

Thames Valley Strategic Clinical Networks

# Diabetes - Case for Change

Oxfordshire CCG

June 2017

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## 1 Executive summary

This document provides an assessment of the current burden of disease, challenges and future predictions for Oxfordshire Clinical Commissioning Group (OCCG). It outlines the opportunities for improvement in the health of the population, providing both the health and system gain. It provides examples of both local and national initiatives which the OCCG may wish to employ to address its diabetes service needs.

There are number of important considerations that underpin the case for change in diabetes care in OCCG:

- Patients are living longer; the average person lives to the average age of m/f (years, 2015) 79/83. As the average population increases, so too does the prevalence of Type 1 and Type 2 diabetes. Diabetes is the fastest growing health threat of our times and an urgent public health issue. It is estimated that Type 2 diabetes treatment accounts for approximately 9% of the annual NHS budget. This is around £8.8 billion a year, or £1 million an hour. 80% of NHS spending on diabetes goes on managing complications, most of which could have been prevented.
- The cost burden of diabetes for Oxfordshire CCG will increase from over £123m in 2015 to £162m in 2035, with a predicted >30% increase in the prevalence of diabetes and its associated complications.

In essence, this means that there is a robust argument for thinking differently about how we manage diabetes care in Oxfordshire. This is also clear by listening to the national policy direction and by reviewing the current pattern of healthcare usage, which is outlined in this document.

This Case for Change has been developed by assessing the current situation in Oxfordshire, by drawing upon the expertise from NHS England, Public Health England, Clinical Leadership, and Oxfordshire County Council's Health and Wellbeing Board.

## 2 Purpose

The purpose of this Case for Change document is to provide detailed information and analysis of local diabetes outcomes and the issues and the challenges that are currently being faced, and projected into the future. Where it is relevant to do so, suggested initiatives have been incorporated into the relevant sections. It will also provide contextual information regarding the local and national drivers for change, as well as providing a repository for additional reference documents. In short, this document will articulate a number of opportunities for improvement in the way that diabetes care is managed in OCCG.

## 3 Introduction

Diabetes is becoming a more common condition world-wide. It can affect people of all ages in every population. Socially disadvantaged groups in affluent societies and people from black and minority ethnic (BME) communities (especially those of South Asian, African and African-Caribbean descent) are particularly vulnerable.

Diabetes can have a major impact on the physical, psychological and material well-being of individuals and their families, and can lead to complications such as heart disease, stroke, renal failure, amputation and blindness. There is evidence to show that:

- The onset of Type 2 diabetes can be delayed, or even prevented;
- Effective management of the condition increases life expectancy and reduces the risk of complications;
- Self-management is the cornerstone of diabetes care.

### 3.1 What is diabetes?

Diabetes is a chronic and progressive disease that impacts upon almost every aspect of life. It can affect infants, children, young people and adults of all ages, and is becoming more common. Diabetes can result in premature death, ill health and disability, yet these can often be prevented or delayed by high-quality care.

Diabetes comprises a group of disorders with many different causes, all of which are characterised by a raised blood glucose level. This is the result of a lack of the hormone insulin and/or an inability to respond to insulin. There are two main types of diabetes: Type 1 diabetes and Type 2 diabetes.

Throughout this document, 'diabetes' will refer to both Type 1 and Type 2 unless it is otherwise specified.

## 4 National strategic context and drivers for change

Patients are living longer; the average person lives to the average age of m/f (years, 2015) 79/83 (WHO, 2017). As the average age of our population increases, so too does the prevalence of Type 1 and 2 diabetes. Diabetes is the fastest growing health threat of our times and an urgent public health issue. It is estimated that Type 2 diabetes treatment accounts for approximately 9% of the annual NHS budget. This is around £8.8 billion a year (NHS, 2017) 80% of NHS spending on diabetes goes on managing complications, most of which could be prevented (Diabetes UK, 2017) Taking into account the changes in age and ethnic structure of the population, and assuming that the increase in levels of overweight and obesity continue; **costs will rise to £16.9 billion in 2035/36** (Hex et al. 2012).

[The Five Year Forward View](#) (2014) makes a case for a more activist prevention and public health agenda for the sake of the future sustainability for the NHS. Its ambition is clear: to achieve 2% net efficiency gains each year for the rest of the decade. This means empowering and supporting patients to self-manage their conditions and thereby reducing complications. There is strong evidence which demonstrates how behavioural interventions, which support people to maintain a healthy weight and be more active, can significantly reduce the risk of developing Type 2 Diabetes (Diabetes UK, 2017). NHS England has committed to investing in evidence-based interventions, such as structured education (SE).

The [NHS Diabetes Prevention Programme \(NHS DPP\)](#) is delivering a systematic approach to reducing the risk of individuals developing diabetes. However, it is equally important that the outcomes for those with diabetes are improved and unjustified variation is reduced. As such, the Diabetes Treatment and Care Programme sets out the high level ambitions to improve outcomes for those with diabetes and to reduce unjustified variation.

The [CCG Improvement and Assessment Framework \(CCG IAF\)](#) sets out the indicators which will be used to drive improvement for patients with diabetes.

- Improving the achievement of the NICE recommended treatment targets (HbA1c, cholesterol and blood pressure) and driving down variation between CCGs.
- Improving uptake of structured education.
- Reducing amputations by improving the timeliness of referrals from primary care to a multi-disciplinary foot team for people with diabetic foot disease; and
- Reducing lengths of stay from diabetic inpatients.

This document will support OCCG to work with clinicians, executive teams and Health and Wellbeing Boards to identify actions to promote improvement against the treatment targets and reduce variation, as part of a co-ordinated approach to improvement across the Thames Valley.

## 5 Local Strategic Context

The high level strategic objectives as set out in the Five Year Forward View align closely with the local drivers for change.

### 5.1 Oxfordshire's Joint Strategic Needs Assessment (JSNA)

The Oxfordshire JSNA provides a consistent evidence-base which supports us in identifying service gaps to target improvements. Key challenges identified in the JSNA, relevant to this case for change, are summarised below:

<b>Demographic Pressures</b>	Oxfordshire's population has grown by more than 10% in the last 15 years. The proportion of older people in the population also continues to increase which means that every pound spent from the public purse has further to go.
<b>Lifestyles</b>	Three in five adults, and over a quarter of Year 6 children, are overweight or obese.
<b>Service demand</b>	As of 1 <sup>st</sup> January 2016, there were 77 General Practitioners (GP) practices in the Oxfordshire Clinical Commissioning Group (OCCG) area, with around 720,000 registered patients. Demand is increasing across a range of secondary health care services.

### 5.2 Oxfordshire's Health and Wellbeing Strategy

Oxfordshire's Health and Wellbeing Strategy builds upon performance in the previous year (2015) and the emerging issues highlighted in the JSNA. The Strategy sets out Oxfordshire County Council's ambition for the year ahead:

Our vision is that by 2019:

- More children and young people will lead healthy, safe lives and will be given the opportunity to develop the skills, confidence and opportunities they need to achieve their fully potential.
- More adults will have the support they need to live their lives as healthily, successfully, independently and safely as possible, with good timely access to health and social care services.
- Everyone will be given the opportunity to voice their opinions and experiences to ensure that services meet their individual needs.
- The best possible services will be provided within the resources we have, giving excellent value for the public.

### 5.3 Oxfordshire Sustainability and Transformation Plans

Our vision is to have GP practices and primary care services which:

- Focus on prevention as well as treatment – helping people to lead healthy lifestyles and helping people with long term conditions to manage their own care.
- Identify those patients most in need of support and make sure they are care for. GP practices need to work more closely with each other to extend the range of services they can offer and share specialist primary care staff such as dieticians, occupational therapists and specialist nurses,
- Work closer with other parts of the health and care system, the voluntary sector and community groups so that care is more joined up

### 5.3 Public Health England Needs Assessment: South Central (HNA)

A diabetes Public Health Needs Assessment has been produced to support us in defining our priorities in addressing care of adults with diabetes at regional level. Key findings from the HNA include:

<b>Demographic Pressures</b>	The population across South Central is projected to rise by 13% by 2035: 4,065,000 persons. There will be a sharp increase in the 65-84 (45%) and over 85 years age groups (128%).
<b>Lifestyles</b>	62.9% of all adults in South Central are classified as overweight or obese. If obesity levels are maintained at current levels there could be an additional 51,947 people with diabetes in South Central by 2035.
<b>Practice Variation</b>	There is considerable variation in the proportion of patients receiving individual and all eight care processes between CCGs in South Central. There is wide variation in attainment by CCG and within CCG in the NICE treatment targets.
<b>Burden of disease</b>	5.8% of the population of South Central are registered on GP registers as having diabetes (QOF, 2015).

## 6 The current challenge in Oxfordshire

28,267 people in Oxfordshire (age 17+) are on the diabetes register, 4.6% of the population (Content.digital.nhs.uk, 2017)

The cost burden of diabetes management and complications equates to £3000/patient/year.<sup>1</sup>

With the rising levels of obesity and diabetes there is a predicted >30% increase in the cost of managing diabetes and its complications, in Oxfordshire rising from £123m/year to £162m/year by 2035.

**Table 2:** Predicted rise in the burden of disease for diabetes in Oxfordshire

	<b>Total expected population with diabetes</b> (Gov.uk, 2017)	<b>Diagnosed</b>	<b>Undiagnosed</b>	<b>Burden of disease (£3000/patient)</b>
<b>2015</b>	41,000	28,627	12,373	<b>£123m</b>
<b>2025</b>	48,000	34,000	14,000	<b>£144m</b>
<b>2035</b>	54,000	38,000	16,000	<b>£162m</b>

The number diagnosed with diabetes in 2025 and 2035 are estimates based on maintaining the same ratio of diagnosed and expected patient cohort. The rising numbers are a consequence of the increased incidence of diabetes and population growth. The total expected population with diabetes is provided by the National Cardiovascular Intelligence Network.

An assumption has been made that the cost for undiagnosed diabetes will be similar to that for diagnosed diabetes group.

<sup>1</sup> NHS England, National Diabetes Treatment and Care Programme - Introduction to and supporting documentation for Value Based Transformation Funding Site Selection (Nov 2016) – slide 4



## 6.1 CCG performance on treatment targets: Primary Care

The National Diabetes Audit (NDA) sets out to answer the following audit questions in primary care:

- Care Processes: What percentage of people registered with diabetes received the nine NICE key processes of diabetes care?
- Treatment Targets: What percentage of people registered with diabetes achieved NICE defined treatment targets for: HbA1c  $\leq 58\text{mmol/mol}$  (7.5%); cholesterol  $< 5\text{mmol/L}$ ; blood pressure  $\leq 140/80\text{ mmHg}$ ? (NDA, 2014)

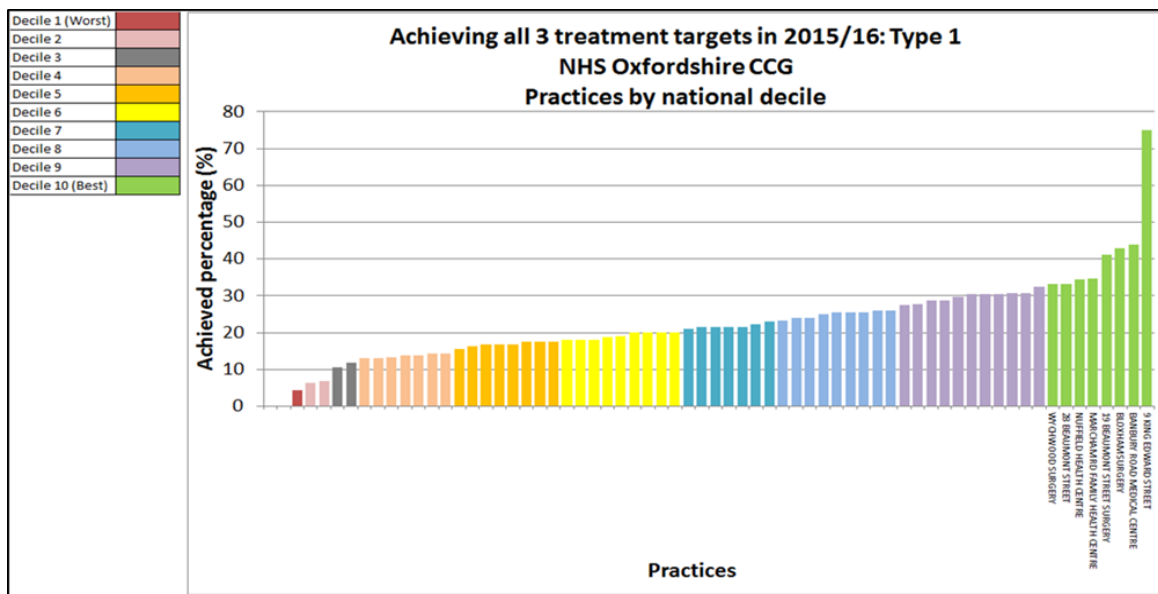
Outcomes from the NDA provide useful comparative information at GP, and CCG level.

### 6.1.1 Practice level variation

There are 82 practices in Oxfordshire. Oxfordshire has a high NDA (National Diabetes Audit) completion rate of 90.7%; 7 practices did not participate. It is essential for all GP practices to participate in the NDA to ensure people with diabetes are achieving the 3 treatment targets and have the 8 diabetes care processes checked yearly.

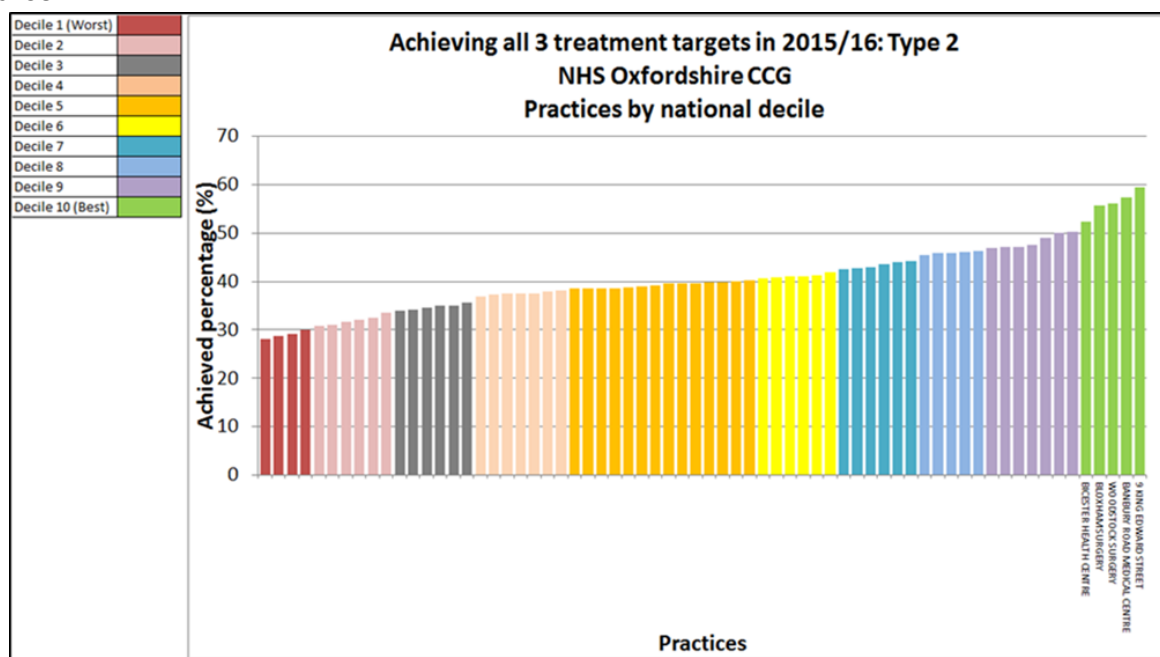
The practice performance varies for **Type 1 diabetes** from one practice out of the 75 being in the *lowest* decile in the country to eight practices being in the *top* decile in the country. The names of the practices in the top decile have been included in the figure so that other practices can understand from them some approaches and initiatives that have supported and contributed to their performance.

**Figure 5:** Current performance on Type 1 diabetes for Oxon practices against national deciles



For **Type 2 diabetes** we see a slightly different picture with the range of achievement of the target going from 28% to 60% but still spanning all the national deciles (Figure 6). Here there are four practices in the bottom decile nationally and five practices in the top decile.

**Figure 6:** Current performance on Type 2 diabetes for Oxon practices against national deciles



Notwithstanding the outlying practices, there is around a 4-fold variation in achievement for Type 1, and a 2-fold achievement for Type 2. The wide variation draws down the overall CCG achievement and the quality of care patients receive. The variation of achievement *within* the CCG is far wider than that across CCG performance in Thames Valley. There is recognition that the majority of people with Type 1 are managed in secondary care. The poor level of confirmation and recording via GP system of the three treatment targets may in part be due to this approach to care rather than patients not having good care and regular reviews. However, there are clearly a small number of practices in Oxfordshire that have systems and processes in place that do ensure accurate recording.

Three practices are in the top decile for the achievement of all three treatment targets for both Type 1 and Type 2 diabetes: 9 King Edward Street, Banbury Road Medical Practice, and Bloxham Surgery. There is an opportunity to understand their management of patients with diabetes as a potential tool for quality improvement across OCCG. There is also a clear opportunity to support those practices in the middle range to identify a small number of changes that are likely to deliver significant improvement for people with Type 1 and Type 2 diabetes.

### 6.1.2 CCG performance against comparators

In addition to looking at how individual practices compare nationally, analysis has also been carried out at CCG level to show how Oxfordshire CCG is performing against four comparators: Right Care Comparator CCGs; Best CCG in Thames Valley; Best CCG in England, and the average performance across England.

The performance of Oxfordshire CCG, when considered against a range of comparators shows average performance. This may give rise to a degree of complacency and reduce the drive to see the potential for improving the care and reducing the complications of the population of Oxfordshire with diabetes, as well as the financial implications.

Maintaining the current level of performance and not addressing the wide variance across practices, when combined with the predicted increase in people with diabetes over the coming years will have a significant impact on both quality of life and finances. The

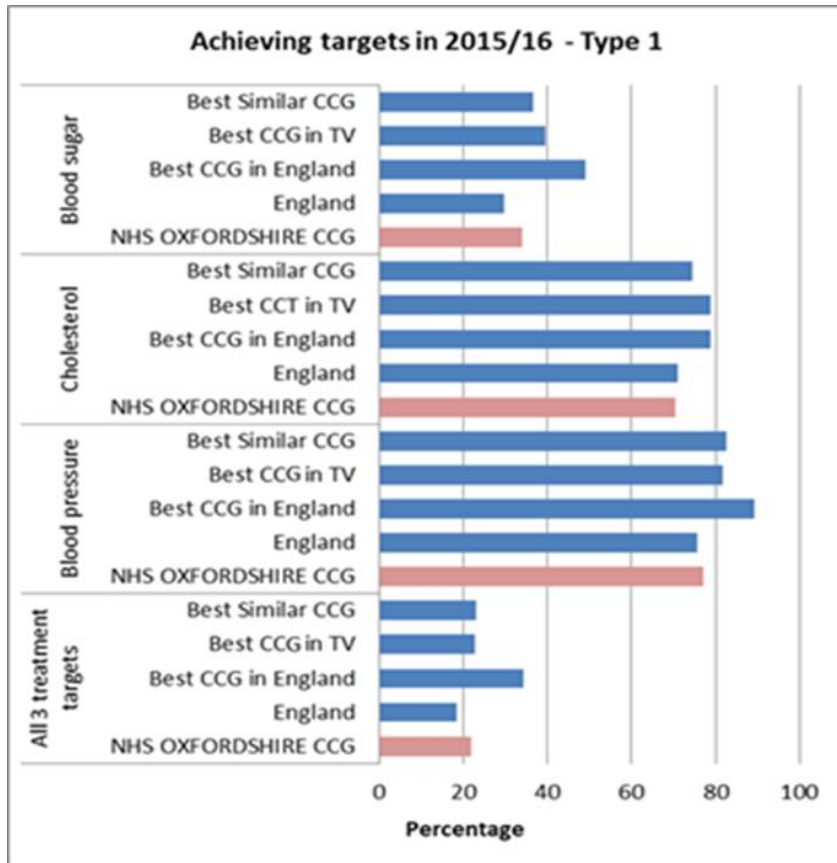


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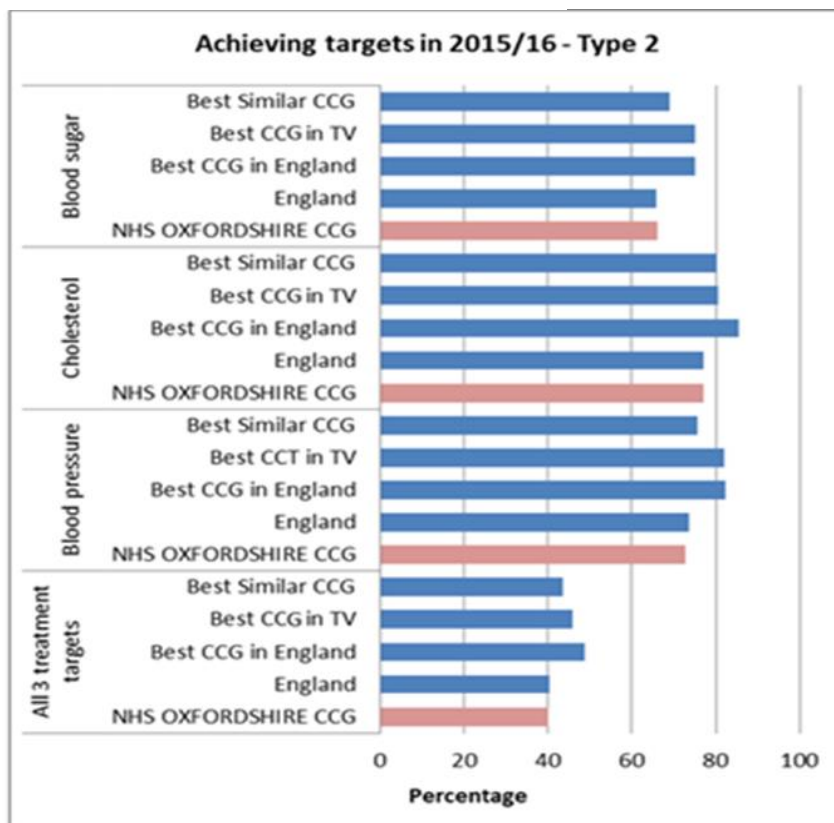
calculation of savings that can be attributed to the achievement of these targets is quantified for Oxfordshire in [Section 9.1](#) below.

There is considerable scope for general practices in each of the national deciles to aim to get to the one above. Those in the top decile can look to match the best performing practices.

**Figure 7:** Current performance on Type 1 diabetes against four comparators



**Figure 8:** Current performance on Type 2 diabetes against four comparators



## 7 Future challenges in Oxfordshire

### 7.1.1 The population is growing, and growing older

The prevalence of diabetes rises steeply with age: one in 20 people over the age of 65 in the UK has diabetes and in people over the age of 85 years this rises to one in five (NSF for diabetes, 2001).

In the 2014 census, Oxfordshire CCG had a population of 663, 566.

The CCG has a current registered list size of approximately 728,000.

For the purposes of this paper the PHE calculation of 663,566 will be used.

**Table 1:** Age breakdown of Oxfordshire population (2014) (Ons.gov.uk, 2017)

	All ages	40-64 years	65-84 years	>85 years
<b>NHS Oxfordshire</b>	659,000	209,000	98,000	16,000

In the Oxfordshire CCG population there is a projected unequal growth in different age ranges, which is in line with the changing demographics across the UK.

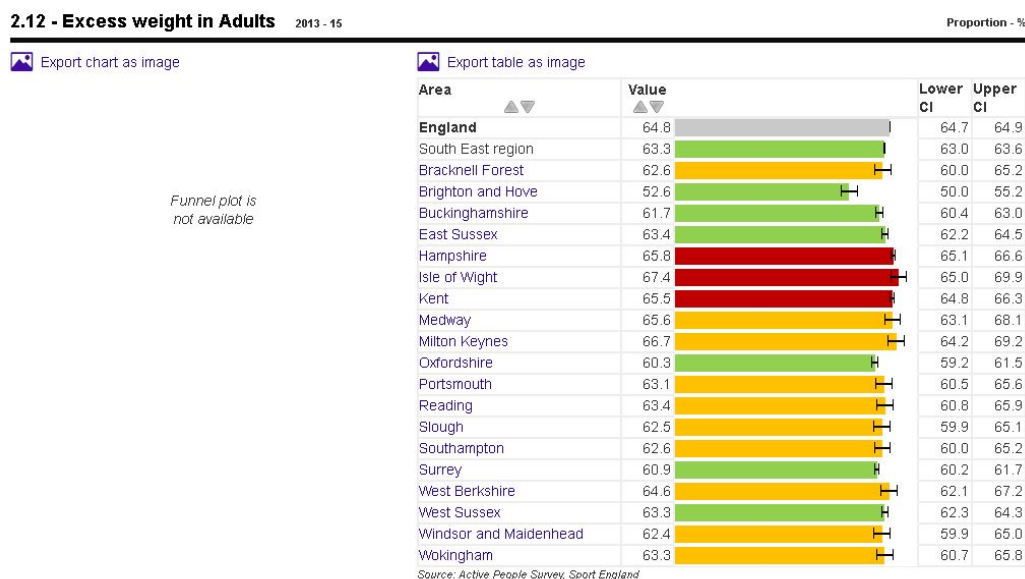
Oxfordshire CCG demographic is predicted to increase from 2014 to 2035:

- 12% increase in population
- 138% increase in people aged over 85
- 44% increase in people aged 65-85 years old
- 3% increase in people aged 40-65 years old

It is estimated that 14,650 of those over the age of 65 would have diabetes by 2035 (NSF, 2001) at a cost of **£44m per annum**<sup>2</sup>.

### 7.1.2 Obesity levels are rising

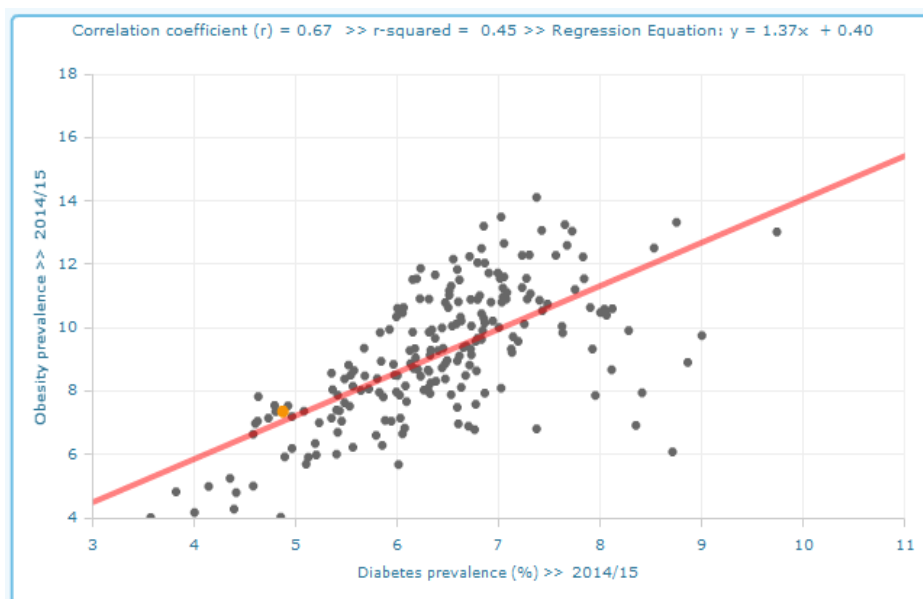
Obesity accounts for 80-85% of the risk in developing Type 2 diabetes and is the predominant risk factor.



<sup>2</sup> NHS England, National Diabetes Treatment and Care Programme - Introduction to and supporting documentation for Value Based Transformation Funding Site Selection (Nov 2016) – slide 4

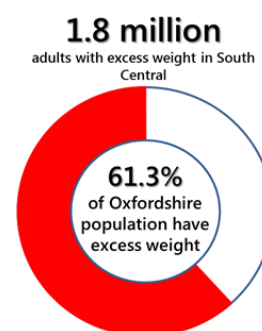
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There is a clear correlation between the rise in obesity and the increased prevalence in Type 2 diabetes. The scatter plot below highlights that whilst the population of Oxfordshire CCG (orange plot) is by no means the most obese amongst the CCGs in England, the relationship between obesity and diabetes is significant.



**Figure 9:** Diabetes prevalence vs. obesity prevalence in Oxfordshire (CCGtools.england.nhs.uk, 2017)

61.3% of the adult population in Oxfordshire were recorded as having excess weight in 2012-2014. 28.9% of children in Oxfordshire are overweight. An additional 11581 people will develop Type 2 diabetes in Oxfordshire CCG by 2035, if obesity levels remain constant and if obesity levels rise by 3% per annum.



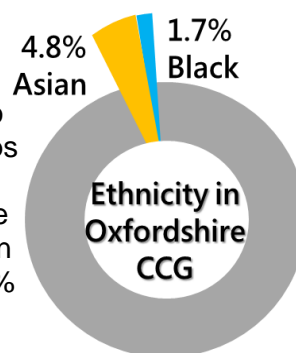
### 30 Second Intervention

Professor Susan Jebb, Professor of Diet and Population Health University of Oxford provides evidence for the effectiveness of carrying out a brief, 30 second intervention with patients who have a raised body fat percentage or who have a high body mass index. In a randomised trial, patients would either be offered referral to a weight management group (12 sessions of 1 hour each, once per week) or simply advised that their health would benefit from weight loss. The study found that, between June 2013 and December 2014, 40% of the individuals assigned to the support intervention attended the weight management group compared with 9% of the individuals who were offered advice. The mean weight change at 12 months was 2.43kg with the support intervention and 1.04kg with the advice intervention. The study found that a behaviourally informed, very brief, physician delivered opportunistic intervention is acceptable to patients and an effective way to reduce population mean weight. More information can be found in [Appendix 1: Diabetes Quality Improvement Initiatives](#)

### 7.1.3 The population's demographics are changing

Type 2 diabetes is up to six times more common in people of South Asian descent and up to three times more common in those of African and African-Caribbean descent, compared with the white population. It is also more common in people of Chinese descent and other non-white groups (NSF, 2001).

Between 2001 and 2011 the proportion of BME communities in Oxfordshire doubled, rising from 4.9% to 9.2% of the population. People from Asian backgrounds constituted the largest BME group, numbering 31,700 or 4.8% of the county's population (up from 2.4% in 2001) (JSNA, 2017).



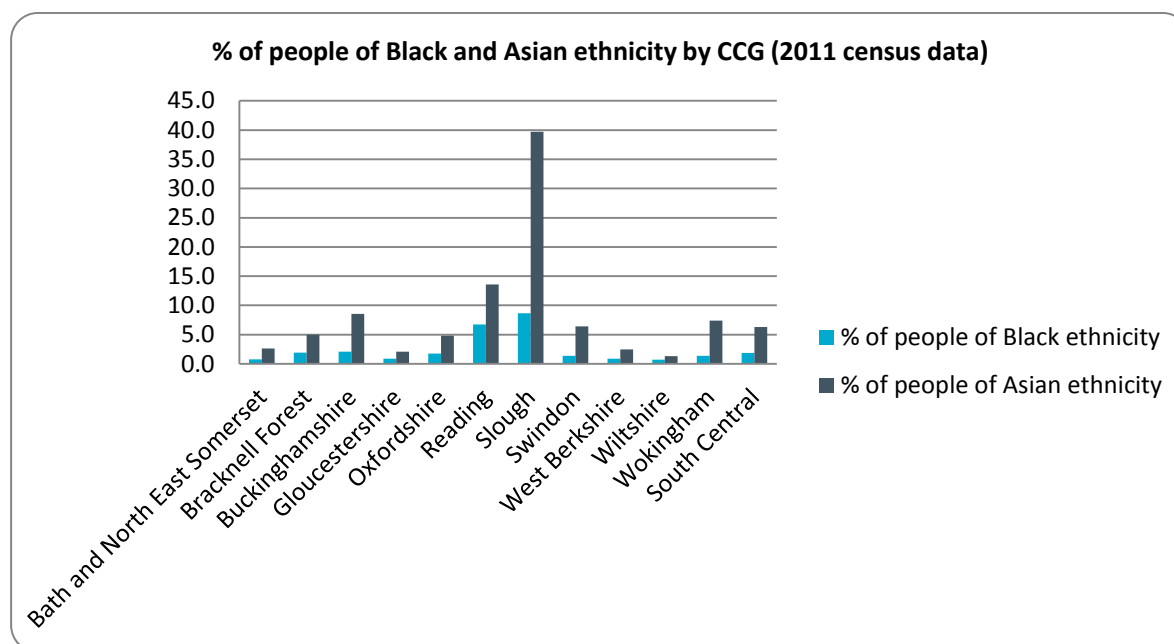
Source: <https://www.nomisweb.co.uk/census/2011/qs211ew>

The most recent census data (2011) reports that there are:

- 31,657 people with South Asian heritage (4.8% of population)
- 11,424 people with black heritage (1.7% of population)
- 5,618 people with Chinese ethnic heritage (JSNA, 2017)

This rise in the proportion of BME communities in the Oxfordshire population is likely to result in an increase in the prevalence of diabetes.

**Figure 4:** Proportion of Black and Asian population by CCG



## 8 The vision for diabetes care

### 8.1 Care and Support Planning

Supportive self-management is a key enabler to improved outcomes in long term conditions, especially diabetes and has been found to improve physical health, namely blood pressure and glucose and mental health<sup>3</sup>. The emphasis is on supporting the healthcare professional to work in partnership with the patient. To be effective it requires a culture change within the general practice team, with wider infrastructure changes and ongoing skills development for healthcare professionals.

<sup>3</sup> Cochrane review 2015

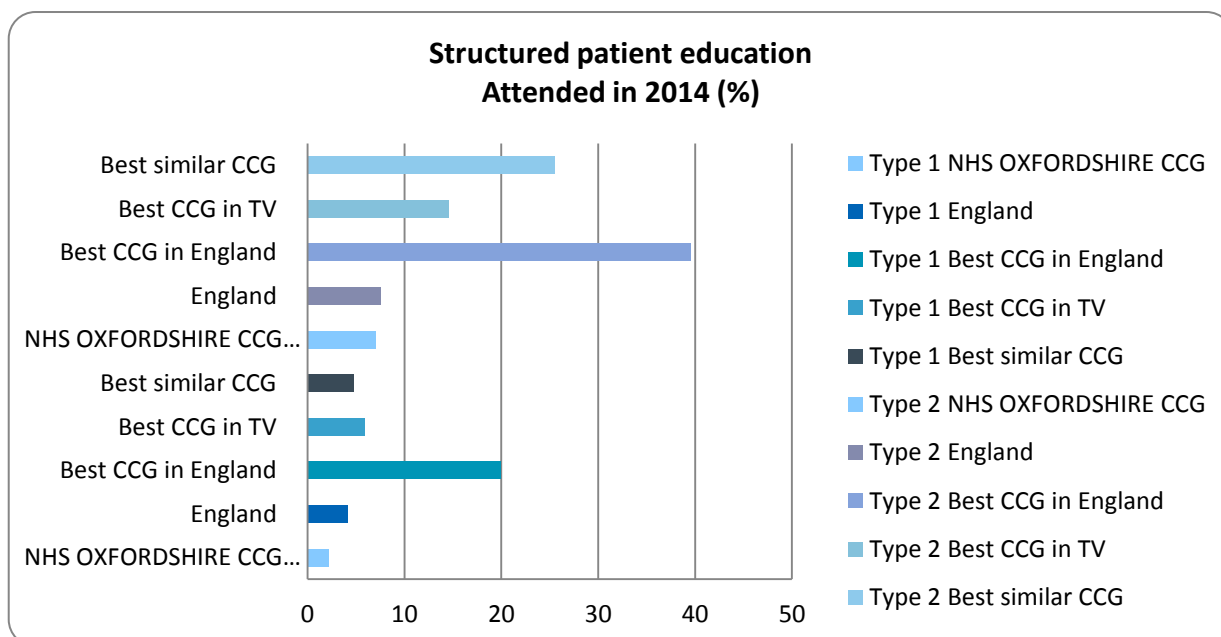
The feasibility and benefits of introducing Care and Support Planning as normal care in general practice was demonstrated by Year of Care pilot sites using diabetes as a test bed. Improvement was observed in clinical outcomes (HbA1c, BP and cholesterol), patient experience, reported involvement in care and changes in healthcare behaviour. Care processes improved becoming more systematic and complete, staff job satisfaction increased, and better team work and more efficient use of resources were measured. <http://www.yearofcare.co.uk/impact-and-benefits>.

The SCN is supporting CCGs in the adoption and embedding of this approach to care for people with diabetes and other long term conditions. <http://tvscn.nhs.uk/networks/long-term-conditions/>

## Structured patient education

Structured education (SE) is an important NICE recommended intervention to enable people with diabetes to manage their condition. The National Diabetes Audit reports that there has been a year on year increase in people with diabetes being offered structured education. Despite this, attendance figures remain disappointingly low with only 7.1% attending SE within 12 months of diagnosis. It is, however, acknowledged that significant data coding issues have been reported which may have had a negative impact on this figure. Information is presented with comparator CCGs. The importance of commissioning a mixed menu of structured and unstructured educational programmes across different styles and modes of delivery to reflect different learning styles has been recognised nationally. Further details can be found in the '[Diabetes Patient Education](#)' TV SCN report.(TVSCN, 2017)

**Figure 9:** Structured patient education attendance, OCCG benchmarked against comparator CCGs.



## 9 Cost savings

### 9.1 Patient Education

Oxfordshire CCG can achieve cost savings of £82,462 after 5 years and £125,883 after 10 years, by increasing patient attendance to structured patient education, to match the best CCG in England.

**Table 4:** Cost saving calculations per patient at 5 years and at 10 years after structured education.

	Savings after five years	Savings after ten years
Type 1	£ 440.00	£ 1,800.00
Type 2	£ 122.00	£ 153.00

**Table 5:** Cost saving calculations for Oxfordshire CCG if match current achievement of comparators.

	Current in Year 2014	NICE Target	Best CCGs in England	Best CCG in similar 10	Best CCG in TV
Type 1 %	2.2%	25%	20.0%	4.8%	5.90%
Type 2 %	7.1%	25%	39.6%	25.5%	14.60%
<b>No of patients</b>	<b>111</b>	<b>409</b>	<b>629</b>	<b>397</b>	<b>230</b>
Type 1	2	23	18	4	5
Type 2	109	386	611	393	225
<b>Savings after 5 years</b>	<b>£14,178</b>	<b>£57,212</b>	<b>£82,462</b>	<b>£49,706</b>	<b>£29,650</b>
Type 1	£880	£10,120	£7,920	£1,760	£2,200
Type 2	£13,298	£47,092	£74,542	£47,946	£27,450
<b>Savings after 10 years</b>	<b>£20,277</b>	<b>£100,458</b>	<b>£125,883</b>	<b>£67,329</b>	<b>£43,425</b>
Type 1	£3,600	£41,400	£32,400	£7,200	£9,000
Type 2	£16,677	£59,058	£93,483	£60,129	£34,425

**Table 6:** CCGs used as comparators in Table 5.

	Type 1 DM	Type 2 DM
Best CCG in England	NHS Bradford City CCG	NHS Dorset CCG
Best CCG in similar 10 CCGs	NHS Nene CCG	NHS Nene CCG
Best CCG in TV	NHS South Reading CCG	NHS South Reading CCG



## 9.2 Treatment targets

**Thames Valley SCN ambition is for 40% of people with diabetes in every GP practice to achieve the 3 treatment targets by 2020.**

Better management of diabetes is delivered through attainment of the three treatment targets i.e. HbA1c  $\leq 58\text{mmol/mol}$ , blood pressure  $< 140/80$  and cholesterol  $< 5\text{mmol/l}$ . This is supported by Baxter et al. who evidence significant improvement both clinically, through reduced microvascular complications, and financially to be gained by improved HbA1c levels. The level of gain depends not only on the type of diabetes mellitus but also on the existing HbA1c measure. At a UK level, the paper references cost savings of £340m achievable in 5 years. At a simplistic level this equates to £3.5m for the Oxon population. This does not include costs of implementing initiatives.

This section summarises the current OCCG performance against the three treatment targets against Right Care comparators. The estimated cost savings attributed to achievement of all three treatment targets and overall reduced risk of complications are listed in Table 7 below. [Section 9.3.2](#) and [Section 9.3.3](#) provide more specific examples, and highlight the potential financial and clinical benefits that may be realised as a result of attaining all three treatment targets.

Oxfordshire CCG current achievement of the 3 treatment targets:

- Type 1 diabetes is 21.9% (England average 18.3%)
- Type 2 diabetes is 40.2% (England average 40.4%)

The estimated gross savings per patient who are moved from not achieving the 3 treatment targets to achieving all 3 treatment targets is £270/patient after five years due to reduced risk of complications and £600/patient after ten years (NHS, 2016)

The role of primary care in overall admissions avoidance through attainment of all three treatment targets is paramount. Structured and on-going patient education, plus risk stratification, delivery of the 8 care processes, a care planning approach to agreeing goals and informing people with diabetes about how to prevent emergencies is crucial to avoiding hospital admissions, which go on to result in excess LoS. (Admissions avoidance and diabetes, 2013)

**Table 7:** Cost savings for Oxfordshire CCG associated with better achievement of 3 treatment targets

Savings for the population of 28,627		Potential savings/patient	Current CCG achievement	At 3TT	At 3TT	Right care best performer: NE Herts	Best in England: Doncaster CCG	Best in TV: Bracknell & Ascot CCG
			40.20%	45%	50%	43.70%	48.80%	46%
5 yrs	28,627	£270		£371,006	£757,470	£270,525	£664,719	£448,299
10 yrs	28,627	£600		£824,458	£1,683,268	£601,167	£1,477,153	£996,220

### 9.3 Inpatient diabetes care

People with diabetes have additional risk of complications, which result in hospital admission. The National Diabetes Audit report 2011-12 on complications reports 9 complications associated with diabetes (NDA, 2011-12):

- Angina
- Myocardial Infarction
- Heart Failure
- Stroke
- Major Amputation
- Minor Amputation
- Renal Replacement Therapy (RRT)
- Retinopathy Treatment
- Diabetic Ketoacidosis (DKA)

80% of current spend on diabetes is on the complications associated with it, many of which are listed below. Achievement of all three NICE treatment targets as listed in [Section 9.2](#), is key to avoiding such complications. This will result in both financial savings, and improved patient outcomes.

**Table 8:** Number of complications based on NDA audit – Report 2 Complications

	% of crude population *	Predicted cases in Oxon**
Angina	5.97%	1731.3
MI	1.47%	426.3
Heart failure	4.15%	1203.5
stroke	1.79%	519.1
Major amputation	0.17%	49.3
Minor amputation	0.30%	87.0
RRT	0.79%	229.1
Retinopathy treatment	0.72%	208.8
DKA	5.69%	1650.1

\* with diabetes experiencing the complication during the two years following the audit period(not adjusted for demographics)

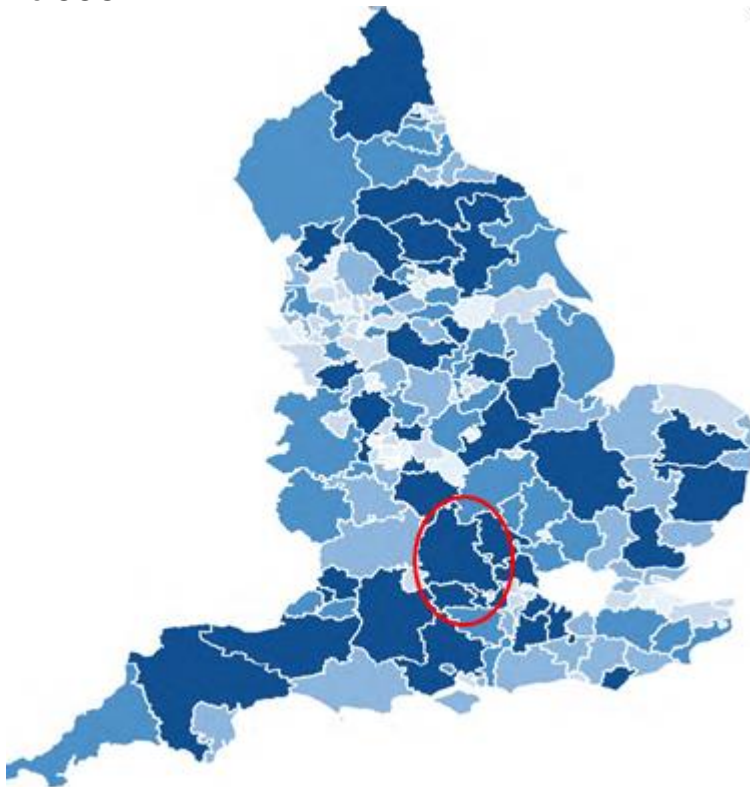
\*\* of the currently diagnosed 28, 267 people with diabetes in Oxfordshire the number of people predicted to develop complications listed.

#### 9.3.1 Right Care comparators

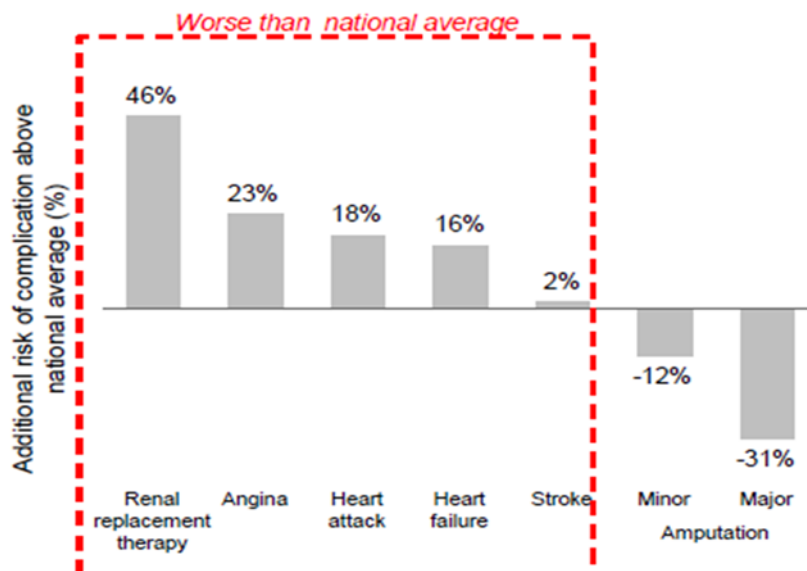
The Right Care Atlas of Variation Maps evidence the additional risk of mortality for patients with diabetes in Oxfordshire. People with diabetes in Oxfordshire have a 51.7% additional risk of mortality compared to the England average 39.2%. People with diabetes are also 46% more likely to require renal replacement therapy than the national average.

Choose an item.

**Figure 10:** Atlas of variation map: the additional risk of mortality for people with diabetes in Oxfordshire CCG.



**Figure 11:** Right Care: additional risk of complications for patients with diabetes in Oxfordshire CCG



### 9.3.2 National Diabetes Inpatient Audit (NaDIA)

The NaDIA is an annual audit of the quality of diabetes care during hospital admission on one day of a specified week of the year, in England and Wales.

Data from the most recent National Diabetes Inpatient Audit (2016) evidences a variable quality of diabetes care during hospital admission in Oxfordshire. Horton General Hospital is shown to be an outlier in Oxfordshire. 37.5% of patients with diabetes were seen by diabetes management teams in the Horton General Hospital; however the below data indicates that inpatients have received poor care when compared against the national average and exemplar hospitals. In particular:

- 45.7% of inpatients with diabetes had minor hypoglycaemia during their hospital stay;
- 27.3% of inpatients with diabetes had severe hypoglycaemia during their hospital stay;
- 50% of inpatients with diabetes experienced at least one medication error during their hospital stay.
- 33.3% of insulin infusions were inappropriate; and
- Only 61% of patients were satisfied with their inpatient care.

**Table 11:** Comparison of National Diabetes Inpatient Audit data 2016

	John Radcliffe Hospital	Churchill Hospital	Horton Hospital	Ipswich Hospital	Russell Hall Hospital	England
no: inpatient diabetes (total beds)	94 (583)	34 (203)	16 (104)	86 (517)	131 (648)	14,712 (84,910)
diabetes prevalence	16.1%	16.7%	15.4%	16.6%	20.2%	17.2%
% seen by DM team	23.1%	34.4%	37.5%	73.5%	42.6%	34.1%
Minor hypoglycaemia (3.0-3.9 mmol/L)	20.2%	18.2%	46.7%	12%	14.3%	18.5%
Severe hypoglycaemia (<2.2 mmol/L)	6.5%	9.4%	27.3%	6%	5%	8.3%
Diabetes foot check on admission to hospital	14.9%	18.5%	6.7%	66.3%	70.2%	30.1%
Diabetes medication errors	36.0%	37.0%	50%	30.2%	25%	37.8%
Diabetes prescription errors	17.3%	14.8%	0%	20.6%	15.2%	21.1%
Insulin errors	22.7%	33.3%	33.3%	18.8%	9.8%	22.7%
Diabetes management errors	26.7%	29.6%	50%	14.3%%	10.9%	24.1%
Patient satisfaction	80.4%	90.2%	60.8%	90%	88.9%	

Inpatients with diabetes (regardless of the cause of admission) experience an age and gender adjusted prolonged length of stay (LoS). The causes of this excess LoS are due in part to in-hospital care processes, insulin and glycaemic management, and a higher rate of co-morbidities. The estimated mean population excess length of stay in diabetes inpatient populations is 0.8 days at an estimated burden of £573m/year in excess length of stay, and £686m/year in excess bed days (Admissions avoidance and diabetes, 2013). Since 2011 there has been a 3% increase in bed occupancy by people with diabetes (Content.digital.nhs.uk, 2017).

In 2015/16 hospital admissions in people with diabetes in Oxfordshire resulted in:

- 14,348 finished discharge episodes.
- 61, 518 bed days.
- Mean length of stay was 6.7 days

It is essential that robust and effective systems of care are implemented consistently in hospitals to ensure that admissions for patients with diabetes do not result in excessive lengths of stay, as a result of secondary complications associated with poor management of their condition. Diabetes specialist inpatient teams have been shown to improve the quality of patient care and a reduction in NHS costs by reducing the incidence of adverse events, lengths of stay, admission and readmission rates, and increasing day case rates. (Inpatient care for people with diabetes: the economic case for change, 2011; Sampson MJ et al, 2006). The introduction of a 7 day Diabetes Inpatient Specialist Nurse at Russell Hall Hospital made an estimated cost saving of £2.3million/year. Likewise, Ipswich Hospital Trust made an estimated cost saving of £1.2million/year. Further details can be found in [Appendix 1: Diabetes Quality Improvement Initiatives](#) of this document.

There is significant opportunity across all Oxfordshire hospitals, but particularly at the Horton General Hospital, to address variation in care and experience of people with diabetes. Reducing this variation and improving achievement closer to that of exemplar hospitals has the potential to reduce LoS, reduce costs and improve patient experience.

### 9.3.3 Lower limb amputation reduction

The amputation rate across Thames Valley ranges from 1.3 per thousand to 2.7 per thousand with Oxfordshire sitting at 1.9. The lowest number of amputations in the country is 0.6 per thousand. In order to achieve to the best in the country, Oxfordshire would need to have a 68% reduction in cases. If it was to perform to the best in Thames Valley it would need to reduce amputations by 32%. Thames Valley is well placed having established a Good to Great foot care pathway that has been accepted across the system and is now being rolled out across the area.

A reduction in amputation rate to match best performing CCG in England could save **Oxfordshire CCG £949,905 over 3 years (i.e. £316,635/year)** (Diabetic Footcare in England: an economic case study, 2017).

**Table 9:** Estimated cost savings for Oxfordshire CCG through reduction in amputation rate to match best performing CCG in England.

Cost saving over 3 years: £949,905			Cost saving over 1 year: £316,635			
	No: cases (2012-15)	Best CCG (rate per 1,000 )	No: cases to reduce to Best CCG rate	Unit costs **		Total savings
Major amputations	53	0.2	38	Acute care	£10,668	£405,384
		(To reduce 0.5)		Post-discharge care	£5,519	£209,722
Minor amputations	100	0.4	67	Acute care	£3,959	£265,253
		(To reduce 0.8)		Post-discharge care	£1,038	£69,546
Gross cost impact	153		105			£949,905

Note: \*\* Based on document: Diabetic foot care in England, An economic case study (January 2017)

### 9.3.4 Renal complications and renal replacement therapy

People with diabetes can develop chronic kidney disease (CKD), which can progress to end-stage renal failure (ESRF) requiring renal replacement therapy or renal transplant. As mentioned in [Section 9.3.1](#), patients who have diabetes in Oxfordshire are currently 46% more likely than the national average to require renal replacement therapy.

The first sign of early diabetes kidney changes is the presence of small amounts of protein in the urine, known as microalbuminuria. Microalbuminuria is a marker of increased cardiovascular risk. 3,140 people with diabetes are coded as having microalbuminuria or nephropathy in Oxfordshire (Content.digital.nhs.uk, 2017)

There is marked variation in coded prevalence of microalbuminuria & nephropathy by GP practice ranging from 1.3% to 38.5% of diabetes population.(Content.digital.nhs.uk, 2017)

The STENO 2 study in people with Type 2 diabetes and microalbuminuria, showed improved outcomes in the group with intensive optimisation of glucose levels (A1C 7.9% vs 9.1%), blood pressure <130/80mmHg and cholesterol <4.5mmol/L for 7.8 years:

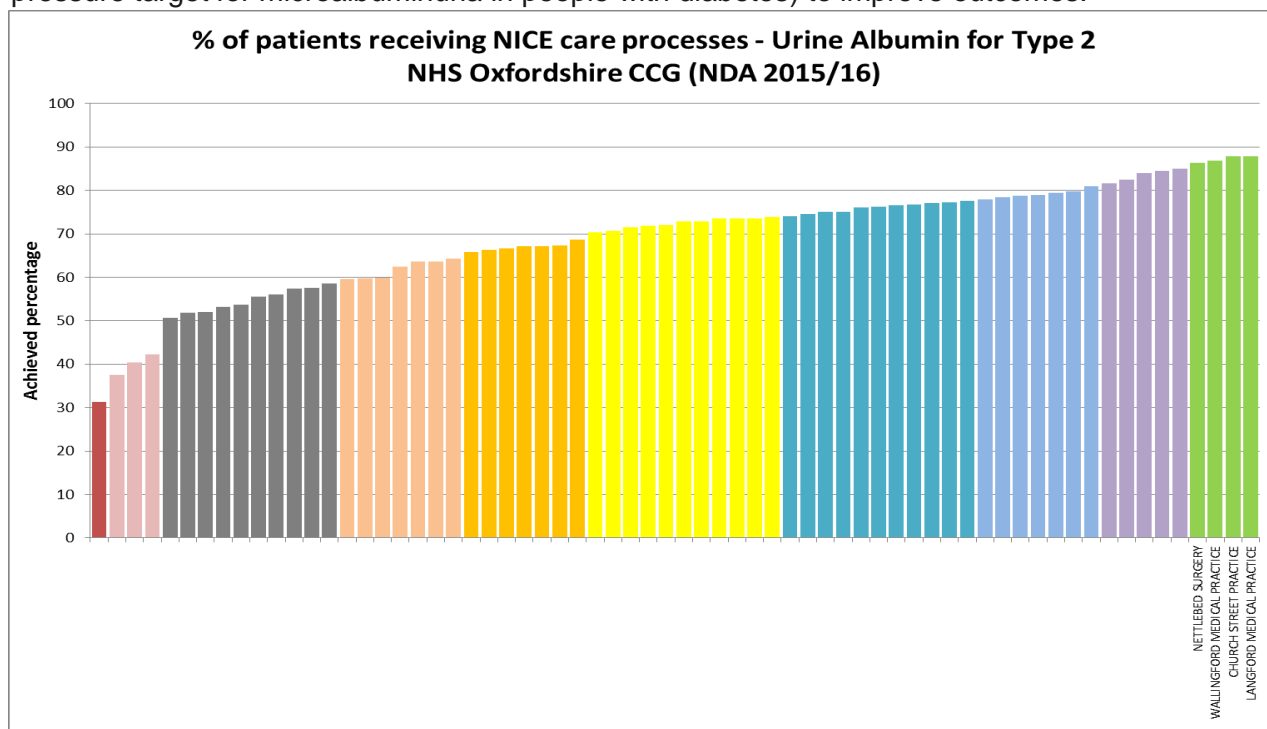
- 50% risk reduction in developing cardiovascular disease.
- 60% risk reduction in developing microvascular complications i.e. progressive kidney damage and diabetes eye complications.(Gaede et al., 2003)
- Reduced mortality: life expectancy increased by median 7.9 years after 21 years follow up. (Gaede et al., 2016)

A study in people with Type 1 diabetes and microalbuminuria, showed 60% regression of microalbuminuria after 6years of intensive optimisation of glucose levels (A1C <8%), cholesterol <5mmol/L and systolic blood pressure (BP) <115mmHg.

There was an additive benefit of having A1C <8%, cholesterol <5and systolic BP <115 mmHg.

- 70% regression with 1 optimum target.
- 2 fold chance of regression with 2 optimum factors.
- 3 fold chance of regression with all 3 optimum factors.(Gaede et al., 2003)

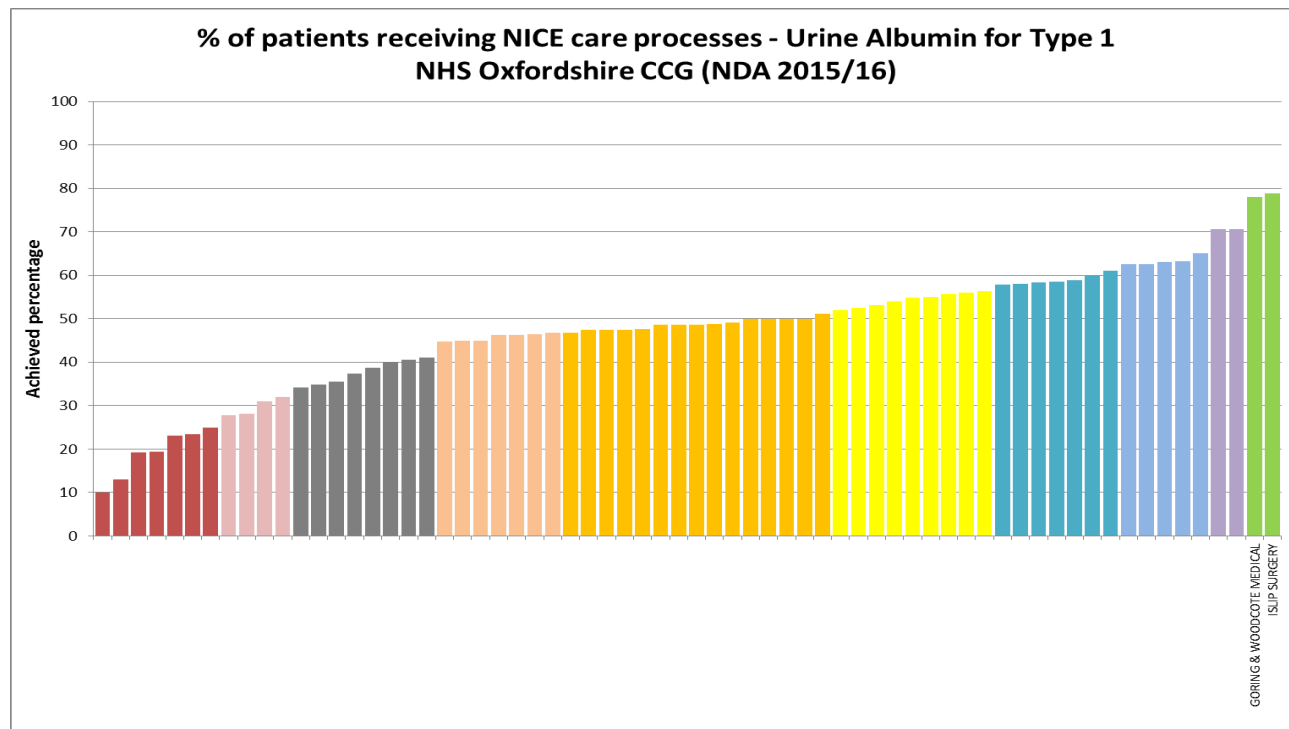
These studies reinforce the importance in detecting early diabetes kidneys changes to ensure optimisation of glucose, cholesterol and blood pressure <130/80 (NICE blood pressure target for microalbuminuria in people with diabetes) to improve outcomes.





There is marked variation in urine ACR being checked by GP practices ranging from 31.3% to 87.9% in people with Type 2 diabetes.

**Figure 11:** Type 1 diabetes and urine ACR



There is marked variation in urine ACR being checked by GP practices ranging from 10% to 78.9% in people with Type 1 diabetes. UK Renal Registry Report 2014 showed there were 533 Oxfordshire CCG residents with and without diabetes receiving renal replacement therapy (RRT) and 159 people with diabetes (29.9%) receiving renal replacement therapy (RRT). (UK Renal Registry 18<sup>th</sup> Annual report, 2017)

Oxfordshire CCG RRT prevalence rate (with and without diabetes):

- RRT is 817 per million population in 2014 (England: 918 per million population)
- Renal transplant is 520 per million population (England: 481 per million population).

This difference is not statistically significant and as discussed above, renal transplant delivers both quality and financial benefit (ibid). Further detail on this is provided in the Appendix.

In 2013 the indicative cost of treating end stage renal failure (Kidney.org.uk, 2017)

- Peritoneal dialysis: £17,500/patient/year
- Hospital haemodialysis: £35,000/patient/year
- Renal transplant: £17,000/patient as one off cost (ibid).

The cost of renal replacement treatment for Oxfordshire CCG is over £11m/year at 2013 prices.

**Table 10:** Cost of renal replacement therapy (with and without diabetes)

	%	No: Oxon CCG in 2014	Unit costs 2013 (£) pa	Total costs (£)
Haemodialysis	76	147	35,000	5,160,400
Peritoneal dialysis	24	47	17,500	814,800
<b>Total number of dialysis patients</b>	<b>100</b>	<b>194</b>		<b>5,975,200</b>
<b>Transplant (one off cost)</b>		<b>339</b>	<b>17,000</b>	<b>5,763,000</b>
<b>Grand total</b>		<b>533</b>		<b>11,738,200</b>

## 10 Headline findings

- With the rising levels of obesity and diabetes there is a predicted **>30% increase** in the cost of managing diabetes and its complications, in Oxfordshire rising from **£123m/year to £162m/year by 2035**. There is an opportunity for OCCG to consider supporting GPs to open conversations with patients about their weight where there is the opportunity to do so.
- There is **wide variation** in the attainment of the NICE recommended three treatment targets across Oxfordshire CCG; 7 practices **did not participate** in the NDA. There is an opportunity for OCCG to encourage participation in the NDA so that there is assurance that all patients are being provided with consistent advice and treatment in primary care. The role of primary care in avoiding hospital admissions through attainment of the three treatment targets is paramount.
- Patients with diabetes in Oxfordshire are at **51.7% additional risk of mortality**. This is higher than the national average of 39.2%. Patients with diabetes in Oxfordshire are **46% more likely** than the national average to require renal replacement therapy. Attainment of the three treatment targets will reduce the risk of complications and would result in significant cost savings. For example: reduction in amputation rate to match best performing CCG in England could save Oxfordshire CCG £949,905 over 3 years (i.e. £316,635/year); reduction in the length of stay in hospitals. There is an opportunity for OCCG to encourage attainment of all three treatment targets to reduce the risk of complications and burden in secondary care.
- Structured education (SE) is an important NICE recommended intervention to enable people with diabetes to manage their condition. Oxfordshire CCG can achieve **cost savings of £82,462** after 5 years and **£125,883** after 10 years, by increasing patient attendance to structured patient education, to match the best CCG in England. OCCG have an opportunity to provide patients with the tools for supportive self-management to improve outcomes and to generate substantial efficiencies. Patient involvement would be useful to understand the barriers and/or facilitators in attending classroom based sessions.
- The estimated excess LoS for patients with diabetes in England is **0.8 days** at an **additional burden of £573m/year**. There is a significant opportunity in Oxfordshire to address the variation in care and experience of inpatients with diabetes. The role of DISNs in secondary care in reducing the risk of complications and excess LoS is paramount and has been shown to be efficient and effective.

## Appendix 1: Diabetes Quality Improvement Initiatives

Initiative	Setting	Intervention	Findings	Reference/Contact for further information
Weight Management	Primary care	<ul style="list-style-type: none"> <li>A two-arm, randomised trial. Patients who consulted 137 primary care physicians in England were screened for obesity. At the end of the consultation, the physician randomly assigned to one of two 30s interventions: 1. Offered a weight management group of 12 sessions 2. Physician advised patients that their health would benefit from weight loss.</li> </ul>	<ul style="list-style-type: none"> <li>Mean weight change at 12 months was 2.43kg.</li> <li>The reactions of patients to the GPs' brief interventions did not differ significantly between the study groups in terms of appropriateness.</li> </ul>	<a href="http://thelancet.com/journals/lancet/article/PIIS0140-6736%2816%2931893-1/fulltext">http://thelancet.com/journals/lancet/article/PIIS0140-6736%2816%2931893-1/fulltext</a>
Care and support planning	Buckinghamshire CCG	<ul style="list-style-type: none"> <li>Early identification of people with pre diabetes: NDPP.</li> <li>Inform and educate patients to become equal partners in managing their condition.</li> <li>Structured patient education and care and support planning.</li> </ul>	<ul style="list-style-type: none"> <li>2016/16 Buckinghamshire CCG achieved best HbA1c treatment target for people with Type 2 diabetes in England.</li> </ul>	K.Hoffmann@nhs.net
Care and support planning	Tower Hamlets CCG	<ul style="list-style-type: none"> <li>CCG engagement with stakeholders to agree KPIs with simple guidance.</li> <li>Quarterly data dashboard on achievement of diabetes treatment targets provided by a Clinical Effectiveness Group.</li> <li>Prescribing incentive scheme to reduce blood pressure and achieve cholesterol targets.</li> </ul>		Julia.Coles1@nhs.net
Programme of diabetes quality improvement	Slough CCG	<ul style="list-style-type: none"> <li>Direct engagement with populations with diabetes to develop structured patient education programme.</li> <li>Practitioner up-skilling course (ED) to improve management of those with diabetes focusing on the three treatment targets.</li> <li>Medicines optimisation project lead by CCG pharmacy resource. Reaching hard to engage patients with tailored support and prescribing reviews.</li> <li>Practice visits linked to incentivisation to improve outcomes.</li> <li>Engagement with specialist nurses and diebetology consultants to pilot virtual clinics with GP practices.</li> </ul>	<ul style="list-style-type: none"> <li>Slough CCG now ranks third best in England for achievement of BP target.</li> <li>Slough CCG now ranks second best in England for achieving all 8 care processes effectively.</li> <li>Hba1c target (&lt;59) 64.48%</li> <li>BP target (&lt;140/80) 80.06%</li> <li>Cholesterol (&lt;5) 76.48%</li> <li>CCG performance is tracking</li> </ul>	Nithya.Nanda@nhs.net

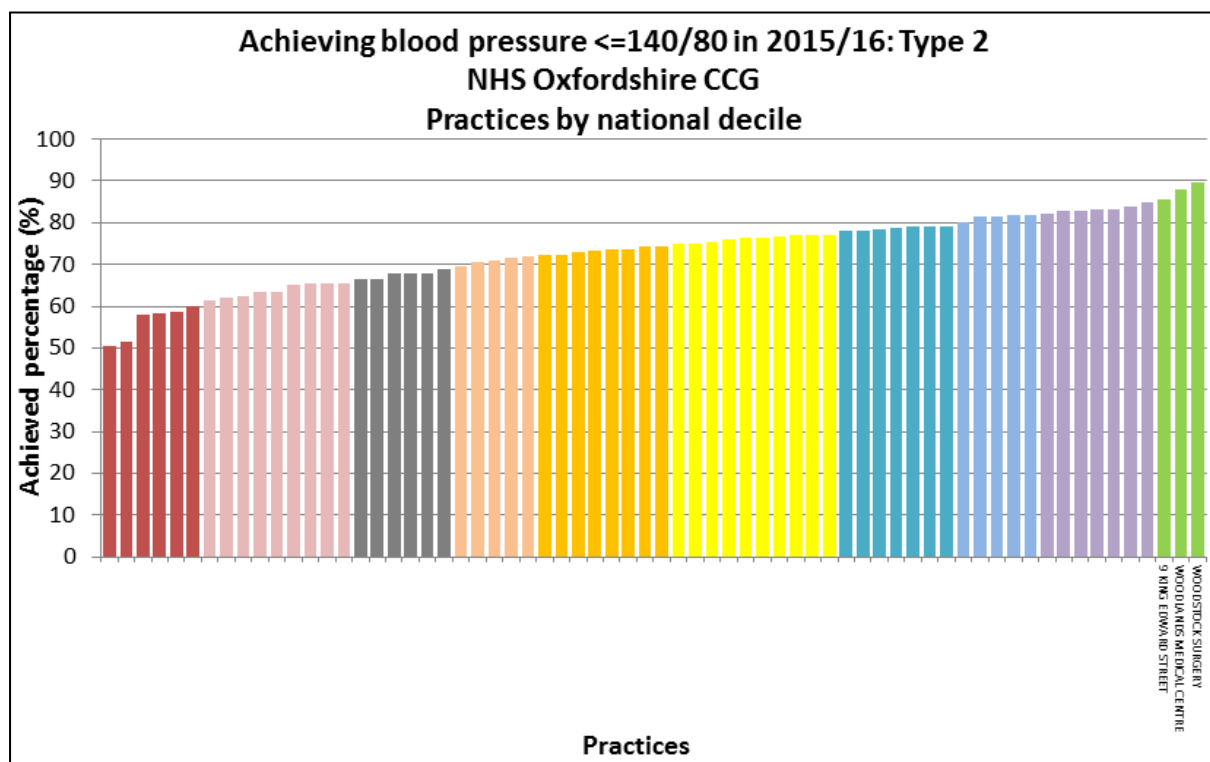
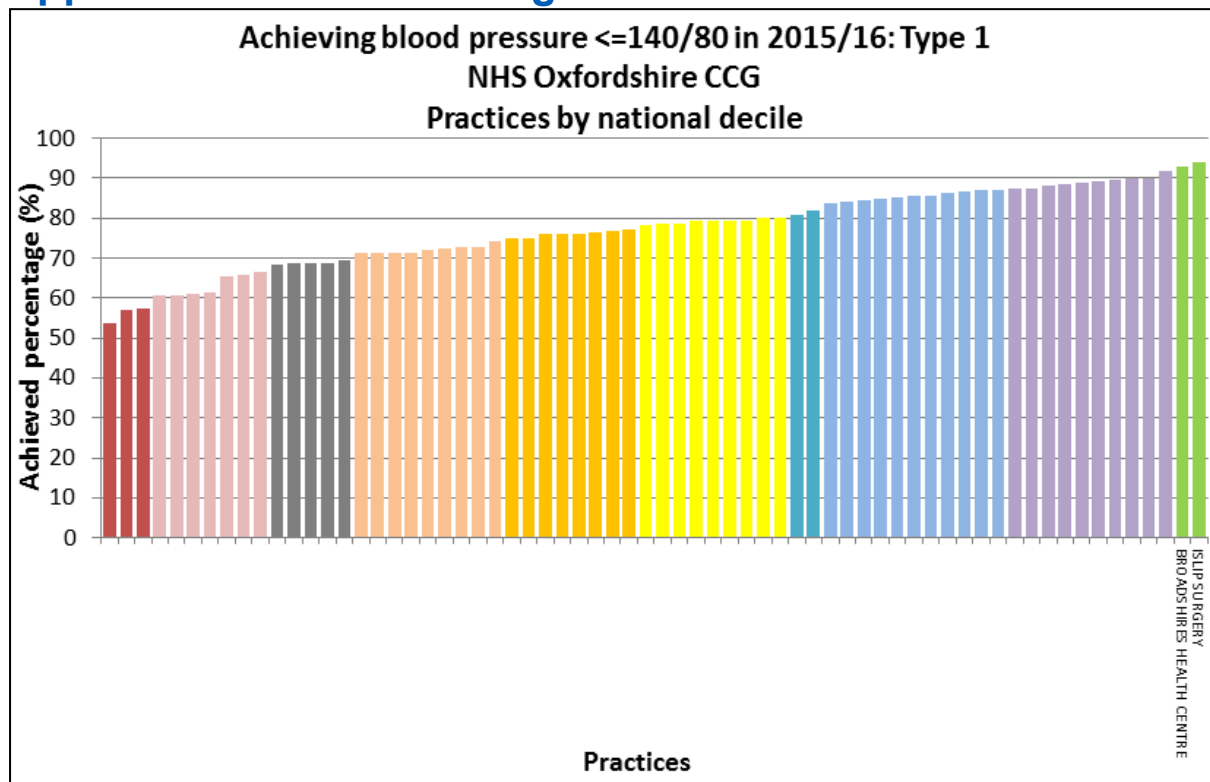
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			towards a position of 'high outcomes, low investment'	
Diabetes insulin optimisation	Berkshire West CCG	<ul style="list-style-type: none"> <li>Insulin optimisation pilot to provide a more focused opportunity to work with individuals under the age of 75 with Type 2 diabetes with HbA1c&gt;85 and not optimally controlled.</li> <li>Up-skilled healthcare professionals' involvement in management of people with Type 2 diabetes who are on insulin therapy.</li> <li>Group optimisation courses with 6 patients per group who have been identified through ECLIPSE</li> </ul>	<p>Average HbA1c reduction 14.5mmols (August 2015-April 2016)</p> <p>* Average HbA1c reduction 15.7mmols (from April-September 2016)</p> <p>Post-course results indicate significant improvements in HbA1c levels, showing an average reduction of 15.1mmols/mol for criteria patients over the periods of August, 2015 to August, 2016 respectively.</p>	pdw@nhs.net
Virtual diabetes clinic	Berkshire West CCG	<ul style="list-style-type: none"> <li>Appointment of community diabetologist to provide in-practice virtual diabetic clinics to assist in the management of patients who are failing to achieve the glycaemic and other therapeutic targets i.e HbA1c&gt; 85 mmol/mol.</li> <li>MDT meeting to discuss every patient (up to 20-30)who has unsatisfactory diabetic control. Clinic establishes an individualised optimum care plan.</li> <li>Patients with very poor diabetic control i.e. HbA1c&gt;85 mmol/mol are prioritised.</li> <li>The team are provided with a clear picture of the patient's social circumstances, past medical history, complications, past and current medical treatment to ascertain the most suitable treatment plan/advice.</li> </ul>	For the first 411 individuals discussed in virtual diabetic clinic, the HbA1c fell from 88.9±21 (SD) mmol to 81±19 p<0.001 (2 tail t test), approximately 8 mmol, or 10% this is a highly statistically significant effect.	iangallen@nhs.net
Inpatient diabetes service	Ipswich Hospital NHS Trust	<ul style="list-style-type: none"> <li>All in-patients with diabetes have a care plan which has an alert system to facilitate appropriate and timely referral to diabetes specialist team.</li> <li>Increased DISN team from 0.5WTE to 3.0WTE to provide a 7 day DISN service with prompt review of: in-</li> </ul>	<ul style="list-style-type: none"> <li>Estimated cost savings of £1.2m/year since introduction of 7 day DISN service</li> <li>Statistically significant reduction of inpatient diabetes mortality</li> </ul>	Sarah.Roberts16@nhs.net

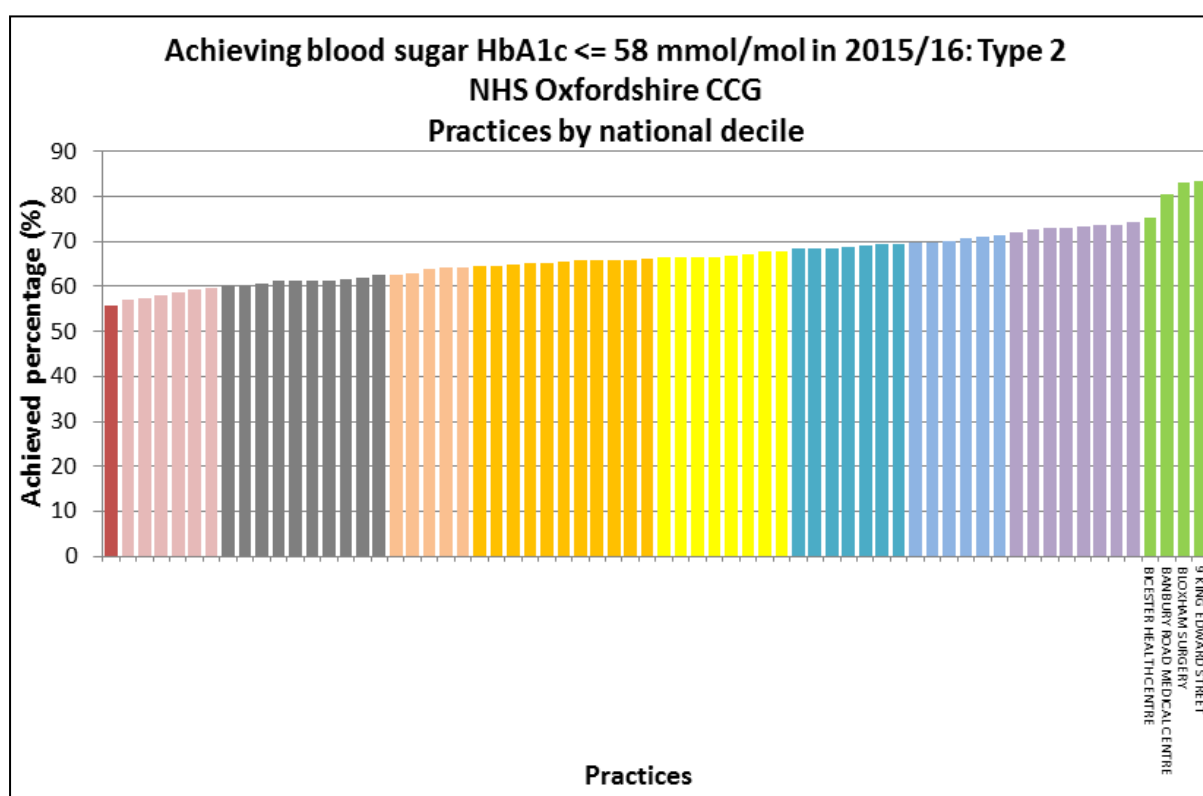
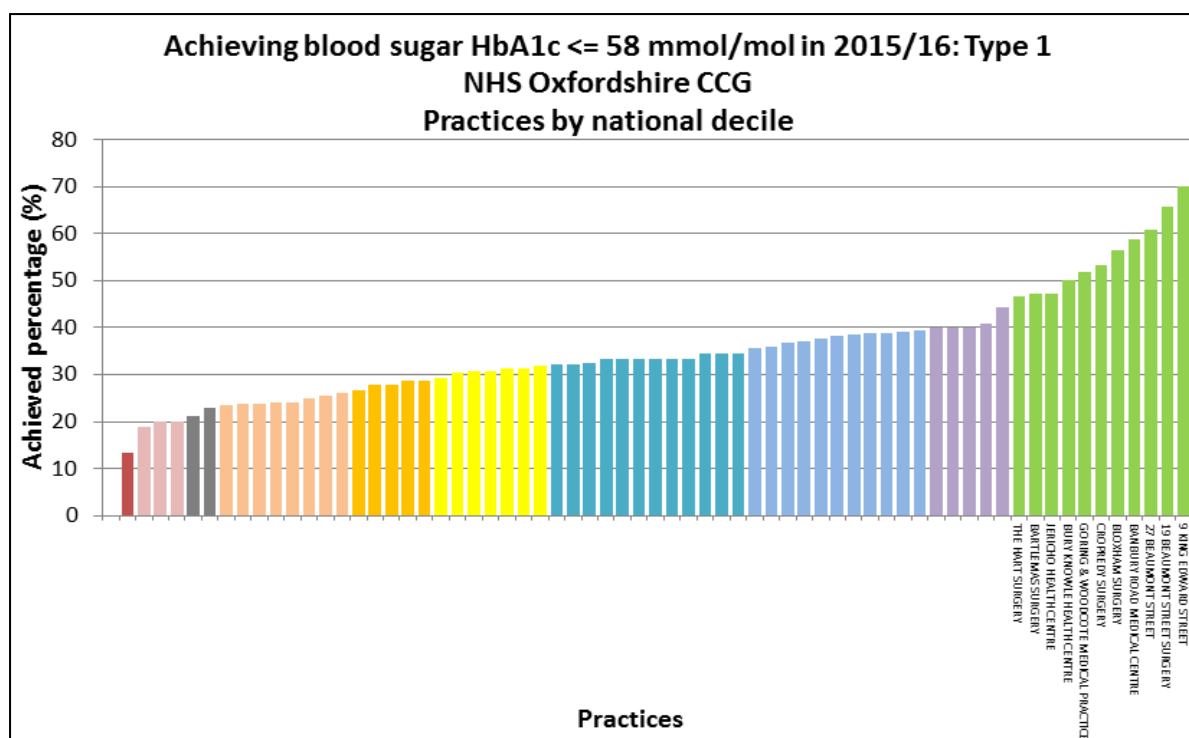
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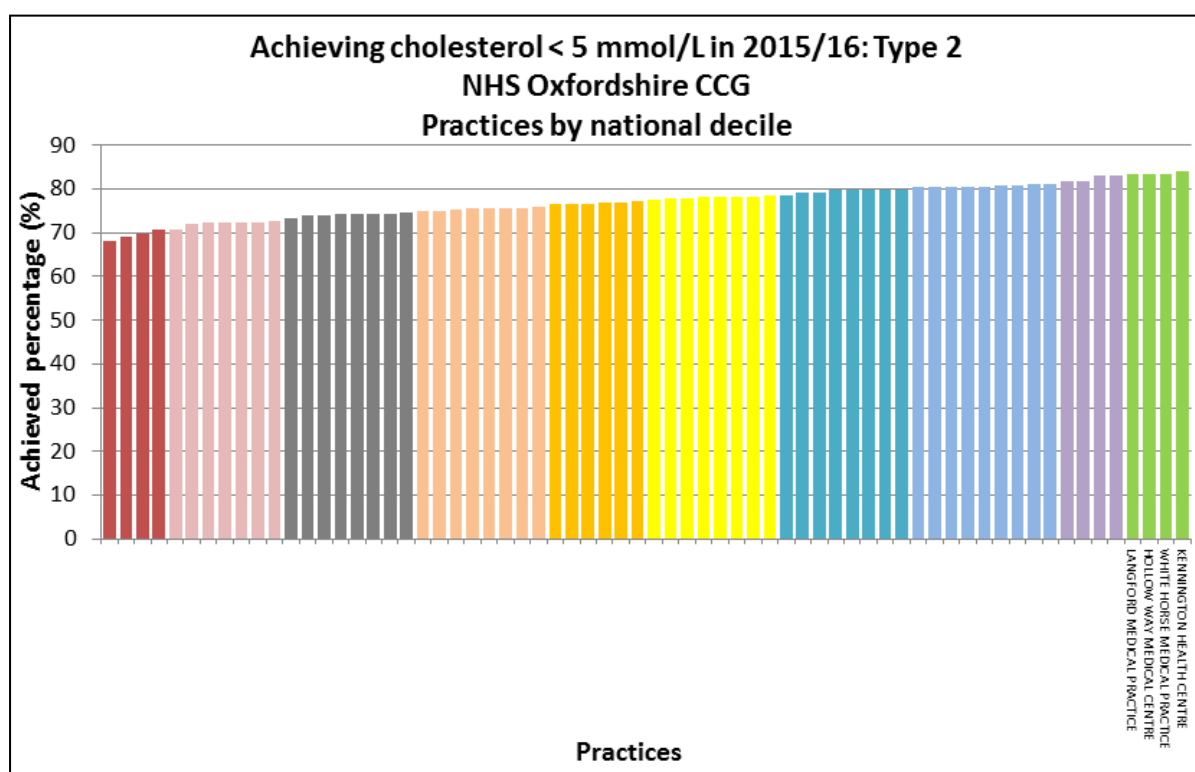
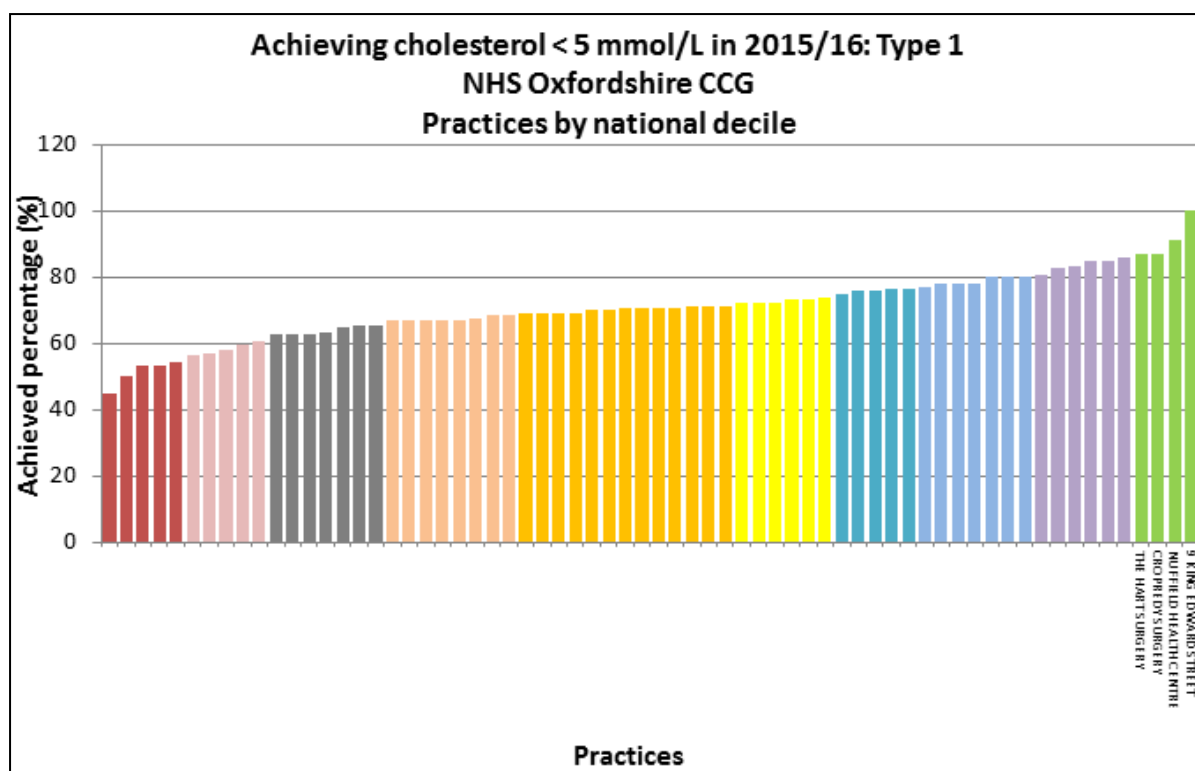
		<p>patients with diabetes admitted to MAU to reduce hypoglycaemia by reviewing diabetes medication on admission and prescription of bedtime 25g carbohydrate snack for people at risk of hypoglycaemia, i.e. those treated with insulin or gliclazide.</p> <ul style="list-style-type: none"> <li>• In-patients with diabetes experiencing hypoglycaemia, identified from a centralised capillary blood glucose (CBG) database linked to web-based ward CBG meters.</li> <li>• Education of healthcare professionals at all levels with case-based induction programme for doctors and opportunistic brief training initiative for ward nurses in the essentials of safe diabetes care.</li> <li>• Foot champion initiative to identify people with diabetes at risk of developing preventing hospital acquired foot ulceration.</li> </ul>	<p>from 6.7% to 4.8% (p=0.01).</p> <ul style="list-style-type: none"> <li>• Better outcomes than England average in NaDIA 2016.</li> <li>• 70% reduction in hospital acquired foot ulceration.</li> <li>• 46% reduction in severe hypoglycaemia.</li> <li>• 80% reduction in recurrent hypoglycaemia by early intervention of DISNs</li> <li>• 68% reduction in the need for IV glucose for treatment of hypoglycaemia.</li> <li>• Reduction of LoS by 1 day</li> </ul>	
Inpatient diabetes service	Russell Hall Hospital	<ul style="list-style-type: none"> <li>• Introduction of a 7 day DISN with dedicated diabetes consultant input (2.0 WTE DISNs, 2PA DCC and 1SPA)</li> <li>• All patients admitted with acute diabetes reviewed by specialist team within 24 hrs to meet Best Practice Tariff criteria for acute admissions with diabetic ketoacidosis and hypoglycaemia, in addition to acute diabetes foot emergency admissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimated £2.3m cost savings</li> <li>• Reduced LoS by 1.2 days</li> <li>• Improved diabetes outcomes than England average in NaDIA (2016)</li> <li>• Reduced cost in excess bed days</li> </ul>	Sarah.Roberts16@nhs.net
Reducing hospital admissions from care homes	South Staffordshire CCG	<ul style="list-style-type: none"> <li>• DISNs educating care home staff: diabetes care pathway and diabetes care plans for residents.</li> <li>• Rolled out to 9 care homes.</li> </ul>	<ul style="list-style-type: none"> <li>• Hospital admission data reviewed 6 months post-intervention, evidencing 15 fewer admissions (71.5% reduction) and 60 bed days saved (50% reduction).</li> <li>• Estimated cost saving of £37,600/year after deduction of service cost.</li> </ul>	Sarah.Roberts16@nhs.net

## Appendix 2. Treatment targets

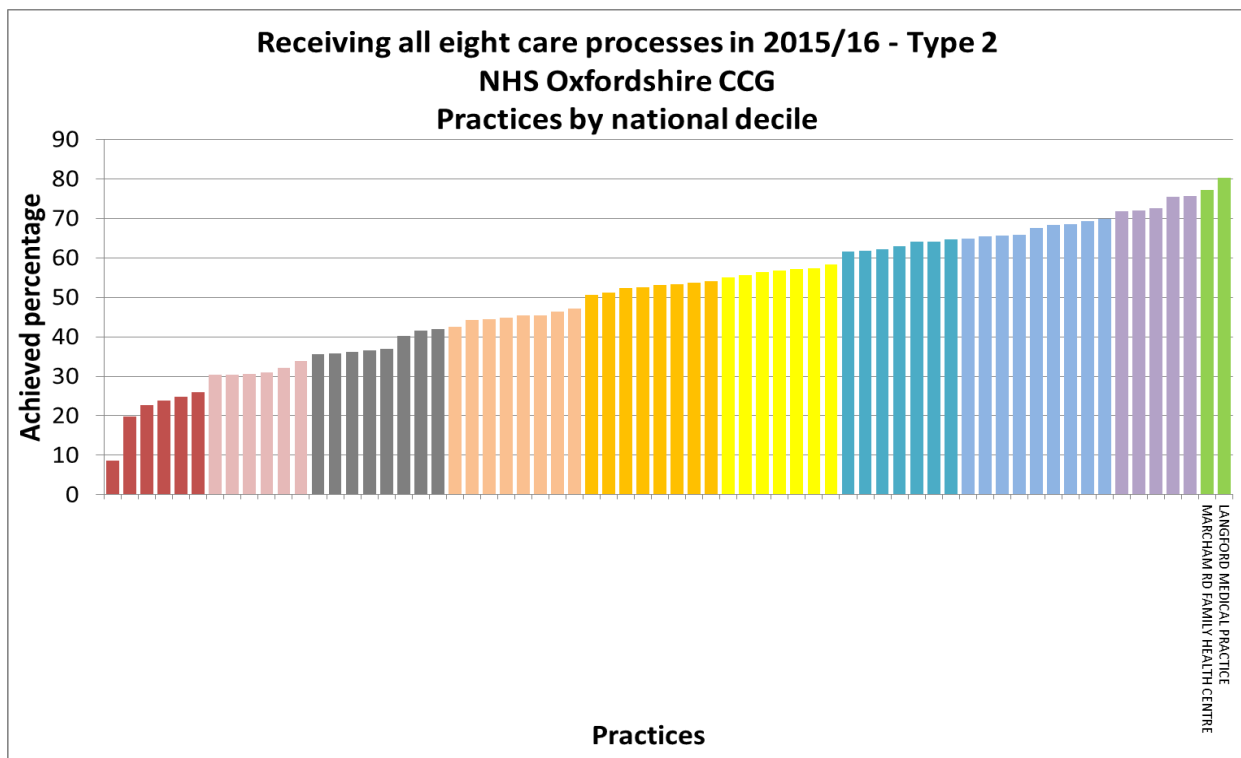
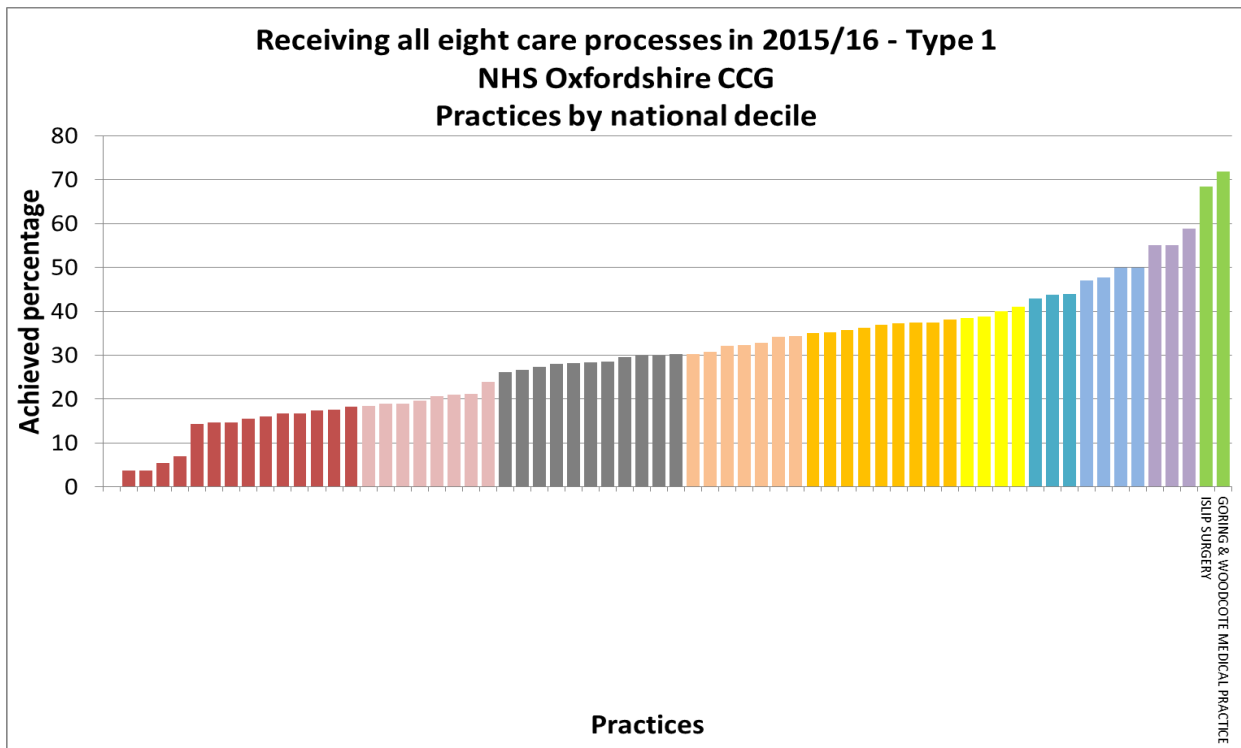








## Care processes



## National Diabetes Audit 2015/16: Comparators

	Type 1 diabetes			Type 2 diabetes	
All 3 treatment targets	NHS Oxfordshire CCG		21.9	NHS Oxfordshire CCG	40.2
	England		18.3	England	40.4
	Best CCG in England	NHS Merton CCG	34.2	NHS Doncaster CCG	48.8
	Best CCG in TV	NHS South Reading CCG	22.7	NHS Aylesbury/ Chiltern CCG	45.9
	Best similar CCG	NHS Herts Valleys CCG	23	NHS East And North Hertfordshire CCG	43.7
Blood pressure <= 140/80	NHS Oxfordshire CCG		77.1	NHS Oxfordshire CCG	72.9
	England		75.7	England	73.7
	Best CCG in England	NHS Cannock Chase CCG	89.3	NHS Cannock Chase CCG	82.3
	Best CCG in TV	NHS Wokingham CCG	81.7	NHS Slough CCG	81.9
	Best similar CCG	NHS Kernow CCG	82.6	NHS Nene CCG	75.7
Cholesterol < 5 mmol/L	NHS Oxfordshire CCG		70.5	NHS Oxfordshire CCG	77.1
	England		70.9	England	77.2
	Best CCG in England	NHS South Reading CCG	78.7	NHS Tower Hamlets CCG	85.4
	Best CCG in TV	NHS South Reading CCG	78.7	NHS North and West Reading CCG	80.7
	Best similar CCG	NHS Herts Valleys CCG	74.4	NHS Herts Valleys CCG	80.2
HbA1c <= 58 mmol/mol (7.5%): Blood sugar	NHS Oxfordshire CCG		34.1	NHS Oxfordshire CCG	66.2
	England		29.6	England	65.9
	Best CCG in England	NHS Merton CCG	49.2	NHS Aylesbury Vale CCG	75.1
	Best CCG in TV	NHS Aylesbury Vale CCG	39.4	NHS Aylesbury Vale CCG	75.1
	Best similar CCG	NHS East And North Hertfordshire CCG	36.5	NHS East And North Hertfordshire CCG	69
All 8 care processes	NHS Oxfordshire CCG		29.3	NHS Oxfordshire CCG	51.6
	England		37.3	England	53.9
	Best CCG in England	NHS Liverpool CCG	60.7	NHS City and Hackney CCG	88.2
	Best CCG in TV	NHS North and West Reading CCG	56.4	NHS North and West Reading CCG	72.6
	Best similar CCG	NHS Bedfordshire CCG	51.6	NHS Bedfordshire CCG	65.5
Structured Patient Education	NHS Oxfordshire CCG		2.2	NHS Oxfordshire CCG	7.1
	England		4.2	England	7.6
	Best CCG in England	NHS Bradford City CCG	20	NHS Dorset CCG	39.6
	Best CCG in TV	NHS South Reading CCG	5.9	NHS South Reading CCG	14.6
	Best similar CCG	NHS Nene CCG	4.8	NHS Nene CCG	25.5

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