%20annual%20report%20documents/NHS\\_Diabetes\\_Audit\\_Mortality\\_Report\\_2011\\_Final.pdf](http://www.ic.nhs.uk/webfiles/Services/NCASP/Diabetes/200910%20annual%20report%20documents/NHS_Diabetes_Audit_Mortality_Report_2011_Final.pdf)

<sup>8</sup> Diabetes UK. (2010). State of Diabetes Care in the UK 2009.

<http://www.diabetes.org.uk/Professionals/Publications-reports-andresources/Reports-statistics-and-case-studies/Reports/State-of-Diabetes-Care-in-the-UK-2009/>

<sup>9</sup> Department of Health. (2001). National service framework for diabetes: standards.

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4002951](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4002951)

<sup>10</sup> QOF, 2012/13

\*Please note unadjusted prevalence does not take into account differences in age structure or gender (which may influence expected prevalence) of the populations compared.

<sup>11</sup> APHO Diabetes Prevalence Model, 2012

<sup>12</sup> NCHOD. <https://indicators.ic.nhs.uk/webview/>

<sup>13</sup> National Society to Prevent Blindness (1980) Visual Problems in the US: data analysis definitions. Data 74 sources, Detailed Data Tables, Analysis, Interpretation. New York.

<sup>14</sup> NHS Atlas of Variation 2011. [http://www.rightcare.nhs.uk/atlas/downloads/Vision\\_AoV\\_2011.pdf](http://www.rightcare.nhs.uk/atlas/downloads/Vision_AoV_2011.pdf)  
Accessed June 2012

<sup>15</sup> Kidney disease clinical commissioning group profile 2012: NHS Wiltshire CCG, NHS Kidney Care, January 2013. url: [http://www.kidneycare.nhs.uk/CCG\\_profiles](http://www.kidneycare.nhs.uk/CCG_profiles)

<sup>16</sup> QOF, 2011/12

<sup>17</sup> Department of Health. (2001). National service framework for diabetes: standards.

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4002951](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4002951)

<sup>18</sup> NHS Health Checks 2012-13.

[http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/Integratedperfomanceasuresmonitoring/DH\\_129481](http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/Perfomancedataandstatistics/Integratedperfomanceasuresmonitoring/DH_129481)

<sup>19</sup> National Diabetes Audit 2011/12

<sup>20</sup> X-PERT Audit Report, X-PERT Community Interest Company. May 2013