Joint Strategic Needs Assessment

Swindon Diabetes

Summary 2017

NHS

Swindon Borough Council

Contents

Glossary

Body Mass Index (BMI): This is calculated as a person's weight in kilogrammes, divided by their height in metres squared (kgs/m2). In adults, a BMI between18.5 to 24.9 inclusive is usually regarded as in the healthy range. A BMI of 25 to 29.9 is overweight, and if the BMI is 30 or more, this is classified as obesity.

Cardiovascular Disease (CVD): Disease affecting the heart and/or circulatory system. The most common forms of CVD are angina, heart attack (myocardial infarction) and stroke. A person with diabetes has an increased risk of these forms of CVD.

Clinical Commissioning Group (CCG): Swindon CCG is responsible for purchasing healthcare for Swindon and Shrivenham residents. See www.swindonccg.nhs.uk/index.php.

Diabetes Mellitus: Diabetes mellitus, or simply diabetes, is a group of metabolic diseases in which a person has difficulty in controlling blood sugars and fats, either because the pancreas does not produce enough insulin, or because cells do not respond to any insulin that is produced. Uncontrolled Diabetes Mellitus may produces one or more of the "classic" symptoms of frequent urination, increased thirst, weight loss, increased susceptibility to infections and increased hunger. A person who has diabetes may not notice any significant symptoms, however.

Diabetic Ketoacidosis: A complication of diabetes, when the body begins to burn fat rapidly and produces acidic ketones in the blood, because it cannot process sugar in the blood. The build-up of ketones and sugar in the blood then leads to nausea, vomiting, dehydration and if untreated, coma and death. This complication is commoner in people who depend on insulin to control their diabetes. It is usually precipitated by another illness or infection.

Diabetic Retinopathy: Damage to the blood vessels in the retina (the light sensitive lining at the back of the eye), which can arise from poorly controlled diabetes and lead to loss of sight if untreated.

"Exceptions" in QOF Data: GPs are able to exclude certain patients from the calculation of QOF indicators, if, for example, these patients are unable to receive treatment or refuse treatment. Patients on the disease register, or in the target group for the clinical area concerned, who are excluded from the indicator, are called "exclusions" or "exceptions".

Foot risk surveillance: foot examination for foot ulcer risk.

HbA1c level: HbA1c occurs when haemoglobin joins with glucose in the blood. Haemoglobin molecules make up the red blood cells in the blood stream. When glucose sticks to these molecules it forms a glycosylated haemoglobin molecule, also known as HbA1c. The more glucose found in the blood, the more glycated haemoglobin (HbA1c) will be present. This gives a better index of blood sugar control over the preceding days than the level of free sugars in the blood.

Hypertension: The state of having raised blood pressure for a prolonged period. This can cause damage to organs like the brain, eyes, kidneys and heart. When diabetes is present with hypertension, the risk of damage to key organs is significantly higher.

Joint Strategic Needs Assessment (JSNA): Swindon JSNAs are a systematic way of investigating health and healthcare needs of a population, and the services available to meet those needs. A JSNA identifies what works well, as well as scope for improvement, drawing on best practice to provide an evidence base to compare local provision against. JSNAs also result in action to address gaps and improve service planning, commissioning and policy in the future.

National Diabetes Audit: The National Diabetes Audit is a major national clinical audit, which measures the effectiveness of diabetes healthcare against NICE Clinical Guidelines and NICE Quality Standards, in England and Wales. The NDA collects and analyses data for use by a range of stakeholders to drive changes and improvements in the quality of services and health outcomes for people with diabetes.

National Diabetes Inpatient Audit: The National Diabetes Inpatient Audit (NaDIA) is a snapshot audit of diabetes inpatient care in England and Wales.

National Paediatric Diabetes Audit: The NPDA is an audit of the care processes received and outcomes achieved by all children and young people attending paediatric diabetes units in England and Wales.

Neuropathy: A complication of diabetes that results in damage to nerves. It commonly affects the limbs, leading to reduced sensation and a predisposition to injury.

NICE: "National Institute for Health and Care Excellence" which provides evidence-based guidance and standards for health and social care services in England and Wales.

Peripheral Vascular Disease: A complication of diabetes which results from deposits to the blood vessels, leading to poor blood circulation, particularly in the limbs.

Primary care: As many people's first point of contact with the NHS, around 90 per cent of patient interaction is with primary care services. In addition to GP practices, primary care covers dental practices, community pharmacies and high street optometrists.

Public Health England (PHE): PHE exist to protect and improve the nation's health and wellbeing, and reduce health inequalities. PHE does this through world-class science, knowledge and intelligence, advocacy, partnerships and providing specialist public health services. See www.gov.uk/government/organisations/public-health-england.

QOF (Quality Outcomes Framework) Indicators: These health and treatment indicators are measured by General Practitioners, so are a valuable measure of the health status of patients with long-term conditions such as diabetes, and of the treatment they are receiving in a Primary Care setting.

Renal replacement therapy: Renal replacement therapy is a term used to encompass life-supporting treatments for renal failure. It includes: haemodialysis, peritoneal dialysis, haemofiltration and renal transplantation.

Retinal screening: A national screening programme to identify damage to the light sensitive lining at the back of the eyes (see **Diabetic retinopathy**).

Serum Cholesterol: Cholesterol is a fatty substance, which is vital for the normal functioning of the body. It is mainly made by the liver, but is also found in some foods we eat. Poor cholesterol control in the blood leads to deposits in blood vessels (plaques), narrowing the blood vessels, and serving as foci for generating clots that can damage organs like the brain and heart. High density lipoproteins (HDL) are proteins that carry cholesterol away from the rest of the body to the liver for processing, while low density lipoproteins (LDL) carry cholesterol back to the body and bloodstream. A good ratio of HDL to LDL helps to maintain an optimal cholesterol level. A complication of diabetes is the inability of the body to maintain a good ratio.

Serum Creatinine: Creatinine in the blood is a by-product of processes in the body that build up muscles. It is excreted by the kidneys and so its level in the blood is used as a measure to see how well the kidneys are functioning.

Transition: In healthcare, the word transition is used to describe the process of preparing, planning and moving from children's to adult services.

Type 1 Diabetes: Thi**s** develops (usually before the age of 40 or in childhood) when the insulin-producing cells in the body have been destroyed and the body is unable to produce any insulin. Insulin allows the cells of the body to use glucose as fuel. In Type 1 diabetes, insulin is low or absent, and cells are unable to use glucose as fuel, causing build-up in the blood.

Type 2 Diabetes: Type 2 diabetes is more common that Type 1 diabetes. It develops (usually in adulthood) when the body can still make some insulin, but not enough, or when the insulin does not work properly (known as insulin resistance). As a result, the cells are only partially unlocked (or not unlocked at all) to receive glucose and glucose builds up in the blood.

Urinary Micro-Albuminuria (or Proteinuria): The presence of protein in the urine. It is an early indicator of kidney damage and is a complication of diabetes.

1. Introduction

1.1 Scope and purpose

Diabetes in the UK is a major public health problem requiring urgent action. Prevalence is increasing nationally and in Swindon. The rise in expenditure and national variation in care necessitates coordinated action on behalf of the CCG and local authority, together with primary, secondary, community care and patient groups to prevent new cases and ensure efficient, cost-effective care for those with the condition. The purpose of this diabetes needs assessment is to identify the needs of the Swindon population in relation to diabetes, working with our local partners to formulate recommendations that will help inform future cost-effective and impactful commissioning.

This needs assessment includes type 1, type 2 and gestational diabetes for all ages, but does not include rarer forms of diabetes, chronic kidney disease or vascular disease. This is because from the current coding it is difficult to determine the cause of chronic kidney disease and vascular disease. Where data is presented elsewhere in Swindon JSNAs this will be signposted and discussed as necessary.

1.2 Swindon's JSNA process

Swindon JSNAs are a systematic way of investigating health and healthcare needs of a population, and the services available to meet those needs. A JSNA identifies what works well, as well as scope for improvement, drawing on best practice to provide an evidence base with which to compare local provision. JSNAs also result in actions to address gaps and improve service planning, commissioning and policy in the future.

2. National context

In the UK in 2014 almost 3.5 million adults had a diagnosis of diabetes and it is estimated that there are 549,000 people in the UK who have diabetes but have not been diagnosed. (Diabetes UK, 2015)

Type 1 diabetes affects over 370,000 adults in the UK. Type 1 diabetes results from the destruction of the cells that normally make insulin. Loss of insulin secretion results in high blood glucose and other abnormalities, which have short-term and long-term adverse effects on health. Type 1 diabetes usually appears before the age of 40, often in childhood. (NICE, 2015)

Type 2 diabetes tends to occur in adulthood and accounts for about 90% of all diabetes. The National Paediatric Diabetes Audit in 2014/15 showed that 1.9% of children and young people with diabetes (up to the age of 24 years) had type 2 diabetes. It develops when the body can still make some insulin, but not enough, or when the insulin that is produced does not work properly (known as insulin resistance). In many people this is a result of being overweight. People with Type 2 diabetes are usually recommended to adopt a healthier lifestyle, (with exercise, good diet and weight-reduction) and subsequently, if necessary, are treated with glucose-lowering medication and often with insulin. (NICE, 2015)

Complication of diabetes result from high circulating glucose levels causing tissue damage. Complications include blindness (type 2 diabetes being a leading cause of preventable sight loss in people of working age), kidney failure and foot ulceration leading to amputation, periodontal disease, as well as premature heart disease, stroke and death. According to the National Diabetes Audit 2010–2011 report on complications and mortality, about 24,000 people with diabetes in England and Wales die early from causes that could have been avoided through better management of their condition. (NICE, 2015) (NHS England, 2016) Nearly 1 in 10 people with diabetes have clinical depression which is nearly twice as many as in those without diabetes and for those with anxiety and/or depression health care costs increase by around 50%. (PHE, 2014) All these conditions increase the likelihood of someone requiring health and social care. The severity of diabetes is sometimes under-estimated but these figures highlight the significance of diabetes and the importance of good blood glucose control.

“There are currently five million people in England at high risk of developing Type 2 diabetes. If current trends persist, one in three people will be obese by 2034 and one in 10 will develop Type 2 diabetes. However, evidence shows that many cases of Type 2 diabetes are preventable. There is also strong international 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 the condition.” (NHS England, 2016)

2.1 Key determinants/risk factors

It is not fully understood why the processes leading to Type 1 diabetes take place. Neither have the exact causes of Type 2 been fully established, although there are factors that clearly make development of the condition more likely. The main risk factors for developing Type 2 diabetes are:

- Being overweight or obese,
- Being physically inactive,
- Having a close relative with Type 2 diabetes,
- Being over the age of 40 or older than 25 years for some black and minority ethnic groups,
- Ethnicity (type 2 diabetes is more common in people of African, African-Caribbean and South Asian family origin).

2.2 National and local policy

There is a large volume of national guidance from NICE, NHS England and PHE about the prevention, diagnosis and management of diabetes.

2.2.1 Prevention

Type 2 diabetes prevention: population and community level interventions (NICE PH35) (NICE, 2011) recommends:

- Integrating national strategy on non-communicable diseases,
- Local JSNAs,
- Developing a local strategy,
- Interventions for communities at high risk of type 2 diabetes,
- Conveying messages to the whole population and to the local population,
- Promoting a healthy diet: national action,
- Promoting physical activity: national action and local action,
- Training those involved in promoting healthy lifestyles.

Type 2 diabetes prevention: prevention in people at high risk (NICE PH38) (NICE, 2012) recommends

- Risk assessment,
- Encouraging people to have a risk assessment,
- Risk identification,
- Matching interventions to risk,
- Reassessing risk,
- Commissioning risk identification and intensive lifestyle-change programmes,
- Quality assured lifestyle-change programmes,
- Raising awareness of the importance of physical activity,
- Providing tailored advice on physical activity,
- Weight management advice,
- Dietary advice,
- Vulnerable groups: information and services and supporting lifestyle changes,
- Training and professional development,
- Metformin for certain groups,
- Orlistat for certain groups.

2.2.2 Diagnosis and management

There is specific guidance on the diagnosis and management of type 1 diabetes (NICE, 2015) and type 2 diabetes (NICE, 2015). Other NICE guidance is available on diabetes in pregnancy, diabetes in children & young people and diabetic foot problems. There are also three quality standards; diabetes in adults, diabetes in children and young people, and diabetes in pregnancy. The National Diabetes Audit has used the NICE guidance to identify key care processes and treatment targets.

3. Population – who is affected?

3.1 Numbers of people affected

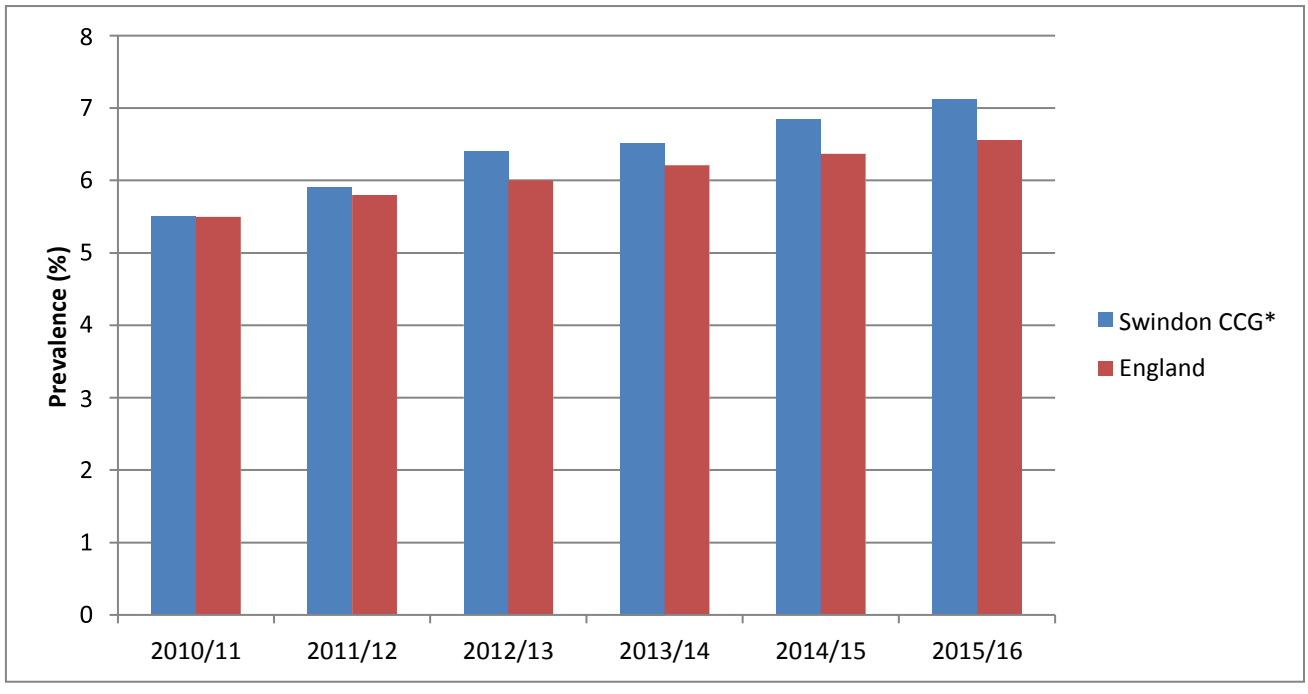
The population of Swindon can be counted in three different ways. Accordingly, data are presented here, (as appropriate or available) for:

- Swindon Unitary Authority (UA, Swindon Borough Council) population.
- Swindon Clinical Commissioning Group (CCG) resident population (people living within the SBC boundaries or in the electoral ward of Shrivenham, Oxfordshire).
- Swindon CCG registered population (people registered with a Swindon CCG GP, some of whom may live outside the CCG boundaries).

For historical reasons, some Swindon CCG data are referred to as "Swindon PCT" data, and vice-versa, according to the source. Although the numbers arising from these different methods of looking at the population differ slightly, it can be reasonably assumed that the trends and patterns of diabetes (and related issues) described by one method, will apply to the others.

From Quality Outcome Framework (QOF) 2015/16 in NHS Swindon CCG there are 230,844 people registered at 26 practices, 79% of the registered population is 17 years and over (181,560 people). There were 12,924 people on the diabetes register in QOF 2015/16 which includes people 17 and over (diabetes prevalence of 7.1%). This compares to 6.6% in England (3,033,529 people). (HSCIC) Graph 1 shows the increase in the number of people on the practice diabetes registers (17+). QOF does not report of whether people have type 1 or type 2 diabetes. However if approximately 90% of those with diabetes have type 2 diabetes, there are around 11,600 people with type 2 diabetes in Swindon.

Graph 1: Prevalence of diabetes (as measured by percentage of practice list on QOF diabetes register aged 17+).



Source: Quality Outcome Framework (NHS Digital, 2015/16)
*Swindon PCT 2011/12 and 2010/11

Using estimates from PHE this and the number of people registered with diabetes in Swindon there may be around 800 people who have diabetes but have not been diagnosed. (PHE, 2016)

The National Diabetes Audit (NDA) provides a comprehensive view of Diabetes Care in England and Wales and measures the effectiveness of diabetes healthcare against NICE Clinical Guidelines and NICE Quality Standards, in England and Wales. (NHS Digital, 2016) The NDA 2014/15 had submissions from 14 practices (of 26) within NHS Swindon CCG. It is worth noting that these practices may not be the same as the practices which did not submit data and, therefore, may not give a representative view of diabetes in Swindon, and that the data collection period is not the same as QOF. Participation in the NDA 2015/16 has increased to 18 of 26 practices (69.2%) and the results are expected 31st January 2017. The 14 practices in NDA reported 500 people with type 1 diabetes and 6,030 people with type 2 diabetes or other. That means in 2014/15 the prevalence across the whole population from the 14 practices which submitted data to the NDA was 5.9%. The demographic results from NHS Swindon CCG are presented in table 2 and table 3 shows the prevalence by age-group

Table 2: Demographics (percentage) of those included in 2014/15 NDA NHS Swindon CCG and England

	NHS SWINDON CCG (14 of 26 practices)		ENGLAND	
	Type 1	**Type 2 and other**	**Type 1**	**Type 2 and other**
Age				
Aged under 40	41.6	4.6	43.1	3.6
Aged 40 to 64	47.4	44.6	42.5	40.7
Aged 65 to 79	9.0	36.3	11.6	39.8
Aged 80 and over	2.0	14.5	2.5	15.8
Age unknown	-	-	0.3	-
Sex				
Male	56.8	55.9	56.3	55.6
Female	43.2	44.1	43.7	44.4
Unknown	-	-	-	-
Indices of multiple deprivation				
IMD most deprived	23.0	25.4	19.0	22.7
IMD 2nd most deprived	14.8	13.0	20.3	22.1
IMD 3rd most deprived	16.8	21.2	20.5	20.5
IMD 2nd least deprived	35.4	31.4	20.2	18.5
IMD least deprived	9.8	9.0	20.0	16.1
IMD unknown	0.2	-	-	-
Ethnicity				
White	75.6	67.1	70.2	63.2
Minority Ethnic Origin	7.2	17.0	9.7	19.1
Unknown/Not Stated	17.2	15.9	20.2	17.8

Source: National Diabetes Audit (NHS Digital, 2016)

[1] PHE estimates on the total number of people with diabetes (diagnosed and undiagnosed) using a multivariate binary logistic regression model developed using Health Survey for England data. Three years of HSE data were combined, 2012 - 2014. Diabetes was defined as self-reported, doctor-diagnosed diabetes or an HBA1c greater than 6.5% (48mmol/mol), who had not previously reported being diagnosed with diabetes.

Table 3: Prevalence by age for type 1 and type 2 diabetes, from NDA 2014/15.

Age	NHS Swindon CCG	England
Under 40	0.9%	0.7%
40-64	7.9%	6.6%
65 to 79	17.4%	15.6%
Over 80	17.2%	16.5%
All	5.9%	5.3%

Source: National Diabetes Audit (NHS Digital, 2016)

3.1.1 Paediatrics

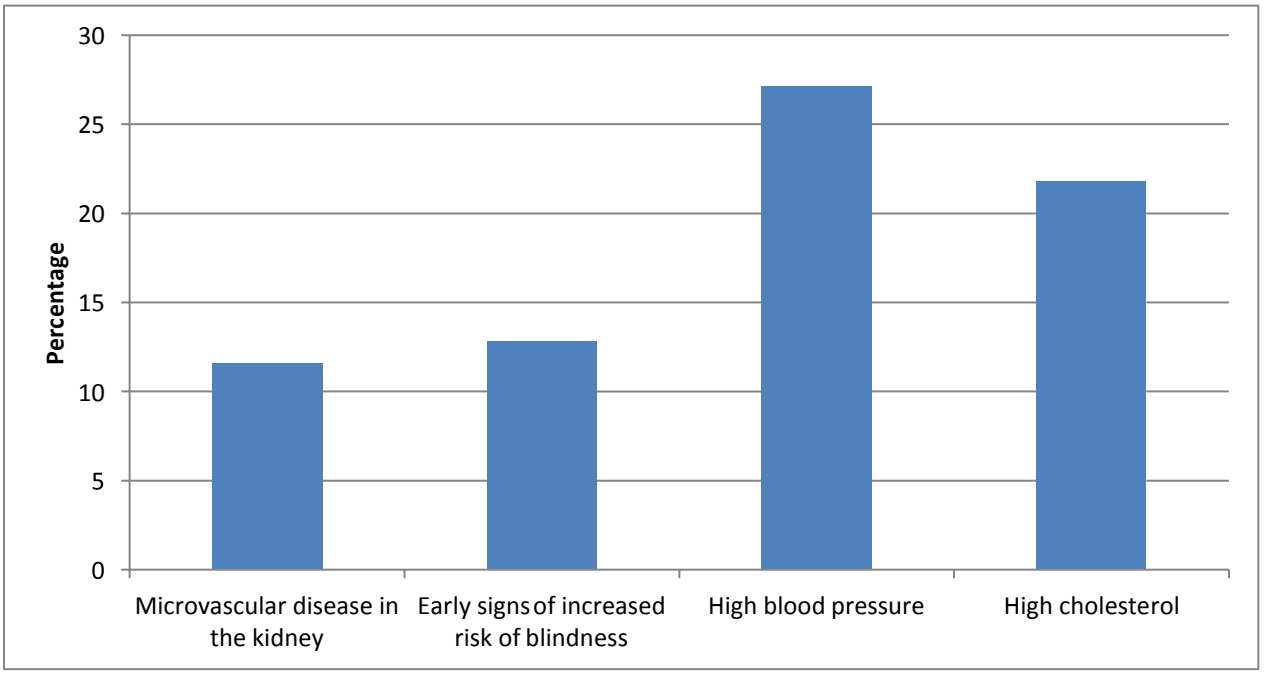
The National Paediatric Diabetes Audit (NPDA) (Royal College of Paediatrics and Child Health, 2014/15) in 2014/15 showed there were 27,600 children and young people (up to the age of 24) cared for in 176 Paediatric Diabetes Units (PDU) across England and Wales. The number of young people and children with diabetes cared for in PDUs continues to rise by 4% each year. Nationally the percentage of children and young people achieving the NICE target of HbA1c <58mmol/mol has increased each year reaching 23.5% in 2014/15.

95.5% of the 27,600 children and young people had type 1 diabetes requiring daily insulin injection. 2% had type 2 diabetes, which is over 500 children and young people with type 2 diabetes in England and Wales. It is worth noting that there is no routine process for screening children and young people for diabetes and these figures could be an underestimate.

A total of 175 children and young people (CYP) with diabetes who received treatment at GWHFT were included in the 2014/15 audit. These are children and young people who attended GWHFT and they may not all be Swindon residents. 96% of these children and young people had type 1 diabetes. In the South West around 1% of the children and young people had type 2 diabetes, but numbers are suppressed at the Swindon level due to small numbers (less than 5). This is mirrored by local information from paediatrics that there are currently less than 5 children and young people with type 2 diabetes seen at GWHFT.

In England and Wales children and young people from deprived areas were found to have poorer blood glucose control, a higher risk of obesity and more microvascular changes in the kidney compared with those living in more affluent areas. There is no data presented within the NPDA on ethnicity. (Royal College of Paediatrics and Child Health, 2014/15) Graph 2 shows details of complications and risk factors for diabetes for those children and young people with diabetes cared for in the PDUs. Around 50% of children and young people were offered structured education. There was poor data available for mental health support offered.

Graph 2: Percentage of children aged 12 to 24 years old with diabetes cared for in PDU in England with complications or risk factors, 2014/15.



Source: NPDA (Royal College of Paediatrics and Child Health, 2014/15)

Transition – from child to adult

"During adolescence many experience deterioration in the control of their diabetes. They are particularly vulnerable as care is transferred from child to adult services. The importance of getting transition right is increasingly acknowledged across international healthcare arena. All too often transition has been perceived as a single event and there has been a lack of appreciation of the need for developmentally appropriate services." (NIHR, 2010)

Deterioration in metabolic control appears secondary to several factors:

- Physiological changes in glucose metabolism increased growth hormone concentration and the pubertal growth spur mean insulin requirements may need to be adjusted regularly.
- Adolescence and young adulthood is a period of multiple social changes which can magnify the challenges of self-management. Even subtle changes in the routines of everyday life can have important consequences.
- 'Non-compliance' with recommended medical regimen is a particular concern at this stage in the life-course.

3.1.2 Maternity

Up to 5% of the 700,000 women who give birth in England and Wales each year have pre-existing diabetes or gestational diabetes. Of women who have diabetes during pregnancy, it is estimated that approximately 87.5% have gestational diabetes (which may or may not resolve after pregnancy), 7.5% have type 1 diabetes and the remaining 5% have type 2 diabetes. The prevalence of type 1 diabetes, and especially type 2 diabetes, has increased in recent years. The incidence of gestational diabetes is also increasing as a result of higher rates of obesity in the general population and more pregnancies in older women. Diabetes in pregnancy is associated with risks to the woman and to the developing fetus. (NICE, 2015)

In Swindon UA there are approximately 3,000 births per year, which means there around 150 women who give birth in Swindon UA each year who have pre-existing diabetes or gestational diabetes.

"Because women need to be aware of pregnancy risks and have access to information about how to minimise these risks in advance of pregnancy, diabetes and maternity services (and networks) need to develop a focus on pregnancy preparation.

Services and networks will be a key element of an integrated approach to engaging with and informing women, and should work with primary care teams to identify and inform all women with diabetes who might become pregnant about the importance of, and options for, safe effective contraception and pregnancy planning.

Particular focus is needed on engagement with women with Type 2 diabetes, who are likely to receive their diabetes care wholly in a primary care setting and may have less contact with specialist teams, and women from ethnic minority groups or living in areas of high deprivation, fewer of whom have HbA1c measurements within the recommended level." (NHS Digital, 2014)

3.1.3 Mental health

Depression is associated with diabetes at various stages of its natural history. Depression and depressive symptoms are associated with poorer glycaemic control, diabetes complications and increased risk of death. Nationally the prevalence of depressive disorders is around two fold higher than in healthy controls, with a prevalence of 9%. In Swindon local estimates suggest that 9.8% of people with diabetes also have depression. Therefore, in Swindon approximately 1,266 people with diabetes may also have depression. In addition 1.9% of people with diabetes also had serious mental illness.

The prevalence of diabetes in schizophrenia is approximately 10% but rises with age, and up to 20-25% of patients over the age of 60 years may have clinically important glucose dysregulation.

It is also important to consider the role of substance misuse, mental state, socio-economic deprivation and social support in people with mental health problems and obesity.

Despite their high prevalence, mental health problems in diabetes mostly go undetected and untreated. One large study found that only half the cases of depression were detected - of which less than a half received any treatment for depression. (Academy of Medical Royal Colleges, Royal College of Pyschiatrists) (Lancet, 2015)

3.1.4 Other co-morbidities

People who have diabetes are also likely to have other co-morbidities. Modelled data for Swindon suggests that 53.3% of people with diabetes have hypertension (compared to 11.2% of the whole population) and 16.7% coronary heart disease (compared to 3.1% of the whole population). Furthermore of people with dementia in Swindon 15.7% could have diabetes as well.

3.2 Prevalence of risk factors

3.2.1 Obesity and overweight

12.4% of people aged 18 years and over with obesity have diagnosed diabetes, five times that of people of a healthy weight (see table 4 for detail).

Table 4: Doctor diagnosed diabetes prevalence by weight status and gender for adults aged 18 years and over 2010-12, England.

	Underweight	Healthy weight	Overweight	Obese
Female	1.9%	1.9%	4.3%	10.7%
Male	0.0%	3.3%	6.0%	14.6%
Total	1.3%	2.4%	5.2%	12.4%

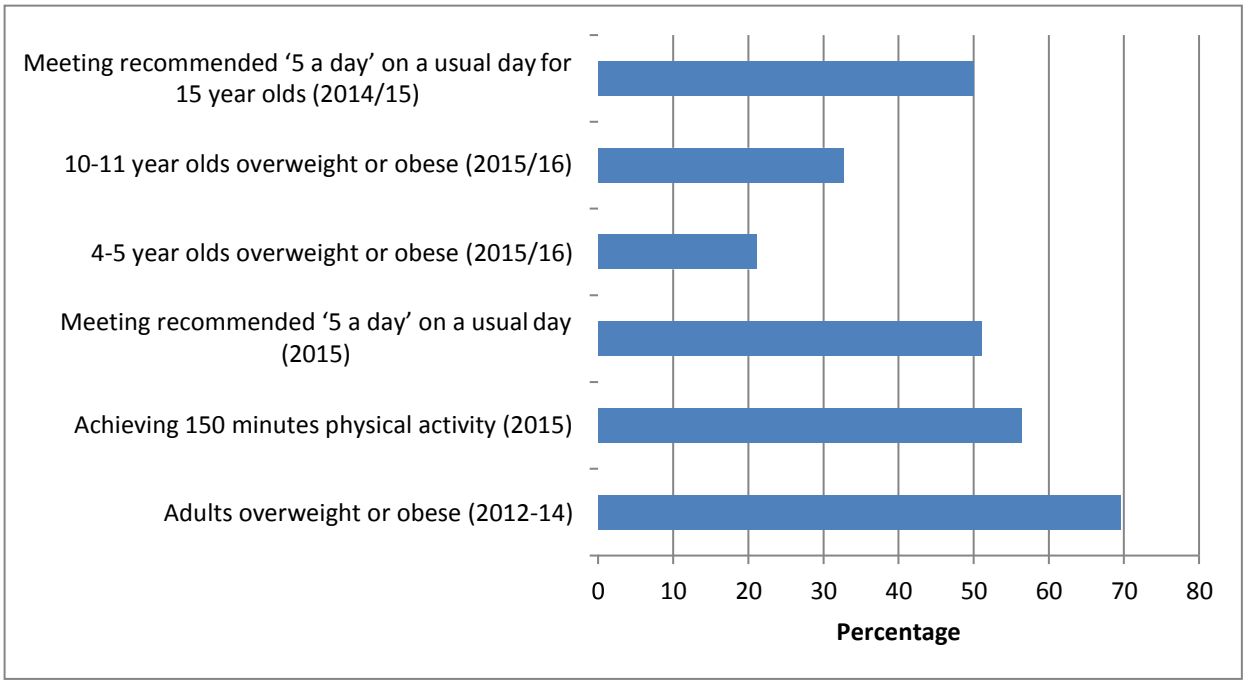
Excludes women who only had diabetes during pregnancy. No distinction is made between type 1 and type 2 diabetes.

Source: Health Survey for England combined data 2010-12. Joint Health Surveys Unit (Nat Cen Social Research & UCL) 2014. The Health and Social Care Information Centre: Leeds. Copyright © 2014, Re-used with the permission of The Health and Social Care Information Centre. All rights reserved. (PHE, 2014)

Adult excess weight is reported from the Active People Survey, Sport England by Public Health England. Data for 2012-14 (most recent data) shows that 69.5% of adults were overweight or obese in Swindon UA (see graph 3). This is significantly higher than the England percentage of 64.6% or the CCG cluster percentage of 63.8% (CCG cluster is group of similar CCGs used for comparison).

The 2015/16 National Child Measurement Programme (NCMP) results show that in Swindon the prevalence of overweight (including obese) in 4 to 5 year olds is 21.1% which is not significantly different to England (22.1%). The prevalence of overweight (including obese) in 10 to 11 year olds is 32.6% is also similar to England (34.2%).

Graph 3: Overweight and obesity, activity and diet percentages for Swindon.



Source: PHE (PHE, 2016)

Swindon Healthy Weight Strategy and Get Swindon Active Strategy contain more information.

3.2.2 Age

There is a different profile of the prevalence of diabetes between type 1 and type 2 diabetes in relation to age. Table 5 shows the percentage of registrations by age and type of diabetes from the National Diabetes Audit 2014/15. However diabetes can occur at any age, and type 2 diabetes is increasingly being diagnososed in children. (NICE, 2015)

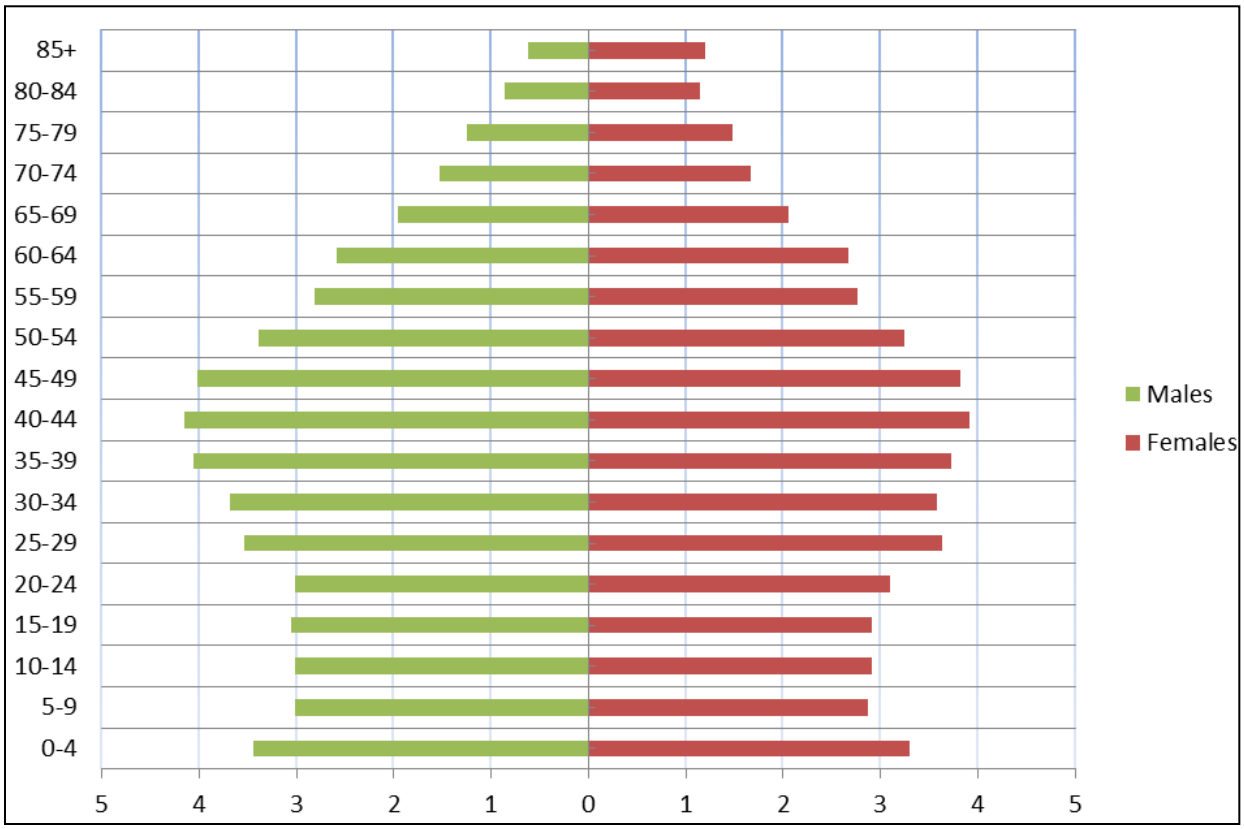
Table 5: Prevalence of diabetes by age group, National Diabetes Audit 2014/15.

Age	Type 1	Type 2
Under 40	43.1	3.6
40 to 64 years	42.5	40.7
65 to 79 years	11.6	39.8
80 years and older	2.5	15.8
Age unknown	0.3	-

Source: NDA (NHS Digital, 2016)

Swindon is a new and growing town with a higher proportion of the population of working age than in England as a whole. The population of Swindon Borough is 217,160. In 2015 14.9% of the population of Swindon Borough were aged over 65 years, compared to 17.1% in England.

Graph 4: Swindon UA population distribution as population pyramid



Swindon's population is forecast to rise by about 14% by 2021 from around 209,700 in 2011 to 240,000 in 2021, and to 265,400 by 2031 (another 10% increase from 2012). Broadly speaking, the main shift will be to a more 'middle-aged' and older population. It is estimated that the largest increase in persons is projected to be in the 65 to 74 year age group, a total of 12,900 additional persons by 2031.

For more information see http://www.swindonjsna.co.uk/dna/population-estimates-projections

3.2.3 Ethnicity

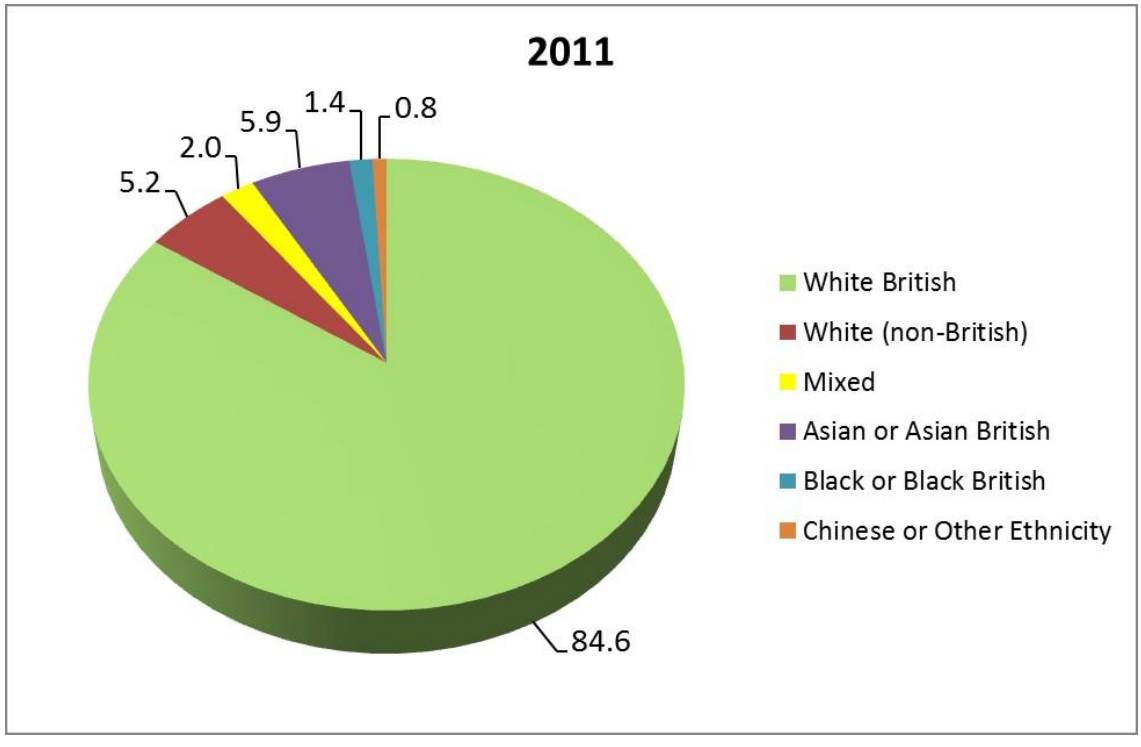
"Type 2 diabetes prevalence is strongly associated with ethnicity. Women of Pakistani ethnicity are over five times more likely, and those of Bangladeshi or black Caribbean ethnicity over three times more likely, to be diagnosed with diabetes compared to women in the general population. Bangladeshi men are almost four times more likely, and Pakistani and Indian men almost three times more likely to have doctor-diagnosed diabetes compared to men in the general population.

Type 2 diabetes affects people of South Asian, African-Caribbean, Chinese or black African descent up to a decade or more earlier than white Europeans. Recently a large scale study of Londoners revealed that by age 80 years, 40-50% of British South Asian, African and African-Caribbean men and women had developed diabetes, at least twice the proportion of white Europeans of the same age." (PHE, 2014)

If we define Black and Minority Ethnic (BME) Groups broadly as everyone except people who report themselves as being White British (so BME Groups include White Irish and White Europeans), the proportion of BME people in Swindon UA has in approximate terms, doubled from 8.5% (15,344 people) in 2001 to 15.4% (32,128 people) in 2011. The Asian/Asian British group, moreover, tripled in size (from 3,837 to 12,411, 2.1% to 5.9%), so the latter is Swindon UA's largest broad BME group.

According to data from the 2011 UK census, approximately 10% of Indian, Pakistani and Bangladeshi people do not use English as their main language and either cannot speak English or cannot speak it well. Research suggests that cultural barriers to diabetes care for South Asian people are still prevalent and include challenges surrounding dietary management, exercise and physical activity, body image and the social stigma attached to having diabetes. Additionally, ideas about the use of medicine from a person's country of origin might influence his or her habits. Some research also suggests that there is a tendency to abandon drugs that do not provide relief from symptoms. In addition, concordance with treatment is often poor in South Asian people, and it has been suggested that this might be because they are less anxious about being concordant and also that they might attach less importance to controlling their diabetes. Therefore, consideration of differences in language and a culturally appropriate approach is crucial. (South Asian Health Foundation, 2014) In Swindon it is known that within the Asian/Asian British group is a large proportion of people from Goa (which is a particular region of India) and it is, therefore, useful to consider this when assuring a culturally appropriate approach.

Graph 5: People of all ages by ethnic group in Swindon UA, 2011

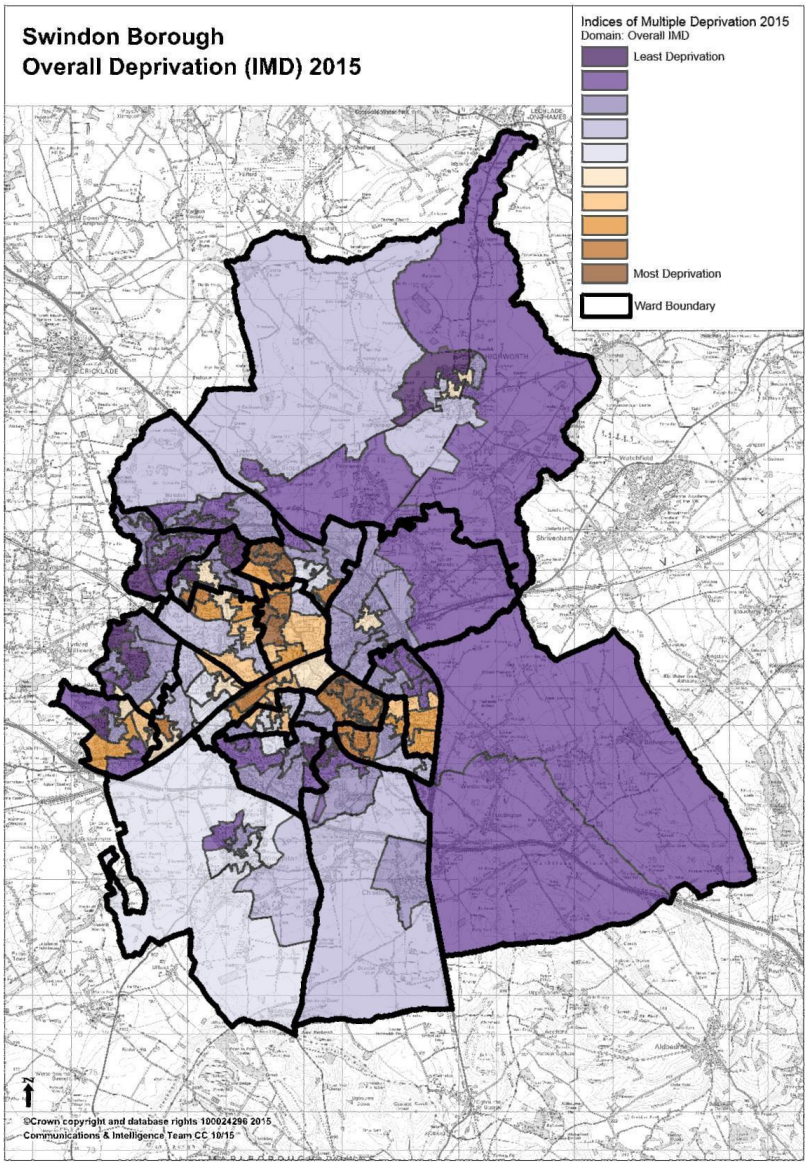


3.2.4 Index of Multiple Deprivation

In England, type 2 diabetes is 40% more common among people in the most deprived quintile compared with those in least deprived quintile. In addition, short term mortality risk from type 2 diabetes is higher among those living in more deprived areas in England, with people in more deprived areas also being more likely to become ill as result of their diabetes. (PHE, 2014)

Swindon UA is shown to be less deprived than England but pockets of deprivation exist. In 2015 eight Swindon Local Super Output Areas (LSOAs) are in the most deprived 10% nationally.

Figure 1: Swindon Lower Super Output Area by National IMD decile 2015



4. What services do people use?

4.1 Prevention

Swindon Borough Council and NHS Swindon CCG commission a wide range of activities to help people maintain a healthy weight and therefore prevent diabetes which contribute to the prevention of type 2 diabetes. These services which target prevention are incorporated in a range of strategies including Swindon Healthy Weight Strategy and Get Swindon Active Strategy. There are also a range national programmes and other lifestyle programmes available locally. Table 6 summarises some of these different programmes by group and setting.

Table 6: Local and national interventions to help people maintain a healthy weight

Setting	Children and Teenagers	Adults and Older People
Early Years	-Breastfeeding • Baby Friendly Initiative • Breastfeeding Welcome • Breastfeeding peer support -Toddler and parent healthy lifestyle course. -Happy Little Teeth Award scheme for playgroups and nurseries. -Health Visitors work on weaning and healthy lifestyle.	
Schools	-School Fruit and Vegetable Scheme, -Healthy Schools Programme, -School meals and school food national food and nutrition standards, -National Child Measurement Programme, -Food for Life Partnership in schools, -Pupil premium supporting physical activity, -School sports and school after school clubs, Active travel to school initiatives.	

Community	-Child & Family Weight Management Programme, -Working together with dental health colleagues to ensure consistent messages on public health promotion, -Sports clubs, -Junior Park Run.	-Change 4 Life, -Physical Activity Programmes, -Adult weight management; dietbusters, -Football fans in training mend weight management programme, -Ability sports, -Community Dietitian Clinics, -Exercise on referral schemes (Steps to Health), - Walking for Health/Walk Swindon, -Triactive programme - walking, cycling and swimming for inactive people, -Healthy Eating Basic Cookery Courses, -Walking football, -Walking netball, -Exercise group for people with a medical condition e.g. cardiac rehab; COPD Swindon running groups, -Community navigators, -Health ambassadors, -Physical activity sessions run by local leisure organisations, businesses, social enterprises and charities , -Weight management sessions run by local leisure organisations, businesses, social enterprises and charities.
Workplace		-Swindon Mindful Employers scheme Great Western Hospital Travel Policy to encourage walking to work, Health
Environment		-Active Travel, -Promotion walking and cycling as part of built environment development in the Swindon Core Strategy Implementation of the Local Sustainable Transport Fund bid to promote cycling and walking.
Hospital	-Obesity care pathway	-Obesity care pathway, -Maternal obesity pathway, -Intense specialist weight management programme, -Pre and post bariatric surgery support service, -Access to bariatric surgery at Bristol, Cornwall, Plymouth, Gloucestershire, Bournemouth & Christchurch or Taunton.

As well as the prevention discussed above, community risk assessment and management for people identified as at high risk of developing diabetes is also important. One aspect of this is the NHS Diabetes Prevention Programme (DPP). The DPP aims to help people who have been identified as having non- diabetic hyperglycaemia (HbA1c 42-47mmol/mol) to reduce this risk. It started in 2016 with a first wave of 27 areas covering 26 million people and making up to 20,000 places available. This will roll out to the whole country by 2020 with an expected 100,000 referrals available each year after. Those referred will get tailored, personalised help to reduce their risk of Type 2 diabetes including education on healthy eating and lifestyle, help to lose weight and bespoke physical exercise programmes, all of which together have been proven to reduce the risk of developing the disease. Evidence suggests that the DPP can lead to on average 26% lower incidence of diabetes and on average 1.57kg weight loss compared to usual care. Swindon along with its Sustainable Transformation Plan partners Wiltshire and Bath & North East Somerset have successfully bid for wave 2. Public health is now working with primary care and NHS England to identify people who have non- diabetic hyperglycaemia and refer them to DPP.

4.2 Early Diagnosis

The NHS Health Check programme aims to help prevent heart disease, stroke, diabetes and kidney disease. Everyone between the ages of 40 and 74, who has not already been diagnosed with one of these conditions, will be invited (once every 5 years) to have a check to assess their risk of heart disease, stroke, diabetes and kidney disease and will be given support and advice to help them reduce or manage that risk. A high uptake of NHS Health Check is important to identify early signs of poor health leading to opportunities for early interventions.

In 2015/16 5,201 people in Swindon UA received an NHS Health Check (of 10,500 invited). From quarter 1 of 2013/14 to quarter 1 2016/17 16,162 people received an NHS Health Check (of 38,654 people invited). This means 25.3% of eligible people have received an NHS Health Check in Swindon, compared to 25.6% in the South West (415,628) and 29.8% in England.

In Swindon we are currently able to look in more detail at NHS Health Checks done by pharmacies. In 2015/16 670 (13%) of NHS Health Checks in Swindon were done in pharmacies. When a NHS Health Check is done there is a diabetes filter to identify whether someone may be at high risk of diabetes and should be seen by their GP for further tests and re-assessment of risk. The diabetes filter is 'yes' if blood pressure is ≥140/90mmHg or where the systolic blood pressure or diastolic blood pressure exceeds 140mmHg or 90mmHg respectively ; or BMI≥30 or ≥27.5 if individuals from Indian, Pakistani, Bangladeshi, other Asian and Chinese ethnicity categories. Of the 670 people, 260 were identified at risk of diabetes. However, 33 of those identified as being at risk should not have been included according to the criteria and 65 people who were not identified should have been based on their results. This means there were 292 people who should have been identified as high risk and referred to their GP. It is difficult to review the referrals for GP as these are separated by reason for referral and there is not an option for diabetes. Therefore, it is not possible to know whether those identified as high risk of diabetes were referred to their GP. It is also not possible to know the result of any further tests or re-assessment of risk (i.e. whether they had diabetes or non-diabetic hyperglycaemia).

4.3 Living with Diabetes

Diabetes is a life-long condition and there is a lot that people with diabetes can do to support their own health. Ensuring that people with diabetes receive the key tests and measurements to prevent or delay the complications of diabetes is a vital component of good diabetes care. Patients with Type 2 diabetes usually receive their care in a Primary Care setting. Patients with diabetes may be seen in outpatients for specialist advice on management. This includes patients with newly diagnosed type 1 diabetes and patients with type 2 diabetes which is complex (GWHFT has specific referral criteria, for example HbA1c>58 mmol/mol on maximum therapy, more than 3 acute diabetes admissions a year).

The complications of diabetes may involve hospital admissions. Apart from diabetic ketoacidosis, which can be an immediate consequence of treatment problems, most of the other possible complications arise after extended periods of high levels of blood glucose. Pro-active involvement for people identified as having complications or being at high risk of complications could be important to reduce further complications.

In Swindon there is also a Swindon Community Diabetes Service. This provides a large quantity of information for patients and healthcare professionals. This includes information on education, courses and support available in Swindon. The Swindon Community Diabetes Service also provides training for healthcare professionals on different aspects of diabetes care, rapid access community diabetes clinics, joint practice based GP/diabetes consultant clinics, joint practice based nurse/diabetes specialist nurse clinics and e-mail/telephone advice. The Swindon Community Diabetes Service also has specific referral criteria.

More information is available at: http://www.swindondiabetes.co.uk/

4.3.1 Self-care

- Supported self-care for people with diabetes and learning disabilities.
- Supported self-care for people with diabetes from BME groups.
- Diabetes Education and Self-Management for Ongoing and Newly Diagnosed (DESMOND) training for newly diagnosed patients in Swindon (see section 4.3.3.1 below for more detail).
- Diabetes self-management groups in the community:

- Diabetes: Living with, living well (Swindon Borough Council)- This 10 week project supports people by aiming to contribute to improving their self-management of Type 1 or Type 2 diabetes and increasing physical fitness and confidence.
- Type 2 diabetes and me (Diabetes UK) - A free e-learning programme consisting of five modules designed to help understand and manage diabetes successfully.
- Living well with type 2 diabetes (LIFT psychology) - This group course of four sessions teaches people to understand thoughts, feelings and behaviours which will help people to think about things differently and do things differently.
- Living well with type 1 diabetes (LIFT psychology) - Four once weekly sessions which will help you to think about your diabetes differently in order that you can better manage it. It is based on Cognitive Behaviour Therapy (CBT) and has been shown to be helpful for many people with diabetes.
- Carbohydrate awareness workshops (GWHFT) - Three hour sessions run by diabetes specialist dietitians. This is a practical course aimed at those who want to understand a bit more about carbohydrate counting.
- SNDT1 (GWHFT) - The SNDT1 education programme consists of four sessions spread over the first year post diagnosis and will cover: Carbohydrate awareness, adjusting insulin, measuring blood glucose levels, managing hypos, exercise and driving, stress and coping and medical aspects of diabetes. It is run in a group, giving participants the opportunity to meet others who have recently been diagnosed with Type 1 Diabetes.
- SWIFT (Swindon Insulin for Food Treatment) (GWHFT) - This course consists of three once weekly sessions and is for those wishing to learn more about carbohydrate counting, insulin, and management of diabetes on a daily basis. You will have the opportunity to learn from other people with type 1 diabetes.

- Diabetes UK Swindon and District Voluntary Group.
- Primary care referral to dietetic service for people with diabetes. There are also a range of leaflets on diet and diabetes available on the Swindon Community Diabetes Service website.

4.3.2 Primary care

4.3.2.1 Care processes

In 2014/15 from data collected in the National Diabetic Audit (NDA) in NHS Swindon CCG all eight care processes were achieved in 36% of people with type 1 diabetes which is as expected compared to similar practices. For type 2 diabetes it was 62% which is higher than expected compared to similar practices. However , the variation between practices for type 1 and type 2 diabetes was large, 10.7%-63.3% for type 1 diabetes and 17.2% and 84.9% for type 2 diabetes.

The eight care processes for people registered with diabetes are; HbA1c test, blood pressure check, serum cholesterol check, serum creatinine check, urine albumin/creatinine level, foot risk assessment, body mass index and smoking status. These would normally be carried out in an annual review in primary care.

Table 7: Percentage of people with type 1 and type 2 diabetes receiving care processes in NHS Swindon CCG, 2011/12 to 2014/15, NDA.

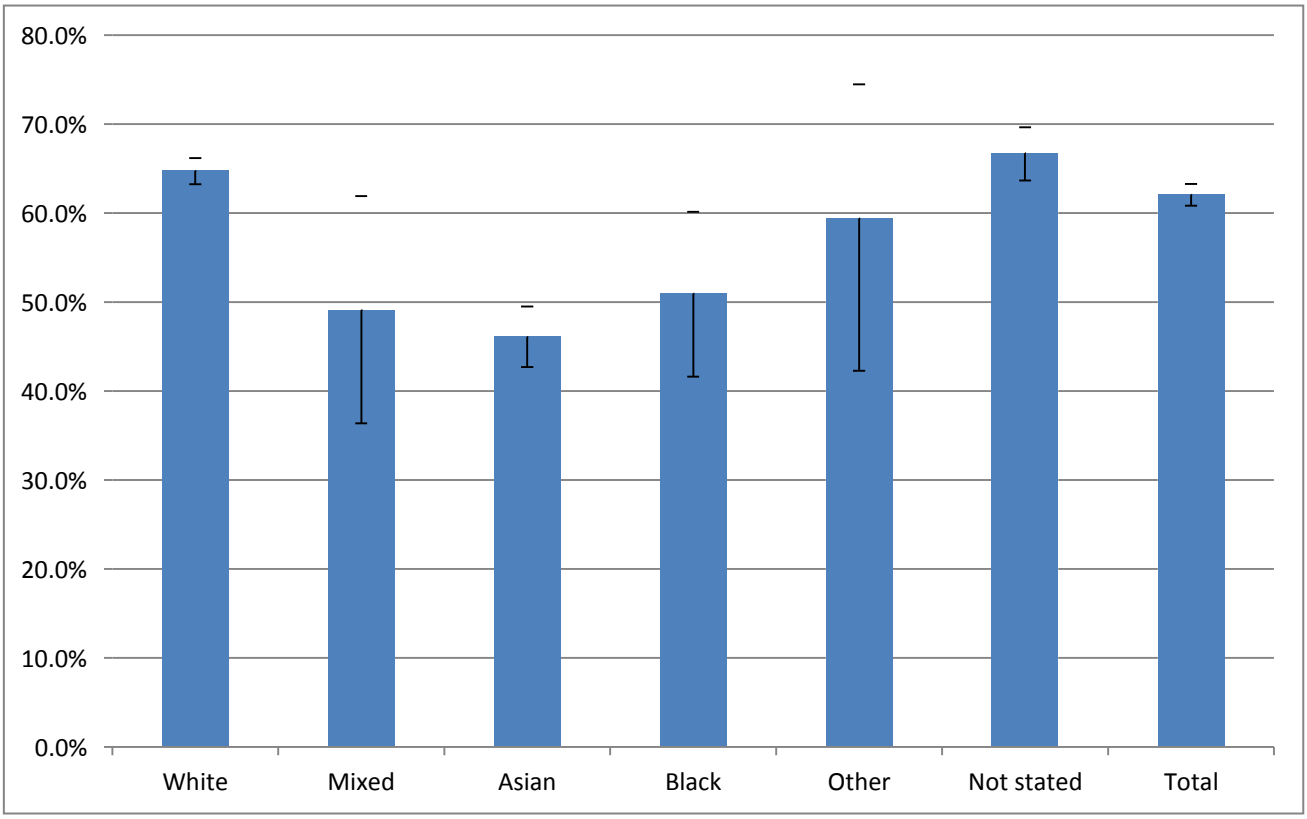
	Type1				Type 2			
Process	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2011/12**	**2012/13**	**2013/14**	**2014/15**
HbA1c	81	78.7	78.6	82.4	92.9	92.6	92.8	95.3
Blood pressure	87.7	87.6	81.9	85.6	95.5	94.9	94.1	96.5
Cholesterol	76.6	75.2	74.4	76.5	91.7	91.4	91	92.2
Serum creatinine	82.5	79.8	80.4	82.3	94.2	93.9	93.1	95.1
Urinary albumin	34.2	45.8	57.7	51.9	50.5	67.3	81.5	77.2
Foot surveillance	68.5	69.9	65.1	69.1	85.2	84.9	85.5	87.3
BMI	82.6	82.5	67.9	69.5	90.4	89.9	85.4	85.3
Smoking	73.1	73.6	71.5	74.7	88.3	88.8	87.6	84.4
Total	**24.1**	**33.6**	**36.7**	**36.0**	**43.4**	**58.3**	**68.7**	**62.0**

Source: NDA (NHS Digital, 2016)

Across England people aged under 40 were much less likely to receive their care processes. For type 1 diabetes the same was true across NHS Swindon CCG in 2014/15 where 28% of people aged 17 to 44 years received all eight care processes, which increased to 63.6% in those aged over 65 years. There was only a small difference between men and women with 39.4% of men and 36.6% of women receiving all eight care processes. 37.5% of people with an ethnic group identified as white received all eight care processes compared to 47.1% with an ethnic group identified as ethnic minority and 37.1% where no ethnic group was identified. There was little variation by deprivation quintile.

For type 2 diabetes 45.1% of people aged 17 to 44 years received all eight care processes, which increased to 68% in those aged over 65 years. There was only a small difference between men and women with 62.4% of men and 61.7% of women receiving all eight care processes. Graph 2 shows the variation in receiving eight care processes by ethnicity. Those with Asian or Black ethnicity are less likely to receive all eight care processes. There was no clear pattern across deprivation quintiles

Graph 6: Number of type 2 diabetes patients (17 and over) in NHS Swindon CCG receiving the eight care processes.



Source: NDA (NHS Digital, 2016)

In 2014/15 80.7% of patients with diabetes, on the QOF register, had a record of a foot examination and risk classification within the preceding 12 months, which is not statistically different from the CCG cluster or England. (PHE, 2016) In 2015/16 82.6% of patients with diabetes, on the QOF register, had a record of a foot examination and risk classification within the preceding 12 months. This data has not yet been compared nationally or with cluster CCGs. (NHS Digital, 2015/16)

4.3.2.2 Management and treatment targets

Structured education

The 2014/15 NDA showed 36.8% of those with newly diagnosed type 1 diabetes were offered structured education with 5.3% attending (compared with 32.8% and 1.9% in England). For newly diagnosed type 2 diabetes 74.4% were offered structured education (78.7% in England) with 0.3% having a record of attending (5.9% in England).

The structured education programme for people with type 2 diabetes (newly diagnosed or ongoing) used locally is referred to as DESMOND (Diabetes Education and Self-Management for Ongoing and Newly Diagnosed). This is a UK NHS training course for people with type 2 diabetes that helps people to identify their own health risks and to set their own goal. A recent audit suggested that some of the difficulties in referral and attendance related to; knowledge of resources, information given to patients and being integrated into a patient plan with appropriate follow up. In addition, discussion with stakeholders suggested that location and timing could be another reason for low attendance as the structured education sessions are currently only run during the day. Work is underway to explore options for evening and weekend sessions. There has been a recent increase in locations where DESMOND sessions are being run which has been positively received. In addition, feedback from people who have attended the sessions is very positive. Many other areas of the country get better uptake and we need to consider what they are doing that we could learn from and also consult with patients as to what they want.

Diabetes UK identified eight steps commissioners can take to change diabetes education (Diabetes UK, 2016);

- Review diabetes education provision to identify local priorities and barriers to uptake, consulting healthcare professionals (HCPs) and people with diabetes.
- Establish a robust service specification for education providers. This may require separate specifications for providers of Type 1 and Type 2 education. Stipulate data collection, KPIs and reporting intervals.
- Set ambitious but achievable targets. Benchmarking against experiences in other areas can be helpful.
- Offer a menu of education options, including 'structured' (level three) courses and less formal, ongoing support – e.g. peer support, online learning, one-to-one support (levels one and two).
- Offer courses in a range of venues in the community and at a range of times.
- Plan effective internal and external communications.
- Use an electronic referral form and allow patients to self-refer.
- Promote and train HCPs in collaborative care planning to empower patients and identify self-management education needs.

There are also a number of other education programmes available for people with diabetes in Swindon (see section 4.3.1) and some of these also cover elements that are within DESMOND. A review of these shows that they are well used but the attendance of these is not included within the 'structured education' of the NDA.

Another area of development in Swindon is a pilot of digital technologies in diabetes care which delivers education and motivation via an App and phone calls.

Screening

Diabetic retinopathy is damage to the retina of the eye and is a complication that can affect anyone who has diabetes. Screening for diabetic retinal disease is effective at detecting unrecognised sight-threatening retinopathy and thereby decreasing the incidence of blindness in the community. The National Screening Committee requires that all diabetic patients over 12 years of age be screened annually for this.

Table 8: Diabetic eye screening, 2014/15.

	Swindon & North Wiltshire NHS Diabetic Eye Screening Programme	England
The proportion of those offered a routine diabetic eye screening appointment who attend and complete a routine digital screening event	81.0%	82.9%
The proportion of subjects attending for diabetic eye screening to whom results were issued within 3 weeks of the screening event.	99.9%	96.5%
The proportion of screen positive subjects with referred proliferative diabetic retinopathy attending for assessment within 4 weeks of notification of positive test from all diabetic eye screening pathways.	87.5%	76.7%

Source: PHE (PHE, 2015)

Treatment targets

15.3% of patients with type 1 diabetes achieved all three treatment targets (HbA1c ≤58mmol/mol, blood pressure ≤140/80 and serum cholesterol <5mmol/L) compared to 19.3% in England. For type 2 diabetes this percentage was 39.1% compared to 43.1% for England. Again there was large variation between practices, 6.5% to 27.3% for type 1 and 30.3% to 56.1% for type 2 diabetes.

Table 9: Percentage of patients included in NDA 2014/15 who reached treatment targets.

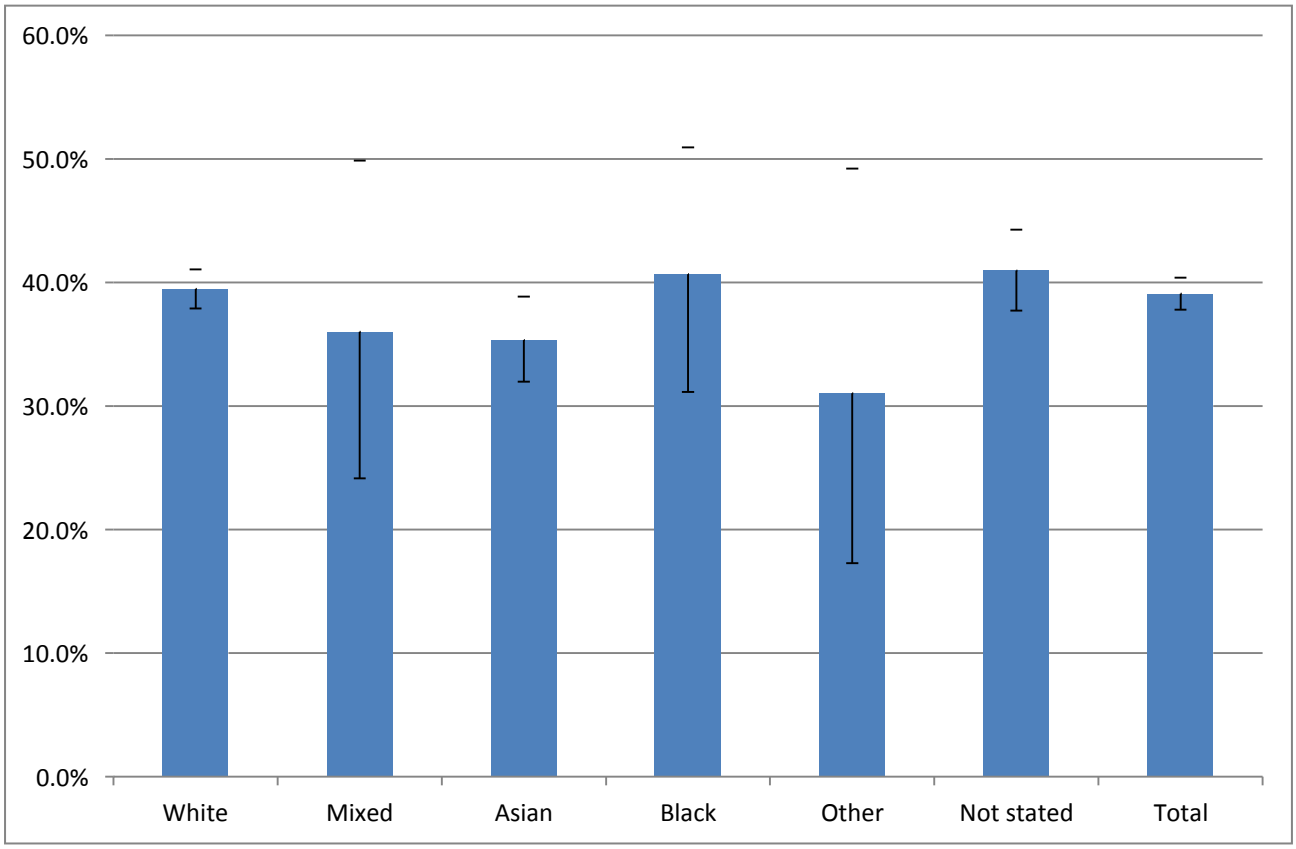
	Type1				Type 2			
Treatment target	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2011/12**	**2012/13**	**2013/14**	**2014/15**
HbA1c ≤58mmol/mol	20.1	21.1	25.5	24.6	59.9	61.4	63.3	63.6
Blood pressure ≤140/80	72.2	73.2	79.1	77.8	63.3	66	73.7	75.3
Serum cholesterol <5mmol/L	71.8	71.8	70.9	69.1	77.7	75.8	76.7	75.6
All three treatment targets	**11.9**	**12.5**	**17.8**	**15.3**	**32.7**	**34.5**	**38.9**	**39.1**

Source: NDA (NHS Digital, 2016)

Across England people aged under 65 were less likely to achieve their treatment targets. For type 1 diabetes the same was true across NHS Swindon CCG in 2014/15 where 12.1% of people aged 17 to 44 years received all three treatment targets, which increased to 23.6% in those aged over 65 years. This lower percentage in the lower age groups may be due to physiological and social changes affecting blood glucose control. There was almost no difference between the percentage of men and women meeting all three treatment targets (men 15.2%, women 14.6%). 15.2% of people with an ethnic group identified as white received all three treatment targets compared to 20.7% with an ethnic group identified as ethnic minority and 10.0% where no ethnic group was identified. 10.7% of people in the most deprived quintile met all three treatment targets compared to 14.3% in the least deprived. It is worth noting that for type 1 diabetes numbers are quite small.

For type 2 diabetes 23.0% of people aged 17 to 44 years received all three treatment targets, which increased to 43.5% in those aged over 65 years. There was almost no difference between the percentage of men and women meeting all three treatment targets (men 39.6%, women 38.4%). Graph 3 shows the variation in receiving all three treatment targets by ethnicity. 35.9% of people in the most deprived quintile met all three treatment targets compared to 42.2% in the least deprived.

Graph 7: Number of type 2 diabetes patients (aged 17 years and over) in NHS Swindon CCG receiving the treatment targets



Source: NDA (NHS Digital, 2016)

Quality Outcome Framework (QOF)

There are 11 diabetes mellitus indicators within QOF 2015/6;

- Establishes and maintain a register of all patients aged 17 or over with diabetes mellitus, which specifies the type of diabetes where a diagnosis has been confirmed,
- The percentage of patients with diabetes, on the register, in whom the last blood pressure reading (measured in the preceding 12 months) is 150/90 mmHg or less,
- The percentage of patients with diabetes, on the register, in whom the last blood pressure reading (measured in the preceding 12 months) is 140/80 mmHg or less,
- The percentage of patients with diabetes, on the register, whose last measured total cholesterol (measured within the preceding 12 months) is 5 mmol/l or less,
- The percentage of patients with diabetes, on the register, with a diagnosis of nephropathy (clinical proteinuria) or micro-albuminuria who are currently treated with an ACE-I (or ARBs),

- The percentage of patients with diabetes, on the register, in whom the last IFCC-HbA1c is 59 mmol/mol or less in the preceding 12 months,
- The percentage of patients with diabetes, on the register, in whom the last IFCC-HbA1c is 64 mmol/mol or less in the preceding 12 months,
- The percentage of patients with diabetes, on the register, in whom the last IFCC-HbA1c is 75 mmol/mol or less in the preceding 12 months,
- The percentage of patients with diabetes, on the register, with a record of a foot examination and risk classification: 1) low risk (normal sensation, palpable pulses), 2) increased risk (neuropathy or absent pulses), 3) high risk (neuropathy or absent pulses plus deformity or skin changes in previous ulcer) or 4) ulcerated foot within the preceding 12 months,
- The percentage of patients newly diagnosed with diabetes, on the register, in the preceding 1 April to 31 March who have a record of being referred to a structured education programme within 9 months after entry on to the diabetes register,
- The percentage of patients with diabetes, on the register, who have had influenza immunisation in the preceding 1 August to 31 March.

Overall in NHS Swindon CCG in 2015/16, the achievement score for diabetes was 89.74% compared to an England achievement score of 89.9%. Achievement score is the percentage of patients who meet all the indicators, in this case all 11 diabetes mellitus indicators. Patients on a specific clinical register can be excluded from individual QOF indicators if a patient is unsuitable for treatment, is newly registered with the practice, is newly diagnosed with a condition, or in the event of informed dissent. The percentage of patients on the registrar who have been excluded is referred to as exceptions. When reported the QOF achievement normally refers to the percentage of patients on the disease register with exceptions removed from the numerator and denominator. Including everyone regardless of exceptions gives the actual achievement and this is the value report on the PHE diabetes framework tool. The exception percentage for NHS Swindon CCG for the diabetes indicators is 12.9% compared to an England exception percentage of 11.6%. The exception percentage in NHS Swindon CCG has been high since 2011/12. The reasons why the exception percentage for NHS Swindon CCG is higher than England are unclear.

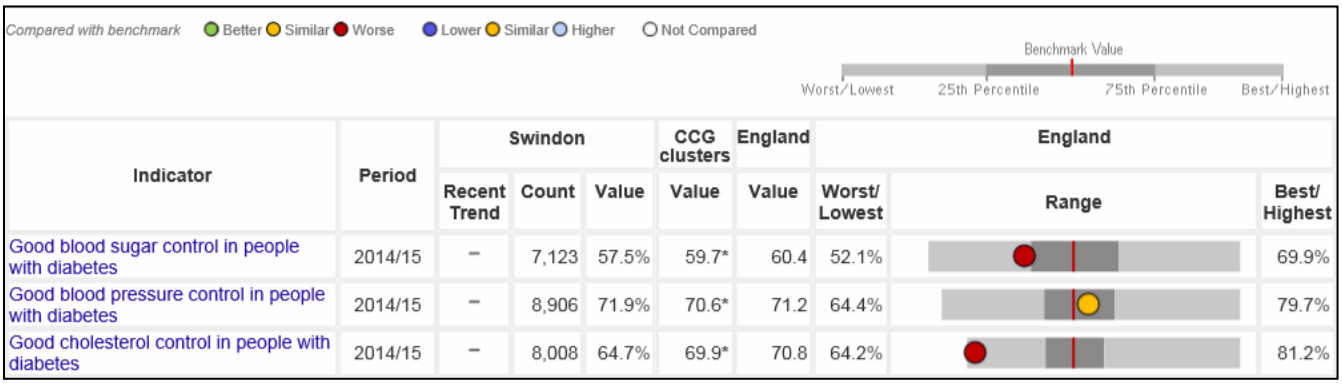
Table 10: NHS Swindon CCG treatment targets from QOF 2015/16 for people on practice diabetes register.

		NHS Swindon CCG (%)	England (%)
HbA1c ≤59mmol/mol	Excluding exceptions	71.9	70.2
	Including exceptions	59.3	60.1
Blood pressure ≤140/80	Excluding exceptions	76.0	77.6
	Including exceptions	69.0	70.4
Serum cholesterol <5mmol/L	Excluding exceptions	75.0	80.2
	Including exceptions	63.6	70.0
Percentage of patients with diabetes with a diagnosis of nephropathy or micro-albuminuria treated with ACE-I (or ARBs)	Excluding exceptions	88.7	92.4
	Including exceptions	76.8	80.9
% of patients with diabetes who have had influenza immunisation	Excluding exceptions	94.6	94.8
	Including exceptions	77.4	75.8

Source: QOF 2015/16

Table 10 shows that in 2015/16 (including exceptions) the percentage of patients with diabetes who had a serum cholesterol <5mmol/L and the percentage of patients with diabetes with a diagnosis of nephropathy or micro-albuminuria treated with ACE-I (or ARBs) in NHS Swindon CCG appeared to be lower than England. The PHE diabetes outcome framework compares NHS Swindon CCG with England and similar CCGs in 2014/15. This shows that in 2014/15 NHS Swindon CCG had less people with good blood sugar control and good cholesterol control than England (see figure 2) and similar CCGs.

Figure 2: PHE diabetes outcomes framework treatment targets.



Indicator	Period	Swindon			CCG clusters	England	England		
		Recent Trend	Count	Value	Value	Value	Worst/ Lowest	Range	Best/ Highest
Good blood sugar control in people with diabetes	2014/15	–	7,123	57.5%	59.7*	60.4	52.1%		69.9%
Good blood pressure control in people with diabetes	2014/15	–	8,906	71.9%	70.6*	71.2	64.4%		79.7%
Good cholesterol control in people with diabetes	2014/15	–	8,008	64.7%	69.9*	70.8	64.2%		81.2%

Source: PHE diabetes outcome framework

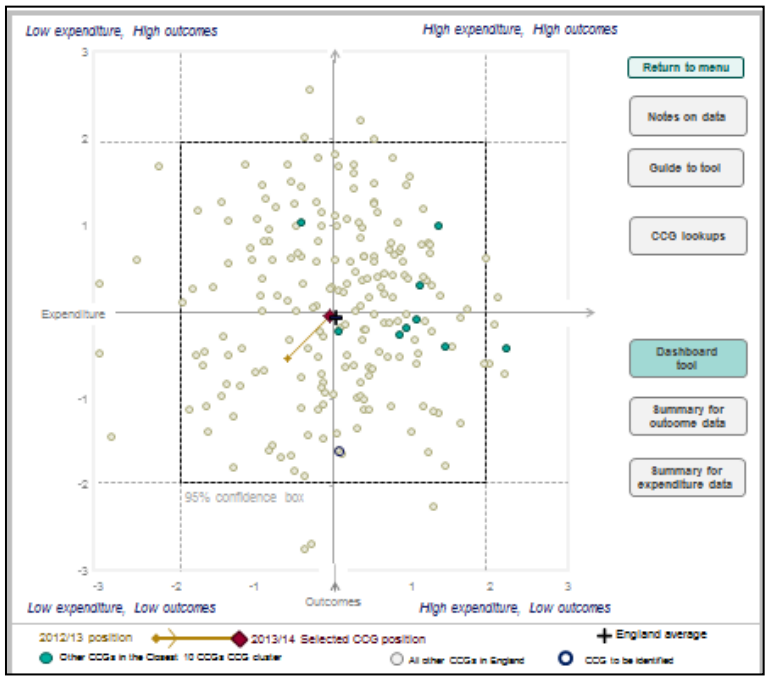
4.3.3 Prescribing costs

In 2015/16 NHS Swindon CCG prescribed 236,428 items used in diabetes costing £4,201,011 which was 11.9% of the total prescribing cost within the CCG. This spend is higher than the national average where in 2015/16 the cost of prescribing drugs for diabetes was £956.7 million, 10.6% of the total cost of prescribing in primary care. This may be because NHS Swindon CCG has a higher prevalence of diabetes than nationally, as well as differences in diabetes control and prescribing.

The diabetes outcome versus expenditure (DOVE) tool showed that in 2013/14 the total spend on diabetes prescribing per person with diabetes in NHS Swindon CCG was £283.44. NHS Swindon CCGs total spend on diabetes prescribing in 2013/14 was £3,306,375. In 2013/14 total spend on diabetes prescribing per person with diabetes varied from £141.84 to £390.71 between practices in NHS Swindon CCG. By 2014/15 this variation had increased further, from £115.32 to £405.53. (PHE, 2016)The DOVE tool also looks at spend on different diabetes presciption items compared to nationally and similar CCGs. Differences are likely to be due to differences in practice population demographics, differences in prescribing and differences in the costs of items used in diabetes. There has been considerable work done in this area locally to reduce variation and costs where possible. There has been a focus on shared decision making and ensuring the importance of lifestlye changes is emphasised in the management of diabetes.

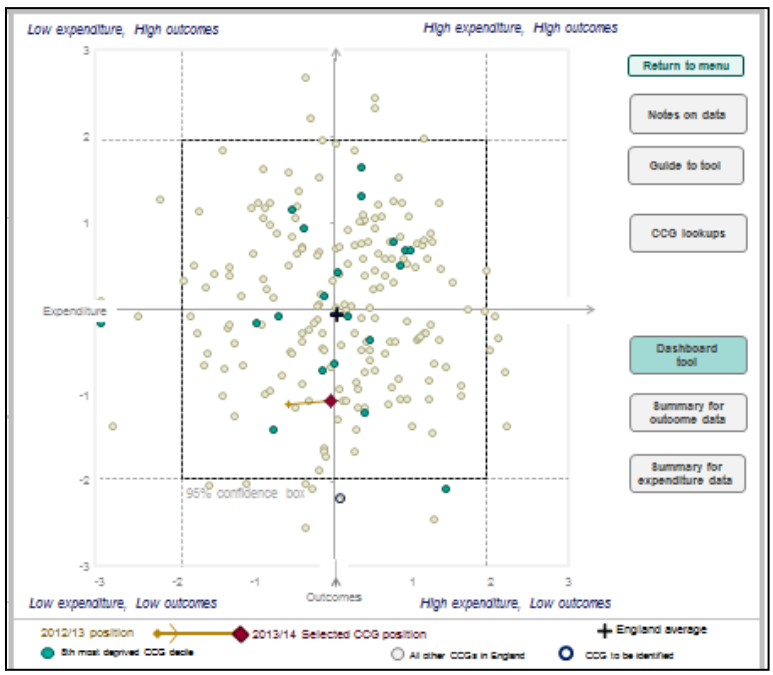
The DOVE tool can show spend against outcomes. This shows that Swindon is average for total spend on diabetes per person on the QOF diabetes register versus the outcome of percentage of people with an HbA1c≤59mmol/ml (graph 8a), but this becomes less favourable if the outcome of percentage of people with HbA1c≤59mmol/ml including exceptions is used (graph 8b).

Graph 8a: Total spend on diabetes prescribing compared to people with diabetes with a HbA1c of 59mmol/ml or less for NHS Swindon CCG compared with other CCGs in the closest 10 CCGs cluster, 2013/14.



Source: DOVE

Graph 8b: Total spend on diabetes prescribing compared to people with diabetes with a HbA1c of 59mmol/ml or less including exceptions for NHS Swindon CCG compared with other CCGs in the closest 10 CCGs cluster, 2013/14.



Source: DOVE

4.3.4 Perspective from primary care

To gain insight into the barriers and opportunities around diabetes in primary care, discussions took place between general practitioners and practice nurses. General practitioners and practice nurses with an interest in diabetes were identified through discussion with Swindon Community Diabetes Service and contacted via e-mail. E-mail comments and telephone discussion were included and highlighted the following areas:

- Annual reviews
  - There was limited time to discuss drugs and behaviour change in an annual review.
  - Probably need at least 20 minutes for an annual review.
  - Re-call system for patients who did not attend annual reviews had increased uptake.
- Motivational interviewing often required more time than the GP had available.
- There are a lot of services available for prevention and management of diabetes but it is difficult to keep track of these and know where to refer patients. Having a good online resource was very helpful with this but also local communications with the public was very important.
- Patient knowledge was very important to enabling behaviour change.
- Language barriers.
- Structured education
  - Educational events need to be in accessible locations but there needs to be better understanding about why people do not attend.
  - Sessions during the evening and weekends, and in more locations would be useful.
  - Living Well with diabetes sessions very popular but still in limited location and often have a waiting list.
- Very limited podiatry service in primary care which can mean getting Dopplers is difficult.
- Feedback from prevention services to primary care would be useful so that they knew whether people had gone and what changes they might have made.
- Some patients have strong preference over weight management options available.

4.3.5 Acute care

In 2015/16 GWHFT spend on diabetes and endocrinology was £1,115,078. This includes admissions, readmissions, high cost devices, block contracts and outpatients. Of this spend £258,672 was outpatient activity. Due to coding it is not possible to separate people seen for diabetes from people seen for other endocrinology diagnoses.

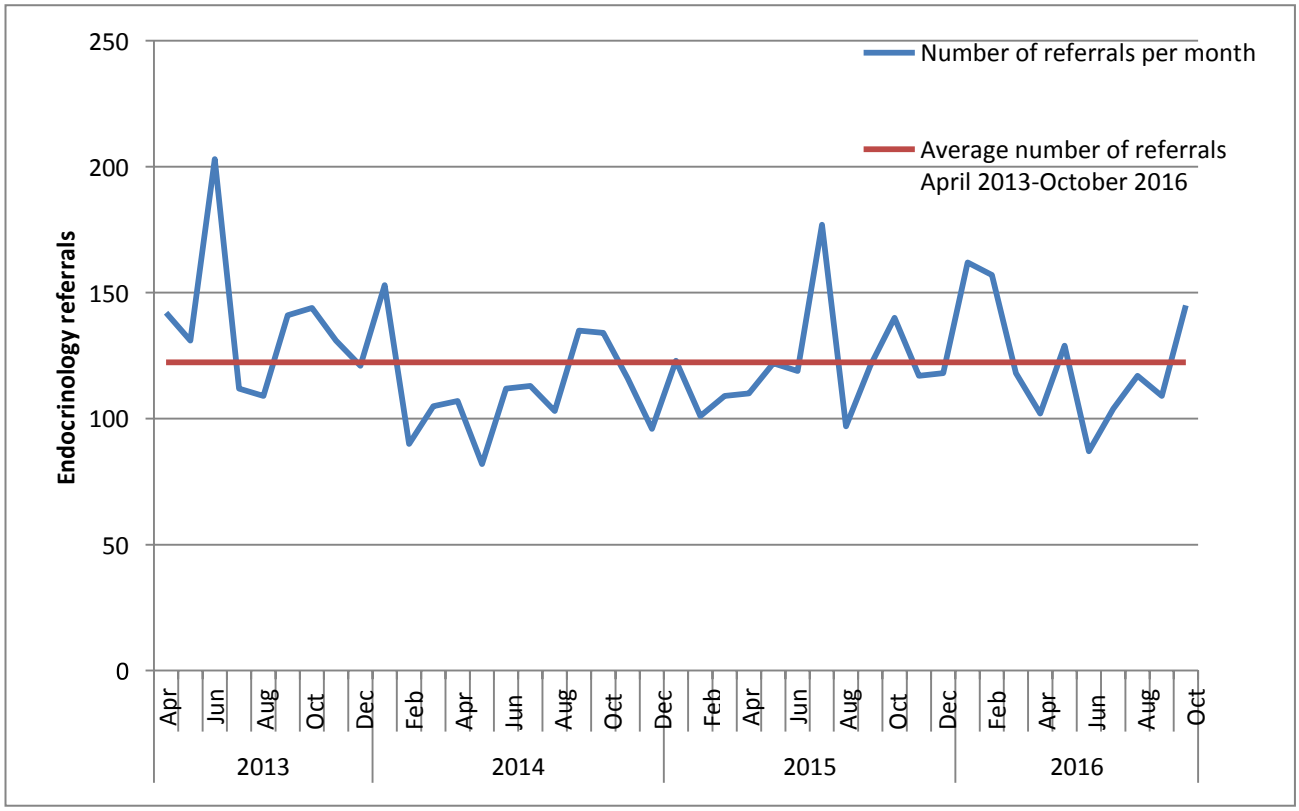
4.3.5.1 Outpatients

Due to coding within outpatients it is not possible to separate people seen for diabetes from people seen for other endocrinology diagnoses. Graph 9 shows endocrinology referrals from 2013/14 to 2016/17. In 2014/15 a review of diabetes (Attain report) showed that endocrinology outpatients received 1,942 new outpatient referrals, saw 1,644 new and 6,658 follow-up attendances. The majority of these referrals come from general practice or consultants where in 2015/16 there were 1,558 referrals of which 761 were from a consultant other than in accident and emergency department and 787 were from a general medical practitioner.

Compared to its peers (seven other trusts), Great Western Hospitals NHS Foundation Trust (GWHFT) has the second highest number of new outpatient attendances and highest number of follow-up outpatient appointments (this is a crude number rather than a rate). GWHFT also has the third highest new to follow up appointment ratio compares to peer trusts (1 new appointment to 4 follow up appointments). The peer trust average is 1 to 3. New to follow up ratios are an estimate of the follow up activity generated for a new patient entering the service. Therefore, it is difficult to know whether ratios are high because of differences in patients, different clinic set-ups or different follow up criteria.

In 2014/15 the report also showed that, compared to its peers, the GWHFT has the highest new appointment did-not -attend rate at 13.6% and third highest follow-up appointment DNA rate, 10.6% (for endocrinology clinic June 2014 to July 2015). Since this data was collected GWHFT has been undergoing a transformation process to improve booking and attendance at outpatients.

Graph 9: Endocrinology referrals to GWHFT, April 2013 to October 2016.



Source: NHS Swindon CCG

Local data on endocrinology outpatients (which includes diabetes) suggests that there are fewer people from the Asian/Asian British group with diabetes being seen than we would expect given the population profile of Swindon and the fact that certain groups are at increased risk of diabetes (see table 11). This mirrors local perspective is that there are not as many people attending with diabetes from Asian/Asian British groups as would be expected. However, there is a large percentage within the 'other' ethnic group category of which 60% were ethnic group not stated.

Table 11: Percentage of outpatient attendance by ethnicity 2015/16 and Swindon population profile.

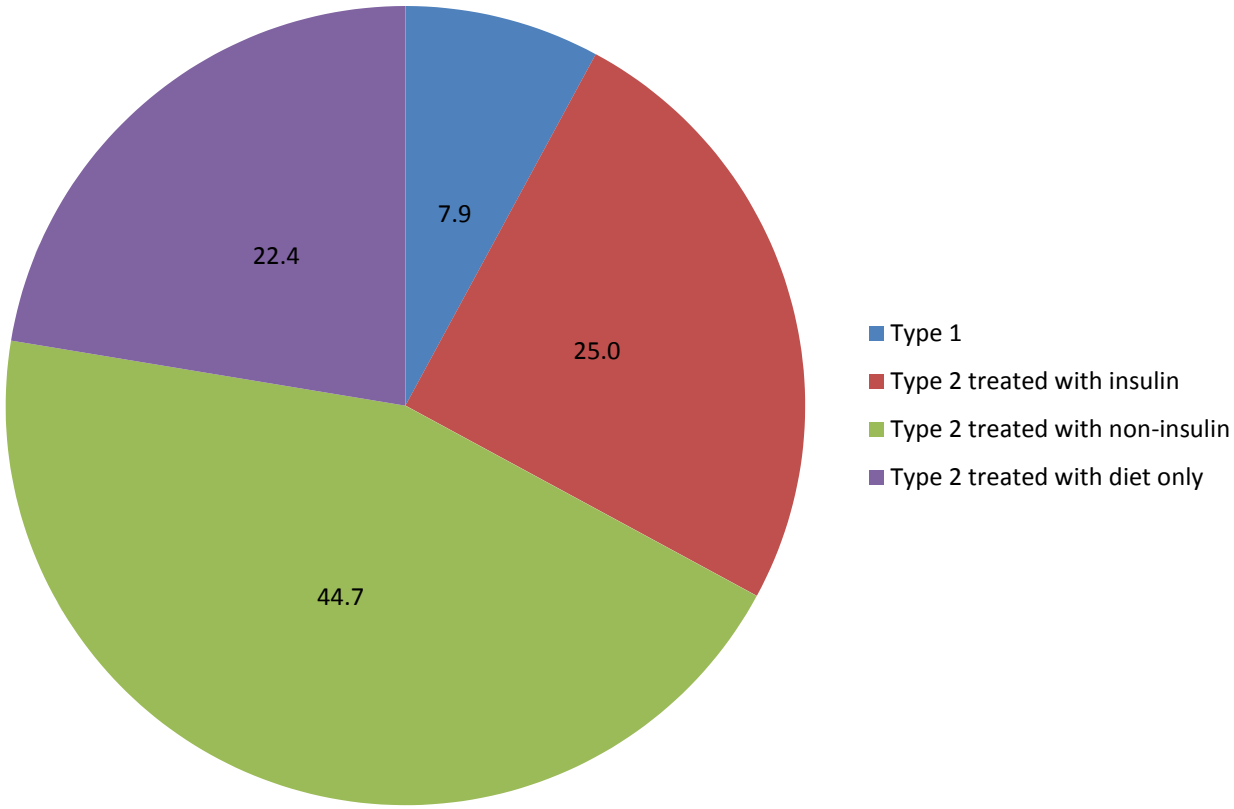
	White	Mixed	Asian or Asian British	Black or Black British	Other
Dietetics	85.5%	0.4%	3.8%	3.7%	7.0%
Endocrinology	83.7%	1.5%	4.9%	1.6%	9.8%
Paediatrics	93.4%	0.5%	4.3%	1.1%	1.1%
Swindon population	89.8%	0.8%	5.9%	1.4%	2.0%

There is also a much higher percentage of women than men seen in endocrinology clinics (58% women, 42% men). However this may be appropriate due to differences in prevalence of endocrinology conditions other than diabetes.

4.3.5.2 Inpatients

The 2015 National Inpatient Audit (NaDIA, (NHS Digital, 2015)) identified 76 in patients with diabetes at GWH, which was 16.6% of the beds audited.

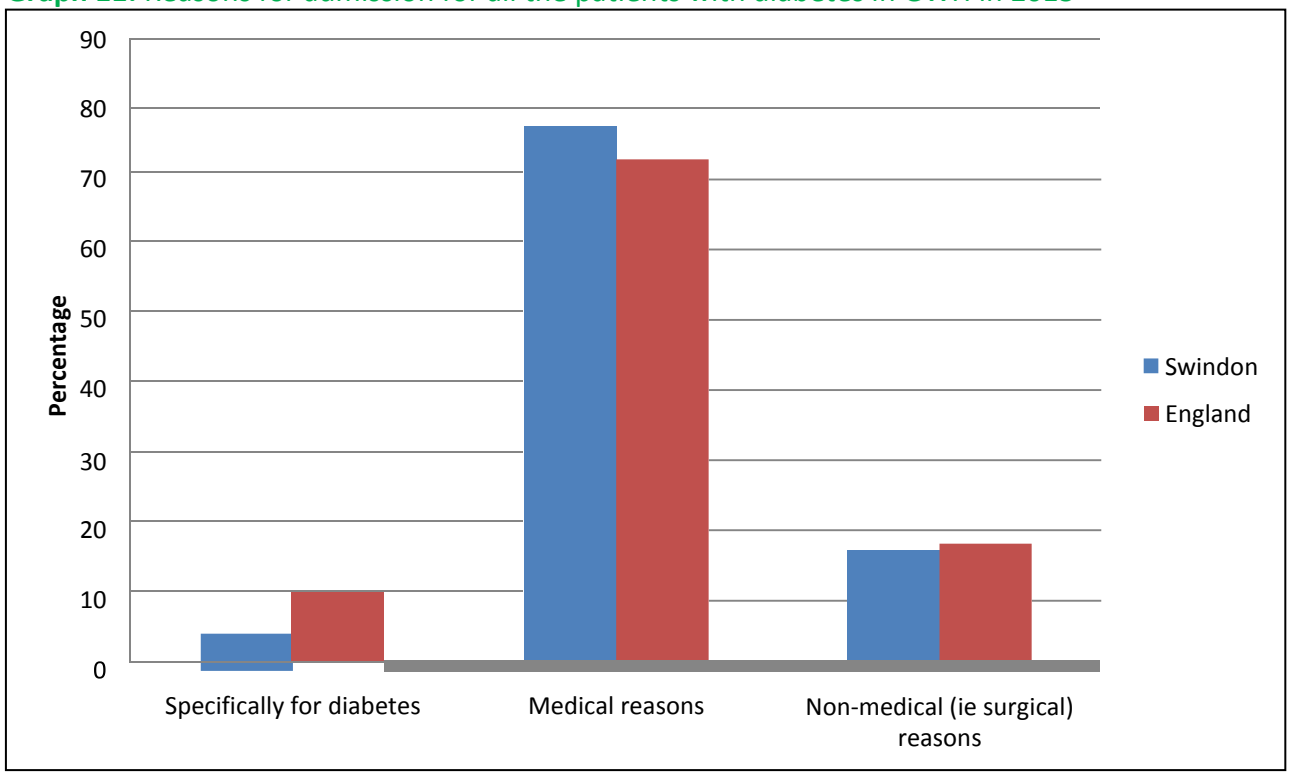
Graph 10: Type of diabetes of GWHFT in patients with diabetes (percentage).



93.4% of the inpatients were white compared to 86.3% nationally. Data is not available locally on the percentage of inpatients with type 1 or 2 diabetes by ethnicity, nor is there any national data looking at admissions or management by ethnicity. (HSCIC, 2015)

The NaDIA showed that 82.9% of patients with diabetes in GWH in 2015 had been admitted as emergencies, compare to 86.2% for England. The Attain report also showed GWHFT is in the middle of the peer group for the number of emergency admissions (spells) with a diagnosis of diabetes with 293 spells. The average length of stay was 5.4 days (compared to an expected 5.2 days) and the Attain report estimated that GWHFT could save 1,553 bed days if the length of stay of these admissions had been at the national median duration. 25% of patients with diabetes were visited by a member of the diabetes team which is lower than previous years and the England average.

Graph 11: Reasons for admission for all the patients with diabetes in GWH in 2015



Source: National Diabetes Inpatient Audit

In financial year 2014/15 there were 226 Accident and Emergency (A&E) attendances with a diagnosis of diabetes in any of the six diagnosis fields. Of these, 185 had a primary diagnosis of diabetes. Current diagnosis coding does not support the identification of activity by diabetes type. Of attendances with any diagnosis of diabetes, 65% were from NHS Swindon CCG, 21% from Wiltshire CCG and 14% from other areas. Only 2% of attendances with a primary diagnosis of diabetes were coded as having 'No investigation with no significant treatment'.

Of all the patients with diabetes in NaDIA appropriate glucose testing was undertaken on 6.3 of the previous 7 days, and patients with diabetes had an average of 5 good diabetes days out of the previous 7 (compared to 4.5 in England).

Table 12: Provision of healthcare professionals at Great Western Hospital, 2015.

	GWH hours per week per each patient	Quartile compared to England (Q1=lowest, Q4=highest)	England hours per week per each patient
Diabetes Specialist Nurse	2.55	Q4	1.58
Consultant	1.25	Q4	0.71
Dietician	0.47	Q3	0.47
Podiatrist	0.59	Q3	0.51

Source: National Diabetes Inpatient Audit

4.3.5.3 Diabetic Ketoacidosis admissions

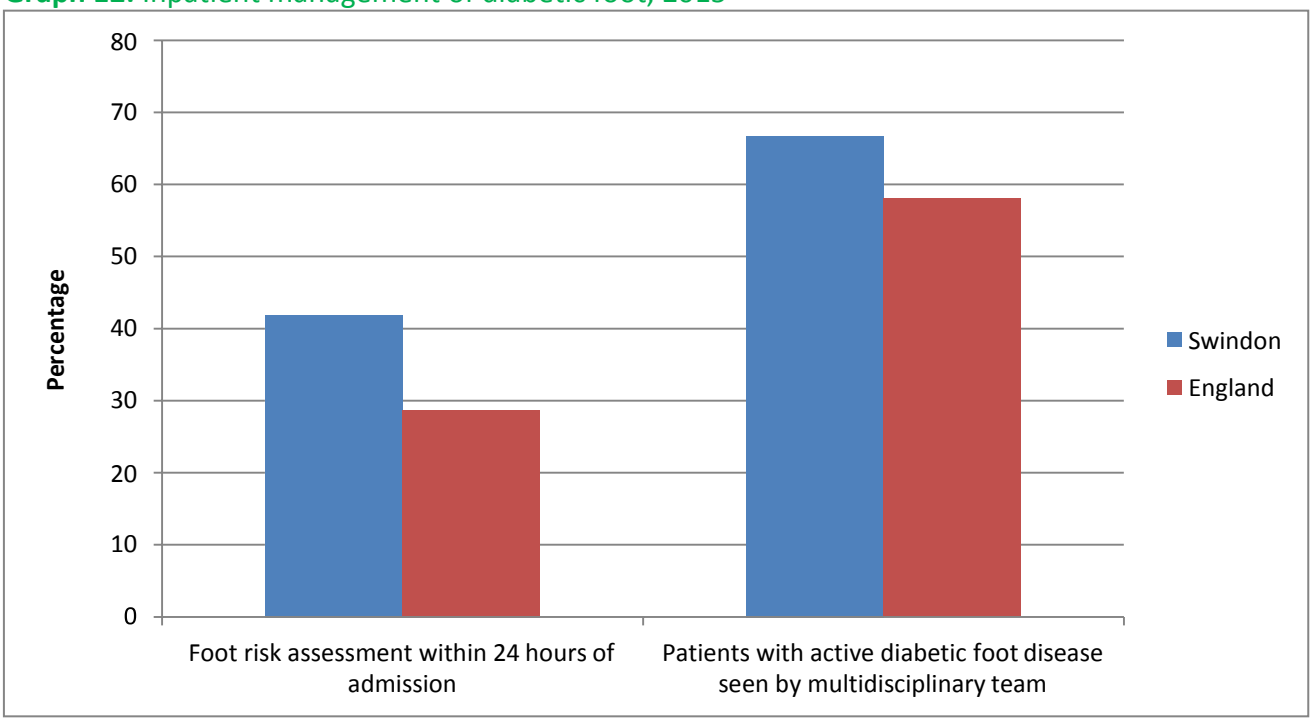
Patients are usually admitted to hospital with this condition. In 2015/16 there were 87 admissions for diabetic ketoacidosis in Swindon. It is not possible to show rates compared with England.

4.3.6 Foot disease

Diabetic foot disease is managed in the community and acute setting. Self-care and awareness is crucial in reducing foot disease and severity of foot disease. There is a diabetic foot ulcer pathway risk assessment and referral pathway which gives information on management and clinics, including podiatry, new ulcer/chronic ulcer review and foot attack. Currently some elements of podiatry at GWHFT are within the diabetes specialty whereas others are within trauma & orthopaedics.

The NaDIA reported that 7.9% of those patients admitted to GWH in 2015 with diabetes had active foot disease (compared to 8.9% across England). There is no data in the audit of prevalence or outcomes by deprivation or ethnicity.

Graph 12: Inpatient management of diabetic foot, 2015



Source: NaDIA

PHE diabetes footcare activity profiles show that from 2012/13 to 2014/15 there were 770 episodes of care for diabetic foot disease (21.9 per 1,000 significantly higher than 19.8 per 1,000 in England).There were 182.4 annual nights in hospital per 1,000 adults with diabetes in NHS Swindon CCG significantly higher at 162.0 per 1,000 in England. (PHE)
There were 316 patients with diabetes who were admitted for diabetic foot disease between 2012/13 and 2014/15 in NHS Swindon CCG. Of these, 180 (57.0%) had more than one episode of care during the three years. These patients accounted for 84.8% of the nights spent in hospital by people with a diabetic foot condition. There were 65 patients (20.6%) who received four or more episodes of care for diabetic foot disease.

NHS Swindon CCG was statistically worse than England for additional risk of minor amputations (2010/11-12/13). There were 106 minor amputations between 1/4/2012 to 31/3/2015 (19 major amputations over the same period). The rate of major amputation episodes in NHS Swindon CCG has decreased by 53% since 2009-2012. There has been no change in the rate of minor amputations since 2009-2012. (PHE, 2016) The profiles and audits generally show there is a good foot care service at GWHFT. The additional risk of minor amputation appears to be related to more people with diabetes developing with foot disease and not being seen until amputation is the only option. Further work is being done at GWHFT to confirm this, and understand the reasons for it in more detail.

More detail of diabetic foot disease can be found in the National Diabetes Foot Care Audit.

4.3.7 Outcomes

Diabetes increases the risk of certain conditions. PHE have calculated the additional risk of myocardial infarction, heart failure, angina, stroke, minor amputation, major amputation and renal replacement therapy among people with diabetes compared to people without diabetes.

The values in table 13 are percentage additional risk of the complication in people with diabetes compared with people without diabetes. Therefore, in NHS Swindon CCG the risk of a person being admitted to hospital for a myocardial infarction is 110.8% higher than among those without diabetes (compared to 118.6% higher in England). The additional risk of renal replacement therapy and minor amputation is significantly higher in NHS Swindon CCG than England. There is no significant difference between NHS Swindon CCG and England for the other five complications. For discussion of minor amputation rate and foot care see section 4.4.1. The reasons for the additional risk of renal replacement therapy in NHS Swindon CCG compared to England are unclear but are likely to be due to a combination of small numbers who require renal replacement, difficulty in accurate coding of the cause of kidney failure and potentially differences in the number of people with diabetes developing kidney failure. Further work is required to understand the reasons for the additional risk of renal replacement.

Table 13: Additional risk of certain conditions in those with diabetes compared to those without, 2010/11-1012/13.

Indicator	NHS Swindon CCG	England
Additional risk of myocardial infarction among people with diabetes	110.8	108.6
Additional risk of heart failure among people with diabetes	160.8	150.0
Additional risk of angina among people with diabetes	150.7	136.8
Additional risk of stroke among people with diabetes	78.5	81.3
Additional risk of renal replacement therapy among people with diabetes	548.1	293.0
Additional risk of minor amputation among people with diabetes	2103.0	753.5
Additional risk of major amputation among people with diabetes	500.0	445.8

Source: PHE

Minor amputation: surgical removal of toes or a part of the foot below the ankle.

Major amputation: surgical removal of the leg above the ankle (usually below, through or above the knee).

All these conditions increase the likelihood of someone requiring health and social care. The severity of diabetes is sometimes under-estimated but these figures highlight the significance of diabetes and the importance of good blood glucose control.

4.3.7.1 Diabetic eye disease

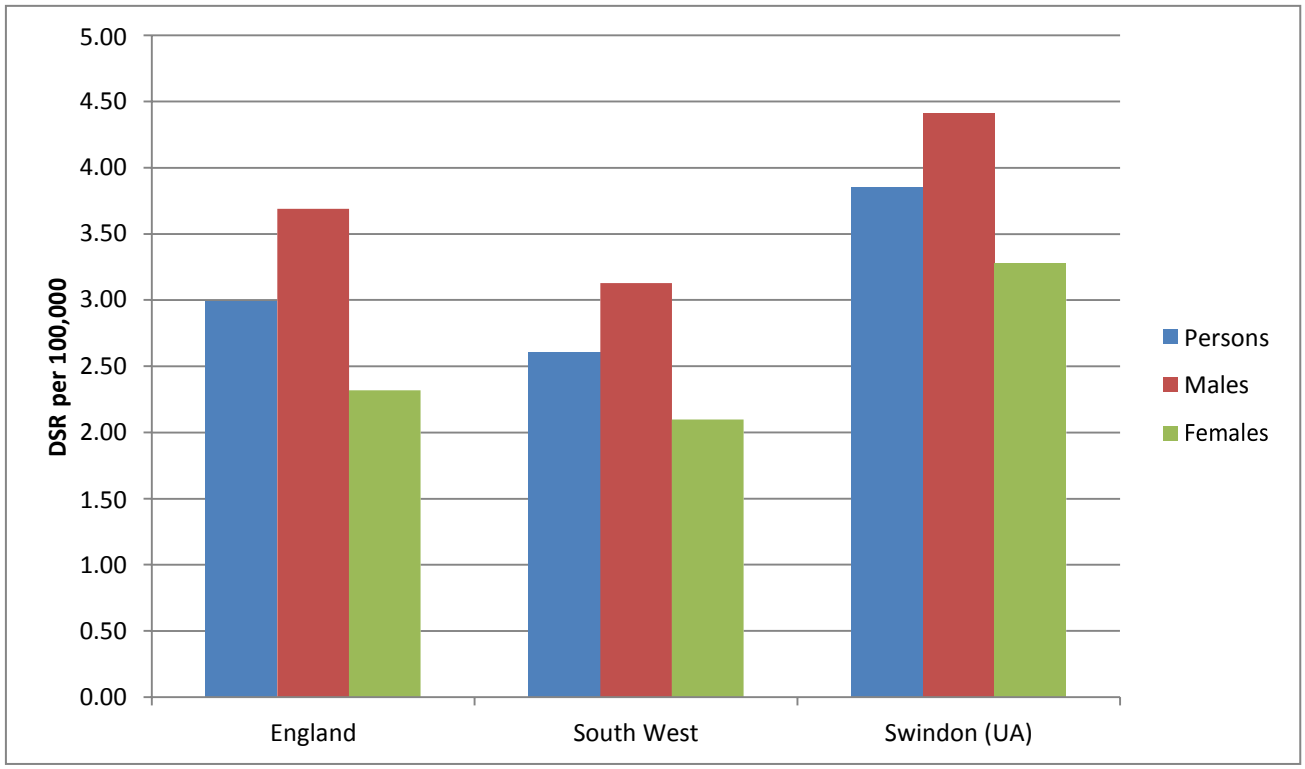
One of the public health outcomes framework indicators is crude rate of sight loss due to diabetic eye disease in those aged 12+ per 100,000 population. For NHS Swindon CCG in 2014/15 the rate is 2.7 per 100,000 which is not significantly different from England.

4.3.7.2 Mortality

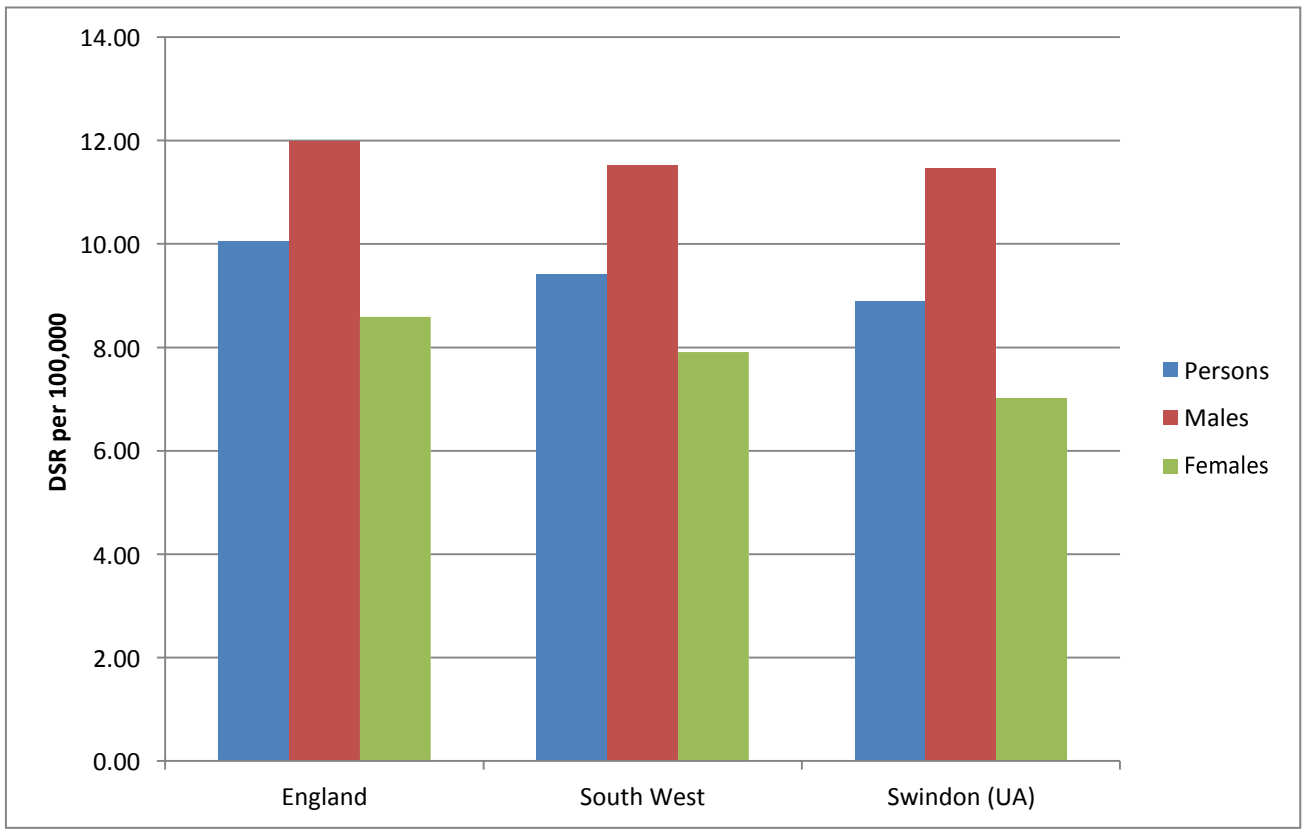
Diabetes that is poorly managed not only leads to complications, but can lead to premature death. However, the cause of death is often recorded as the resultant disease or complication rather than the underlying diabetic cause or trigger. This means that deaths and mortality rates from diabetes are low. In 2012-14, in Swindon UA, there were 19 recorded deaths with an underlying cause of diabetes.

The all-age mortality rate from diabetes in Swindon UA residents has declined in the last two decades but on average by only one less death (per 100,000) every ten years. (NHS Digitial) Rates have also declined for the South West and England as a whole. Graph 13 shows the mortality rates for males, females and persons, aged under 75 years, for Swindon UA (in the years 2012 to 2014 combined) and compares them with rates for England and the South West. (NHS Digitial) Although the Swindon rates appear to be slightly higher, the differences do not reach the level of statistical significance. Graph 14 depicts a similar set of comparisons for people of all ages. Swindon has lower rates of diabetes mortality than England and the South West, but again the differences do not reach the level of statistical significance.

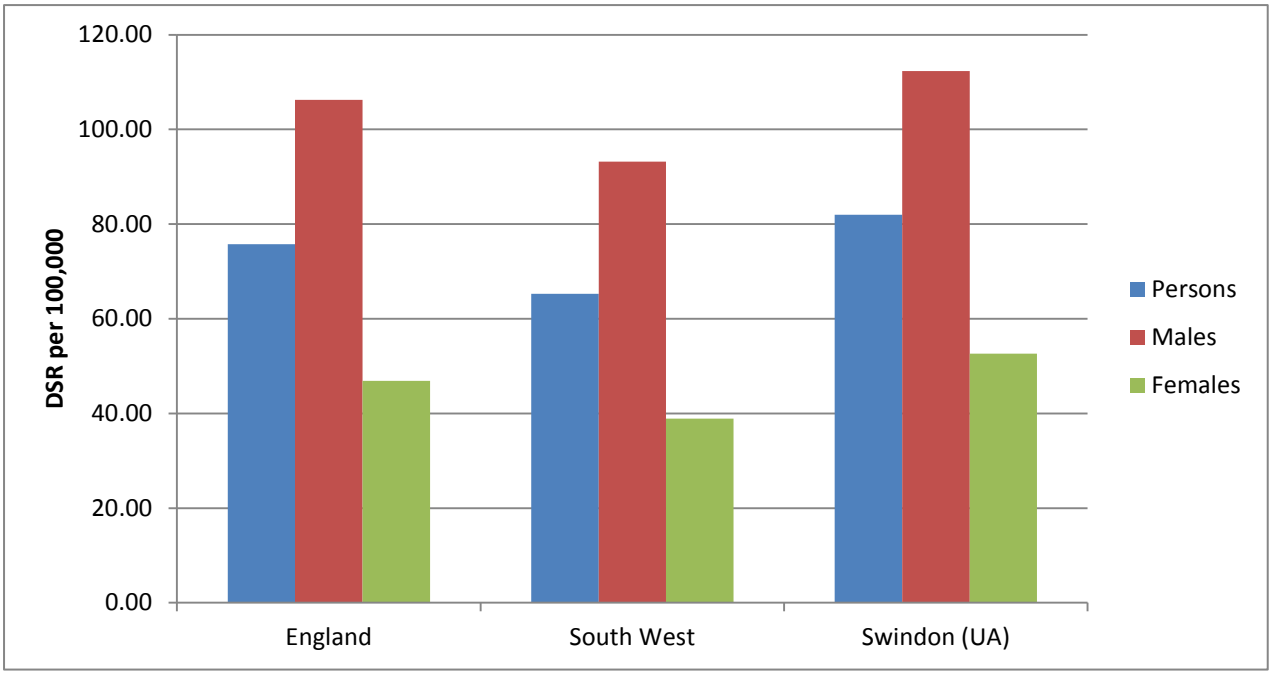
Graph 13: Diabetes Mortality in People aged <75 years in 2012-2014 combined. Directly Standardised Rate per 100,000 per annum (ICD 10 E10-E14).



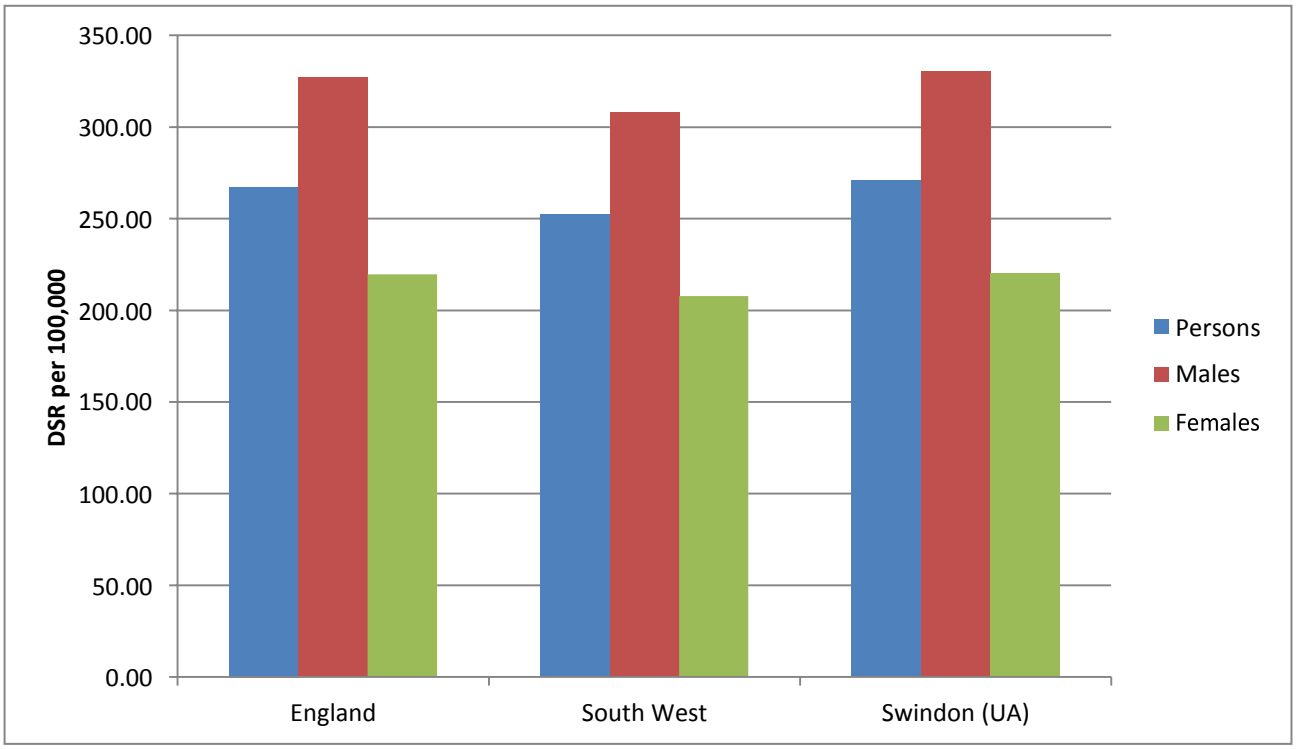
Graph 14: Diabetes Mortality in People of All Ages in 2012-2014 combined. Directly Standardised Rate per 100,000 per annum (ICD 10 E10-E14).



Graph 15: Cardiovascular Mortality in People aged <75years in 2008-2010 combined. Directly Standardised Rate per 100,000 per annum (ICD 10 I00-I99).



Graph 16: Cardiovascular Mortality in People of all Ages in 2008-2010 combined. Directly Standardised Rate per 100,000 per annum (ICD 10 I00-I99).



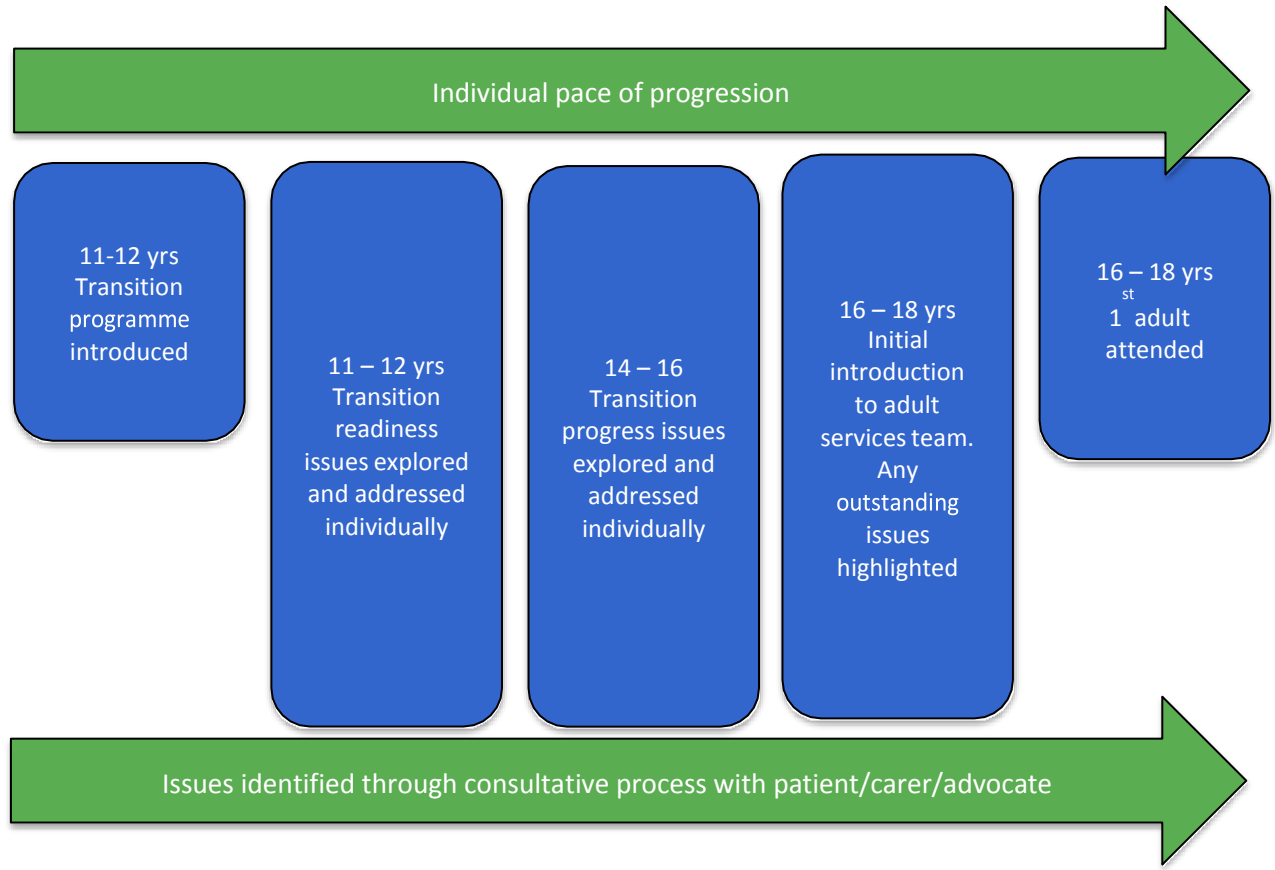
The degree of control of diabetes in a population is likely to have an impact on the level of mortality from cardiovascular disease (CVD). Graphs 15 and 16 present CVD mortality rates for Swindon UA and its comparators. (NHS Digitial) All-age CVD mortality rates in Swindon are similar to England but significantly higher than the South West for males and females considered together (but not separately due to smaller sample sizes). However, graph 6 indicates CVD mortality in Swindon for males and females aged under 75 is similar to England but higher (statistically significantly) than the South West.

4.3.8 Paediatrics and transition

GWHFT has been improving transition services for all conditions including diabetes. There is currently a two year CQUIN in place to develop and implement a plan to improve transition for young people in Swindon from paediatrics to adult health services in line with specific milestone indicators. These milestone indicators include ensuring a young person friendly status for GWHFT, staff training and transition pathways.

Diabetes has had a transition pathway for several years but has been working to improve this further by increasing awareness, standardising paperwork and working closely with children and young people to understand how they feel about the processes. Figure 3 below shows the process, and ages which children and young people move through the transition process.

Figure3: GWHFT transition process for children and young adults with diabetes



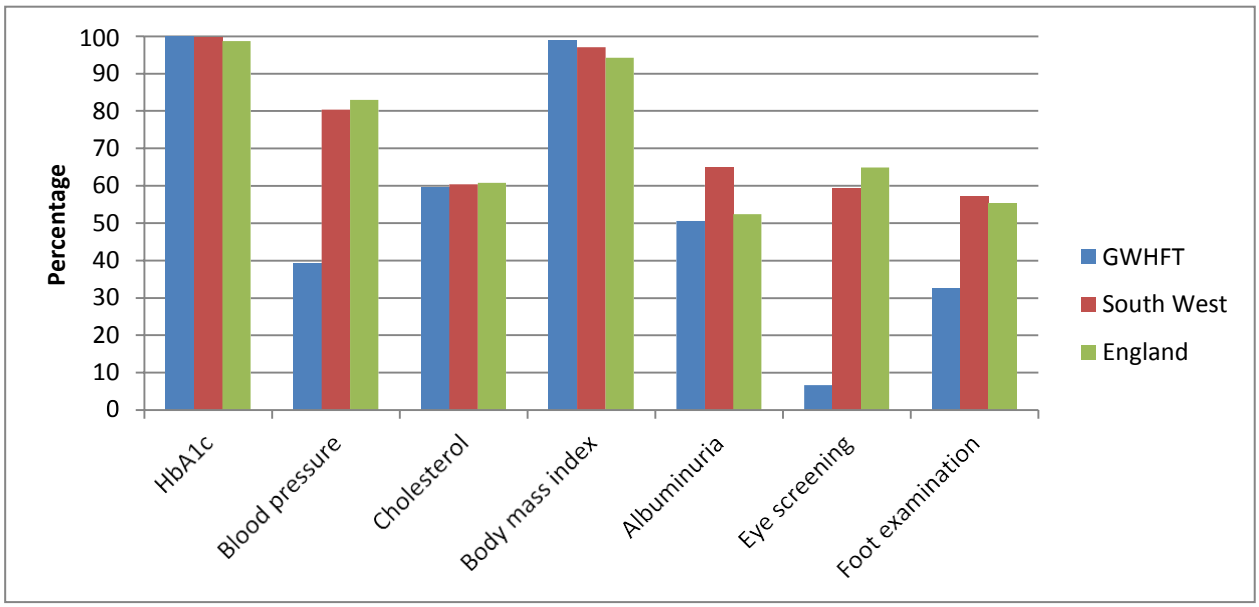
Source: GWHFT

In 2015/16 55 children and young people with diabetes went through or were within the diabetes transition service. There were a large number of 'did not attends' for these clinics and for the 1st and 2nd appointment in the adult service after transfer. Work is ongoing to reduce these 'did not attends' and improve the transition service further.

The National Paediatric Diabetes Audit (NPDA) (Royal College of Paediatrics and Child Health) compares care and outcomes of children and young people (up to age 24 years) receiving care from Paediatric Diabetes Units. Of the 175 children and young people seen at GWHFT none of young people aged 12 years and older had received all seven care processes between April 2014 and March 2015 compared to 25.4% across England and Wales. The completion rate for all seven key care processes for GWHFT is lower than the national figure for England and Wales. This seems to be due to a lower percentage of children and young people who received blood pressure checks, eye screening and foot examination.

This may be partly due to small numbers and recording of care processes. Graph 17 shows the percentage of children and young people who received each of the seven care processes.

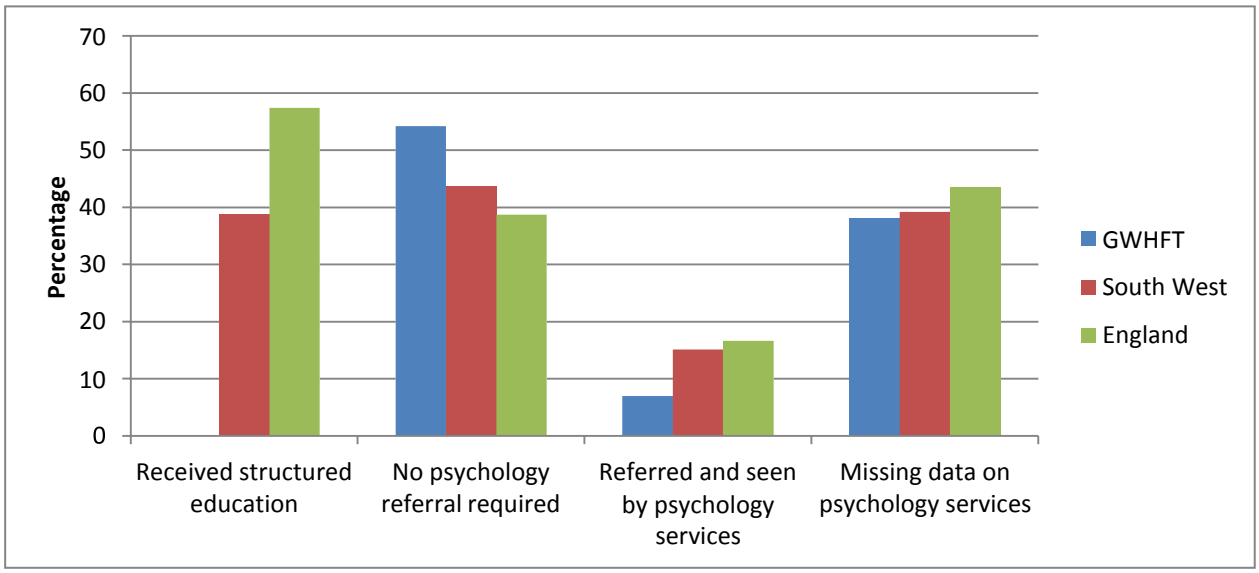
Graph 17: Percentage of children and young people who received each of the seven care processes.



Source: National Paediatric Diabetes Audit, 2014/15.

In GWHFT the adjusted mean HbA1c for children and young people with Type 1 diabetes is similar to the national figure for England and Wales (71.5 mmol/mol in GWHFT compared to 70.6 mmol/mol across England and Wales). The case-mix adjusted percentage of children and young people with Type 1 diabetes with an HbA1c of less than 58 mmol/mol in GWHFT is similar to the national figure (24% compared to 22%). There was variation between GWHFT, the south west and England in the percentage of children and young people who received structured education and psychological support (graph 18) but some of this may be attributable to small numbers and variation in reporting.

Graph 18: Percentage of children and young people who received structured education and psychological support



NB Less than five for received structured education at GWHFT therefore numbers suppressed.
Source: National Paediatric Diabetes Audit, 2014/15.

4.3.9 Education for healthcare professionals

The Swindon Community Diabetes Service provides practice based education for health care professionals, and professional education and training. This includes education and training from basic diabetes education courses to bespoke training.

4.4 Evidence of effectiveness and cost-effectiveness

Diabetes is estimated to have cost the UK £9.8 billion in direct costs in 2010/2011, this equates to approximately ten per cent of the total health resource expenditure. It is estimated that 80 per cent of these costs are incurred in treating potentially avoidable complications. In 2012/13 42.5 million items were prescribed to treat diabetes, £764 million was spent on drugs to treat diabetes in primary care. (Diabetes Action)

As specified in section 2.2 there is good quality evidence for effectiveness within NICE guidance. There is also a strong body of evidence provided by the National Institute of Health Care and Excellence (NICE) around maintaining a healthy weight and preventing excess weight gain, and well as identification, assessment and management of excess weight.

4.4.1 Diabetes Prevention Programme

A return on investment for the Diabetes Prevention Programme (DPP) showed that in Swindon if 1,200 individuals are offered the DPP up take is likely to be 40%. Therefore 480 individuals will receive the DPP intervention, and the five year net cumulative reduction in diabetes cases will be 20. The model estimates that the total five year savings to the NHS will be £59,261, of which £16,243 is estimated to be cashable (estimated to be those that will directly release cash for the NHS, and include the costs of medications and laboratory tests which may no longer be required due to the DPP intervention). Total five year social care savings are estimated to be £3,899.

4.4.2 Structured education

A cost utility analysis comparing diabetes education and self-management for ongoing and newly diagnosed (DESMOND) intervention with usual care in people with newly diagnosed type 2 diabetes found the mean incremental lifetime cost per person receiving the DESMOND intervention was £209, an incremental gain in QALYs per person of 0.0392 and the mean incremental cost per QALY is £5,387. However, 'real world' intervention costs were shown to be lower than that in trials with the lifetime incremental cost of the DESMOND intervention being £82 and the mean incremental cost per QALY gained £2,092. Reductions in weight and smoking were the main benefits seen (Gillett M, 2010).

4.4.3 Recent research

A National Institute for health Research (NIHR) review 'Evidence for action on type 2 diabetes' brings together recent evidence from research (NIHR, 2016). (NIHR, 2016) This showed:

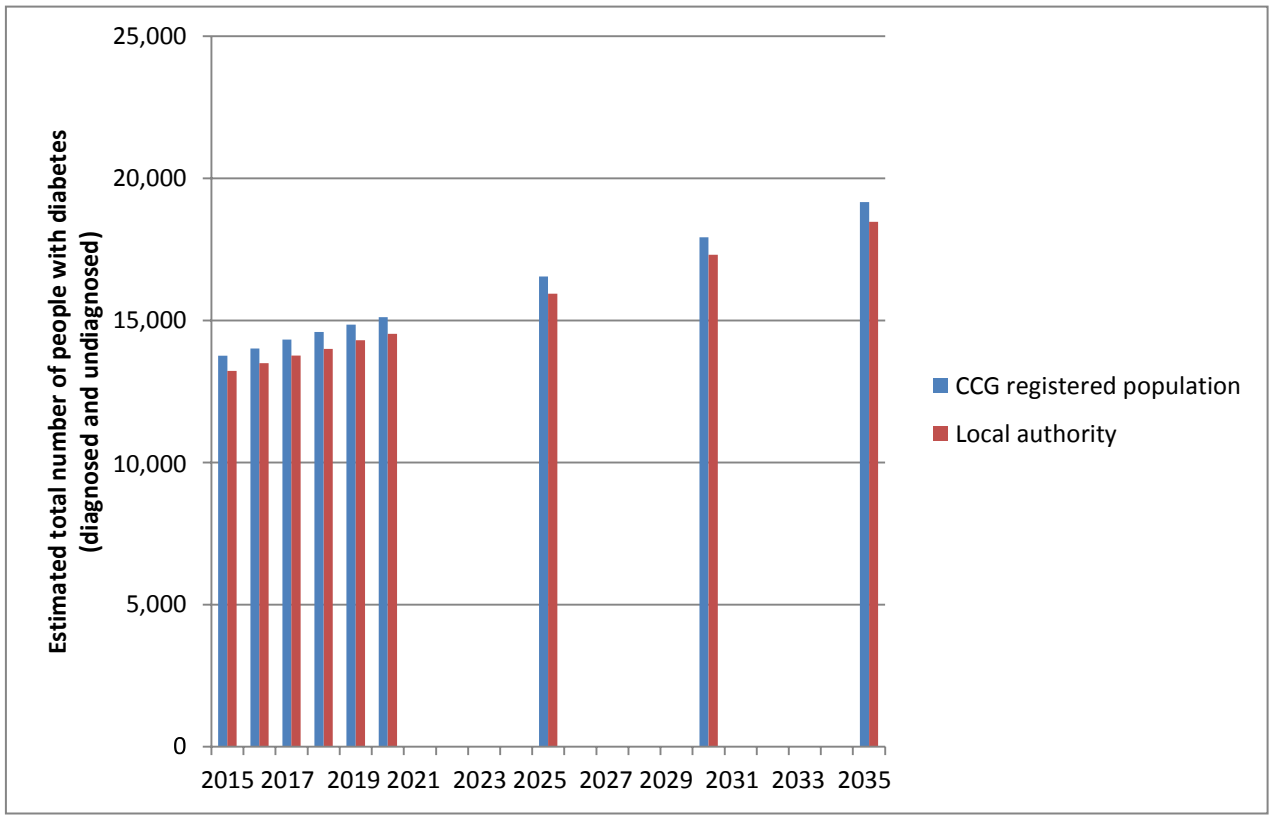
- Preventing type 2 diabetes in people at risk
  - Lifestyle interventions to change diet and activity work in delaying or preventing diabetes in those at risk.
  - For people with impaired glucose tolerance walking just 20 minutes a day for a year reduces cardiovascular risk.
  - For those who are very overweight, bariatric surgery reduces the risk of developing type 2 diabetes fourfold over seven years. This surgery can even lead to remission of diabetes in around a third of obese people with the condition.
  - 'One size fits all' social marketing campaigns or interventions may not work to prevent diabetes, owing to diverse cultural beliefs and traditions.
- Identifying people with type 2 diabetes
  - Evidence does not support screening for diabetes in the general population. Where screening is considered appropriate (such as in high risk populations), using a risk stratification tool followed by a screening blood test is the most cost-effective approach.
- Self-management
  - Structured education can work but few attend, particularly those at greatest risk of complications. Research shows more explanation and encouragement by health professionals would make a difference to patients. Follow-up after an initial session is also important.
  - Early research suggests computer-based packages could help patients manage their diabetes and mobile phone apps may also be helpful.
  - Patients value personalised care plans and treatment targets.

5. What does the future look like?

5.1 Projections

PHE have produced new estimates on the total number of people with diabetes (diagnosed and undiagnosed) using a multivariate binary logistic regression model developed using Health Survey for England data. Three years of HSE data were combined, 2012 - 2014. Diabetes was defined as self-reported, doctor-diagnosed diabetes or an HBA1c greater than 6.5% (48mmol/mol), who had not previously reported being diagnosed with diabetes. These estimates suggest that for Swindon local authority prevalence of diabetes will increase from 7.6% in 2015 to 8.5% in 2025, and to 9.1% in 2035, which equates to an additional 2,711 people with diabetes by 2025 and an additional 5,250 people with diabetes by 2035 (diagnosed and undiagnosed). This is very similar to the estimates for NHS Swindon CCG registered population where the prevalence is estimated to increase from 7.5% in 2015 to 8.3% in 2025 and 9.0% in 2035. Graph 19 shows the estimated numbers of people with diabetes (diagnosed and undiagnosed). These estimates are based on population projections and assumed no change in age, sex and ethnic specific prevalence rates of diabetes. It was also assumed that there was no change in the proportion of people who are overweight or obese. (PHE, 2016)

Graph 19: Estimated total number of people with diabetes (diagnosed and undiagnosed) in Swindon.



Source: PHE

People with non-diabetic hyperglycaemia are at high risk of developing diabetes. PHE estimated the number of people aged 16 years and over with non-diabetic hyperglycaemia using a logistic regression model developed using Health Survey for England (HSE) data. Five years of HSE data were combined, 2009 - 2013. Non-diabetic hyperglycaemia was defined as an HbA1c value between 6.0% (42mmol/mol) and 6.4% (47mmol/mol), excluding those who had already been diagnosed with diabetes with an HbA1c value in this range. In Swindon UA 10.5% of the registered population was estimated to have non-diabetic hyperglycaemia, equating to 18,535 people. (NHS England, 2015)

5.2 Possible alternative scenarios

5.2.1 Obesity and overweight

YHPHO Diabetes Prevalence Model uses the prevalence of diabetes (diagnosed and undiagnosed) and the distribution of body mass index found in the 2010 Health Survey for England. These models show the potential impact of the percentage of the population overweight or obese on diabetes prevalence.

These models show that in England diabetes prevalence could increase to 8.8% in 2030 (from 7.3% in 2012) if obesity continues to rise at the current rate. If obesity levels stayed at the 2010 level, the prevalence may only increase to 8.2%. For Swindon UA the prevalence model suggests that the prevalence could increase to 8.3% in 2030 (from 6.5% in 2010) if obesity continues to rise at the current rate. If obesity levels stayed at the 2010 level, the prevalence may only increase to 7.7%. That could mean 1,192 fewer people had diabetes.

Approximately a third of the diabetes prevalence increase is attributable to obesity, whilst the rest is due to ageing and the changing ethnic structure of the population. (PHE obesity and DM)

5.2.2 Referrals

A report into secondary care predicted that with continuation of current population changes by 2025 there would need to be an additional 301 new and 1,908 follow up appointments would need to be provided by GWHFT for people with diabetes. In scenario testing they predicted that if GP referrals could be reduced by 5% each year for 5 years this would lead to a reduction of 199 new appointments and 1,262 follow up appointments.

6. What do local people think?

Attain report from November 2015 conducted four patient engagement events to ensure that patients' views were integral to the review and to the informing the recommendations. These included two evening events with diabetes patients attending a 'Living Well with Diabetes' course, Diabetes Stakeholder event as well as the Clinical Commissioning Group's Patient & Public Involvement Forum.

The collated findings of patient engagement events included the following points:

- Communication
  - Ability to contact specialist doctor, nurse or dieticians directly,
  - Improved listening skills,
  - Different GP practices give different advice,
  - Plain speaking clinicians.

-Information provision

- Written/online:
  - Standardised information packs on diagnosis
  - A good leaflet in plain English for people with newly diagnosed diabetes,
  - Recipes for busy people,
  - More adverts about what's available,
  - More information on prevention of diabetes.
- From professionals
  - Latest research shared,
  - More assistance with understanding diabetes,
  - Options for medication,
  - Pros\cons of medication,
  - Explanation of the result of being a diabetic.
- Bus to visit community with information,
- Clinicians come to speak to community groups.

-Access

- Shorter waiting times,

- Dieticians from the start,
- Drop in sessions,
- Shorter waiting times for education courses ,
- Times for courses for working people,
- Diabetic exercise classes – reduced price,
- Dietician clubs at GPs,
- More time for Dietician talks,
- More testing at GPs not GWHFT, Blood results back quicker,
- See consultant every 6 months,
- Easier access to practice nurses.

-Other

- Use of new technologies, use of IT, use of 'apps',
- Help when diet has gone wrong,
- Help with hunger control,
- Health ambassadors for people with newly diagnosed diabetes,
- Follow up diabetic courses,
- Small group education,
- Shop for diabetic equipment,
- More time with nurses,
- Longer appointment times for people with diabetes,
- More training in diabetes for GPs.

6.1 Views of transitions

A questionnaire carried out by GWHFT of the diabetes transition service (November 2015 to February 2016) was completed by 13 young people with type 1 diabetes (aged 18-23 years). 90% of the respondents felt prepared for the move to adult services and 100% felt that the hospital staff understood the needs of young people. After the clinic the young people reported to feeling; appreciated, relieved, relaxed, fine, good, confident, normal and positive. Important aspects for the clinic were: appointments at convenient times for college, clinics running on time and the opportunity to see all the health care professionals at the same time if needed cited as very important.

7. Conclusions and recommendations

7.1 Summary of key points

Prevalence

There are a higher percentage of people with diabetes in Swindon than in England and there are also a higher percentage of people who are overweight or obese which is one of the largest risk factors for developing type 2 diabetes.

- There were 12,924 people on the diabetes register in the Quality Outcome Framework (QOF) 2015/16 which includes people aged 17 years and over. This means that 7.1% of the population of Swindon aged 17 years and over had diagnosed diabetes which is slightly higher than the England prevalence of 6.6%. Approximately 90% have type 2 diabetes (around 11,600 people aged 17 years and over).

- Estimates suggest that there may be a further 830 people who have undiagnosed diabetes in Swindon.

- Estimates suggest that for Swindon local authority prevalence of diabetes will increase from 7.6% in 2015 to 8.5% in 2025, and to 9.1% in 2035, which equates to an additional 2,711 people with diabetes by 2025 and an additional 5,250 people with diabetes by 2035. These estimates include people with diagnosed diabetes and undiagnosed diabetes. These increases are similar to those estimated nationally as are based on population projections. If excess weight continues to increase diabetes prevalence will increase further than these projections.

- Estimates suggest that there are 18,535 people aged 16 years and over in Swindon who may be at high risk of developing diabetes (10.5% on Swindon UA population).

- Risk factors:

  - 12.4% of people aged 18 years and over with obesity have diagnosed diabetes, five times that of people of a healthy weight. 69.5% of adults were overweight or obese in Swindon UA in 2012-14. This is significantly higher than England or the South West.

  - 21.1% of 4 to 5 year olds and 32.6% 10 to 11 year olds were overweight or obese in 2015/16. This is similar to England.

  - Depending on ethnicity and gender, people in certain groups can be 3 to 5 times more likely to develop diabetes and develop diabetes younger. 15.4% of Swindon's population was from a BME group in 2011 and therefore may be at increased risk of diabetes, of these 5.9% were Asian/Asian British.

- Estimated 220-250 women give birth in Swindon each year who have diabetes (type 1, type 2 or gestational). Diabetes increases maternal and fetal risk but good blood sugar management during pregnancy can decrease these.

- Up to 9.8% of people with diabetes may have depression.

- 175 children and young people (people aged up to 24 years) were treated for diabetes in the GWHFT. 95.5% of these children and young people had type 1 diabetes.

Services

There is a wide range of services for diabetes available in Swindon. The majority of people with diabetes receive their care in primary care where there is wide variation in the care and management offered. There are some areas in Swindon where improvement is required, and other areas which are performing very well. The problems that can be caused by diabetes mean people are much more likely to need health and social care. Ensuring that everyone with diabetes is able to have the same opportunities is crucial to improving outcomes for people with diabetes in Swindon.

- There are a wide range of services available in Swindon for promotion of a healthy weight and active lifestyle. In Swindon the Healthy Weight Strategy, Breastfeeding Strategy and Get Swindon Active Strategy provide strategic overview and action plans to ensure people are supported to maintain a healthy weight and active lifestyle.

- There are a number of options to aid people with diabetes to self-manage their diabetes including a wide range of other educational options for people with type 1 and type 2 diabetes in a variety of locations across Swindon.

- 36% of people with type 1 diabetes and 62% of people with 2 diabetes achieved all eight care processes in NHS Swindon CCG (2014/15, data collected in the National Diabetic Audit). This is similar to England, but there is wide variation between practices. In addition, younger people and those with Asian or Black ethnicity are less likely to receive all eight care processes.

- 37% of people with newly diagnosed type 1 diabetes were offered structured education and 74% of people with newly diagnosed type 2 diabetes were offered structured education (2014/15, NDA). The percentage offered structured education is similar to England however the uptake of structured education for people with type 2 diabetes is much lower in Swindon at less than 1%. Many other areas of the country get better uptake and we need to consider what they are doing that we could learn from and also consult with patients as to what they want.

- 15.3% of patients with type 1 diabetes achieved all three treatment targets (HbA1c ≤58mmol/mol, blood pressure ≤140/80 and serum cholesterol <5mmol/L) and 39.1% of patients with type 2 diabetes achieved all three treatment targets. Younger people were less likely to achieve treatment targets. Achieving good blood pressure control, good cholesterol control and good blood sugar control (as measure by QOF) is worse in Swindon than nationally.

- The Swindon Community Diabetes Service offers education for healthcare professionals, advice for healthcare professionals including joint clinics and clinics for people with more complex diabetes.

- Secondary care outpatient data suggests that there may be unequal access to this service for different ethnic groups but there are a large number of people with ‘unknown’ ethnicity status.

- There are a number of other elements within the diabetes pathway such as transitions, foot care and maternity which have a large potential to improve outcomes for specific groups of people with diabetes.

7.2 Recommendations

1. Stopping people from getting type 2 diabetes is crucial. If this is not achieved almost 9 out of every 100 people (15,931 people or 8.5% of the population) in Swindon may have diabetes by 2025.
    a. Make sure people know how to prevent diabetes, by promoting an active lifestyle, watching their weight and eating a healthy diet. This can be through working with communities and health and social care through appropriate campaigns.
    b. Promote the prevention services we provide, e.g. the new Swindon Community Health and Wellbeing Hub.
    c. Support a national programme, called the NHS Diabetes Prevention Plan, to help local people with a high chance of getting diabetes to reduce their risk of developing diabetes.

2. Make sure people at high risk of diabetes and people who have just developed diabetes are diagnosed quickly, so that they can get the best care. This will be done through education of patients and health-care professionals. Health professionals are advised to use risk assessments to aid early diagnosis. Continued education around this area by the Swindon Community Diabetes team is required.

3. Provide better care in Swindon for people with diabetes to reduce complications and, therefore, reduce need for health and social care. Action is required to reduce the differences in care for people with diabetes that occurs between GP practices.
    a. Work with the community, CCG and the Great Western Hospital NHS Foundation Trust on a community model of care.
    b. Increase the percentage of people with diabetes receiving all eight care processes. We will especially target young people and those from minority ethnic groups. This could be achieved by raising the profile of the annual review for people with diabetes and taking up national opportunities for improving diabetes care.
    c. Increase the percentage of people with diabetes meeting all three treatment targets. We will especially target young people and those in deprived areas. To achieve this annual reviews are required, primary care education and awareness of referrals and patient engagement.
    d. Increase referrals, and attendance, to structured education sessions. To ensure this primary care needs to be aware of and understand these courses, refer appropriately as part of the care plan, offer a variety of course times and dates to suit patients and engage with patients to understand in more detail why people do not attend.
    e. Continue improvements in foot care processes including amputation rates by ongoing review of the service, especially availability of podiatry services in the community and secondary care.
    f. Continue to increase participation in National Diabetes Audit to get complete information of diabetes care in primary care, including on ethnicity.
    g. Continued education for people with diabetes and healthcare professionals on the increased risk of depression with diabetes is required to ensure people with diabetes and depression receive appropriate care.

4. Make sure there are continued patient and public involvement in communication of key messages, diabetes care and any changes to care. Specific work to find out if there are any barriers to people from BME groups using diabetes services or being diagnosed with diabetes is needed to understand the possible differences in service use.

5. Make sure that there is continued communication between areas where people with diabetes attend for other reasons (such as maternity, podiatry and chiropody) and specialist diabetes services. We will carry on with the programme of change within diabetes transitions which aims to improve the service for children with diabetes as they move into adult services.

6. Aim to make ethnicity recording more complete in hospital outpatients clinics so we are able to understand differences in access to diabetes specialist services.

7. These recommendations should be taken to the Swindon Diabetes Transformation Board for action.

Bibliography

Academy of Medical Royal Colleges, Royal College of Pyschiatrists. (n.d.). No Health without Mental Health. The supporting evidence. Retrieved November 30, 2016, from http://www.rcpsych.ac.uk/pdf/No%20Health%20-%20%20the%20evidence_%20revised%20May%2010.pdf

Diabetes UK. (2015). Facts and Stats. Retrieved October 10, 2016, from https://www.diabetes.org.uk/Documents/Position%20statements/Diabetes%20UK%20Facts%20and%20Stats_Dec%202015.pdf

Diabetes UK. (2016, May). Achieving a setp change in self-management education: a quick guide. Retrieved january 9, 2017, from https://www.diabetes.org.uk/Documents/Professionals/Professional%20resources/Achieving%20a%20step%20change%20in%20diabetes%20self%20management%20education.pdf

Gillett M, D. H. (2010). Delivering the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cost effectiveness analysis. BMJ, 4093.

Lancet. (2015). Depression and diabetes. Retrieved November 30, 2016, from http://www.thelancet.com/series/depression-diabetes

NHS Digital. (2014). National Pregnancy in Diabetes Audit 2014. Retrieved November 30, 2016, from http://content.digital.nhs.uk/catalogue/PUB19042/npid-audi-sout-west-reg-2014.pdf

NHS Digital. (2015). National Inpatient Audit. Retrieved December 12, 2016, from http://content.digital.nhs.uk/diabetesinpatientaudit

NHS Digital. (2015/16). Quality Outcome Framework. Retrieved November 30, 2016, from http://content.digital.nhs.uk/qof

NHS Digital. (2016). National Diabetes Audit. Retrieved November 30, 2016, from http://content.digital.nhs.uk/catalogue/PUB19900

NHS Digital. (2016, August 3). Prescribing for diabetesn England 2005/06 to 2015/16. Retrieved January 16, 2017, from http://content.digital.nhs.uk/article/2021/Website-Search?productid=21370&q=prescribing+diabetes&sort=Relevance&size=10&page=1&area=both#top

NHS Digitial. (n.d.). Compendium of Population Health Indicators.

NHS England. (2015). NHS diabetes prevention programme: non-diabetic hyperglycaemia. Retrieved December 12, 2016, from https://www.gov.uk/government/publications/nhs-diabetes-prevention-programme-non-diabetic-hyperglycaemia

NHS England. (2016). NHS Diabetes Prevention Programme. Retrieved November 30, 2016, from https://www.england.nhs.uk/ourwork/qual-clin-lead/diabetes-prevention/

NICE. (2011). Type 2 diabetes prevention: population and community-level interventions. Retrieved November 30, 2016, from https://www.nice.org.uk/Guidance/PH35

NICE. (2012). Type 2 diabetes: prevention in people at high risk. Retrieved November 30, 2016, from https://www.nice.org.uk/Guidance/PH38

NICE. (2015). Diabetes in pregnancy: management from preconception to the postnatal period. NG3. Retrieved November 30, 2016, from https://www.nice.org.uk/guidance/ng3/chapter/Introduction

NICE. (2015). Type 1 diabetes in adults: diagnosis and management. Clinical Guidance 17. Retrieved Octover 10, 2016, from https://www.nice.org.uk/guidance/ng17

NICE. (2015). Type 2 diabetes in adults: management. Clinical Guidance 28. Retrieved November 30, 2016, from https://www.nice.org.uk/guidance/ng28

NIHR. (2010). The transition from paediatric to adult diabetes services:what works, for whom and in what circumstances?

NIHR. (2016). On the level. Evidence for action on type 2 diabetes. Retrieved October 18, 2016, from http://www.dc.nihr.ac.uk/themed-reviews/ThemedReview-Diabetes_WEBinteractive.pdf

PHE. (2014). Adult obesity and type 2 diabetes. Retrieved November 30, 2016, from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/338934/Adult_obesity_and_type_2_diabetes_.pdf

PHE. (2015). NHS Screening Programmes: KPI reports 2014 to 2015. Retrieved November 30, 2016, from https://www.gov.uk/government/publications/nhs-screening-programmes-kpi-reports-2014-to-2015

PHE. (2016). Diabetes footcare activity profiles. Retrieved October 10, 2016, from http://www.yhpho.org.uk/default.aspx?RID=116836

PHE. (2016). Diabetes Outcoms Versus Expenditure (DOVE) tool. Retrieved December 7, 2016, from http://www.yhpho.org.uk/resource/view.aspx?RID=88739

PHE. (2016). Diabetes prevalence models for local authorites and CCG. Retrieved October 25, 2016, from http://www.yhpho.org.uk/resource/view.aspx?RID=154049

PHE. (2016). Public Health Profiles. Retrieved November 30, 2016, from http://fingertips.phe.org.uk/

Royal College of Paediatrics and Child Health. (2014/15). National Paediatric Diabetes Audit. Retrieved November 30, 2016, from http://www.rcpch.ac.uk/improving-child-health/quality-improvement-and-clinical-audit/national-paediatric-diabetes-audit-n-0#2014-15 National Paediatric Diabetes Audit reports

South Asian Health Foundation. (2014). Type 2 diabetes in the UK South Asian population. Retrieved December 7, 2016, from http://www.sahf.org.uk/sites/default/files/publications/Type%202%20Diabetes%20in%20the%20UK%20South%20Asian%20population.pdf