

# National Diabetes Audit

## Key findings about the quality of care for children and young people with diabetes in England and Wales

Report for the audit period 2006-2007



Prepared in partnership with:



**It is a pleasure once again to write this introduction to the Paediatric NDA on behalf of members of the Brecon Group (the all Wales Paediatric Diabetes interest group), who for this audit period (2006-2007) have excelled themselves with a 100 per cent participation rate from centres in Wales. This is the third year that Wales has participated in the audit and numbers of registrations have increased year**

**on year. My thanks go to all those who have collected data and to Heather O'Connell who has tirelessly chased up centres to get every last HbA1C. The success of the Brecon group as a Paediatric Diabetes network in Wales is quite clearly demonstrated by overwhelming enthusiasm to support the NDA. Participation in the NDA has helped in many respects. In Wales it has been useful to 'benchmark' centres against each other and to compare Welsh centres with those in England. On a personal note, I have used these data to support a business case for future funding for the Cardiff service.**

However, we should not be complacent. In Wales, as in England, there are a worryingly large number of children admitted with Diabetic Ketoacidosis, which is more marked in girls and children from socially deprived areas. Despite good registration coverage, the submission of data on 'care processes' remains low from Wales, which I hope will improve as centres start to use electronic data collection. Although the median HbA1c for children in Wales is the same as that in England which represents an improvement of 0.1 per cent on the previous year, our 'cut offs' for the lower and upper quartiles are 0.1 per cent higher suggesting a slight skew in levels towards a higher HbA1c. It is pleasing to see that there has been some improvement in the number of centres reporting some form of structured education, although, overall this still remains exceedingly low. I hope centres in Wales and England will use the audit data in a positive manner to help them plan services for children with diabetes, and where a shortfall exists, design new initiatives to solve the problem.

### **Justin T Warner**

Consultant Paediatric Endocrinologist  
Honorary Lecturer  
Department of Child Health  
University Hospital of Wales

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Report for the audit period 2006-2007

**This report presents the main findings from the fourth year of the National Diabetes Audit of paediatric specialist units in England and Wales. The report provides key findings about the quality of care for Children and Young people with diabetes in England and Wales. It also provides recommendations for both national and local organisations based on the analysis of the audit data.**

The NDA Executive Summary will complement this report. The Executive Summary is available to download from: <http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/diabetes>. For further information about the report contact The NHS Information Centre's (The NHS IC) Contact Centre 0845 300 6016 or email: [enquiries@ic.nhs.uk](mailto:enquiries@ic.nhs.uk) quoting document reference IC19110208.

This report is available as a PDF file download only and can be found at: <http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/diabetes>. For further information about the report contact The NHS Information Centre's (The NHS IC) Contact Centre 0845 300 6016 or email: [enquiries@ic.nhs.uk](mailto:enquiries@ic.nhs.uk) quoting document reference IC19110208.

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The project wishes to acknowledge the following individuals and groups that have supported the NDA and provided guidance and direction over the audit year.

The Project Board for providing governance and strategic direction for the audit, including: Martin Old, Sue Roberts, Bob Young, Bridget Turner, Dick Waite and Helen Laing.

The NDA also wishes to thank the Paediatric Advisory Group for providing advice and guidance for the paediatric elements of the audit and the Paediatric Steering Group for its support and development of the paediatric analysis. Full details of membership can be found in Appendix A.

Justin Warner and Heather O'Connell at the Brecon Group Registry, for their efforts in developing Welsh paediatric participation in the audit and all those at the Welsh Assembly Government, who have worked towards developing participation in the audit from primary care.

Connecting for Health Systems and Service Delivery (CFHSSD - formerly NHSIA) for their support and development of the technical infrastructure for the audit, including Phil Moores, Julian Van Tienhoven, Bev Bowen and in particular Simon Netley and Darren Reddick for their support and encouragement to all those organisations participating in the audit throughout the data submission period.

The NDA User Group, for their input and support of the audit. Full membership of the NDA user group can be found in Appendix A.

The NDA has benefited from the support of staff throughout The NHS Information Centre for health and social care (The IC). The project would like to thank them all, including the Population and Geography Team, in particular Nick Armitage for his support on NDA development of Super Output Area analysis for the audit and David Wheatley for designing the NDA participation Maps. Also, Charlotte Tye of the Marketing and Communications Team.

And finally, thanks to all those who have worked hard to encourage participation and submit data to the audit, including clinicians, managers, diabetes leads, clinical audit, service improvement and administrative staff. Their efforts and commitment have contributed to the ongoing development of the NDA.

## Foreword



### **This is the fourth report produced by the National Diabetes Audit team.**

It is encouraging that data are still being submitted to the Audit. However, it seems that the amount of data being submitted may have plateaued as there has been very little change in the total data submitted this year compared with last. It seems that it has not proved possible to address the issues which have been present previously, namely those of being able to submit the data electronically and clearly, if we are going to achieve our ultimate aim of getting as near as possible to 100 per cent submission, this is a problem that needs to be addressed urgently. This is especially true if the data set is to be expanded, a matter which is under consideration at the moment.

This is the last report which will be produced in which the various units submitting data will be anonymised. From now on, following wide consultation with all the units who have submitted data in the past and those units that had never submitted data, the identity of the submitting units will be de-anonymised so that it will become much easier to benchmark against the national data. Although there were a few units who expressed concerns about de-anonymisation, there was an overwhelming majority in favour of de-anonymisation and therefore the decision has been taken that this should occur.

I hope therefore that the enthusiasm for the National Diabetes Audit will be maintained and that over the next period of time we will be able to move towards obtaining as near complete data as possible.

My thanks once again to the Welsh contingent who this year have managed to achieve 100 per cent data collection and I hope that where the Welsh have shown the way, the English will be able to follow suit.



### **Dr Jeremy Allgrove**

Consultant Paediatric Endocrinologist  
Chair, National Diabetes Audit Paediatric Advisory Group

## Summary of Key Findings

**A number of important findings have been identified from the 2006-2007 audit data, based on the paediatric units that participated in the audit. There is a general trend of improvements across most areas of analysis. However, the numbers of children and young people with HbA1c results of over 9.5 per cent remains high.**

- Although there has been a 4 per cent increase in the number of specialist paediatric units submitting data to the audit, there has been a 1.5 per cent decrease in records held, with information received on 12,727 children and young people with diabetes in England and Wales. This is a reflection of the continuing difficulty that many units experience in being able to submit data across the audit years.
- 29.55 per cent of children and young people with diabetes have HbA1c readings of over 9.5 per cent. Although this is a slight reduction from 2005-2006, the finding is comparable with the previous audit years.
- As in previous years, more females than males have HbA1c readings of over 9.5 per cent. Again, this is consistent across all age bands, with the exception of those aged 4 years old and under.
- 17.93 per cent of children and young people aged under 16 years old achieve the NICE HbA1c guideline of <7.5 per cent. This is an improvement from the 2005-2006 audit (16.5 per cent). There has been improvement across all age bands.
- On average, 7.31 per cent of children and young people under the age of 16 experienced at least one episode of diabetic ketoacidosis in the audit period. This is a decrease on the 2005-2006 audit result. Again, more girls than boys experience ketoacidosis.
- Overall, 83.95 per cent of children and young people have had their HbA1c recorded at least once in the audit period, up from last year's 77.31 per cent.
- 78.72 percent of children and young people achieved the NICE cholesterol guideline of <5.0 mmol/litre. This is a slight reduction on the previous audit year. As in previous analysis, the finding is based on all results submitted to the audit and includes children across all age bands.

- An increasing number of units are submitting information on all care process data collected for the NDA.

### Recommendations

- Those involved in the delivery of care for children and young people with diabetes should review their local results and consider how service improvements can be identified and delivered.
- All those involved in the commissioning and delivery of care for children and young people with diabetes should ensure that services are resourced and organised to provide appropriate support for those with HbA1c levels of over 9.5 per cent.
- Commissioners of specialist paediatric diabetes services in England and Wales should ensure that the provision of clinical IT systems is included in service specifications. This will support systematic service delivery, participation in both national and local clinical audit and reduce the burden of data collection on front line staff.
- All those delivering care to children and young people with diabetes should strive to keep accurate, comprehensive structured records of the care processes delivered and outcomes achieved.
- Clinicians should strive to record measures of structured education participation and achievement.

### Good Practice

**The development and sharing of good practice is a key aim of the audit. The following areas have been identified:**

- All specialist diabetes units delivering care to children and young people could benefit from participating in the national diabetes audit.
- Plans for service improvements can be soundly based on review of local results and national comparators provided in the audit analysis. This can be used to develop a business case for additional specialised staff or other local service improvements.

- Specialist paediatric services should have a clinical IT system to support care delivery and make audit participation straightforward. Where clinical IT is not available the provision of a data input resource can relieve the burden of data collection on clinical staff.
- Where specialist paediatric special interest groups exist, a co-ordinator can provide a vital role in supporting local analysis, reporting, action planning and encouraging participation in the audit.

## Introduction

This is the fourth paediatric report of the National Diabetes Audit and presents the main findings for the paediatric analysis. The audit was commissioned by the Healthcare Commission and was developed in partnership with Diabetes UK. Clinical and professional guidance is provided by the NDA Paediatric Advisory Group, which has a vital role in guiding the paediatric audit. The membership of the Paediatric Advisory Group and the NDA Project Board can be found in Appendix A.

The continued success of the paediatric diabetes audit is a result of the commitment from the clinicians and nurses who give their time to collate the information needed to participate. This effort should not be underestimated for units that have to manually input the data into spreadsheets and databases. The analysis for the audit is available through the on-line analysis toolkit and on the NDA website, in chart and table form, for the key areas of the audit. All analysis is based on the diabetes NSF and NICE guidance.

NICE guidance addresses the diagnosis and management of children and young people with type 1 diabetes<sup>1</sup> it covers:

- initial management at diagnosis (including consideration of admission criteria and initial insulin regimens)
- continuing care of children and young people with type 1 diabetes
- ongoing monitoring of glycaemic control
- management of hypoglycaemia and hypoglycaemic coma
- prevention and management of diabetic keto-acidosis (including the management of intercurrent illness)
- peri-operative management of children and young people with type 1 diabetes
- surveillance for complications
- the special needs of young people (adolescents) and the interface between paediatric and adult services.

The Diabetes NSFs<sup>2,3</sup>, for England and Wales also set standards for the delivery of care to children and young people with diabetes.

### **Diabetes NSF – standard 5**

“All children and young people with diabetes will receive consistently high-quality care and they, with their families and others involved in their day-to-day care, will be supported to optimise control of their blood glucose and their physical, psychological, intellectual, educational and social development.”

### **Diabetes NSF – standard 6**

“All young people with diabetes will experience a smooth transition of care from paediatric diabetes services to adult diabetes services, whether hospital or community based, either directly or via a young people’s clinic. The transition will be organised in partnership with each individual and at an age appropriate to and agreed with them.”

## **What does the National Diabetes Audit Measure?**

### **The Paediatric National Diabetes Audit aims to provide answers to the following questions:**

- how many children and young people with diabetes are cared for in paediatric units?
- what is the annual rate of ketoacidosis for children and young people registered with diabetes?
- what proportions of children and young people with diabetes are getting the key processes of diabetes care?
- what proportions of children and young people with diabetes achieve treatment targets?

Each of the audit questions are discussed in this report and the key findings from the 2006-2007 audit period are presented. Where appropriate, comparisons are made with data from the previous audit years of 2003-2004, 2004-2005 and 2005-2006.

To undertake more detailed and locally based analyses, users should access the NDA Toolkit directly. Toolkit user guides can be downloaded from the NDA website and there is an on-line tutorial available.

The project has consulted with those involved in clinical care of children and young people about whether the analysis in the toolkit and in the annual report should use unit or hospital names. The majority would prefer to use unit names. This is the last report for the audit that will use anonymised codes. Units can request a copy of their code by emailing: [diabetes@ic.nhs.uk](mailto:diabetes@ic.nhs.uk).

### **All future analysis and reporting will use unit names.**

## Participation

**Many paediatric units are working predominantly with paper-based methods of record-keeping and to collect and submit data electronically in these circumstances has not been easy or straightforward. Ideally, information on the complete dataset should be submitted to the audit (see Appendix G). This is not always possible, especially for units that do not have supporting clinical IT systems. Because of this a number of units have submitted partial data and have provided information about registrations with limited information on care processes and treatment targets.**

The NDA has provided standardised forms in Excel or Access format that can be completed as part of the data submission process. These are available from the NDA website: <http://www.ic.nhs.uk/diabetesaudits>. The majority of paediatric units submit data to the NDA in this way. It is also possible to co-ordinate submission of data via district registers and central co-ordination; the Yorkshire Paediatric Diabetes Special Interest Group and Welsh units participate in the audit by this approach. For those units that have the TWINKLE IT system it is possible to submit data by use of an electronic extract. This is also possible with the DIAMOND IT system, which is in use in some paediatric units.

Prior to the National Diabetes Audit, Diabetes UK conducted a national audit of children (0-16 years) with diabetes for 2000, 2001 and 2002. A number of findings from the Diabetes UK audits provide useful benchmarks and are included for comparison.

In total, 106 paediatric units successfully submitted data to the 2006-2007 audit, 92 in England and 14 in Wales. When compared to the 28 units that took part in the first NDA of 2003-2004, it is clear that those involved in the care of children, and young people with diabetes have made an enormous commitment and effort to participate. 36 paediatric units are registered for the audit, but have not managed to submit data this audit period. Feedback indicates that the main issue for units that have participated in previous years, but have not managed to submit data for the 2006-2007 audit, is a lack of resource to collect the required data.

There is no national record of specialist paediatric units in the UK that deliver diabetes care to children and young people. The NDA has been working with

the support of the NDA Paediatric Advisory Group to identify and develop this information. This is an ongoing effort to ensure that the unit information is as accurate as possible. The data within this report are based on our work to date, which indicates that there are 198 specialist paediatric units delivering diabetes care in England and Wales.

## Detailed Analysis

### Registrations

The NDA asks:

#### How many children and young people with diabetes are cared for in paediatric units?

In total, 106 Specialist Paediatric units across England and Wales submitted data to the audit, which is a unit participation increase of 4 per cent from the previous audit year. Full details of the paediatric units and registration status can be found in Appendix C. Of these 106 units, 21 had not submitted in the previous audit year (2005-2006). However, 17 units that did submit in the previous audit year did not provide data for 2006-2007.

For the 2006-2007 audit year, 12,727 records were successfully submitted to the NDA by specialist paediatric units. However, this is a decrease of 197 records from the previous audit year and represents a 1.5 per cent decrease in data submission. (Figure 1). This reduction in records is because of variability in the units that manage to submit data to the audit over time.

In England, 11,446 records were successfully submitted from 92 specialist paediatric units. This represents a unit participation rate of 50 per cent (based on current information of 184 specialist paediatric units in England). In Wales, 1,281 records were submitted from 14 specialist paediatric units. This represents a unit participation rate of 100 per cent (based on information on 14 specialist paediatric units in Wales).

**Overall, the NDA includes records from approximately 50 per cent of children and young people in England and Wales with diabetes. This coverage rises to 100 per cent for Wales**

The numbers of successful records submitted to the NDA by individual specialist paediatric units ranges from 35 to 449, which is indicative of the variation in the size of diabetic caseload for specialist paediatric units in England and Wales.

Figure 1: Time trend: registration information from Specialist Paediatric Units in England and Wales

	Registrations 2003-2004	Registrations 2004-2005	Registrations 2005-2006	Registrations 2006-2007
England	3,484	7,073	11,713	11,446
Wales	-	768	1,211	1,281
(National Value)	3,484	7,841	12,924	12,727

Figure 2: Registrations for paediatric units in England

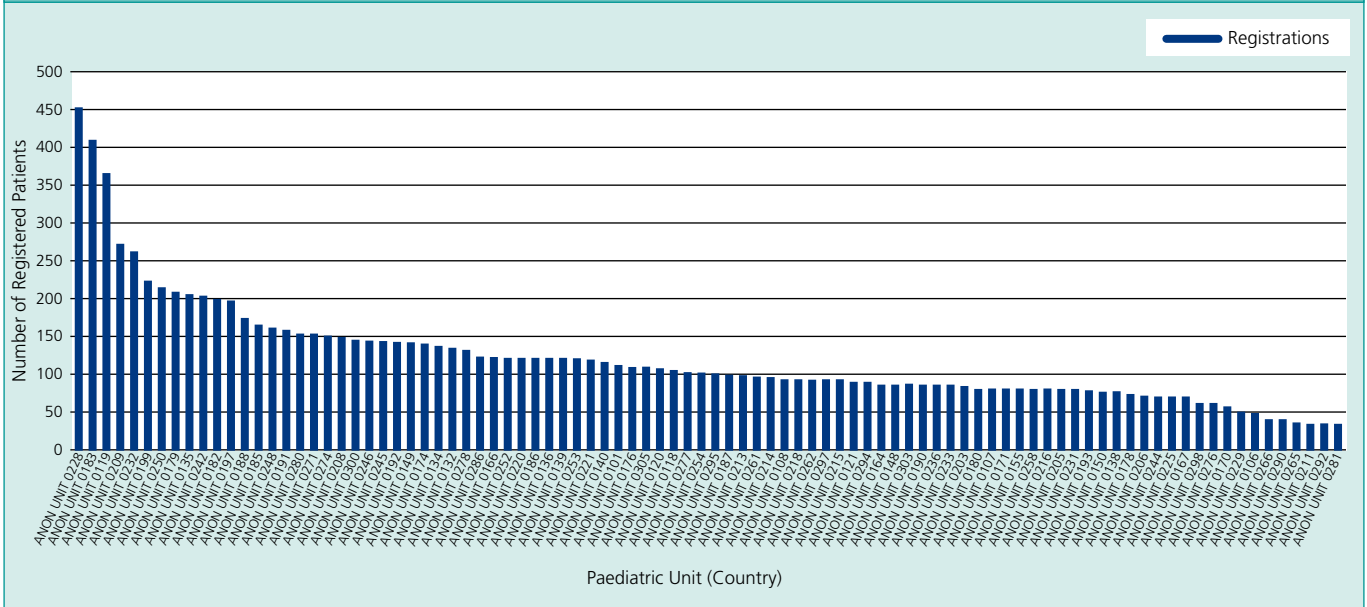
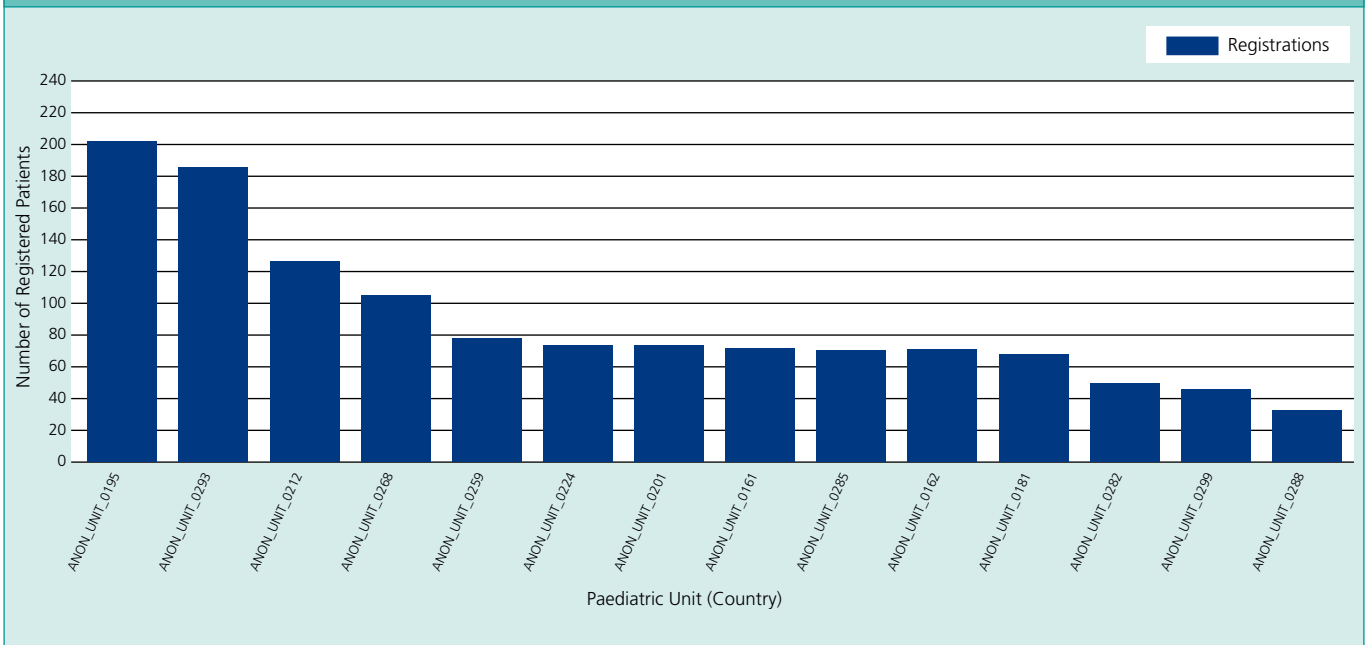


Figure 3: Registrations for paediatric units in Wales



## Registrations and Sex

The general distribution of diabetes prevalence by sex has not varied widely over the period that audits have been undertaken by either Diabetes UK (2000 to 2002) or the NDA (2003-2004 onwards).

Combined data analysis for registrations and sex from England and Wales can be seen as a time-trend

in Figure 4. Welsh paediatric units did not participate in the first year of the NDA.

The time trend analysis follows the same pattern as in the first 3 years of the audit. There are slightly more males registered (51.90 per cent) than females (48.03 per cent).

Figure 4: Time trend: registration information by sex: England and Wales combined



The time trend for total registrations is illustrated in Figure 5.

Figure 5: Time trend: registration information from Specialist Paediatric Units in England and Wales

	Registrations 2003-2004		Registrations 2004-2005		Registrations 2005-2006		Registrations 2006-2007	
Not known	0	0%	1	<0.02%	17	0.13%	9	0.07%
male	1,785	51.2%	4,006	51.1%	6,650	51.4%	6,605	51.90%
female	1,699	48.8%	3,833	48.9%	6,254	48.4%	6,113	48.03%
Not specified	0	0%	1	<0.02%	3	0.02%	0	0%
<b>(National Value)</b>	<b>3,484</b>		<b>7,841</b>		<b>12,924</b>		<b>12,727</b>	

\* The affects of rounding may skew the percentage totals

## Registrations and age

The combined analysis for England and Wales, registrations by current age is illustrated in Figure 6.

The highest numbers of registrations are found in those aged 12 to 15 years, which was also the finding of the previous audits (Figure 7).

Figure 6: Age: Clinical Bands

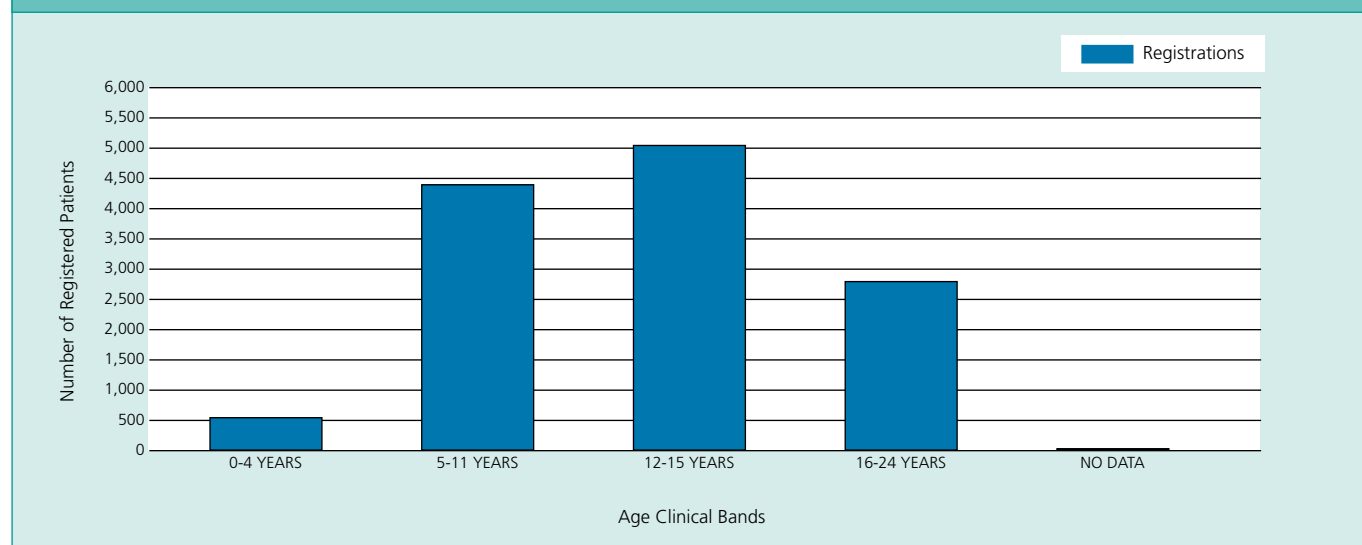


Figure 7: Time trend: registration numbers by age band: combined totals from England and Wales

	Registrations 2003-2004		Registrations 2004-2005		Registrations 2005-2006		Registrations 2006-2007	
0 - 4 yrs	174	4.99%	405	5.17%	633	4.90%	541	4.25%
5 - 11 yrs	1,353	38.83%	2,808	35.81%	4,462	34.52%	4,382	34.43%
12 - 15 yrs	1,363	39.12%	3,057	38.99%	5,075	39.27%	5,029	39.51%
16 - 24 yrs	594	17.05%	1,567	19.98%	2,741	21.21%	2,748	21.59%
No data	0	0%	4	0.05%	13	0.10%	27	0.21%
<b>(National Value)</b>	<b>3,484</b>		<b>7,841</b>		<b>12,924</b>		<b>12,727</b>	

\* The affects of rounding may skew the percentage totals

As anticipated, the lowest numbers of registrations are in those aged 0 to 4 years. This also follows the same trend as previous years.

Figure 8: Registration age bands: totals and percentages for England and Wales

Age Band	England		Wales		Total	
0 - 4 yrs	488	4.26%	53	4.14%	541	4.25%
5 - 11 yrs	3,923	34.27%	459	35.83%	4,382	34.43%
12 - 15 yrs	4,491	39.23%	538	42.00%	5,029	39.51%
<b>Under 16s subtotal</b>	<b>8,902</b>	<b>77.77%</b>	<b>1,050</b>	<b>81.97%</b>	<b>9,952</b>	<b>78.20%</b>
16 - 24 yrs	2,518	22.00%	230	17.95%	2,748	21.59%
Unknown Age	26	0.23%	1	0.08%	27	0.21%
<b>Total</b>	<b>11,446</b>		<b>1,281</b>		<b>12,727</b>	

\* The affects of rounding may skew the percentage totals

## Registrations and ethnicity

For children and young people of all ages, ethnic origin was recorded for 73.83 per cent of registrations submitted from paediatric units in England. This is an increase from the 2005-2006 audit figure of 66.13 per cent.

Ethnic origin was recorded for 92.51 per cent of registrations submitted from paediatric units in Wales. This was also an increase from the 2005-2006 audit figure of 84.55 per cent, although not reaching the 2004-2005 figure of 99.74 per cent.

Combined analyses for both England and Wales shows that 75.71 per cent of data submitted have a recording of ethnic origin (an increase from last year's value of 67.86 per cent).

There are only slight differences in the percentages of children and young people with diabetes (under 16 years old) across ethnic categories between the 2005-2006 audit year and the 2006-2007 audit year.

Figure 9: Time trend: registration by ethnicity 2005-2006 to 2006-2007: <16 years, for England and Wales

Ethnicity	Registrations 2005-2006		Registrations 2006-2007	
	Registrations	Percentage	Registrations	Percentage
White	6,293	61.88%	6,803	68.36%
Asian	270	2.65%	322	3.24%
Black	111	1.09%	137	1.38%
Other	169	1.66%	196	1.97%
Not stated	3,327	32.71%	2,494	25.06%
<b>Total</b>	<b>10,170</b>		<b>9,952</b>	

\* The affects of rounding may skew the percentage totals

## Type of Diabetes in children <16 years

The NDA data shows that there are small but increasing numbers of children and young people being diagnosed with type 2 diabetes

However, the numbers of children identified with type 2 diabetes and MODY are a fluctuating percentage of

the overall numbers of children with diabetes over the three audit years. This could be due to the variability of submitting units over time (Figure 10).

This may also result in the slight fluctuations across all types of diabetes over the four audit years.

Figure 10: Time trend: diabetes type: Specialist Paediatric Units in England and Wales <16

Type of diabetes	Registrations 2003-2004		Registrations 2004-2005		Registrations 2005-2006		Registrations 2006-2007	
	Numbers of children <16	Percentage	Numbers of children <16	Percentage	Numbers of children <16	Percentage	Numbers of children <16	Percentage
Type 1	2,722	94.19%	6,078	96.94%	9,513	93.54%	9,484	95.30%
Type 2	37	1.28%	73	1.16%	122	1.20%	121	1.22%
MODY	3	0.10%	7	0.11%	23	0.23%	18	0.18%
Other specified	114	3.94%	100	1.59%	351	3.45%	280	2.81%
Not specified	14	0.48%	12	0.19%	161	1.58%	49	0.49%
<b>(National Value)</b>	<b>2,890</b>		<b>6,270</b>		<b>10,170</b>		<b>9,952</b>	

\* The affects of rounding may skew the percentage totals

The highest number of registrations (95.30 per cent) is for type 1 diabetes in children and young people <16yrs. This follows the same trend as the previous three audit years (Figure 10).

Analysis of type 1 diabetes in more detail shows that the highest numbers of registrations are in children and young people aged 12 to 15. Again, this follows the same trend as in previous audits. As expected, the lowest number of registrations appears in children under 4 years of age.

Following the same trend as in previous years, the number of children with type 2 diabetes increases with age and peaks in children and young people aged between 12 and 15, although the numbers are still small.

The highest numbers of registrations for type 1 diabetes are in the white ethnic category (6,658).

The highest numbers of registrations for type 2 diabetes are also in the white ethnic category (56).

Figure 11: Type of diabetes by ethnic group

	White		Asian		Black		Other		Not Stated		Total
	Patient numbers	Percent	Patient numbers	Percent	Patient numbers	Percent	Patient numbers	Percent	Patient numbers	Percent	
<b>Under 16</b>											
Type 1	6,658	97.87%	280	86.96%	123	89.78%	187	95.41%	2,236	89.66%	9,484
Type 2	56	0.82%	22	6.83%	11	8.03%	3	1.53%	29	1.16%	121
MODY	13	0.19%	1	0.31%	0	0%	2	1.02%	2	0.08%	18
Other	54	0.79%	14	4.35%	2	1.46%	4	2.04%	206	8.26%	280
Not Specified	22	0.32%	5	1.55%	1	0.73%	0	0%	21	0.84%	49
<b>Under 16 Sub Total</b>	<b>6,803</b>		<b>322</b>		<b>137</b>		<b>196</b>		<b>2,494</b>		<b>9,952</b>
<b>Aged 16-24</b>											
Type 1	1,913	96.47%	71	74.74%	30	83.33%	46	85.19%	481	82.93%	2,541
Type 2	34	1.71%	14	14.74%	5	13.89%	6	11.11%	18	3.10%	77
MODY	6	0.30%	1	1.05%	1	2.78%	1	1.85%	1	0.17%	10
Other	21	1.06%	9	9.47%	0	0%	1	1.85%	76	13.10%	107
Not Specified	9	0.45%	0	0%	0	0%	0	0%	4	0.69%	13
<b>16-24 Sub Total</b>	<b>1,983</b>		<b>95</b>		<b>36</b>		<b>54</b>		<b>580</b>		<b>2,748</b>
No age data (all diabetes types)		9		0		0		0		18	27
<b>Total</b>		<b>8,795</b>		<b>417</b>		<b>173</b>		<b>250</b>		<b>3,092</b>	<b>12,727</b>

\* The affects of rounding may skew the percentage totals

The findings for the 2006-2007 audit show that there are proportionally more BME children and young people with type 2 diabetes than white children, although the numbers are still small. This was also found in the 2005-2006 audit.

### Deprivation for children <16 years

Deprivation information (Index of Multiple Deprivation 2007) is not directly comparable between England

and Wales. Therefore, this section is based on registrations for England only. Where it is not possible to map from postcode to lower super output area, deprivation quintile is recorded as 'no data'.

The inclusion of deprivation information for Wales in the analysis toolkit is currently under review.

Quintile 1 represents the least deprived areas and Quintile 5 the most deprived areas.

Figure 12: Time trend: deprivation quintiles <16 years, England only

Deprivation Quintile	Percentage of 2003-2004 registrations	Percentage of 2004-2005 registrations	Percentage of 2005-2006 registrations	Percentage of 2006-2007 registrations
No data	7.58%	8.34%	0.40%	0.40%
Quintile 1	15.95%	15.53%	19.94%	19.38%
Quintile 2	18.27%	20.38%	19.65%	21.47%
Quintile 3	15.78%	17.56%	20.24%	20.20%
Quintile 4	17.51%	16.72%	18.50%	18.40%
Quintile 5	24.91%	21.47%	21.26%	20.15%

\* The affects of rounding may skew the percentage totals

The analysis is based on small numbers, so firm conclusions are difficult to draw. However, for the fourth year in a row there is a reduction in the percentage of children and young people with diabetes in quintile 5, and for the first time this quintile doesn't have the greatest percentage. However, changes may be influenced by the location of the participating paediatric units.

Generally, as seen previously, the diabetic population is fairly evenly spread across all the quintiles.

### Age at Diagnosis of Diabetes

The average age at diagnosis in the 2006-2007 audit year was 7.69 years old. There is little difference from previous years, with values of 7.69 in 2004-2005 and 7.70 in 2005-2006.

The data on mean age at diagnosis by paediatric unit are available in Appendix D.

### Diabetic Ketoacidosis (DKA) in children with diabetes

The NDA asks:

#### what is the rate of ketoacidosis for children registered with diabetes?

The purpose of this audit question is to analyse the rate of Ketoacidosis for children registered with diabetes and assess the services provided to ensure

smooth transition to adult care. This is reflected in the standards set out in the Diabetes NSF<sup>2,3</sup>.

“All children and young people with diabetes will receive consistently high-quality care and they, with their families and others involved in their day-to-day care, will be supported to optimise the control of their blood glucose and their physical, psychological, intellectual, educational and social development”.

#### NSF for diabetes: Standard 5

Data from children and young people diagnosed with diabetes within the audit year have been excluded throughout this section of the report to ensure that ketoacidosis (DKA) at diagnosis is not included. This means that the rates might be slightly under-reported as some children may have had more than one episode in the year of diagnosis.

Data on DKA from paediatric units are supplemented with information on DKA from the Hospital Episode Statistics (HES) database for England and the Patient Episode Database for Wales (PEDW). This analysis is available in the NDA toolkit.

Analysis of DKA for England and Wales combined, using 1 year of HES and PEDW data (Figure 13) shows that:

- 7.31 per cent of children aged under 16 years and 7.60 per cent of children and young people under 24 years experienced at least one episode of DKA.

Figure 13: Diabetic Ketoacidosis: Age Bands 0-24: England and Wales combined: Diabetes diagnosed prior to audit year

Age Band	Registrations	Prevalence % in audit year	Prevalence % in previous 5 years
0-4 yrs	278	5.76	43.88
5-11 yrs	3,466	5.40	20.20
12-15 yrs	4,341	8.94	21.61
<b>Under 16s Subtotal</b>	<b>8,085</b>	<b>7.31</b>	<b>21.77</b>
16-24yrs	2,593	8.52	21.94
Unknown Age	19	5.26	10.53
<b>Total</b>	<b>10,697</b>	<b>7.60</b>	<b>21.79</b>

\* The affects of rounding may skew the percentage totals

- For under 16s, there is higher prevalence of DKA in females (8.88 per cent) compared to males (5.84 per cent)
- This gap widens between females aged 16 to 24 (10.36 per cent) and males aged 16 to 24 (6.79 per cent).
- The prevalence of DKA for young people aged 16 to 24 is 8.52 per cent.
- The incidence figure for the audit year across all age groups is 14.38 episodes of ketoacidosis per 100 people.

Figure 14: Diabetic Ketoacidosis by sex: Prevalence in audit year: England and Wales combined: Diabetes diagnosed prior to audit year

Age Band	Female %	Male %	Sub Total %	Not Specified sex %	TOTAL %
Under 16	8.88	5.84	7.31	0.00	7.31
16-24	10.36	6.79	8.49	33.33	8.52
Total	9.24	6.06	7.60	14.29	7.60

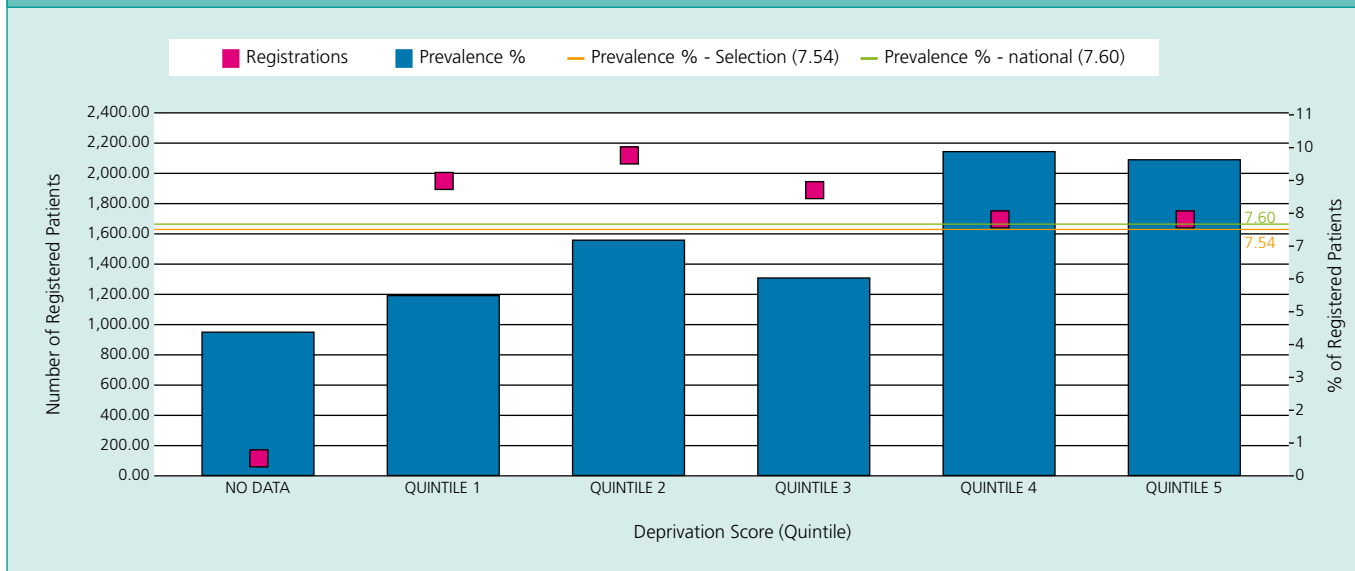
\* The affects of rounding may skew the percentage totals

### DKA, Deprivation and Ethnicity

As before, as deprivation information (IMD) is not directly comparable between England and Wales, only English registrations are considered in this section.

There is a pronounced difference in prevalence between the most deprived quintile (9.76 per cent) and the least deprived (5.44 per cent), although it is noted that the second most deprived quintile actually has the highest prevalence at 9.89 per cent.

Figure 15: Prevalence of ketoacidosis in audit year by deprivation quintile: England only, ages 0-24 years



The highest prevalences of DKA can be found in the Black (10.07 per cent) and Other (10.65 per cent) Ethnic Groups, respectively 2.47 and 3.05 per cent above the national average of 7.60 per cent. However it must be noted that these groups have

the lowest number of registrations (149 and 216 respectively). The lowest prevalence of DKA can be found in the White Ethnic Group (7.49 per cent).

Figure 16: Prevalence of ketoacidosis in audit year by ethnic group (ages 0-24) and audit year, England and Wales

	% Prevalence 2003-04 (n=2,736)	% Prevalence 2004-05 (n=6,521)	% Prevalence 2005-06 (n=10,623)	% Prevalence 2006-07 (n=10,697)
White	6.17	5.93	7.72	7.49
Asian	3.33	6.40	4.78	7.87
Black	6.17	4.67	8.70	10.07
Other	5.00	8.15	6.38	10.65
Not Stated	6.83	6.85	7.71	7.50
<b>Total</b>	<b>6.18</b>	<b>6.23</b>	<b>7.62</b>	<b>7.60</b>

\* The affects of rounding may skew the percentage totals

## Care Processes

The NDA asks:

### **what proportion of children with diabetes receiving care from specialist paediatric units are getting the key processes of care?**

The Diabetes NSFs<sup>2,3</sup> Standard 5: Clinical care of children and young people with diabetes, states:

“All children and young people with diabetes will receive consistently high quality care and they, with their families and others involved in their day-to-day care, will be supported to optimise the control of their blood glucose and their physical, psychological, intellectual, educational and social development.”

Not all of the care processes outlined in the Diabetes NSF Delivery Strategy and measured through the National Diabetes Audit are recommended for children of all ages. Guidelines specify age 12 for starting most care processes. The NDA incorporates data collection for the relevant care processes for children, appropriate to their age, and provides analysis on this information.

Improved diabetes management and control in children and young people can reduce the incidence and delay the impact of long-term complications of diabetes.

The NDA collects data for a number of care processes recommended by NICE<sup>1</sup>, in particular the guidance that states: children and young people with type 1 diabetes should be offered screening for:

- retinopathy annually from the age of 12 years
- microalbuminuria annually from the age of 12 years
- blood pressure annually from the age of 12 years
- annual foot care reviews
- height and weight measurement and BMI calculation\*. These form part of the screening process for complications and associated conditions.

The rates of carrying out care processes vary considerably between specialist units. Many units do not record care process information electronically, and complete information was not always submitted to the audit. The analysis for this section is conducted on those children and young people for whom data has been submitted. Full details of the data submitted from each participating paediatric unit can be found in Appendix C.

For the 2006-2007 audit, 27 paediatric units (25.5 per cent of participating units) submitted data on “all care processes” for some of their patients. This continues the year-on-year rise, with values of 18.7 and 19.6 per cent seen in the last two audit years respectively.

As in previous audits, as a general trend, HbA1c is the most highly recorded care process and likely to be the most commonly undertaken care process. There has been a year-on-year increase in the percentage of children and young people submitted to the audit who have an HbA1c recording (85.41 per cent) this year compared to last year (77.31 per cent). This is an increase of 8.10 per cent.

All age bands have over 82 per cent of children and young people having HbA1c recorded, a year-on-year increase, with the highest level of recording (86.92 per cent) occurring in the 5 to 11 year old group, which is a change from previous years.

The proportion of children and young people receiving each of the care processes has risen, reversing the drop seen last year for blood pressure, cholesterol, and eye and foot examinations.

Care should be taken with the interpretation of care process analysis because of limitations due to the variability of completeness for data set submissions from specialist paediatric units. Low results may be a reflection of absence of data, rather than an indicator of practice.

\* This is only part of the screening recommended

Figure 17: Care process percentage done for registered patients >12 years old by country

Care Process Type	ENGLAND		WALES	
	12-15 YEARS	16-24 YEARS	12-15 YEARS	16-24 YEARS
HbA1c	88.60	85.31	60.59	57.39
BMI	66.53	57.28	34.39	37.39
Blood Pressure	56.22	54.03	32.16	36.09
Albumin	33.89	27.75	15.43	23.04
Creatinine	28.70	25.29	21.38	17.83
Cholesterol	22.36	23.46	21.00	20.00
Eye Exam	25.83	24.93	21.00	25.65
Foot Exam	22.53	19.37	19.52	24.78
All Care Processes	3.36	3.02	5.95	7.39
<b>Registered Patients</b>	<b>4,491</b>	<b>2,519</b>	<b>538</b>	<b>230</b>

Figure 18: Care process percentage of registered patients, all ages, by sex and country

Care Process Type	ENGLAND		WALES	
	FEMALE	MALE	FEMALE	MALE
HbA1c	88.03	88.32	61.43	60.09
BMI	61.41	62.06	35.33	31.02
Blood Pressure	49.87	49.79	32.25	28.31
Albumin	26.78	26.83	13.45	13.25
Creatinine	25.66	24.10	18.64	18.52
Cholesterol	20.89	18.97	18.31	17.77
Eye Exam	22.20	21.53	17.50	17.32
Foot Exam	19.85	19.04	18.48	16.11
All Care Processes	3.38	3.05	6.32	6.48
<b>Registered Patients</b>	<b>5,496</b>	<b>5,941</b>	<b>617</b>	<b>664</b>

In Wales, the separate care process percentages are higher for females. This trend was noted last year for both England and Wales, with the exception of HbA1c for England and eye exams for Wales. For England this year, the proportion of males having HbA1c recorded is still greater than for females, as is BMI and Albumin.

As with last year, in England the highest proportion of children and young people recorded with a Creatinine and Cholesterol measurement is for those with Type 2 diabetes. For the other care processes, there are a greater proportion of children and young people with Type 1 diabetes receiving the process than those with Type 2. This is a reversal of last years result for BMI.

In Wales, the proportion of children and young people receiving each care process is greater for Type 2 diabetes patients. It is noted that the small number of children and young people with Type 2 diabetes may be a factor in this result.

### HbA1c Analysis

The following section incorporates the analysis of median HbA1c, available at unit level within the NDA analysis toolkit.

An important note must be made about HbA1c values. Different units use different methods for measuring HbA1c, and these different methods are not standardised - for example the Bayer DCA 2000 does not report HbA1c values above 14 percent.

The guidance from the NDA Paediatric Advisory Group states that the latest record for HbA1c in the audit year should be submitted. However, the analysis is further complicated by the fact that some units may potentially be reporting an overview of a given patient's HbA1c values for the year, or possibly the best result from the audit period.

Comparison of HbA1c values amongst the children and young people at a particular unit will be meaningful, but care must be taken when comparing values amongst units.

Of the 12,727 records submitted by Specialist Paediatric Units from England and Wales 10,684 (83.95 per cent) had an HbA1c recording present, up from last year's 77 per cent.

For England, this is 86.55 per cent (11,446 children and young people).

For Wales, this is 60.73 per cent (1,281 children and young people).

Figure 19: Percentage of registered patients with an HbA1c recording, by country

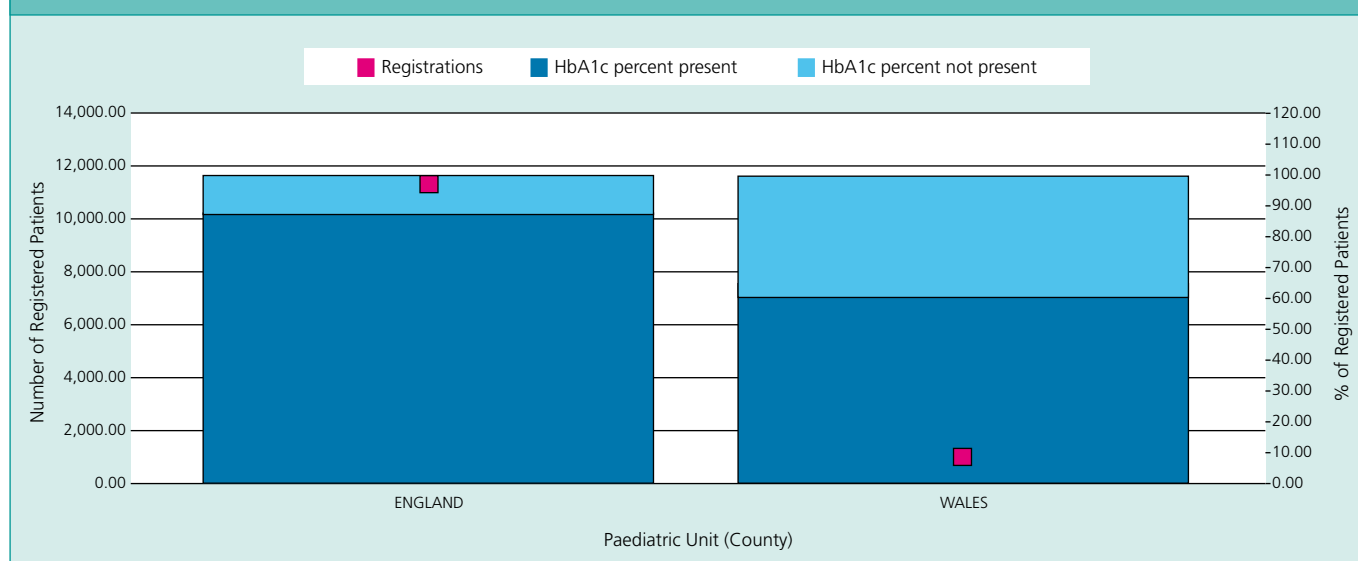


Figure 20 is shown for illustrative purposes only (50 units). 106 units have submitted data to the audit and full details of HbA1c recordings and HbA1c medians per unit can be found in the NDA analysis toolkit and Appendix F.

The percentage of males and females with an HbA1c value present are comparable i.e. males at 84.01 per cent and females at 83.89 per cent. This echoes the findings from last year, even though the percentages have increased in value (2005/06: Male 76.98 per cent, Female 76.88 per cent). As with last year,

Figure 20: Number of registered Patients with an HbA1c value present, by Paediatric unit (50 only shown), for England and Wales

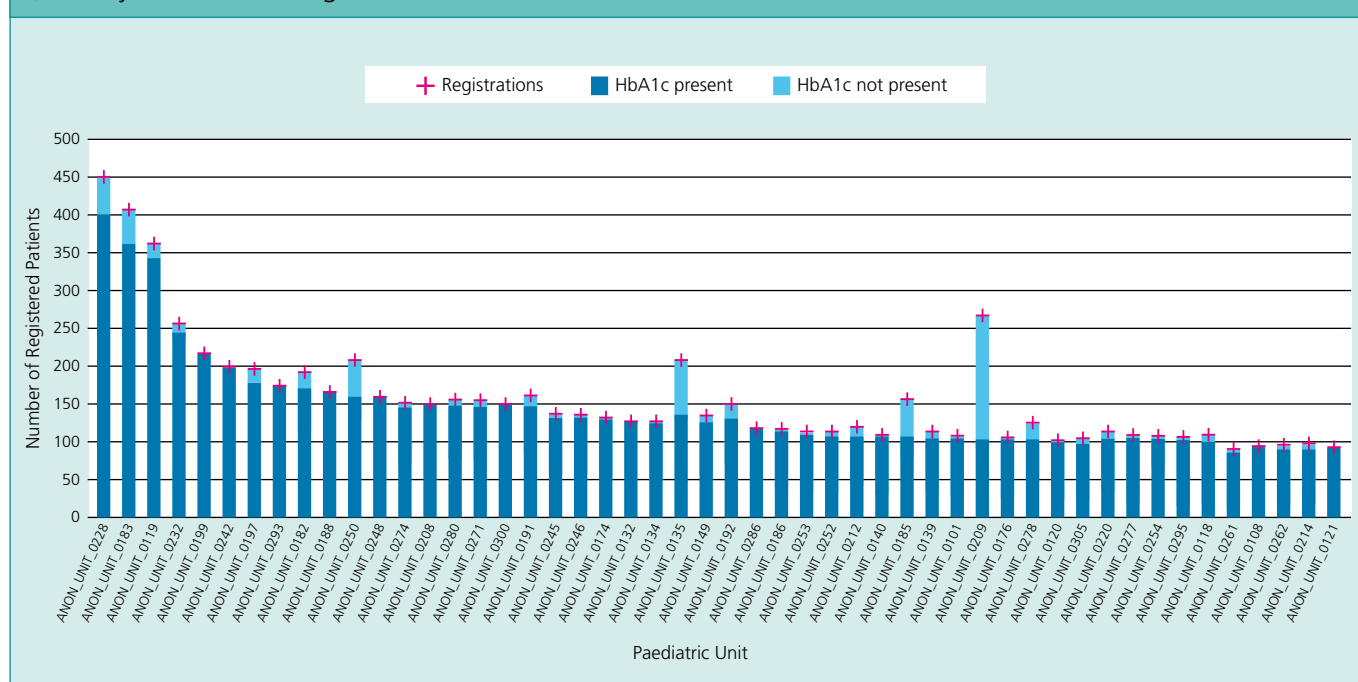
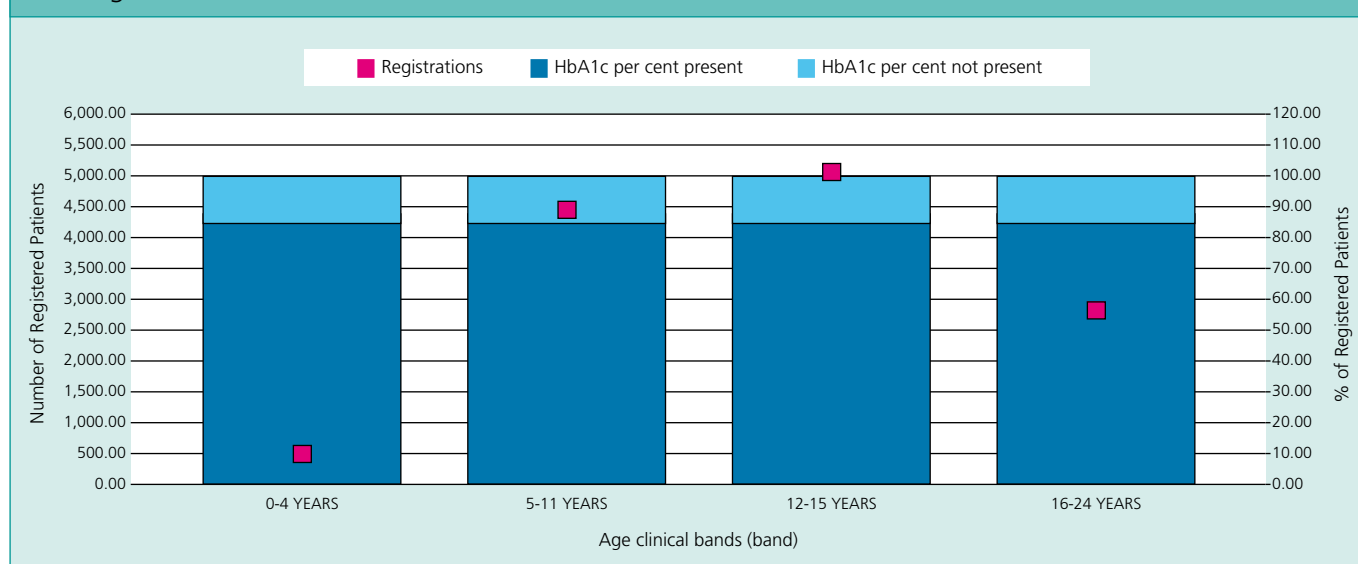


Figure 21: Percentage of registered patients with an HbA1c value recorded, by Age band, for England and Wales



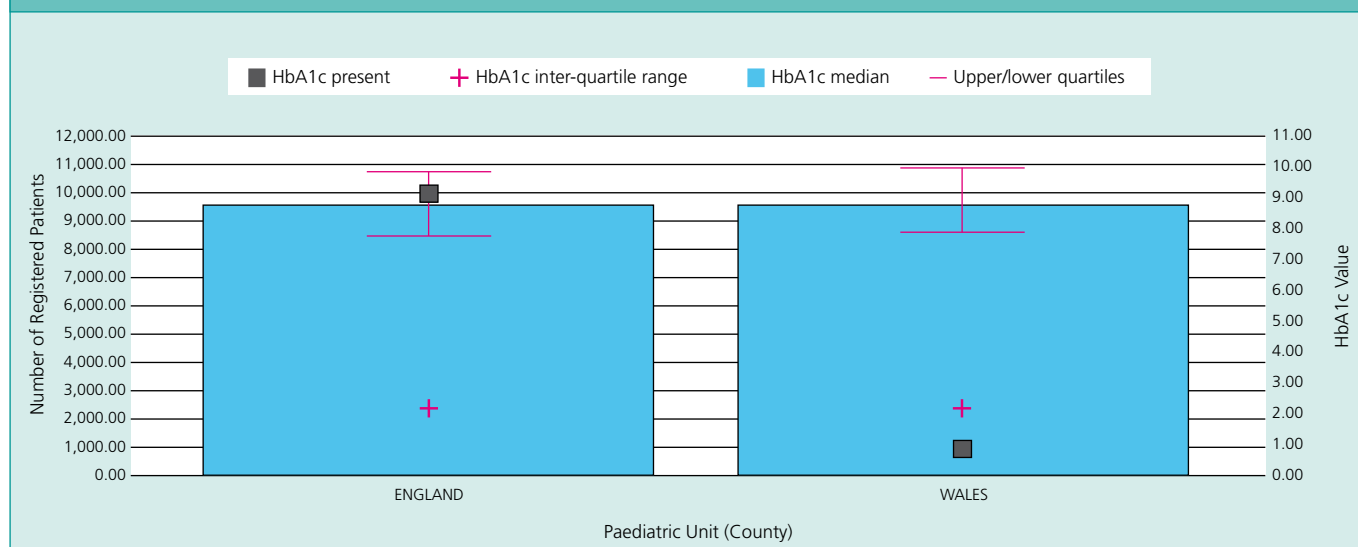
this is despite there being more male than female registrations with 6,605 male and 6,113 female (combined England and Wales).

The details of the percentage of registered children and young people with an HbA1c value recorded, by age band, for England and Wales combined are contained in Figures 21 and 22. These do not include the 27 registrations with unknown ages.

Figure 22: Percentage of registered patients with an HbA1c value recorded, by Age band, for England and Wales

	Registrations	HbA1c per cent present	HbA1c per cent not present
0 - 4 yrs	541	83.73	16.27
5 - 11 yrs	4,382	85.39	14.61
12 - 15 yrs	5,029	84.41	15.59
16 - 24 yrs	2,748	81.15	18.85
<b>(National Value)</b>	<b>12,700</b>	<b>84.02</b>	<b>15.98</b>

Figure 23: Median HbA1c value and inter-quartile range, by country



The median HbA1c for England and Wales are the same at 8.7 per cent, despite differences in diabetic population sizes.

The inter-quartile ranges are also the same, at 2.0 per cent, although the values of the lower and upper quartiles differ. For England the lower quartile is 7.8 per cent and the upper 9.8 per cent. For Wales these are 7.9 per cent and 9.9 per cent respectively.

This tells us that 25 per cent of children and young people with diabetes have HbA1c values over 9.8 per cent in England, and 9.9 per cent in Wales.

More detailed analysis shows that this equates to 2,477 children and young people in England with an HbA1c value in excess of 9.8 per cent.

For Wales, this means 195 children and young people had an HbA1c value in excess of 9.9 per cent

If these levels were sustained over time then these children and young people would be at increased risk of the complications associated with diabetes, such as cardiac failure, myocardial infarction, stroke, diabetic ketoacidosis, amputation and blindness.

## Treatment Targets

The NDA asks:

### what proportions of children with diabetes achieve treatment targets?

Recommended levels for HbA1c have been published in NICE guidelines. There is substantial research that recognises the importance of keeping blood glucose levels as close as possible to the normal range for people without diabetes. This is known to prevent or delay the onset of long-term vascular complications of diabetes. Examination for the early detection of complications is important to support self-management and minimise the effects of diabetic complications when they occur. If blood glucose levels are too high there is a risk of developing problems with eyes, kidneys, feet, nerves and heart later in life. On the other hand if the blood glucose gets too low then there is a risk of hypoglycaemia.

The NDA examines the HbA1c and cholesterol results of children and young people with diabetes. The following analyses are based on data for children and young people that have a recording of HbA1c and cholesterol levels. Records where no value was recorded were excluded.

## HbA1c

Analysis of data from children and young people with a target recorded from both England and Wales shows that:

- 17.67 per cent achieved the HbA1c NICE target of <7.5 per cent, an increase on the value for last year (16.63 per cent)
- there has been an increase in the percentage of children and young people achieving HbA1c results of >6.5 and ≤7.5 per cent. However, there has also been an increase in the percentage of children and young people with HbA1c results of over 11.5 per cent, although it is noted that these are small numbers
- the proportion of children and young people having HbA1c levels of ≥7.5 per cent and ≤9.5 per cent has dropped, from 53.66 per cent last year to 52.78 per cent for the 2006-2007 audit period.
- Overall, 29.55 per cent of children and young people with diabetes have HbA1c levels of >9.5 per cent with the majority of these having an HbA1c recording of >9.5 and ≤11.5 per cent (Figure 24). This is comparable to last year, and is a worrying result in view of the long-term implications for health outcomes and complications associated with diabetes that may arise as a result of poor blood glucose control.

Figure 24: Percentage of children and young people within HbA1c bands

HbA1c Value	Number of patients 2005-2006	Percentage of patients 2005-2006	Number of patients 2006-2007	Percentage of patients 2006-2007
≤6.5	535	5.38	548	5.13
>6.5 and ≤7.5	1308	13.15	1565	14.65
>7.5 and ≤9.5	5152	51.82	5415	50.68
>9.5 and ≤11.5	2198	22.11	2276	21.30
>11.5 and ≤13.5	552	5.55	629	5.89
>13.5 and ≤15.5	176	1.77	223	2.09
>15.5 and ≤17.5	21	0.21	24	0.22
>17.5	1	0.01	4	0.04

A higher percentage of males (18.40 per cent) than females (16.87 per cent) achieve the NICE guideline HbA1c target of <7.5 per cent. This trend has been observed in the previous audit years.

There is an increase in the percentage of children and young people achieving HbA1c levels of  $\leq 7.5$  per cent. There has also been a reduction in the percentage

of children and young people with HbA1c readings between >7.5 per cent and  $\leq 13.5$  per cent.

However, there has been an increase in the percentage with HbA1c readings of over 13.5 per cent, but it must be noted that the numbers are small in this group.

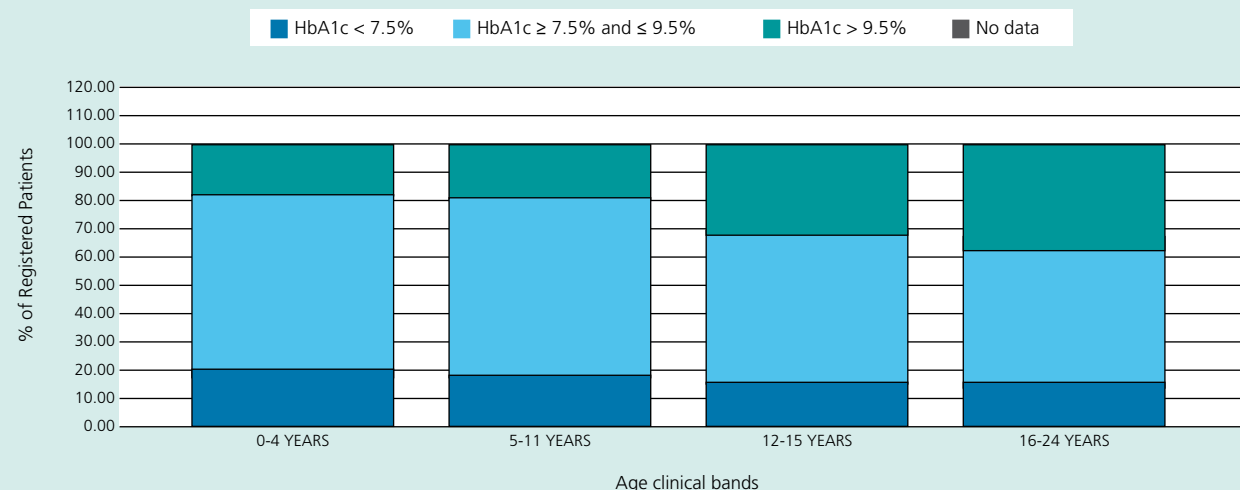
## HbA1c and Age

Figure 25: HbA1c levels: results for England and Wales

Age Band	Gender	Percentage in HbA1c bands		
		<7.5 per cent	$\geq 7.5$ per cent and $\leq 9.5$ per cent	> 9.5 per cent
Under 16 years	Male	18.67	55.52	25.81
	Female	17.13	54.12	28.75
	<b>Total</b>	<b>17.93</b>	<b>54.84</b>	<b>27.23</b>
16 to 24 years	Male	17.37	46.36	36.27
	Female	15.77	43.34	40.89
	<b>Total</b>	<b>16.59</b>	<b>44.89</b>	<b>38.52</b>
All ages	Male	18.40	53.64	27.96
	Female	16.87	51.89	31.23
	<b>Total</b>	<b>17.67</b>	<b>52.78</b>	<b>29.55</b>

As previously, a higher percentage of younger people aged under 12 achieve the HbA1c target of <7.5 per cent, compared to those aged 12 and over.

Figure 26: HbA1c levels by age bands (clinical): England and Wales – children and young people with HbA1c levels recorded



## HbA1c and Ethnicity

There is a range of almost 6 per cent when comparing the ethnic groups of children and young people achieving the HbA1c target of < 7.5 per cent. While this is greater than the range of variation in the 2005-2006 audit data, it is noted that the numbers of children and young people in each group is low.

The greatest proportion of children and young people meeting the target is found among the Black Ethnic Group, with 29 of 146 children and young people meeting the target.

The lowest is for the Other Ethnic Group, where 29 of 208 meet the target. The remaining ethnic groups are within 0.5 per cent of the national figure (17.66 per cent).

Median HbA1c rates per unit can be found in Appendix F.

## Cholesterol

Although NICE guidelines do not state that cholesterol should be tested for all ages, results have been analysed from the data submitted to the NDA and are shown for

interest. 82.94 per cent of children and young people have no value for cholesterol recorded.

Overall, 78.72 per cent of children and young people with a cholesterol value recorded, achieve the Cholesterol target of <5.0 mmol/litre\*.

Figure 27: Percentage of patients with targets recorded achieving the NICE <5.0 mmol/litre target, by age band, for data from both England and Wales

	Registrations	Target achieved Percentage
0 - 4 yrs	43	88.37
5 - 11 yrs	581	83.99
12 - 15 yrs	987	78.32
16 - 24 yrs	557	73.07
No data	3	100.00
(National Value)	2,171	78.72

\*NICE do not recommend cholesterol testing for all ages

Figure 28: Cholesterol treatment target rates. England and Wales, children and young people with a cholesterol reading

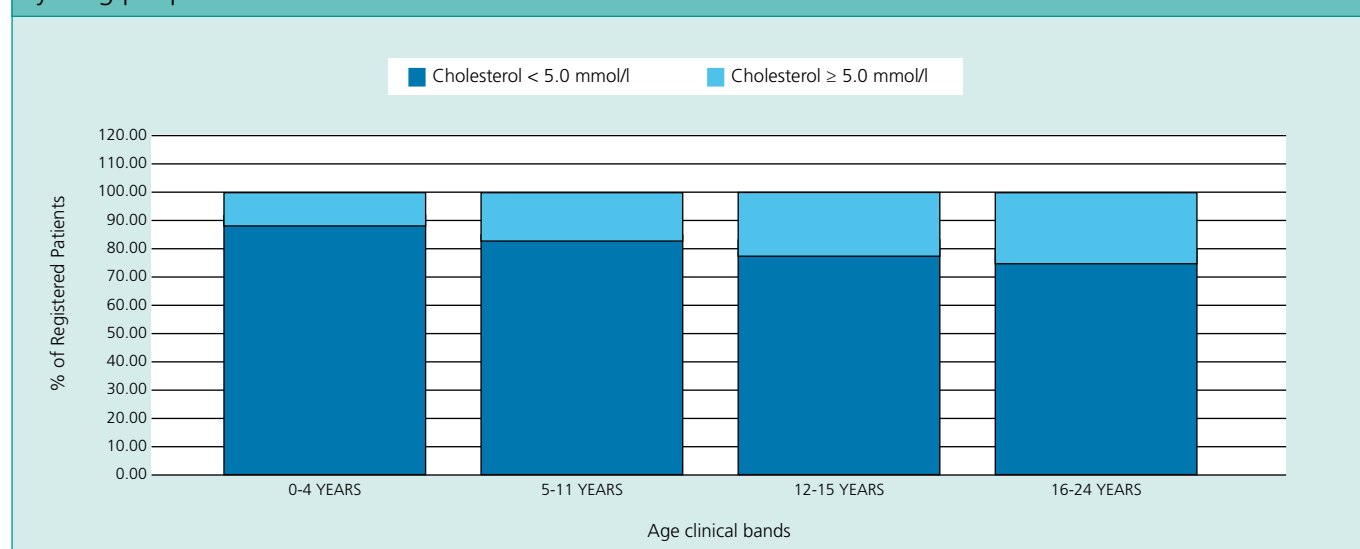
Age Band	Gender	Percentage achieving cholesterol target < 5.0 mmol/litre
12 to 15 years	Male	84.49
	Female	71.90
16 to 24 years	Male	79.70
	Female	67.01
12 to 24 years	Male	82.83
	Female	70.06

As was seen in the last audit year, for children and young people over 12 years of age, a higher percentage of males (82.83 per cent) than females (70.06 per cent) achieve the < 5.0 mmol/l guideline.

There is little variance found across ethnic group or deprivation quintile.

As with the HbA1c target, the highest proportion of children and young people meeting the guideline occurs in the lower ages (Figure 29).

Figure 29: Achievement of cholesterol target by age band: England and Wales, children and young people with a cholesterol level recorded



### Structured Education

The NICE guidance ‘Diagnosis and management of type 1 diabetes in children and young people’<sup>1</sup> recommends that:

“Children and young people with type 1 diabetes and their families should be offered timely and ongoing opportunities to access information about the development, management and effects of type 1 diabetes.”

It also states that:

“...the method of delivering education and content will depend on the individual and should be appropriate for the child’s or young person’s age, maturity, culture, wishes and existing knowledge within the family”.

The importance of improving the care of people with diabetes is highlighted in the ‘National Service Framework for Diabetes: Standards’<sup>2</sup>, published in 2001. Standard 3 of the NSF states that:

“...all children, young people and adults with diabetes will receive a service which encourages partnership and decision-making, supports them in managing their diabetes and helps them to adopt and maintain a healthy lifestyle”.

Structured education is one of the key interventions needed to achieve Standard 3.

The NICE Health Technology Appraisal (TA60)<sup>4</sup> on patient education model recommends patient education for all people with diabetes. The funding direction also states that it must be implemented by January 2006.

The DH Patient Education Working Group<sup>5</sup> found that there was no nationally evaluated paediatric or adolescent structured education being delivered systematically in the UK.

This is supported by information from the NDA paediatric advisory group and paediatric steering groups, which indicates that education about diabetes and its effects is being delivered to children and young people and their families, but not as part of a nationally recognised programme.

It is clear that there is ongoing work to research and develop structured education programmes for children and young people. The NDA paediatric advisory group would welcome support for this from the Department of Health and all those involved in the care of children and young people with diabetes.

This is the second year that information on structured education has been collected for the NDA. Of the total number of registrations submitted to the audit for 2006-2007 (12,727), 951 contained information about structured education. This represents 7.47 per cent of the registered patients, and is a marked improvement on the situation for the 2005-2006 audit period when 2.81 per cent of registrations contained some information about structured education.

Until the recording of details concerning structured education improves, it is not possible to perform a full analysis. Instead, in keeping with analysis performed for the adult population, it is noted that 86.75 per cent of children and young people that did have some structured education information recorded only had their educational needs reviewed during the audit period.

- 6.52 per cent were offered the opportunity to attend some form of structured education, but didn't attend.
- 6.73 per cent (64 children and young people) have a record of attending some form of structured education during the audit period.

Repeating these calculations for the limited data for the 2005-2006 audit period gives values of;

- 37.47 per cent for having a review only

- 10.47 per cent being offered, but not taking up, some form of structured education
- 52.07 per cent attended structured education.

However, the differences between these figures have little significance due to the small and differing numbers of children and young people involved (951 in 2006-2007 and 363 in 2005-2006).

# Appendix A

## NDA Paediatric Advisory Group

The NDA Paediatric Advisory Group provides vital knowledge on issues surrounding children and young people with Diabetes. Members provide strategic direction to the paediatric audit.

The NDA paediatric advisory group are committed to the continuation of the audit and its future development. One of the key areas that has been identified for improvement is the inclusion of insulin therapy modality. The audit is in the process of being re-scoped and we will encourage the inclusion of improvements in the paediatric diabetes audit in this process.

### Members

Jeremy Allgrove	Consultant in Paediatric Endocrinology and Diabetes, East London Centre for Paediatric and Adolescent Diabetes, Royal London Hospital; Representative of Royal College of Paediatrics and Child Health.
Julie Edge	Consultant in Paediatric Diabetes and Endocrinology, John Radcliffe Hospital, Oxford
Fiona Campbell	Consultant Paediatrician and Clinical Director of Paediatric Medicine, St James' University Hospital, Leeds
Justin Warner	Consultant Paediatric Endocrinologist, University Hospital of Wales
Tricia McKinney	Paediatric Epidemiologist, University of Leeds
Jonathan Mimmagh	Children's Diabetes Nurse, Cumbria
Charlotte Gosden	Diabetes UK
Emma Adams	Higher Business Analyst, National Clinical Audit Support Programme, The NHS IC
Julie Henderson	Senior Project Manager, National Clinical Audit Support Programme, The NHS IC

The majority of the NDA Paediatric Steering Group members are clinicians. They encourage participation and submission of data to the audit. Members also act as regional focal points for clinical queries regarding the NDA.

### Members

Jeremy Allgrove	North Thames
Fiona Campbell	Yorkshire
Julie Edge	Oxford
Kath Price	Trent
Christine Burren	South West
Nicola Trevelyan	Wessex
Murray Bain	South Thames (West)
Bill Lamb	Northern
Jo Blair	North West
Justin Warner	Wales
Tricia McKinney	Paediatric Epidemiologist, Leeds University
Carlo Acerini	Anglia
Charles Buchanan	South Thames (East)
Jonathan Mimmagh	North West
Gill Challener	Anglia
Antoinette Macaulay	Wessex
Gill Salt	West Midlands
Martha Ford-Adams	South Thames (East)

Jonathan Mimmagh Children's Diabetes Nurse, Cumbria  
Charlotte Gosden Diabetes UK  
Emma Adams The NHS Information Centre  
Julie Henderson The NHS Information Centre

## NDA User Group

The NDA User group represent the views of the NDA users and contribute to the ongoing development of the audit. The Group encourages participation in the NDA and the sharing of best practice.

## Members

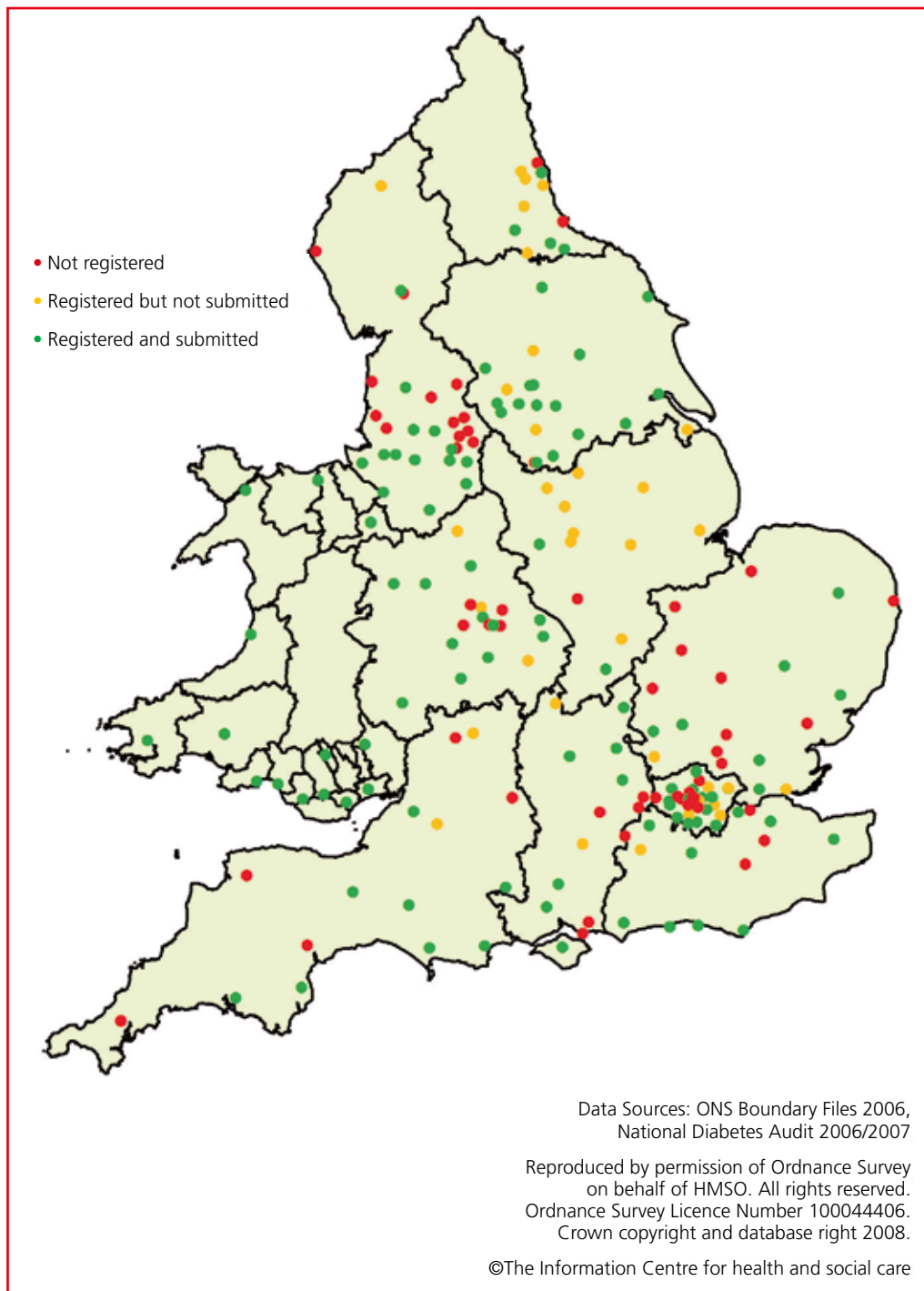
Douglas Russell Medical Director, Tower Hamlets Primary Care Trust  
Ivor Lewis Consultant Paediatrician, East Surrey Hospital  
Amanda McGough Hambleton and Richmondshire PCT  
Gill Saunders Programme Manager, South West Region NDST  
Jacqueline Watson Clinical Audit Facilitator, Sunderland PCT  
Jacquie Everett Quality and Improvement Facilitator, Oldham PCT  
Andrew Batters Tower Hamlets PCT  
Craig Deerfield Clinical Audit Facilitator, Birmingham PCT  
Afaf Boutros Quality Improvement Lead, Southwark PCT  
Chris Soper Diabetes Lead Central Cornwall PCT  
Teresa Dodd IT Development Specialist, Sheffield Teaching Hospital  
Adrian Scott Consultant Physician in Diabetes and General Medicine, Sheffield Teaching Hospital  
  
Liz Mowat GP and Diabetes Lead, Leeds PCT  
Lizanne Baldwin Information Manager, Sutton and Merton PCT  
Andrea Cooper Diabetes Information Service Manager, Thameside and Glossop PCT  
Jean West Diabetes Information Service Co-ordinator, Thameside and Glossop PCT  
Emma Adams Higher Business Analyst, National Clinical Audit Support Programme, The NHS IC  
  
Julie Henderson Senior Project Manager, National Clinical Audit Support Programme, The NHS IC

## Appendix B: The Diabetes NSF Standards for England and Wales

<b>Standard 1: Prevention of type 2 diabetes</b>	The NHS will develop, implement and monitor strategies to reduce the risk of developing type 2 diabetes in the population as a whole and to reduce the inequalities in the risk of developing type 2 diabetes
<b>Standard 2: Identification of people with diabetes</b>	The NHS will develop, implement and monitor strategies to identify people who do not know they have diabetes
<b>Standard 3: Empowering people with diabetes</b>	All children, young people and adults with diabetes will receive a service which encourages partnership in decision-making, supports them in managing their diabetes and helps them to adopt and maintain a healthy lifestyle. This will be reflected in an agreed and shared care plan in an appropriate format and language. Where appropriate, parents and carers should be fully engaged in this process
<b>Standard 4: Clinical care of adults with diabetes</b>	All adults with diabetes will receive high-quality care throughout their lifetime, including support to optimise the control of their blood glucose, blood pressure and other risk factors for developing the complications of diabetes
<b>Standards 5 and 6: Clinical care of children and young people with diabetes</b>	<p>All children and young people with diabetes will receive consistently high-quality care and they, with their families and others involved in their day-to-day care, will be supported to optimise the control of their blood glucose and their physical, psychological, intellectual, educational and social development</p> <p>All young people with diabetes will experience a smooth transition of care from paediatric diabetes services to adult diabetes services, whether hospital or community-based, either directly or via a young people's clinic. The transition will be organised in partnership with each individual and at an appropriate age to and agreed with them</p>
<b>Standard 7: Management of diabetic emergencies</b>	The NHS will develop, implement and monitor agreed protocols for rapid and effective treatment of diabetic emergencies by appropriately trained health care professionals. Protocols will include the management of acute complications and procedures to minimise the risk of recurrence
<b>Standard 8: Care of people with diabetes during admission to hospital</b>	All children, young people and adults with diabetes admitted to hospital, for whatever reason, will receive effective care of their diabetes. Wherever possible, they will continue to be involved in decisions concerning the management of their diabetes
<b>Standard 9: Diabetes and pregnancy</b>	The NHS will develop, implement and monitor policies that seek to empower and support women with pre-existing diabetes and those who develop diabetes during pregnancy to optimise the outcomes of their pregnancy
<b>Standards 10, 11 and 12: Detection and management of long-term complications</b>	<p>All young people and adults with diabetes will receive regular surveillance for the long-term complications of diabetes</p> <p>The NHS will develop, implement and monitor agreed protocols and systems of care to ensure that all people who develop long-term complications of diabetes receive timely, appropriate and effective investigation and treatment to reduce their risk of disability and premature death</p> <p>All people with diabetes requiring multi-agency support will receive integrated health and social care</p>

## Appendix C: Paediatric Unit Participation

### Map of NDA Participation by Paediatric Unit 2006-2007



## NDA Participation by Paediatric Unit 2006-2007

Key:

	Not registered
	Registered but not submitted
	Registered and Submitted

### ENGLAND

#### North East Strategic Health Authority

PZ160	Bishop Auckland General Hospital
PZ161	Darlington Memorial Hospital
PZ163	North Tees General Hospital, Stockton-on-Tees
PZ120	North Tyneside General Hospital
PZ107	Queen Elizabeth Hospital, Gateshead
PZ141	South Tyneside District Hospital
PZ080	Sunderland Royal Hospital
PZ133	James Cook University Hospital, Middlesbrough
PZ210	University Hospital of Hartlepool
PZ162	University Hospital Of North Durham

#### North West Strategic Health Authority

PZ170	Arrowe Park Hospital
PZ106	Victoria Hospital, Blackpool
PZ204	Booth Hall Children's Hospital
PZ205	Burnley General Hospital
PZ179	Countess of Chester Hospital NHS Foundation Trust
PZ150	Cumberland Infirmary
PZ029	Fairfield General Hospital
PZ030	Leighton Hospital
PZ009	Macclesfield District General Hospital
PZ167	Morecambe Bay Trust
PZ110	Ormskirk & District General Hospital
PZ091	Queen's Park Hospital, Blackburn
PZ074	Royal Liverpool Children's NHS Trust
PZ206	Rochdale Infirmary
PZ104	Royal Albert Edward Infirmary
PZ177	Royal Bolton Hospital

PZ136	Royal Manchester Children's Hospital
PZ044	Royal Oldham Hospital
PZ183	Royal Preston Hospital
PZ032	Royal Victoria Infirmary, Newcastle-Upon-Tyne
PZ063	Southport District General Hospital
PZ043	St Mary's Hospital for Women and Children, Manchester
PZ069	Stepping Hill Hospital, Stockport
PZ140	Tameside General Hospital
PZ134	Trafford General Hospital
PZ049	Warrington General Hospital
PZ022	West Cumberland Hospital
PZ208	Westmorland General Hospital
PZ153	Whiston Hospital
PZ015	Wythenshawe Hospital

#### East of England Strategic Health Authority

PZ041	Addenbrooke's Hospital
PZ019	Basildon & Thurrock Hospital
PZ220	Bedford Hospital
PZ076	Colchester General hospital
PZ099	East & North Hertfordshire NHS Trust
PZ172	Watford General Hospital
PZ198	Herts & Essex Hospital
PZ086	Hinchingbrooke Hospital
PZ181	Ipswich Hospital NHS Trust
PZ127	James Paget Healthcare Trust
PZ010	Luton and Dunstable Hospital
PZ171	Mid Essex Hospital
PZ002	Norfolk and Norwich University Hospital
PZ131	Peterborough District Hospital
PZ200	Princess Alexandra Hospital, Harlow
PZ156	Queen Elizabeth Hospital, Kings Lynn
PZ146	Southend Hospital
PZ201	St Margaret's Hospital, Essex
PZ072	West Suffolk Hospital, Bury St Edmunds

Yorkshire and Humber Strategic Health Authority	
PZ047	Airedale General Hospital
PZ149	Barnsley District General Hospital
PZ166	Calderdale Royal Hospital
PZ226	Dewsbury & District Hospital
PZ020	Diana, Princess of Wales Hospital, Grimsby
PZ006	Doncaster Royal Infirmary
PZ027	Friarage Hospital, Northallerton
PZ129	Harrogate District Hospital
PZ186	Huddersfield Royal Infirmary
PZ026	Hull Royal Infirmary
PZ101	Leeds General Infirmary
PZ003	Pinderfields General Hospital
PZ090	Pontefract General Infirmary
PZ164	Rotherham General Hospital
PZ112	Scarborough General Hospital
PZ053	Scunthorpe General Hospital
PZ219	Sheffield Childrens Hospital
PZ155	St James's University Hospital, Leeds
PZ105	St Luke's Hospital, Bradford
PZ114	York District Hospital

East Midlands Strategic Health Authority	
PZ016	Bassetlaw District General Hospital
PZ064	Chesterfield Royal Hospital
PZ005	Derbyshire Children's Hospital
PZ168	Grantham and District Hospital
PZ174	Kettering General Hospital
PZ180	Kings Mill Hospital, Sutton-in-Ashfield
PZ055	Leicester Royal Infirmary
PZ048	Lincoln County Hospital
PZ004	Northampton General Hospital
PZ116	Nottingham University Hospital
PZ128	Pilgrim Hospital, Nottingham
PZ042	Queen's Medical Centre, Nottingham

West Midlands Strategic Health Authority	
PZ073	The Alexandra Hospital, Redditch
PZ108	Birmingham Children's Hospital
PZ097	Birmingham City Hospital Trust

PZ040	Birmingham Heartlands Hospital
PZ121	George Eliot Hospital
PZ078	City General Hospital, Stoke-on-Trent
PZ144	Good Hope Hospital
PZ111	Hereford County Hospital
PZ084	Kidderminster General Hospital
PZ222	New Cross Hospital, Wolverhampton
PZ094	Princess Royal Hospital, Telford
PZ033	Queens Hospital, Burton
PZ095	Royal Shrewsbury
PZ223	Sandwell General Hospital
PZ065	Staffordshire General Hospital
PZ178	The Manor Hospital
PZ122	Walsgrave Hospital
PZ138	Warwick Hospital
PZ225	Worcestershire Royal Hospital
PZ070	Wordsley Hospital

South Central Strategic Health Authority	
PZ046	Horton General Hospital
PZ007	John Radcliffe Hospital, Oxford
PZ066	King Edward VII Hospital, Windsor
PZ145	Milton Keynes General Hospital
PZ159	North Hampshire Hospitals NHS Trust
PZ035	Royal Berkshire Hospital
PZ034	Royal Hampshire County Hospital
PZ211	Royal Naval Hospital, Gosport
PZ109	Southampton General Hospital
PZ075	St Mary's Hospital, Isle of Wight
PZ148	St Mary's Hospital, Portsmouth
PZ028	Stoke Mandeville Hospital
PZ021	Wexham Park Hospital
PZ038	Wycombe General Hospital

London Strategic Health Authority	
PZ012	Barnet and Chase Farm NHS Trust
PZ195	Central Middlesex Hospital
PZ130	Chelsea & Westminster Hospital, London
PZ191	Ealing Hospital NHS Trust
PZ196	Great Ormond Street Hospital
PZ082	Guy's & St Thomas

PZ197	Hammersmith Hospital
PZ102	Hillingdon Hospital
PZ215	King's College Hospital, London
PZ057	Kingston Hospital
PZ062	Mayday University Hospital
PZ058	Newham General Hospital
PZ199	North Middlesex University Hospital
PZ089	Northwick Park Hospital
PZ142	Oldchurch Hospital
PZ085	Princess Royal University Hospital
PZ151	Queen Elizabeth Hospital, London
PZ175	Queen Mary's Hospital, Sidcup
PZ050	Queen Mary's Hospital for Children, Epsom & St Helier Trust
PZ157	Royal Free & University College Hospital, London
PZ023	St George's Hospital, London
PZ051	The General Hospital, St Helier
PZ202	St Mary's Hospital, London
PZ059	The Royal London Hospital
PZ203	University College Hospital, London
PZ118	University Hospital Lewisham
PZ182	West Middlesex University Hospital
PZ036	Whipps Cross University Hospital
PZ045	Whittington Hospital

#### South East Coast Strategic Health Authority

PZ119	Darent Valley Hospital
PZ024	East Kent Hospitals NHS Trust
PZ184	Eastbourne District General Hospital
PZ218	Frimley Park Hospital
PZ214	Gravesend & North Kent Hospital
PZ125	Maidstone Hospital
PZ126	Medway Maritime Hospital
PZ216	Pembury Hospital
PZ135	Royal Alexandra Children's Hospital
PZ088	Royal Surrey County Hospital
PZ176	St Peter's Hospital, Chertsey
PZ031	St Richard's Hospital, Chichester
PZ213	Surrey and Sussex NHS Trust
PZ018	Worthing Hospital

#### South West Strategic Health Authority

PZ139	Bristol Royal Hospital for Children
PZ192	Cheltenham General Hospital
PZ096	Derriford Hospital
PZ017	Dorset County Hospital
PZ229	Gloucestershire Royal Infirmary
PZ137	Musgrove Park Hospital
PZ100	North Devon District Hospital
PZ054	Poole Hospital NHS Trust
PZ067	Royal Cornwall Hospital
PZ060	Royal Devon and Exeter Hospital
PZ068	Royal United Hospital, Bath
PZ169	Salisbury District Hospital
PZ221	The Great Western Hospital, Swindon
PZ152	Torbay Hospital
PZ173	Yeovil District Hospital

#### WALES

##### North Wales Regional Office

PZ011	Glan Clwyd District General Hospital
PZ187	Wrexham Maelor Hospital
PZ132	Ysbyty Gwyneda

##### Mid and West Wales Regional Office

PZ092	Bro Morgannwg NHS Trust
PZ185	Bronglais General Hospital
PZ193	Neath Port Talbot Hospital
PZ001	Singleton Hospital
PZ056	West Wales General Hospital
PZ190	Withybush General Hospital

##### South East Wales Regional Office

PZ052	Nevill Hall Hospital
PZ228	Prince Charles Hospital
PZ189	Royal Glamorgan Hospital
PZ188	Royal Gwent Hospital
PZ113	University Hospital of Wales

## Appendix D: Mean Age at Diagnosis by Paediatric Unit

An entry of "N/A" for the mean age indicates this calculation was not possible with the data submitted by the unit.

Anon unit code	Mean Age
Anon_Unit_0228	8.7
Anon_Unit_0183	8.0
Anon_Unit_0119	7.7
Anon_Unit_0209	7.0
Anon_Unit_0232	7.7
Anon_Unit_0199	8.0
Anon_Unit_0250	10.4
Anon_Unit_0179	7.2
Anon_Unit_0135	7.9
Anon_Unit_0242	8.0
Anon_Unit_0182	8.0
Anon_Unit_0197	7.6
Anon_Unit_0188	8.1
Anon_Unit_0185	N/A
Anon_Unit_0248	8.0
Anon_Unit_0191	6.3
Anon_Unit_0280	8.2
Anon_Unit_0271	8.2
Anon_Unit_0274	7.4
Anon_Unit_0208	7.3
Anon_Unit_0300	8.1
Anon_Unit_0246	7.5
Anon_Unit_0245	7.5
Anon_Unit_0192	8.2
Anon_Unit_0149	6.8
Anon_Unit_0174	7.9
Anon_Unit_0134	7.2
Anon_Unit_0132	8.1
Anon_Unit_0278	7.3
Anon_Unit_0286	7.6
Anon_Unit_0252	8.7
Anon_Unit_0166	7.8
Anon_Unit_0136	8.0
Anon_Unit_0220	7.4
Anon_Unit_0186	7.5

Anon unit code	Mean Age
Anon_Unit_0139	7.8
Anon_Unit_0253	8.1
Anon_Unit_0221	7.8
Anon_Unit_0140	7.8
Anon_Unit_0101	8.5
Anon_Unit_0176	7.5
Anon_Unit_0305	6.3
Anon_Unit_0120	7.3
Anon_Unit_0118	7.5
Anon_Unit_0277	7.8
Anon_Unit_0254	7.9
Anon_Unit_0295	8.0
Anon_Unit_0187	7.6
Anon_Unit_0213	6.5
Anon_Unit_0261	8.3
Anon_Unit_0214	7.5
Anon_Unit_0218	8.4
Anon_Unit_0108	7.3
Anon_Unit_0297	7.2
Anon_Unit_0215	7.3
Anon_Unit_0262	8.3
Anon_Unit_0121	7.9
Anon_Unit_0294	7.9
Anon_Unit_0164	7.4
Anon_Unit_0148	8.1
Anon_Unit_0303	7.5
Anon_Unit_0190	7.8
Anon_Unit_0236	8.0
Anon_Unit_0233	7.6
Anon_Unit_0203	8.5
Anon_Unit_0107	8.4
Anon_Unit_0180	7.2
Anon_Unit_0155	7.6
Anon_Unit_0171	7.4
Anon_Unit_0216	8.5

Anon unit code	Mean Age
Anon_Unit_0258	7.3
Anon_Unit_0231	7.6
Anon_Unit_0205	8.2
Anon_Unit_0193	8.3
Anon_Unit_0150	7.7
Anon_Unit_0138	9.8
Anon_Unit_0178	6.5
Anon_Unit_0206	7.5
Anon_Unit_0244	8.5
Anon_Unit_0167	7.5
Anon_Unit_0225	6.6
Anon_Unit_0298	8.5
Anon_Unit_0276	8.0
Anon_Unit_0170	6.5
Anon_Unit_0229	7.8
Anon_Unit_0106	8.2
Anon_Unit_0266	8.0
Anon_Unit_0290	9.1
Anon_Unit_0265	6.9
Anon_Unit_0211	6.0
Anon_Unit_0292	7.1
Anon_Unit_0281	7.6
Anon_Unit_0195	7.6
Anon_Unit_0293	8.0
Anon_Unit_0212	6.8
Anon_Unit_0268	7.9
Anon_Unit_0259	7.2
Anon_Unit_0201	7.5
Anon_Unit_0224	7.1
Anon_Unit_0161	8.1
Anon_Unit_0162	1.4
Anon_Unit_0285	8.4
Anon_Unit_0181	7.4
Anon_Unit_0282	8.3
Anon_Unit_0299	8.9
Anon_Unit_0288	8.1

## Appendix E: Care Process Percentage Recorded by Paediatric Unit

Data from patients over 12 years old

Anon Unit Code	Registrations ≥12 YEARS	HbA1c	BMI	BP	ALBUMIN	CHOLESTEROL	CREATININE	EYE EXAM	FOOT EXAM	ALL CARE PROCESSES
Anon_Unit_0228	328	89.63	0.30	0.30	0.30	0.30	0.30	0.00	0.00	0.00
Anon_Unit_0183	262	90.84	88.55	48.47	0.00	2.67	0.00	6.11	32.06	0.00
Anon_Unit_0119	242	93.39	95.45	41.74	42.98	1.65	12.81	0.41	27.69	0.00
Anon_Unit_0209	122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0232	156	98.08	92.95	58.97	57.69	26.28	39.74	59.62	2.56	1.28
Anon_Unit_0199	137	100.00	99.27	100.00	2.19	0.00	0.73	0.00	0.00	0.00
Anon_Unit_0250	157	78.34	33.12	73.25	0.00	38.85	64.97	61.15	33.76	0.00
Anon_Unit_0179	132	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0135	150	60.67	59.33	20.00	7.33	10.00	18.67	0.00	13.33	0.00
Anon_Unit_0242	117	100.00	98.29	91.45	82.91	9.40	0.85	13.68	0.00	0.00
Anon_Unit_0182	121	90.91	0.00	0.00	0.00	0.00	0.00	30.58	9.92	0.00
Anon_Unit_0197	119	97.48	94.96	45.38	36.97	1.68	1.68	0.00	0.00	0.00
Anon_Unit_0188	116	100.00	4.31	100.00	0.00	0.00	0.00	44.83	8.62	0.00
Anon_Unit_0185	107	100.00	100.00	100.00	100.00	100.00	100.00	79.44	17.76	17.76
Anon_Unit_0248	105	100.00	100.00	99.05	51.43	67.62	79.05	72.38	10.48	3.81
Anon_Unit_0191	72	86.11	43.06	41.67	61.11	0.00	0.00	30.56	25.00	0.00
Anon_Unit_0280	115	93.91	94.78	68.70	60.00	8.70	15.65	1.74	0.87	0.00
Anon_Unit_0271	94	91.49	91.49	89.36	70.21	74.47	72.34	63.83	57.45	44.68
Anon_Unit_0274	89	100.00	98.88	98.88	5.62	4.49	0.00	0.00	0.00	0.00
Anon_Unit_0208	87	100.00	63.22	0.00	0.00	0.00	0.00	1.15	0.00	0.00
Anon_Unit_0300	95	100.00	100.00	76.84	73.68	1.05	0.00	52.63	38.95	0.00
Anon_Unit_0246	85	94.12	95.29	81.18	60.00	69.41	76.47	55.29	67.06	30.59
Anon_Unit_0245	89	97.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0192	102	86.27	71.57	55.88	0.00	57.84	66.67	42.16	53.92	0.00
Anon_Unit_0149	78	96.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0174	80	100.00	100.00	100.00	85.00	6.25	0.00	0.00	45.00	0.00
Anon_Unit_0134	79	100.00	100.00	81.01	73.42	40.51	29.11	40.51	30.38	0.00

Anon Unit Code	Registrations ≥12 YEARS	HbA1c	BMI	BP	ALBUMIN	CHOLESTEROL	CREATININE	EYE EXAM	FOOT EXAM	ALL CARE PROCESSES
Anon_Unit_0132	77	100.00	1.30	1.30	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0278	68	83.82	85.29	42.65	38.24	1.47	13.24	67.65	2.94	0.00
Anon_Unit_0286	65	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0252	89	94.38	98.88	86.52	30.34	3.37	1.12	13.48	5.62	0.00
Anon_Unit_0166	84	54.76	42.86	9.52	4.76	3.57	2.38	0.00	5.95	0.00
Anon_Unit_0136	92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0220	72	87.50	98.61	86.11	18.06	76.39	77.78	0.00	0.00	0.00
Anon_Unit_0186	75	97.33	97.33	89.33	68.00	4.00	42.67	78.67	0.00	0.00
Anon_Unit_0139	80	91.25	90.00	71.25	48.75	57.50	48.75	43.75	52.50	15.00
Anon_Unit_0253	74	98.65	75.68	64.86	10.81	1.35	2.70	0.00	1.35	0.00
Anon_Unit_0221	69	98.55	76.81	73.91	20.29	56.52	75.36	42.03	59.42	5.80
Anon_Unit_0140	72	97.22	95.83	59.72	34.72	72.22	61.11	0.00	4.17	0.00
Anon_Unit_0101	82	98.78	98.78	100.00	97.56	92.68	87.80	0.00	93.90	0.00
Anon_Unit_0176	68	97.06	97.06	63.24	36.76	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0305	57	98.25	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0120	75	98.67	0.00	97.33	96.00	0.00	0.00	98.67	98.67	0.00
Anon_Unit_0118	64	92.19	0.00	32.81	70.31	62.50	71.88	9.38	40.63	0.00
Anon_Unit_0277	65	98.46	98.46	98.46	50.77	7.69	26.15	0.00	0.00	0.00
Anon_Unit_0254	65	98.46	75.38	96.92	70.77	75.38	83.08	63.08	0.00	0.00
Anon_Unit_0295	68	97.06	89.71	70.59	5.88	72.06	76.47	64.71	67.65	5.88
Anon_Unit_0187	53	81.13	66.04	49.06	37.74	52.83	56.60	18.87	49.06	9.43
Anon_Unit_0213	48	89.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0261	61	95.08	49.18	49.18	37.70	1.64	45.90	37.70	34.43	1.64
Anon_Unit_0214	64	93.75	92.19	78.13	37.50	15.63	34.38	85.94	82.81	1.56
Anon_Unit_0218	72	95.83	93.06	84.72	23.61	23.61	29.17	13.89	31.94	1.39
Anon_Unit_0108	57	100.00	100.00	98.25	100.00	100.00	100.00	82.46	19.30	17.54
Anon_Unit_0297	47	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0215	65	100.00	100.00	96.92	96.92	80.00	83.08	95.38	84.62	76.92

Anon Unit Code	Registrations ≥12 YEARS	HbA1c	BMI	BP	ALBUMIN	CHOLESTEROL	CREATININE	EYE EXAM	FOOT EXAM	ALL CARE PROCESSES
Anon_Unit_0262	65	98.46	92.31	86.15	49.23	70.77	72.31	43.08	0.00	0.00
Anon_Unit_0121	61	100.00	81.97	77.05	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0294	55	100.00	100.00	92.73	56.36	18.18	92.73	72.73	72.73	12.73
Anon_Unit_0164	48	93.75	0.00	72.92	52.08	75.00	87.50	52.08	2.08	0.00
Anon_Unit_0148	69	43.48	34.78	23.19	24.64	7.25	13.04	8.70	27.54	0.00
Anon_Unit_0303	47	95.74	93.62	89.36	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0190	61	95.08	93.44	54.10	21.31	75.41	77.05	54.10	55.74	9.84
Anon_Unit_0236	49	100.00	97.96	81.63	6.12	85.71	89.80	4.08	6.12	0.00
Anon_Unit_0233	48	100.00	100.00	43.75	47.92	2.08	25.00	72.92	2.08	0.00
Anon_Unit_0203	55	94.55	94.55	61.82	54.55	12.73	12.73	70.91	1.82	0.00
Anon_Unit_0107	56	94.64	0.00	41.07	44.64	0.00	0.00	28.57	44.64	0.00
Anon_Unit_0180	51	98.04	94.12	82.35	50.98	9.80	3.92	31.37	1.96	0.00
Anon_Unit_0155	45	95.56	97.78	97.78	15.56	33.33	53.33	51.11	51.11	6.67
Anon_Unit_0171	51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0216	62	80.65	41.94	45.16	19.35	12.90	22.58	29.03	30.65	4.84
Anon_Unit_0258	46	100.00	60.87	60.87	52.17	52.17	0.00	0.00	26.09	0.00
Anon_Unit_0231	43	95.35	97.67	97.67	0.00	0.00	83.72	69.77	88.37	0.00
Anon_Unit_0205	58	94.83	94.83	86.21	65.52	79.31	86.21	10.34	24.14	3.45
Anon_Unit_0193	53	100.00	100.00	92.45	77.36	0.00	0.00	67.92	92.45	0.00
Anon_Unit_0150	45	93.33	91.11	22.22	0.00	2.22	2.22	11.11	2.22	0.00
Anon_Unit_0138	60	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0178	33	87.88	51.52	36.36	36.36	3.03	9.09	27.27	27.27	0.00
Anon_Unit_0206	39	25.64	0.00	2.56	2.56	0.00	2.56	2.56	0.00	0.00
Anon_Unit_0244	47	97.87	95.74	93.62	65.96	63.83	78.72	0.00	76.60	0.00
Anon_Unit_0167	42	97.62	97.62	97.62	2.38	38.10	38.10	0.00	0.00	0.00
Anon_Unit_0225	36	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0298	43	100.00	0.00	100.00	58.14	58.14	51.16	0.00	0.00	0.00

Anon Unit Code	Registrations ≥12 YEARS	HbA1c	BMI	BP	ALBUMIN	CHOLESTEROL	CREATININE	EYE EXAM	FOOT EXAM	ALL CARE PROCESSES
Anon_Unit_0276	36	97.22	97.22	97.22	61.11	0.00	41.67	58.33	47.22	0.00
Anon_Unit_0170	33	96.97	0.00	0.00	0.00	81.82	0.00	84.85	0.00	0.00
Anon_Unit_0229	39	100.00	0.00	94.87	66.67	0.00	0.00	58.97	0.00	0.00
Anon_Unit_0106	38	97.37	94.74	81.58	44.74	7.89	78.95	0.00	2.63	0.00
Anon_Unit_0266	24	100.00	100.00	100.00	95.83	91.67	100.00	83.33	95.83	79.17
Anon_Unit_0290	28	100.00	89.29	96.43	32.14	67.86	92.86	67.86	57.14	14.29
Anon_Unit_0265	21	95.24	90.48	95.24	71.43	14.29	23.81	42.86	66.67	9.52
Anon_Unit_0211	9	88.89	88.89	88.89	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0292	22	9.09	13.64	36.36	50.00	31.82	0.00	4.55	54.55	0.00
Anon_Unit_0281	27	100.00	100.00	92.59	85.19	11.11	40.74	59.26	62.96	0.00
Anon_Unit_0195	126	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0293	122	99.18	100.00	96.72	40.98	30.33	18.03	52.46	57.38	9.84
Anon_Unit_0212	67	88.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0268	54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0259	46	97.83	95.65	76.09	76.09	54.35	69.57	45.65	0.00	0.00
Anon_Unit_0201	46	63.04	63.04	63.04	54.35	67.39	71.74	52.17	52.17	30.43
Anon_Unit_0224	40	82.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0161	52	88.46	1.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0162	39	97.44	100.00	100.00	66.67	79.49	87.18	100.00	100.00	58.97
Anon_Unit_0285	47	10.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0181	38	94.74	94.74	92.11	0.00	92.11	92.11	63.16	76.32	0.00
Anon_Unit_0282	36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0299	32	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Anon_Unit_0288	23	95.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>7,777</b>	<b>84.67</b>	<b>60.45</b>	<b>53.25</b>	<b>30.30</b>	<b>22.55</b>	<b>26.77</b>	<b>25.19</b>	<b>21.36</b>	<b>3.55</b>

## Appendix F: HbA1c Results by Paediatric Unit

Anon Unit Names	Number of Records	% with HbA1c recorded	Median HbA1c	Anon Unit Names	Number of Records	% with HbA1c recorded	Median HbA1c
Anon_Unit_0228	449	89.53%	8.7	Anon_Unit_0253	123	98.37%	9.1
Anon_Unit_0183	410	88.78%	8.4	Anon_Unit_0221	123	0.00%	-
Anon_Unit_0119	369	93.77%	8.7	Anon_Unit_0140	119	98.32%	8.8
Anon_Unit_0209	273	41.39%	9.0	Anon_Unit_0101	116	98.28%	8.4
Anon_Unit_0232	263	96.20%	8.8	Anon_Unit_0176	115	98.26%	8.5
Anon_Unit_0199	226	99.56%	9.2	Anon_Unit_0305	114	94.74%	8.8
Anon_Unit_0250	216	79.17%	9.1	Anon_Unit_0120	112	99.11%	9.0
Anon_Unit_0179	211	0.00%	-	Anon_Unit_0118	110	90.00%	8.6
Anon_Unit_0135	206	66.02%	9.0	Anon_Unit_0277	108	99.07%	9.3
Anon_Unit_0242	206	100.00%	8.6	Anon_Unit_0254	106	99.06%	9.2
Anon_Unit_0182	199	90.45%	7.8	Anon_Unit_0295	105	97.14%	8.7
Anon_Unit_0197	198	94.95%	8.4	Anon_Unit_0187	105	77.14%	8.7
Anon_Unit_0188	178	99.44%	8.2	Anon_Unit_0213	103	87.38%	8.6
Anon_Unit_0185	166	70.48%	8.3	Anon_Unit_0261	101	95.05%	8.7
Anon_Unit_0248	165	100.00%	8.7	Anon_Unit_0214	100	94.00%	8.8
Anon_Unit_0191	160	90.63%	8.5	Anon_Unit_0218	96	96.88%	8.1
Anon_Unit_0280	156	94.87%	9.2	Anon_Unit_0108	96	100.00%	7.9
Anon_Unit_0271	155	94.84%	8.5	Anon_Unit_0297	95	96.84%	9.2
Anon_Unit_0274	154	98.05%	8.2	Anon_Unit_0215	95	98.95%	8.4
Anon_Unit_0208	149	100.00%	8.7	Anon_Unit_0262	95	98.95%	9.0
Anon_Unit_0300	147	100.00%	8.3	Anon_Unit_0121	94	100.00%	9.4
Anon_Unit_0246	146	96.58%	9.0	Anon_Unit_0294	93	98.92%	9.3
Anon_Unit_0245	146	97.95%	8.8	Anon_Unit_0164	92	91.30%	8.6
Anon_Unit_0192	145	89.66%	9.3	Anon_Unit_0148	91	40.66%	8.8
Anon_Unit_0149	143	94.41%	8.1	Anon_Unit_0303	91	96.70%	8.5
Anon_Unit_0174	141	99.29%	8.9	Anon_Unit_0190	91	95.60%	9.9
Anon_Unit_0134	139	99.28%	8.5	Anon_Unit_0236	89	94.38%	9.4
Anon_Unit_0132	139	100.00%	8.4	Anon_Unit_0233	89	100.00%	8.6
Anon_Unit_0278	135	83.70%	8.5	Anon_Unit_0203	88	96.59%	8.4
Anon_Unit_0286	128	100.00%	8.6	Anon_Unit_0107	86	90.70%	8.7
Anon_Unit_0252	126	93.65%	8.9	Anon_Unit_0180	86	98.84%	8.8
Anon_Unit_0166	126	59.52%	9.0	Anon_Unit_0155	85	91.76%	8.5
Anon_Unit_0136	125	0.00%	-	Anon_Unit_0171	85	0.00%	-
Anon_Unit_0220	125	86.40%	8.8	Anon_Unit_0216	84	85.71%	7.9
Anon_Unit_0186	125	98.40%	8.8	Anon_Unit_0258	84	100.00%	8.7
Anon_Unit_0139	124	92.74%	9.0	Anon_Unit_0231	83	93.98%	8.5

Anon Unit Names	Number of Records	% with HbA1c recorded	Median HbA1c
Anon_Unit_0205	83	95.18%	8.6
Anon_Unit_0193	82	100.00%	9.2
Anon_Unit_0150	80	86.25%	9.6
Anon_Unit_0138	79	100.00%	8.7
Anon_Unit_0178	77	89.61%	8.5
Anon_Unit_0206	74	29.73%	8.7
Anon_Unit_0244	73	93.15%	8.9
Anon_Unit_0167	72	95.83%	8.5
Anon_Unit_0225	72	98.61%	8.4
Anon_Unit_0298	63	100.00%	9.2
Anon_Unit_0276	62	90.32%	8.9
Anon_Unit_0170	60	98.33%	8.8
Anon_Unit_0229	55	100.00%	9.4
Anon_Unit_0106	52	98.08%	8.5
Anon_Unit_0266	46	100.00%	8.6
Anon_Unit_0290	43	95.35%	8.5
Anon_Unit_0265	40	87.50%	8.0
Anon_Unit_0211	39	84.62%	7.9
Anon_Unit_0292	39	7.69%	-
Anon_Unit_0281	38	100.00%	8.2
Anon_Unit_0195	202	0.00%	-
Anon_Unit_0293	185	98.92%	9.1
Anon_Unit_0212	131	90.08%	9.7
Anon_Unit_0268	109	0.00%	-
Anon_Unit_0259	78	96.15%	8.3
Anon_Unit_0201	75	68.00%	8.5
Anon_Unit_0224	75	84.00%	7.9
Anon_Unit_0161	74	91.89%	7.9
Anon_Unit_0162	72	98.61%	8.5
Anon_Unit_0285	72	15.28%	10.4
Anon_Unit_0181	69	94.20%	9.3
Anon_Unit_0282	56	0.00%	-
Anon_Unit_0299	48	81.25%	8.6
Anon_Unit_0288	35	97.14%	8.7

## Appendix G: The National Diabetes Audit Dataset: Annotated for Paediatric Unit Submissions

**For each patient please submit**

Field No.	Data item name	M/O	Permitted values	Notes
1.	NHS number	M	Format (10N). 10 digit numeric	
2.	Type of data	M	1 Demographic/observation data	
3.	Year of Birth	M	Year: (format CCYY)	
4.	Postcode of usual address	M	The patient's postcode	The postcode will be translated to Super Output Area (SOA) and only the SOA will be stored centrally.
5.	Sex	M	National Codes are used: 0 Unknown 1 Male 2 Female 9 Not specified	
6.	Ethnic category	O	National Codes are used: A British B Irish C Any other White background D White and Black Caribbean E White and Black African F White and Asian G Any other mixed background H Indian J Pakistani K Bangladeshi L Any other Asian background M Caribbean N African P Any other Black background R Chinese S Any other ethnic group Z Not stated	
7.	Death Date	O	Date: (format CCYY-MM-DD)	
8.	GP Practice Code	O	Format X99999, where X can be A-H, J-N, P, W, Y	
9.	NHS organisation code (provider code)	M	This is your NHS organisation code. Format PZXXX– Paediatric Unit code	
10.	Source Unit	M	P	Should be set to "P" for all patients being treated in paediatric units. Should be null for patients being treated in all other units.
11.	Year of Diagnosis (Diabetes)	O	Year: (format CCYY)	

Field No.	Data item name	M/O	Permitted values	Notes
12	Diabetes type	M	01 type 1 02 type 2 06 MODY 08 Other specified 99 Not Specified	Organisations should determine the type of diabetes from local coding systems. Where type 1 or type 2 cannot be derived e.g. a coding of NIDDM or IDDM is used the type should be coded as 08 Other specified
13.	Person observation (BMI)	O	Format 99.9	Only required for children aged 12 years and above
14.	Observation Date (BMI)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided. Also add date if height/weight measurement has been taken for children of all ages.
15.	Systolic Blood Pressure	O	Format (3N). 3 digit numeric	Only required for children aged 12 years and above
16.	Observation Date (Blood pressure)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
17.	Diastolic Blood Pressure	O	Format (3N). 3 digit numeric	Only required for children aged 12 years and above
18.	Observation Date (Blood pressure)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
19.	Person observation (HbA1c Level)	O	Format 99.9	Whilst not mandatory this is the most important care process data item for the audit
20.	Observation Date (HbA1c level)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
21.	Person observation (Serum Creatinine Level)	O	Format (4N). 4 digit numeric	Only required for children aged 12 years and above
22.	Observation Date (Serum creatinine level)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
23.	Person observation (Urinary Albumin Level)	O	Format 9999.99	Only required for children aged 12 years and above
24.	Urinary Albumin Level Testing Method	O	01 Albumin concentration (mg/L) 02 Albumin creatinine ratio (mg/mmol) 03 Timed overnight albumin (ug/min) 04 24hr albumin excretion (mg/24hr)	
25.	Albuminuria Stage	O	01 Normoalbuminuria 02 Microalbuminuria 03 Macroalbuminuria	

Field No.	Data item name	M/O	Permitted values	Notes
26.	Observation Date (Urinary Albumin level)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
27.	Person observation (Total Serum Cholesterol Level)	O	Format 99.9	Only required for children aged 12 years and above
28.	Observation Date (Cholesterol level)	O	Date: (format YYYY-MM-DD)	Mandatory if observation value provided
29.	Diabetes routine review (eye)	O	01 Carried out 02 Not done 03 Not necessary	Only required for children aged 12 years and above
30.	Observation Date (Eye examination)	O	Date: (format YYYY-MM-DD)	Mandatory if observation value provided
31.	Diabetes routine review (foot)	O	01 Carried out 02 Not done 03 Not necessary	Only required for children aged 12 years and above
32.	Observation Date (Foot examination)	O	Date: (format YYYY-MM-DD)	Mandatory if observation value provided
33.	Smoking Status	O	National codes: 1 Current smoker 2 Ex-smoker 3 Non-smoker history unknown 4 Never smoked 9 Unknown	Not collected for paediatric data
34.	Observation Date (Smoking status)	O	Date: (format CCYY-MM-DD)	
35.	Patient education review	O	01 Carried out 02 Not done	
36.	Observation Date (patient education review)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
37.	Diabetes Structured Education programme offered	O	01 Carried out 02 Not done	
38.	Observation date (Diabetes Structured Education programme offered)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided
39.	Diabetes Structured Education programme attended	O	01 Carried out 02 Not done	
40.	Observation date (Diabetes Structured Education programme attended)	O	Date: (format CCYY-MM-DD)	Mandatory if observation value provided

For each episode of ketoacidosis you should also submit the following records:

Field No.	Data item name	Permitted values
1	NHS Number	n10
2	Type of data	2 Conditions/complications/procedure data
3	Diagnosis/procedure scheme in use	Format n3 872 – ICD-10 (This will always be 872)
4	Diagnostic coding (Diabetes relevant ICD-10)	E10.1 Insulin-dependent diabetes mellitus with ketoacidosis E11.1 Non-insulin-dependent diabetes mellitus with ketoacidosis E13.1 Other specified diabetes mellitus with ketoacidosis E14.1 Unspecified diabetes mellitus with ketoacidosis E10.0 Insulin-dependent diabetes mellitus with ketoacidosis and coma E11.0 Non-insulin-dependent diabetes mellitus with ketoacidosis and coma E13.0 Other specified diabetes mellitus with coma E14.0 Unspecified diabetes mellitus with coma
5	Observation Date (Diabetes relevant diagnosis)	Date: (format YYYY-MM-DD)

Note: multiple occurrences of record type 2 (ketoacidosis) for a single NHS number within the audit period are permitted.

## References

1. NHS National Institute for Clinical Excellence (NICE) (2004), Clinical Guideline 15, developed by the National Collaborating Centre for Women's and Children's Health and the National Collaborating Centre for Chronic Conditions: Type 1 diabetes: diagnosis and management of type 1 diabetes in children, young people and adults
2. Department of Health (2001), National Service Framework for Diabetes: Standards
3. National Service Framework for Diabetes (Wales) <http://www.wales.nhs.uk/sites3/home.cfm?orgid=440>
4. Technology Appraisal Guidance 60: Guidance on the use of patient-education models for diabetes (2003)
5. Making Every Young Person with Diabetes Matter: Report of the Children and Young People with Diabetes Working Group (2007): London: Department of Health

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 The NHS Information Centre for health and social care  
1 Trevelyan Square  
Boar Lane  
Leeds  
LS1 6AE