

## Why is it important?

Diabetes is an increasingly common, life-long, progressive but largely preventable health condition affecting children and adults, causing a heavy burden on health and social services. It is a chronic condition in which the blood sugar level is too high because the body cannot use it properly. Over 3.1 million people in the UK are diagnosed as having the condition (Quality Outcomes Framework 2016/17, NHS Digital), and an estimated 24,000 avoidable deaths are caused annually by diabetes-related complications, resulting in 325,000 lost working years.

There are two main types of diabetes.

### Type 1

- More prevalent in children and young adults.
- Occurs when the body is unable to produce insulin.
- The least common type of diabetes, accounting for around 10% of all people diagnosed with diabetes.
- Reduces life expectancy by at least 5 years.

### Type 2

- More commonly diagnosed in those aged 40+.
- Increasingly being diagnosed in younger, overweight people.
- Develops when the body cannot produce enough insulin, or when the insulin produced does not work properly.
- Mostly linked with being overweight due to diet and lifestyle.
- Type 2 diabetes is preventable and there is evidence that early Type 2 diabetes can be reversed through lifestyle change.
- Nationally 90% of all diabetes is estimated to be type 2.
- Reduces life expectancy by around 5-7 years.

“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)

When diabetes is not well-managed, complications can develop which threaten health and can endanger life. Effective control of blood glucose and hypertension can prevent the development and progression of complications. Much of the management and monitoring of diabetic patients, particularly patients with Type 2 diabetes, is undertaken within Primary Care. Cost-effective treatment close to home is a priority, to reduce unnecessary admissions to or attendances at hospital.

People with diabetes are more likely to be admitted to hospital and have longer stays than people of the same age without the condition. Treatment for diabetes is estimated to account for at least 5% of healthcare costs. Adults with the condition have excess risk of a range of complications, including major vascular disease (heart attack and stroke) and microvascular disease (kidney disease, amputation). Effective management and treatment can help reduce the risk of common complications associated with diabetes.

Chronic complications include:

- Blindness - it is the leading cause of preventable blindness in people of working age.
- Kidney failure - it is the largest single cause of end stage renal failure.
- It is the biggest cause of lower limb amputation (due to foot ulcers), excluding accidents.
- Heart disease.
- Myocardial infarction - people with diabetes have a higher risk of myocardial infarction than those without diabetes.
- Stroke.
- Gum disease.

The rising prevalence of diabetes places a significant burden on local health care costs. However, it should be stressed that rising prevalence is not necessarily a bad thing, as it means that there is less undiagnosed diabetes in the population, which means that more with the condition are in receipt of appropriate management. Type 2 diabetes (approximately 90% of diagnosed cases) is partially preventable – it can be prevented or delayed by lifestyle changes (exercise, weight loss, healthy eating). Earlier detection of Type 2 diabetes followed by effective treatment reduces the risk of developing diabetic complications which can result in considerable morbidity and have a detrimental impact on quality of life (such as cardiovascular, kidney, foot and eye diseases). Around 80% of the costs of treating Type 2 diabetes is spent on avoidable complications including heart attack, stroke, renal disease, blindness and amputations.

### Durham data – the local picture and how we compare

Like all long-term medical conditions, diabetes prevalence is measured at CCG level rather than local authority.

- Diagnosed diabetes prevalence is higher in both North Durham and DDES CCGs than England (Quality Outcomes Framework [QOF] 2016/17, Table 1).
- There are around 34,000 people aged 17+ diagnosed with diabetes in County Durham (15,192 in North Durham; 18,824 in DDES). However, the real figure will be higher as there will be people in the population with the condition undiagnosed.
- The estimated number of people with diagnosed and undiagnosed diabetes in County Durham is around 39,000. This means that there were potentially around 5,000 people in County Durham “missing” from GP registers in 2015/16. Being undiagnosed means that the condition is not being managed so the risk of complications increases.
- Levels of excess weight in adults, one of the biggest risk factors for developing Type 2 diabetes, is also greater locally than nationally.
- Estimates suggest that of the 16+ population of DDES, 11.9% (27,119) have non-diabetic hyperglycaemia (pre-diabetes) and are therefore at risk of developing Type 2 diabetes as well as other cardiovascular conditions. The estimate for North Durham is 11.4% (23,029). The England estimate is 11.4%.

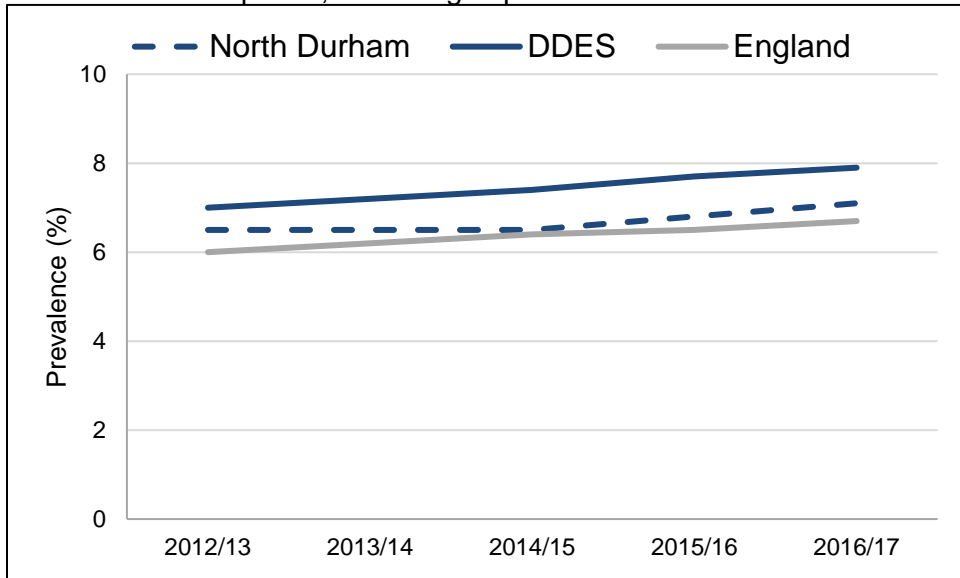
**Table 1:** Diabetes prevalence and risk factors, North Durham CCG, DDES CCG, Cumbria and the North East and England. Source: Fingertips, Public Health England (PHE) and Prevalence estimates of diabetes for Local Authorities and CCGs, National Cardiovascular Intelligence Network

		North Durham		DDES		Sub region	England
		%	Number	%	Number		
Diabetes prevalence	2016/17	6.8	15,192	7.9	18,824	7.1	6.7
Estimated diabetes prevalence (diagnosed and undiagnosed)	2017	8.1	17,176	9.2	22,187	-	8.5
Est. prevalence of non-diabetic hyperglycaemia for adults aged 16+	2015	11.4	23,209	11.9	27,119	-	11.4
Obese (%) 10-11 years	2015/16	20.7	1,348	22	1,798	21.0	19.0
Excess weight in adults	2012-14	12.2	25,819	14.1	33,652	11.4	9.0

Locally and nationally, diagnosed diabetes prevalence has been increasing over time (Figure 1). Between 2012/13 and 2016/17, prevalence in:

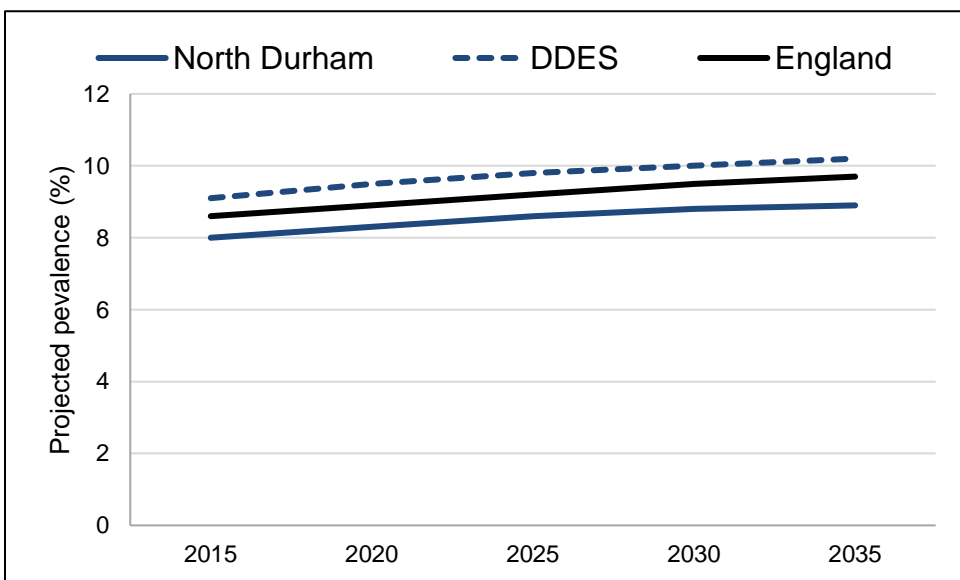
- North Durham rose from 6.2% (13,259) to 7.1% (15,192).
- DDES rose from 7% (16,421) to 7.9% (18,824).

**Figure 1:** Diagnosed diabetes prevalence (%), North Durham CCG, DDES CCG and England, 2012/13 to 2016/17. Source: Diabetes profile, PHE Fingertips



- Prevalence of Type 2 diabetes is projected to increase over time nationally and locally (Figure 2). This is largely due to a combination of increasing levels of obesity, poor diet and reduced levels of physical activity in the population, meaning that more people will be at risk of diabetes.
- Between 2015 and 2035, the estimated level of diagnosed and undiagnosed diabetes in:
  - England is estimated to rise from 8.6% to 9.7%.
  - North Durham CCG is expected to rise from 8% to 8.9%.
  - DDES CCG is expected to rise from 9.1% to 10.2%.

**Figure 2:** Prevalence estimates of diabetes (diagnosed and undiagnosed), North Durham CCG, DDES CCG and England, 2015 to 2035. Source: National Cardiovascular Disease Network, Public Health England.



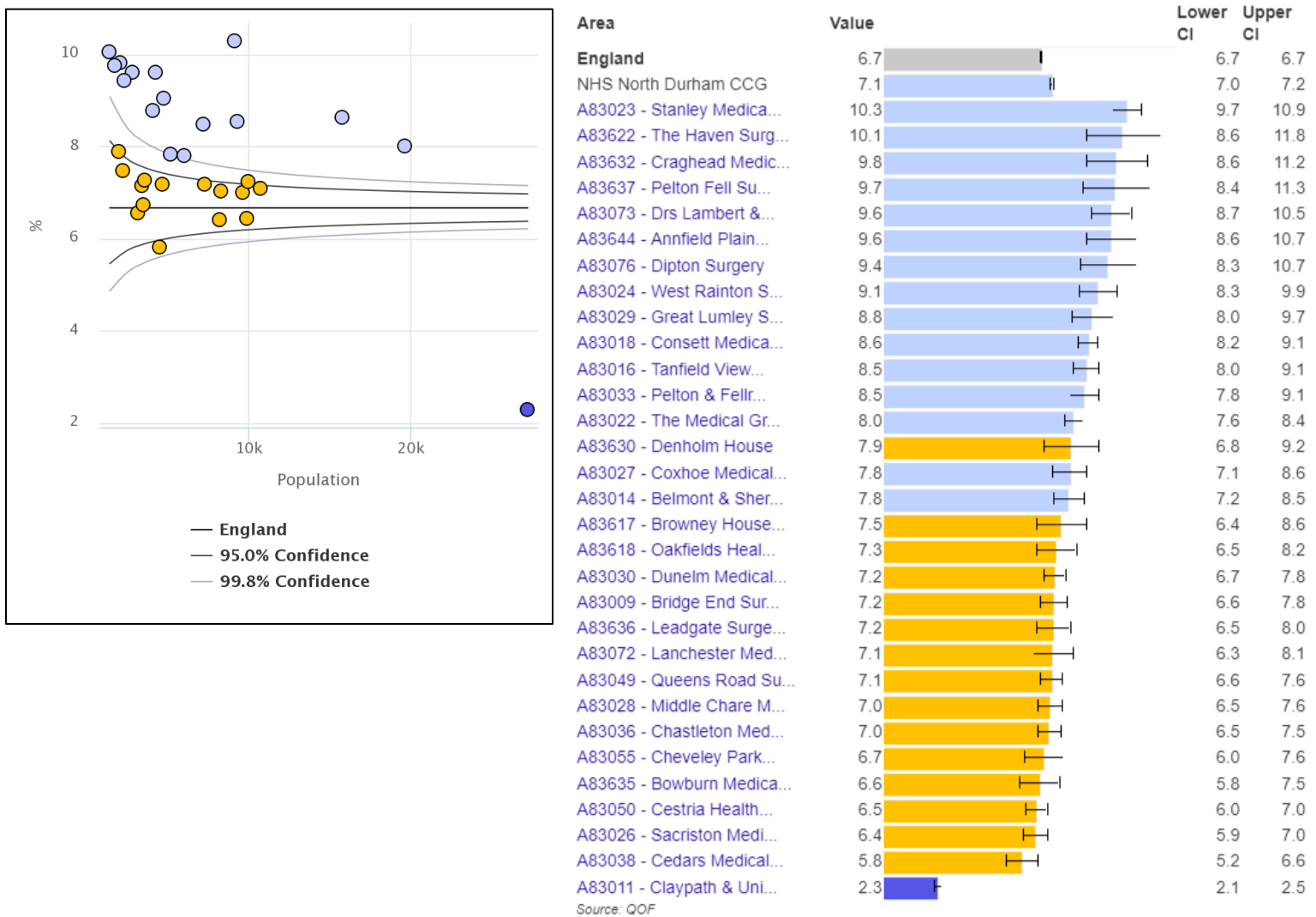
- There is significant variation in diabetes prevalence by GP practice within North Durham CCG (Figure 3). Practice level diabetes prevalence for 2016/17 in North Durham CCG ranges from 2.3% to 10.3%.

Statistical Process Control (SPC) charts provide information about variation by plotting the procedure rates against the England average and providing limits at two standard deviations (SD) and three standard deviations from this mean. We would expect that 95% of the rates would be within the two SD limit and 99.7% within the three SD limit.

Some degree of variation will naturally occur in any process and it is important to establish the likely reason for this variation. Common-cause variation is the natural or expected variation in a process, while special-cause variation is unexpected variation which results from unusual occurrences. Points which fall outside of control limits and non-random patterns on a control chart indicate the presence of special-cause variation. It is important to identify and try to eliminate special-cause variation. In effect, those rates which fall above or below the control limits may be special cause variation and warrant further investigation.

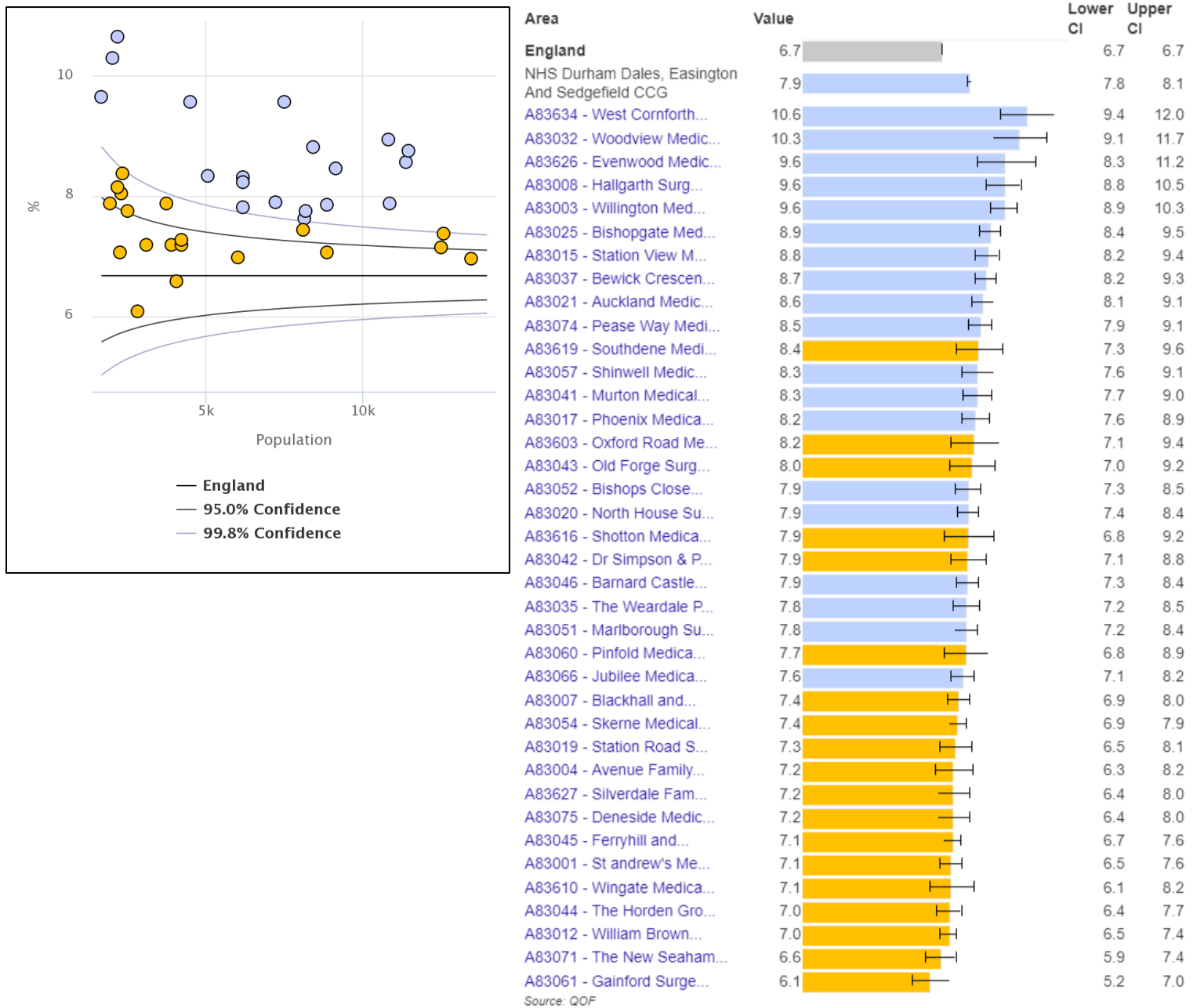
- The 15 North Durham GP practices highlighted in light blue (Figure 3) have a significantly higher prevalence of diabetes compared to the England average.

**Figure 3:** Diabetes QOF prevalence (17+) by GP, North Durham CCG: 2016/17



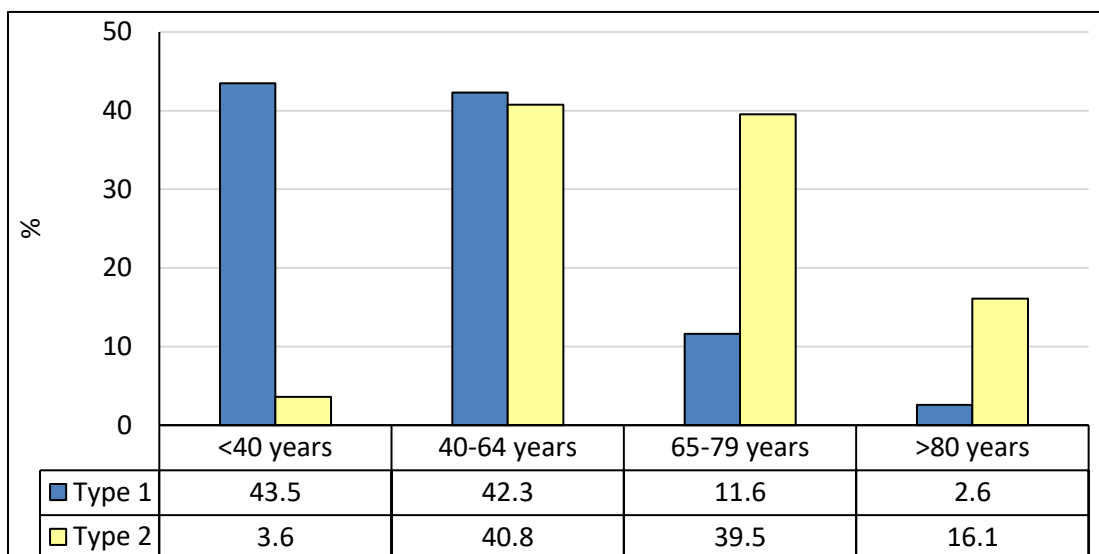
- There is significant variation in diabetes prevalence by GP practice within DDES CCG (Figure 4). Practice level diabetes prevalence for 2016/17 in DDES ranges from 6.1% to 10.6%.
- The 19 DDES GP practices highlighted in light blue (Figure 4) have a significantly higher prevalence of diabetes compared to the England average.

**Figure 4:** Diabetes QOF prevalence (17+) by GP, DDES CCG: 2016/17



- Although diabetes can occur at any age, and Type 2 diabetes is increasingly being diagnosed in children (NICE, 2015), there is a clear association between increasing age and higher Type 2 diabetes prevalence (Figure 5). There is a different profile for Type 1 prevalence.

**Figure 5:** Diabetes prevalence by age group (national). Source: National Diabetes Audit 2015/16, NHS Digital



Patients with diabetes need routine retinal screening, foot care and diabetes management. 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 Quality Standards. Practice participation in the NDA for both Durham CCGs is 100%, higher than the national average (95%).

NICE recommends nine care processes for diabetes - five risk factors (body mass index, blood pressure, smoking, glucose levels (HbA1c<sup>1</sup>) and cholesterol) and four tests to identify early complications (urine albumin creatinine ratio, serum creatinine, foot nerve and circulation examination and eye screening, held by NHSEDES and included here). These would normally be carried out in an annual review in primary care.

The 2016/17 NDA (Table 2) shows:

- North Durham
  - A similar proportion of Type 1 diabetes patients receiving all nine care processes (33.9%) compared to the national average (34.4%).
  - A higher proportion of Type 2 diabetes patients receiving all nine care processes (54.3%) compared to the national average (47.7%).
  - A lower proportion of Type 1 and 2 diabetes patients receiving an annual foot check (65.5% Type 1 and 76.6% Type 2) compared to the national average (70.1% Type 1, and 79.4% Type 2).
  - All other care processes for Type 1 and 2 diabetes were proportionally higher than England other than recorded smoking status (Type 1).
- DDES
  - A lower proportion of Type 1 diabetes patients receiving all nine care processes (30.7%) compared to the national average (34.4%).
  - A higher proportion of Type 2 diabetes patients receiving all nine care processes (49.2%) compared to the national average (47.7%).
  - A lower proportion of Type 1 and 2 diabetes patients receiving an annual foot check (65.7% Type 1 and 70.3% Type 2) compared to the national average (70.1% Type 1, and 79.4% Type 2).
  - All other care processes for Type 1 and 2 diabetes were proportionally higher than England other than for Type 1 patients receiving a blood test and cholesterol check, although these were similar to England.

<sup>1</sup> HbA1c refers to glycated haemoglobin. Measuring HbA1c gives an overall picture of average blood sugar levels over a period of time. For people with diabetes this is important, as the higher the HbA1c, the greater the risk of developing diabetes-related complications.

**Table 2:** Diabetes care processes, DDES CCG, North Durham CCG, Cumbria & North East and England. Source: National Diabetes Audit (NDA), NHS England, and Diabetes profile, Fingertips. PHE.

Indicator	North Durham		DDES		Region	England
	Count	%	Count	%	%	%
Type 1 receiving all 9 care processes	490	<b>33.9</b>	470	<b>30.7</b>	37.4	34.4
Type 2 receiving all 9 care processes	7,400	<b>54.3</b>	8,510	<b>49.2</b>	53.6	47.7
Type 1 receiving a blood test	1,285	<b>88.9</b>	1,305	<b>85.3</b>	87.8	84.9
Type 2 receiving a blood test	13,245	<b>97.2</b>	16,740	<b>96.9</b>	96.6	95.3
Type 1 receiving a blood pressure check	1,265	<b>92.3</b>	1,330	<b>93.0</b>	91.9	90.6
Type 2 receiving a blood pressure check	13,180	<b>97.4</b>	16,650	<b>97.7</b>	97.2	96.4
Type 1 receiving a cholesterol check	1,165	<b>85.0</b>	1,170	<b>81.8</b>	82.6	80.8
Type 2 receiving a cholesterol check	12,760	<b>94.3</b>	16,125	<b>94.6</b>	94.6	93.1
Type 1 receiving a serum creatinine test	1,230	<b>89.8</b>	1,225	<b>85.7</b>	85.3	83.3
Type 2 receiving a serum creatinine test	13,070	<b>96.6</b>	16,530	<b>97.0</b>	96.5	95.1
Type 1 receiving urinary albumin test	705	<b>51.5</b>	695	<b>48.6</b>	53.3	51.0
Type 2 receiving urinary albumin test	9,695	<b>71.7</b>	12,305	<b>72.2</b>	71.9	65.6
Type 1 receiving an annual foot check	925	<b>65.5</b>	940	<b>65.7</b>	70.6	70.1
Type 2 receiving an annual foot check	10,360	<b>76.6</b>	11,975	<b>70.3</b>	78.4	79.4
Type 1 who had their BMI recorded	1,195	<b>87.2</b>	1,210	<b>84.6</b>	81.6	75.8
Type 2 who had their BMI recorded	12,350	<b>91.3</b>	15,515	<b>91.1</b>	87.8	83.3
Type 1 whose smoking status is recorded	1,120	<b>81.8</b>	1,240	<b>86.7</b>	84.9	79.8
Type 2 whose smoking status is recorded	12,500	<b>92.4</b>	15,960	<b>93.7</b>	92.2	85.7

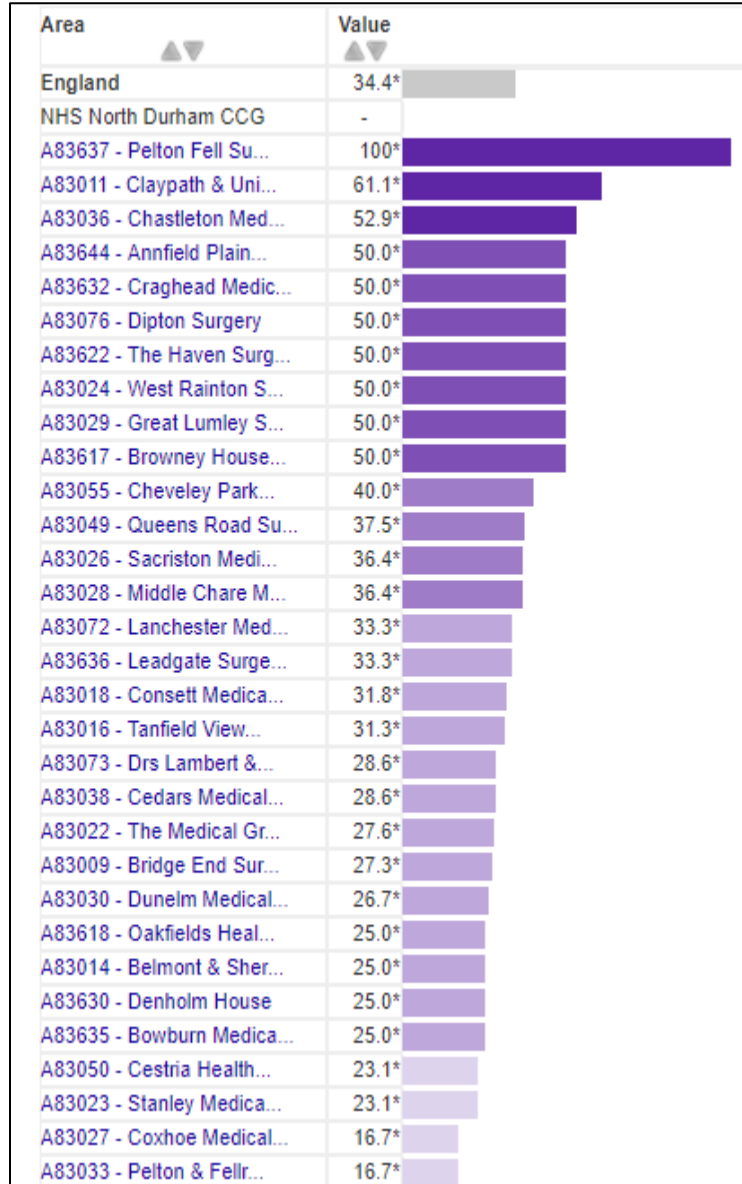
	Better than England
	Similar to England
	Worse than England

There is variation by GP Practice in the proportion of Type 1 and Type 2 diabetes patients receiving all nine care processes within North Durham CCG (Figure 6).

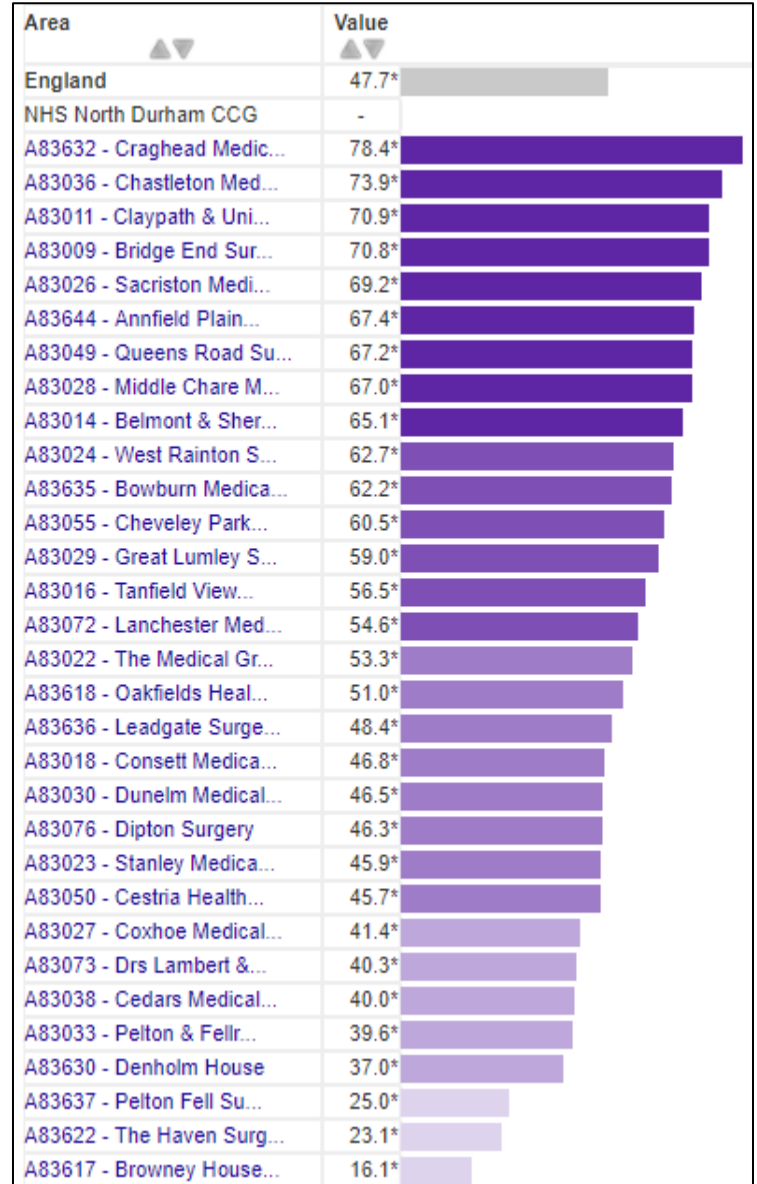
- For both Type 1 and Type 2 diabetes the range was large: 16.7% to 100% for Type 1 and 16.1% to 78.4% for Type 2.
- 4 GP Practices are in the lowest quintile (20%) nationally for Type 1; and 3 for Type 2.

**Figure 6:** People with Type 1 and Type 2 diabetes who received all nine care processes, %, North Durham CCG, 2016/17. Source: National Diabetes Audit (NDA), NHS England, and Diabetes profile, Fingertips. PHE.

**Type 1**



**Type 2**



Low High

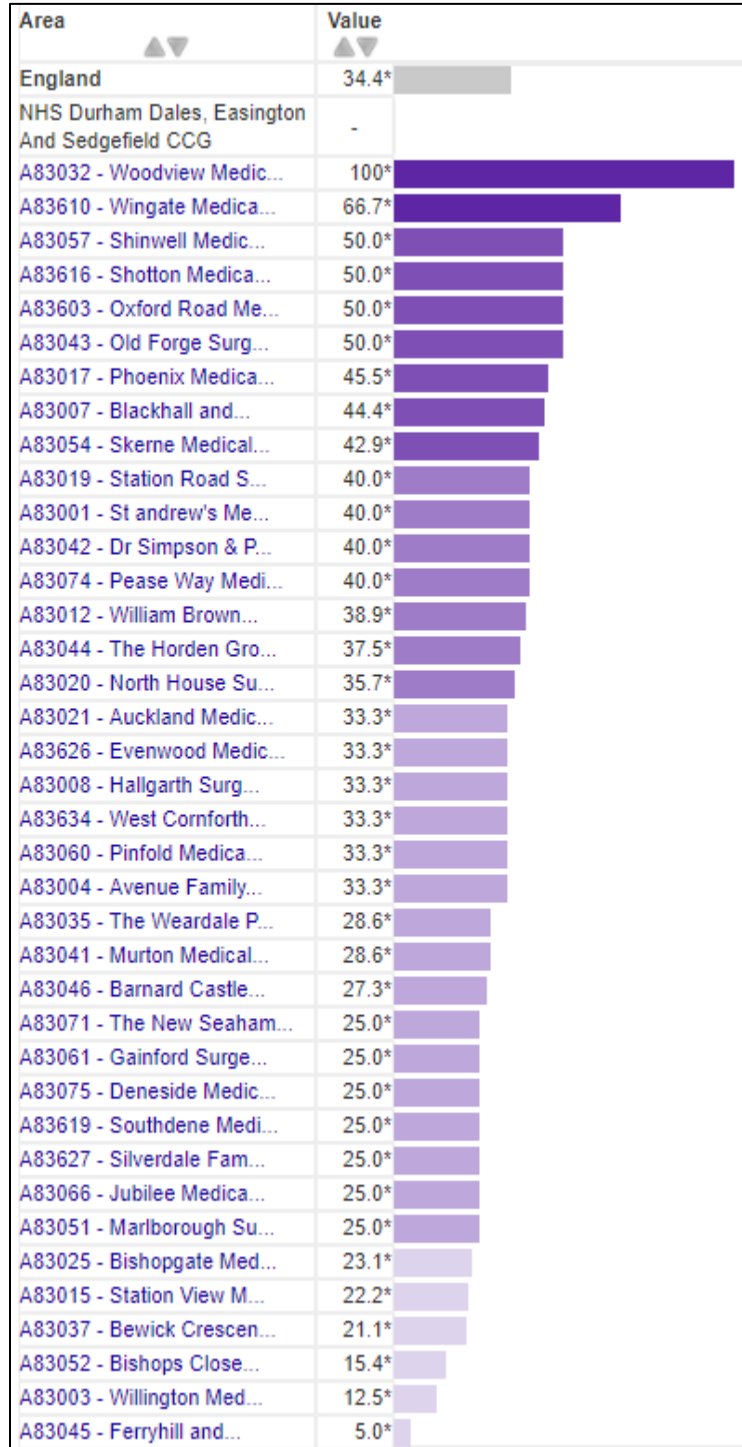


There is variation by GP Practice in the proportion of Type 1 and Type 2 diabetes patients receiving all nine care processes within DDES CCG (Figure 7).

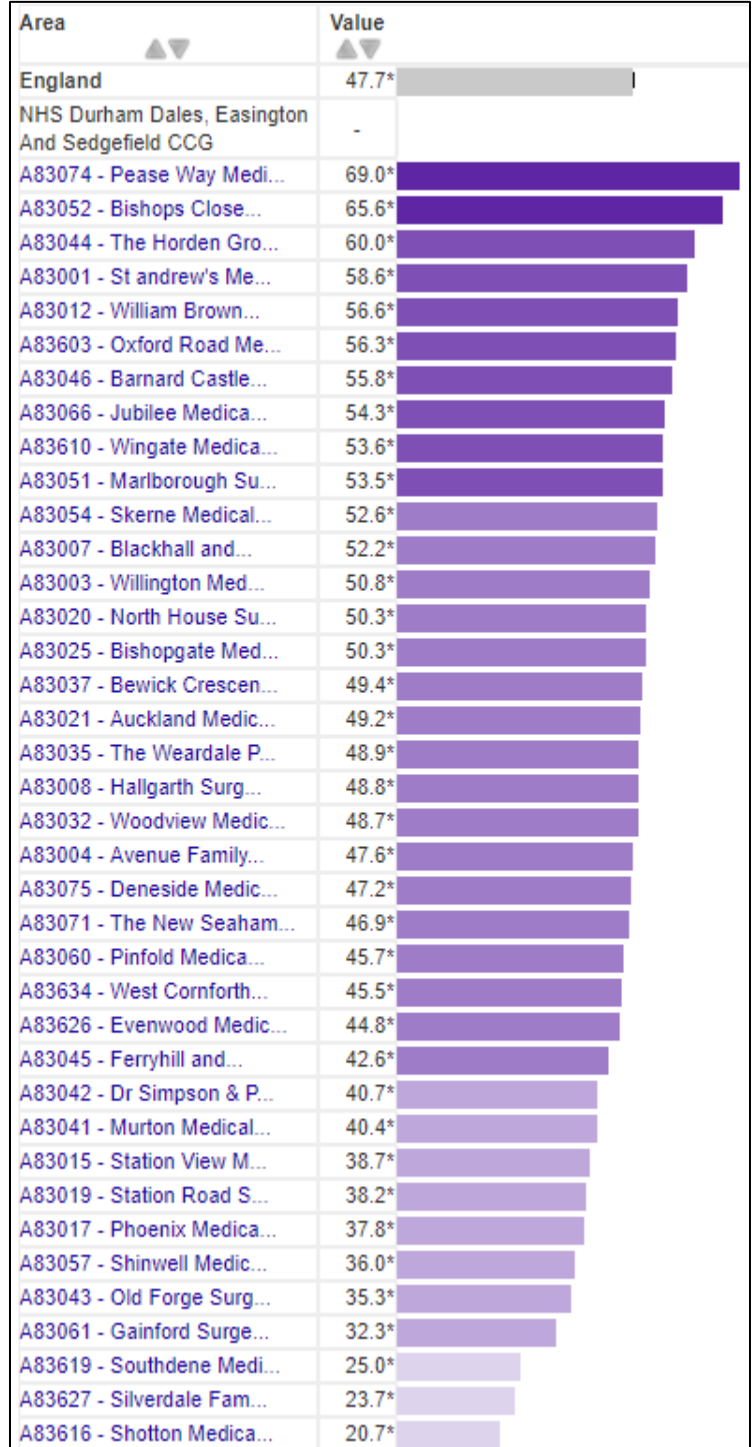
- For both Type 1 and Type 2 diabetes the range was large: 5% to 100% for Type 1 and 20.7% to 69% for Type 2.
- 6 GP Practices are in the lowest quintile (20%) nationally for Type 1; and 3 for Type 2.

**Figure 7:** People with Type 1 and Type 2 diabetes who received all nine care processes, %, DDES CCG, 2016/17. Source: National Diabetes Audit (NDA), NHS England, and Diabetes profile, Fingertips. PHE.

**Type 1**



**Type 2**



Low High

NICE recommends three treatment targets for HbA1c (glucose control), blood pressure and serum cholesterol:

- Target HbA1c reduces the risk of all diabetic complications.
- Target blood pressure reduces the risk of cardiovascular complications and reduces the progression of eye disease and kidney disease.
- Target cholesterol reduces the risk of vascular complications.

The NDA 2016/17 shows that:

- 18.3% of Type 1 diabetes patients in North Durham CCG achieve all three treatment targets (Table 3). This is similar to the national level.
- 43.3% of Type 2 diabetes patients in North Durham CCG achieve all three treatment targets. This is higher than the national average (41.1%).
- 14% of Type 1 diabetes patients in DDES CCG achieve all three treatment targets. This was lower than the national average (19%).
- 41.5% of Type 2 diabetes patients in DDES CCG achieve all three treatment targets. This was similar to the national average.

**Table 3:** Diabetes treatment targets, DDES CCG, North Durham CCG, Cumbria & North East and England.  
Source: National Diabetes Audit (NDA), NHS Digital, and Diabetes profile, Fingertips. PHE.

2016-17 Treatment target achievement ( completed)	Type 1		Sub-region		Type 2		Sub-region		England	
	North Durham	DDES		England	North Durham	DDES		England		
Blood glucose level <48 mmol/mol (HbA1c <6.5)	8.2	6.1	0.1	8.5	38.1	30.7	0.3	30.6		
Blood glucose level < 58mmol/mol (HbA1c < 7.5)	27.3	23.8	27.3	30.4	70.0	67.0	67.0	67.0		
Blood glucose level < 86mmol/mol (HbAc1 < 10)	82.8	80.8	-	84.8	93.7	93.7	-	93.3		
Blood pressure <=140/80	70.0	72.6	72.0	76.0	74.3	74.2	74.6	74.4		
Cholesterol <4 mmol/L	29.2	29.2	30.0	28.7	40.6	40.8	43.0	41.3		
Cholesterol <5 mmol/L	71.2	66.5	68.9	69.4	76.2	76.2	76.7	76.2		
All three treatment targets	18.3	14.0	16.8	19.0	43.3	41.5	42.0	41.1		

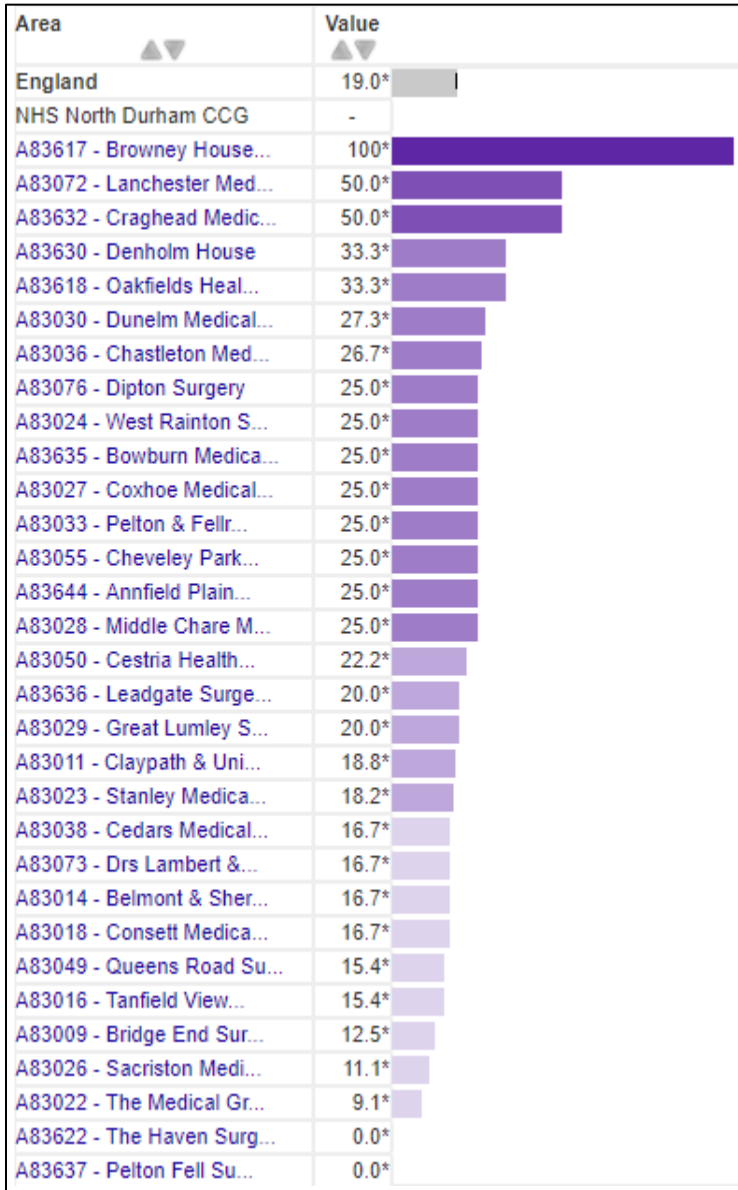
	Better than England
	Similar to England
	Worse than England

There is variation by GP Practice in the proportion of Type 1 and Type 2 diabetes patients achieving all three treatment targets within North Durham CCG (Figure 8).

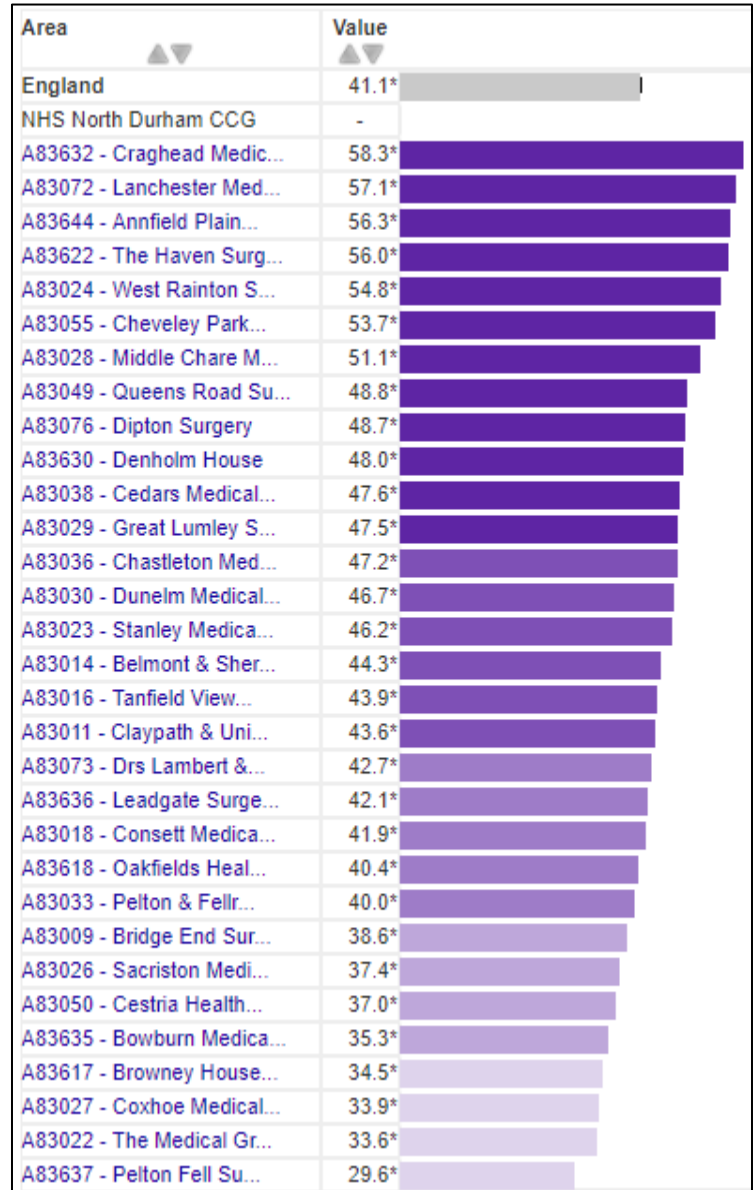
- For both Type 1 and Type 2 diabetes the range was large: from 0% to 100% for Type 1 and 29.6% to 58.3% for Type 2.
- 9 GP Practices are in the lowest quintile (20%) nationally for Type 1; and 4 for Type 2.

**Figure 8:** People with Type 1 and Type 2 diabetes who achieved all three treatment targets, %, North Durham CCG, 2016/17. Source: National Diabetes Audit (NDA), NHS England, and Diabetes profile, Fingertips. PHE.

**Type 1**



**Type 2**



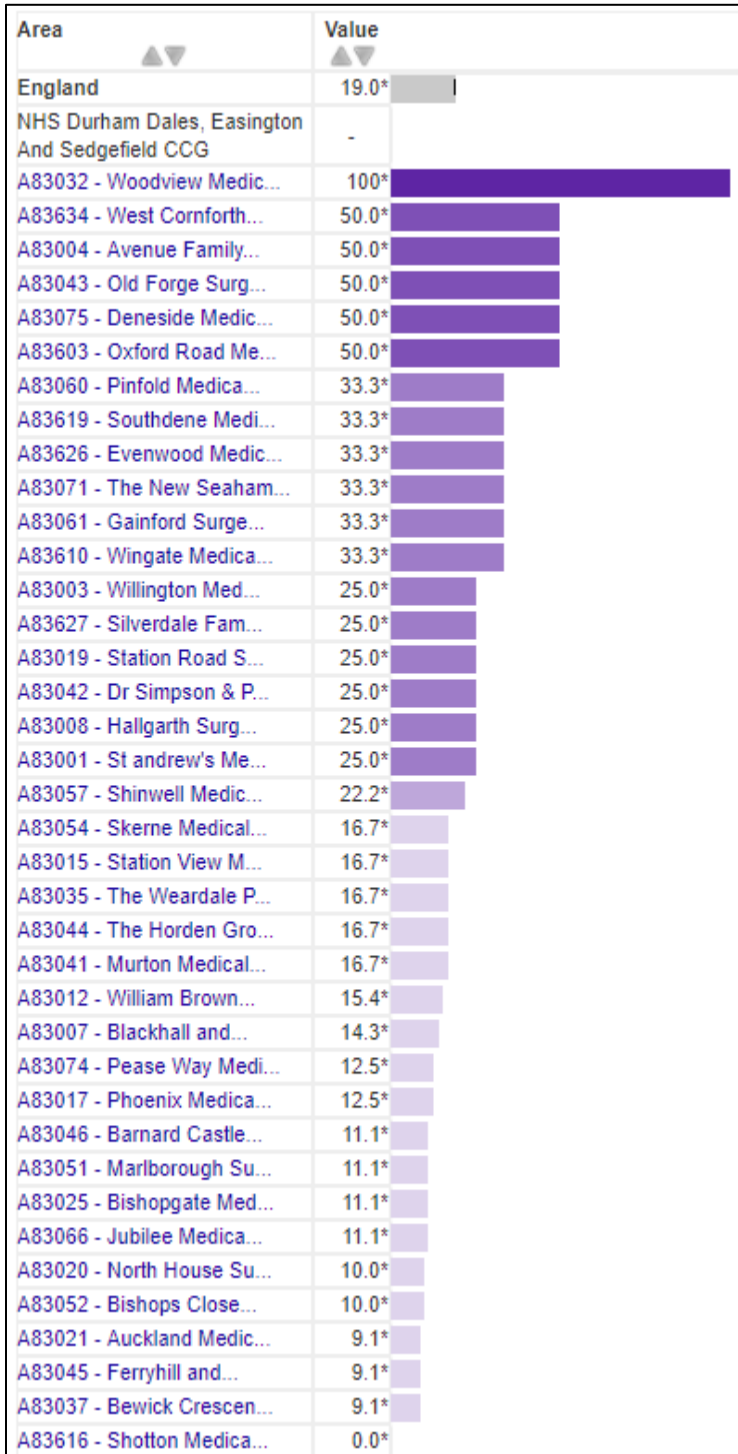
Low High

There is variation by GP Practice in the proportion of Type 1 and Type 2 diabetes patients achieving all three treatment targets within North Durham CCG (Figure 9).

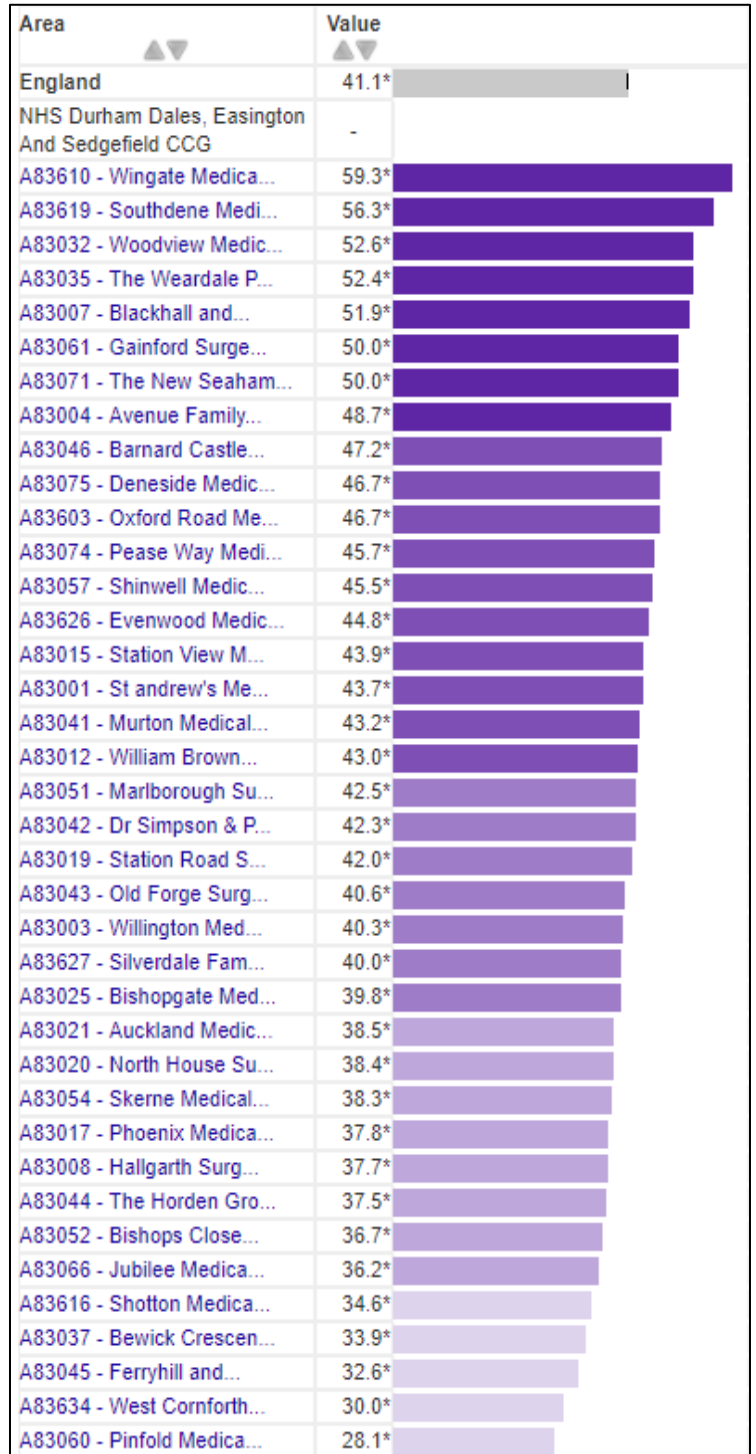
- For both Type 1 and Type 2 diabetes the range was large: from 0% to 100% for Type 1 and 29.6% to 58.3% for Type 2.
- 9 GP Practices are in the lowest quintile (20%) nationally for Type 1; and 4 for Type 2.

**Figure 9:** People with Type 1 and Type 2 diabetes who achieved all three treatment targets, %, DDES CCG, 2016/17. Source: National Diabetes Audit (NDA), NHS England, and Diabetes profile, Fingertips. PHE.

**Type 1**



**Type 2**



Low High

Diabetes increases the risk of certain conditions. People with diabetes have a higher risk of complications such as angina, myocardial infarction, heart failure and stroke than those without diabetes. The following indicators (Table 4) identify the additional risk of someone with diabetes having these complications over a three year period, compared to the population without diabetes.

- Rates of complications related to diabetes are not statistically significantly different in both North Durham and DDES CCGs compared to England, except for heart failure where the risk is significantly better than the England average in North Durham, and angina in DDES.
  - The risk of a person having angina in North Durham is 124.7% higher than those without diabetes, compared to 123% in DDES and 136.8% in England.
  - The risk of a person having heart failure in North Durham is 122.9% higher than those without diabetes, lower than DDES (142.9%) and England (150%).

**Table 4:** Additional risk of certain conditions in those with diabetes compared to those without, 2010/11-2012/13, North Durham CCG, DDES CCG and England. Source: NDA 2012/13, NHS England and Diabetes Profile, PHE Fingertips

	North Durham		DDES		England
	Count	Value	Count	Value	Value
Additional risk of angina among people with diabetes	892	124.7	1,474	123.0	136.8
Additional risk of myocardial infarction among people with diabetes	152	83.3	291	87.8	108.6
Additional risk of heart failure among people with diabetes	517	122.9	798	142.9	150.0
Additional risk of stroke among people with diabetes	245	98.7	337	99.0	81.3
Additional risk of renal replacement therapy among people with diabetes	50	291.9	98	299.8	293.0

There are many adverse outcomes for poorly managed diabetes. Poor diabetic foot care often costs more than good care. Delays in access to specialist care can lead to severe long-term ulcers and, in some cases, to amputation. Severe ulcers and amputations devastate lives and increase NHS costs. 'Up to 80 per cent of people with diabetes die within five years of having an amputation or a foot ulcer. Evidence shows that providing an integrated footcare pathway, with trained staff in foot protection services in the community and speedy access to multidisciplinary specialist teams, considerably lowers the risk of amputation' (Diabetic Footcare Profile, PHE Fingertips).

A major diabetic lower-limb amputation (above the ankle) is an adverse outcome of diabetes. The rate at which major amputations occur in a diabetic population can be used as a good overall proxy measure of the effectiveness of healthcare and the diabetic foot care systems. Survival rates and quality of life for patients following a major diabetic lower-limb amputation can often be poor. Foot ulcers are a common complication in diabetes and contribute significantly to the need for hospital admissions, length of stay and, if not treated successfully, to amputations. Annual foot checks are recommended.

**Table 5:** Diabetes foot care activity, North Durham CCG, DDES CCG and England. Source: NDA 2012/13, NHS England and Diabetes Profile, PHE Fingertips.

	North Durham		DDES		England
	Count	Value	Count	Value	Value
Major diabetic lower-limb amputation procedures (2013/14-15/16)	55	10.5	59	9.0	8.1
Minor diabetic lower-limb amputation procedures (2013/14-15/16)	80	18.4	102	21.0	21.0
Hospital spells for diabetic foot disease (2013/14-15/16)	539	129.0	719	137.3	138.2
Median length of stay for diabetic foot procedures (2013/14-15/16)	-	8.0	-	10.0	8.0
Adjusted length of stay for diabetic foot disease	-	9.0	-	10.7	9.5
People with Type 1 diabetes who receive an annual foot check (2016/17)	925	67.5%	940	65.7%	70.1%
People with Type 2 diabetes who receive an annual foot check (2016/17)	10,360	76.6%	11,975	70.3%	78.4%

- The proportion of diabetes patients (Types 1 and 2) receiving an annual foot check in 2016/17 was statistically significantly lower than England in both North Durham CCG and DDES CCG (Table 5).
- Levels of major and minor lower-limb amputation procedures in North Durham and DDES CCGs are not statistically significantly different to England.
- Hospital spells for diabetic foot disease in North Durham are statistically significantly better than England. Rates in DDES are not significantly different to England.

### Groups most at risk

It is not fully understood why the processes leading to Type 1 diabetes take place, nor have the exact causes of Type 2 been fully established. However, there are factors which clearly make development of the condition more likely. Type 2 diabetes is strongly associated with ethnicity, social deprivation and age. Prevalence increases with age, with the highest percentages of people over 70 years.

The main risk factors for developing diabetes are:

- Being overweight or obese.  
Obesity is the most potent risk factor for Type 2 diabetes. It accounts for 80-85 of the overall risk of developing Type 2 diabetes (Hauner H. 2010, Textbook of Diabetes, Diabetes and Obesity). Almost two in every three people in the UK are overweight or obese.
- Being physically inactive.  
Physical inactivity is associated with increases in obesity, CVD, cancer, hypertension, and in the development of Type 2 diabetes. Meeting recommended physical activity levels can cut the risk of developing these long-term conditions.
- Smoking.  
Smoking increases the risk of diabetes, especially among heavy smokers.
- Having a relative with diabetes.  
Diabetes risk is 15 times higher in those with immediate family with diabetes (Type 1). Type 2 Diabetes risk is 2-6 times more likely in people with family history of diabetes. People whose mother developed (gestational) diabetes during pregnancy are at higher risk.

- Deprivation.  
Deprivation is associated with obesity, smoking and other risk factors for diabetes.
- Ethnicity type.  
Type 2 diabetes is more common in people of African, African-Caribbean and South Asian family origin. People of Asian and Black ethnicity are 2-4 times more likely to develop diabetes than those of Caucasian ethnicity.
- Age.  
Children and adolescents are more likely to be diagnosed with Type 1 diabetes. Older people are more likely to have Type 2 diabetes. Risk increases for those aged 40+ or those aged 25+ for some black and minority ethnic groups.

**How does this topic link to our strategies and plans?**

Diabetes has been identified as a key area of focus by the County Durham Health and Wellbeing Board and is reflected in a Joint Health and Wellbeing Strategy priority, which aims to ‘reduce health inequalities for adults through prevention and early identification.’ The Health and Wellbeing Board will support behaviour change across a range of unhealthy behaviours, to help people to live healthy lives.

**Author:**

**Approver:**

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**Data sources:**

[CVD: Primary Care Intelligence Packs, National Cardiovascular Intelligence Network, PHE](#)  
[Quality Outcomes Framework \(QOF\), 2016/17, NHS Digital](#)  
[Diabetes profiles, Fingertips, Public Health England \(PHE\)](#)  
[Prevalence estimates of diabetes for Local Authorities and CCGs, National Cardiovascular Intelligence Network](#)  
[National Diabetes Audit, NHS England](#)