

DWED (Diabetics With Eating Disorders) is a non profit organisation working towards charitable status. Recent research shows that not only are females\* with Type 1 Diabetes at twice the risk of developing Anorexia or Bulimia, but also as many as 40% of 15 – 30 year olds regularly omit insulin. This practice can have devestating consequences such as organ failure, infertility, blindness, and in the worst cases death. Despite the horrific complications and staggering prevalence, Deliberate Insulin Manipulation/Omission or 'Diabulimia' as the press have named it, is not diagnosable and there are no current guidelines for the NHS on how to deal with the issue.

# Diabetes and DKA in England's Primary Care Trusts

A study into the prevalence of diabetes, the costs and the admission rates of Diabetic ketoacidosis in England's Primary Care Trusts November 2010

Diabetics with Eating Disorders ⊙ www.dwed.org.uk ⊙ 0208 8083832

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<sup>\*</sup>Although less common, it can be found in males with Type 1 Diabetes.





# Introduction

#### What is Diabetes?

Diabetes mellitus (more commonly known just as Diabetes) is a condition where the body has too much glucose in the blood because the body is either unable to produce any insulin (Type 1 Diabetes), or because the insulin that is produced is not effective as it should be (Type 2 Diabetes).

Type 1 Diabetes is rare and typically diagnosed in childhood or adolescence. Following diagnosis the person with Diabetes will be reliant on synthetic insulin (via injection or continuous pump infusion) and strict adherence to a specific regime to survive. Type 1 Diabetes should not be confused with Type 2 Diabetes which can be caused by lifestyle and/or diet factors and is commonly diagnosed in adults. Most Type 2 Diabetes can be treated by eating a healthy and balanced diet and exercising regularly.

#### Diabetes in the UK

Diabetes has been labelled by the Department of Health as one of the largest healthcare challenges that the NHS faces<sup>1</sup>, this is largely due to the increasing number of people diagnosed with diabetes, estimated in 2009 to be 2.6 million<sup>2</sup>. This continuously growing figure places tremendous demands on the NHS, which is clearly illustrated by estimates that 10% of the NHS budget is spent on diabetes<sup>3</sup>.

The increasing numbers of people diagnosed with diabetes within the UK is a cause for concern and highlights the importance of improving support to people with diabetes to help them manage their condition effectively and efficiently. As a result, this report aims to contribute to the existing research into diabetes by taking a particular interest into the admissions and costs associated with Diabetic Ketoacidosis, Diabetic Retinopathy and Diabetic Neuropathy.

- 1 Department of Health (2010), Six Years On: Delivering the Diabetes National Service Framework, p.2
- 2 Diabetes UK, Diabetes in the UK 2010: Key Statistics on Diabetes, p.4
- 3 Department of Health (2006), Turning the corner improving diabetes care www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\_4136141







#### Diabetes in the NHS

- Data provided by 47 Primary Care Trusts (PCT's) gives England an average prevalence for diabetes of 4.1%4.
- The average proportion of people with diabetes that have been diagnosed with Type 1 Diabetes is 10.76%.

The prevalence of Diabetes and Type 1 Diabetes across England's PCT's is as follows:

Region	Diabetes Prevalence	Type-1 Diabetes
East Midlands	2.51%	12.33%
London	4.21%	9.05%
North East <sup>5</sup>	n/a	n/a
North West	3.94%	11.26%
South East	4.63%	11.68%
South West	3.09%	9.62%
East Anglia	3.42%	12.95%
West Midlands	5.72%	8.67%
Yorkshire & Humberside	3.20%	15.42%

<sup>47</sup> PCT's (33%) provided data for the number of people that have been diagnosed with diabetes within their trust

<sup>5</sup> None of the 8 PCTs in the North East provided a figure for the number of people with Diabetes in their trust

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# Support, Advocacy, Awareness, Action



#### Diabetic Ketoacidosis

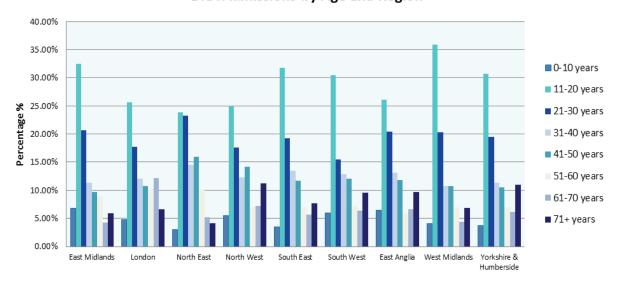
Diabetic Ketoacidosis (DKA) is a complication of Diabetes that predominantly affects people with Type 1 Diabetes. DKA happens when the body has an absolute or relative insulin deficiency which restricts glucose from entering the cells so that it can be converted into energy. The body responds to this by burning its own fat and muscle, trying to use this as energy instead. This process produces acidic by-products known as Ketones, which are highly hazardous to the body. Once a person with Diabetes has a certain level of ketones in their system their body enters Diabetic Ketoacidosis (DKA).

Despite improvements in diabetes care, DKA is considered a clinical emergency and is fatal if it is left untreated. However, research does illustrate that the mortality rate falls to under 5% with adequate and timely treatment <sup>6</sup>.

# DKA Accident & Emergency Admissions by Age Group<sup>7</sup>

- From the data collated it is evident that an episode of DKA is more common in young people - more than 65% of patients admitted into Accident & Emergency were under the age of 40, with over 47% were under the age of 25.
- This trend is consistent across all regions in England, with the most frequent age group for admissions into Accident & Emergency being between the ages of 11 and 20.
- The trend of Accident & Emergency admissions for DKA declines with age, with a distinct rise in admissions occurring in those aged over 71.

#### **DKA Admissions by Age and Region**



- 6 Powers AC (2005). "Diabetes mellitus" in Kasper DL, Braunwald E, Fauci AS, et al.. Harrison's Principles of Internal Medicine (16th ed.). New York, NY: McGraw-Hill. pp. 2152–2180
- 7 68 PCT's (48%) provided data for the number of Accident & Emergency admissions where the primary diagnosis was DKA





# DKA Accident & Emergency Admissions by Age Group ctd.

Age Group	%	TOTAL
0-5 years	3.11	204
6-10 years	1.86	122
11-15 years	13.10	859
16-20 years	16.10	1056
21-25 years	12.90	846
26-30 years	6.34	416
31-35 years	6.80	446
36-40 years	5.57	365
41-45 years	7.18	471
46-50 years	4.61	302
51-55 years	4.86	319
56-60 years	2.79	183
61-65 years	3.80	249
66-70 years	2.68	176
71+ years	8.30	544
TOTAL	100	6,558

#### **DKA Re-Admissions**<sup>8</sup>

 An average of 31% of patients that are admitted to hospital for DKA, are re-admitted with DKA within a year of their initial admission

Region	A&E Admissions	Re-admissions	Re-Admission Rate
East Midlands	608	228	37.50%
London	506	141	27.87%
North East	247	73	29.55%
North West	676	199	29.44%
South East	850	206	24.24%
South West	405	106	26.17%
East Anglia	538	223	41.45%
West Midlands	384	143	37.24%
Yorkshire & Humberside	460	144	31.30%
TOTAL	4,674	1,463	31.30%

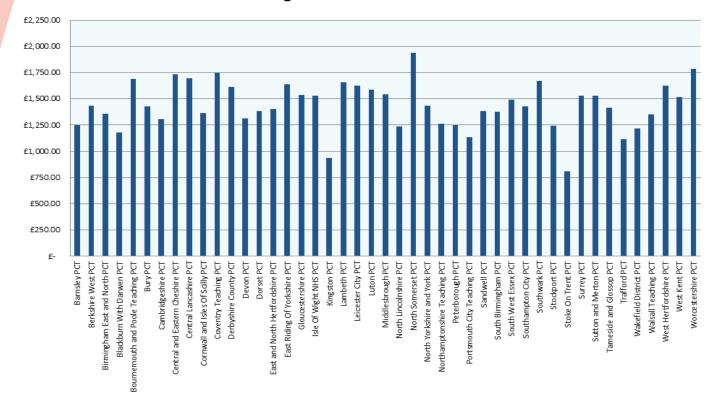




#### DKA Costs<sup>9</sup>

- The average cost of an admission where the primary diagnosis is noted to be DKA is £1,438.04.
- This figure is based on the response of 45 PCT's who provided sufficient data to calculate the average cost.
- Median cost of DKA is £125,440

#### Average Cost of a DKA Admission









# Diabetic Retinopathy

Diabetic retinopathy is a complication of diabetes in which the retina becomes damaged. The blood vessels that supply the retina can become damaged due to prolonged periods of high blood glucose levels. These blood vessels can become blocked and prevent light passing through to the retina, which can commonly lead to complete blindness.

It is estimated that people diagnosed with diabetes are 10 to 20 times more likely to go blind than people without 10. Despite this staggering figure research has shown that adequate treatment can prevent severe vision loss in 90% of cases of diabetic retinopathy<sup>11</sup>.

#### Diabetic Retinopathy Costs<sup>12</sup>

Mean Average: £381,896.83 (70 PCTs) Median: £96,657

Below is a breakdown of the costs of which the PCT provided, as you will be able to see the PCT's provided a variety of different costs related to Diabetic Retinopathy.

#### Inpatients only

Primary Care Trust	Amount
Bassetlaw PCT	£ 52,497
Blackburn With Darwen PCT	£ 12,912
Bristol PCT	£ 399,814
Cambridgeshire PCT	£ 379,934
Central Lancashire PCT	£1,483,125
Cornwall and Isles Of Scilly PCT	£ 10,022,540
Derbyshire County PCT	£ 224,411
East Riding Of Yorkshire PCT	£ 5,050
Eastern and Coastal Kent PCT	£ 119,053
Gloucestershire PCT	£ 706,600
Heart Of Birmingham Teaching PCT	£ 34,315
Hillingdon PCT	£ 15,643
Isle Of Wight NHS PCT	£11,868
Kensington and Chelsea PCT	£25,575
Kingston PCT	£ 19,860
Lambeth PCT	£ 55,535
Leeds PCT	£ 176,779
Liverpool PCT	£11,000

Primary Care Trust	Amount
Luton PCT	£ 7,007
Mid Essex PCT	£ 23,831
Middlesbrough PCT	£ 77,153
Milton Keynes PCT	£ 9,097
North East Essex PCT	£ 9,500
North Lincolnshire PCT	£ 40,334
Northamptonshire Teaching PCT	£ 10,975
Peterborough PCT	£ 436,069
Plymouth Teaching PCT	£ 133,352
Sandwell PCT	£ 34,747
Southwark PCT	£ 66,926
Stockport PCT	£ 2,943
Stoke On Trent PCT	£ 133,731
Waltham Forest PCT	£ 240,434
West Sussex PCT	£ 45,140
Berkshire West PCT	£ 243,656
Ashton, Leigh and Wigan PCT	£ 330,325

<sup>10</sup> Diabetes UK, Diabetes in the UK 2010: Key Statistics on Diabetes, p.12

<sup>11</sup> Tapp RJ, Shaw JE, Harper CA, et al. (2003). "The prevalence of and factors associated with diabetic retinopathy in the Australian population". Diabetes Care 26 (6): 1731-7





Primary Care Trust	Amount
Screening Costs	
Bournemouth and Poole Teaching PCT	£ 377,536
Derby City PCT	£ 241,059
Gloucestershire PCT	£811,000
Norfolk PCT	£ 685,049
North Yorkshire and York PCT	£ 930,000
Oxfordshire PCT	£ 580,000
Portsmouth City Teaching PCT	£1,193,656
Southampton City PCT	£ 232,000

Inpatients and Outpatients	
Hampshire PCT	£ 886,000

Primary Care Only		
	Norfolk PCT	£ 57,624

Costs Not Specified	
Costs Not Specified	1
Birmingham East and North PCT	£ 590,865
Bradford and Airedale Teaching PCT	£ 75,000
Brighton and Hove City PCT	£ 157,296
Calderdale PCT	£ 163,649
County Durham PCT	£ 20,674
Doncaster PCT	£ 378,355
East and North Hertfordshire PCT	£ 19,258
East Lancashire Teaching PCT	£ 12,979
Hammersmith and Fulham PCT	£ 33,750
Kirklees PCT	£ 460,414
Knowsley PCT	£ 58,567
Newham PCT	£ 421,871
Nottinghamshire County Teaching PCT	£ 7,445
Oldham PCT	£ 268,085
Portsmouth City Teaching PCT	£ 79,833
Redbridge PCT	£ 92,096
Richmond and Twickenham PCT	£ 56,905
Somerset PCT	£ 112,429
South West Essex PCT	£ 286,057
Surrey PCT	£ 4,799
Swindon PCT	£ 9,517
Tameside and Glossop PCT	£ 7,809
Telford and Wrekin PCT	£ 472,701
Wakefield District PCT	£ 1,576
Walsall Teaching PCT	£ 480,000
West Essex PCT	£ 101,219
West Hertfordshire PCT	£ 2,409
Worcestershire PCT	£ 567,075





# **Diabetic Neuropathy**

Diabetic neuropathy is a condition where the nervous system is damaged due to the prolonged exposure to high blood glucose levels which is a result of diabetes. It is common that people with Diabetes first develop neuropathy in their toes, feet and legs (peripheral neuropathy). It is believed that the most effective way of preventing the development of diabetic neuropathy is by controlling blood glucose levels.

#### Diabetic Neuropathy Costs<sup>13</sup>

Mean Average: £247,964.67 (60 PCTs) Median: £28,385

Below is a breakdown of the costs of which the PCT provided, as you will be able to see the PCT's provided a variety of different costs related to Diabetic Neuropathy.

#### Inpatients only

Primary Care Trust	Amount	Primary Care Trust	Amount
Bedfordshire PCT	£ 10,191	Liverpool PCT	£ 31,000
Bassetlaw PCT	£ 62,130	Luton PCT	£ 13,172
Blackburn With Darwen PCT	£ 596	Mid Essex PCT	£ 14,818
Bristol PCT	£1,784	Middlesbrough PCT	£ 11,454
Bury PCT	£ 240,119	North of Tyne PCT	£ 23,597
Cambridgeshire PCT	£ 56,214	North East Essex PCT	£ 420,500
Central Lancashire PCT	£ 790,904	Northamptonshire Teaching PCT	£ 13,423
Cornwall and Isles Of Scilly PCT	£ 9,781,855	Peterborough PCT	£ 141,458
Derbyshire County PCT	£ 68,049	Plymouth Teaching PCT	£ 82,474
East Riding Of Yorkshire PCT	£ 271,185	Sandwell PCT	£ 16,110
Gloucestershire PCT	£ 279,600	Stockport PCT	£ 2,077
Heart Of Birmingham Teaching PCT	£ 7,024	Stoke On Trent PCT	£ 14,068
Hillingdon PCT	£ 5,557	Telford and Wrekin PCT	£ 37,757
Kensington and Chelsea PCT	£ 10,832	Trafford PCT	£ 6,430
Kingston PCT	£ 3,177	Waltham Forest PCT	£ 243,120
Lambeth PCT	£ 3,148	Warwickshire PCT	£ 14,410
Leeds PCT	£ 25,769	West Sussex PCT	£ 113,550





Primary Care Trust	Amount
Inpatients and Outpatients	
Hampshire PCT	£ 15,000

Primary Care Only	
Norfolk PCT	£ 34,069

Costs Not Specified	
Ashton, Leigh and Wigan PCT	£ 229,422
Brighton and Hove City PCT	£ 10,415
Calderdale PCT	£ 66,776
County Durham PCT	£ 75,103
Doncaster PCT	£ 42,732
East and North Hertfordshire PCT	£ 17,750
East Lancashire Teaching PCT	£ 9,613
Halton and St Helens PCT	£ 323,849
Hammersmith and Fulham PCT	£ 21,500
Havering PCT	£ 17,000
Knowsley PCT	£ 63,427
Newham PCT	£ 175,385
Norfolk PCT	£ 37,633
Nottinghamshire County Teaching PCT	£ 94,759
Oldham PCT	£ 230,493
Redbridge PCT	£ 93,806
Richmond and Twickenham PCT	£ 7,561
Somerset PCT	£ 45,255
South West Essex PCT	£ 156,603
Surrey PCT	£ 9,079
Swindon PCT	£ 6,590
Tameside and Glossop PCT	£ 2,360
West Essex PCT	£ 13,480
West Hertfordshire PCT	£11,382
Worcestershire PCT	£ 218,256





# Methodology

Freedom of Information requests were used to obtain all data in this report. 141 NHS Primary Care Trusts were sent a request asking for information about the prevalence of diabetes and the admissions and costs associated with DKA. The full text of the Freedom of Information request submitted is included in Appendix 3.

Of the 141 NHS Primary Care Trusts that the FOI request were sent to 24 did not provide information despite having well over the statutory limit of 20 days to do so.

# **Guide to the Appendices**

- The original FOI request as sent to the 141 NHS Primary Care Trusts is found in Appendix 1
- The full list of NHS Primary Care Trusts that provided information to the FOI request is found in Appendix 2.
- The full list of those NHS Primary Care Trusts that failed to provide information to the FOI request and their reason can be found in Appendix 3.

#### References

Department of Health (2006), Turning the corner improving diabetes care www.dh.gov.uk/en/Publicationsandstatistics/Publications/ PublicationsPolicyAndGuidance/DH 4136141 <date accessed 18 November 2001>

Department of Health (2010), Six Years On: Delivering the Diabetes National Service Framework, <u>http://www.dh.gov.uk/prod\_consum\_dh/groups/dh</u> digitalassets/@dh/@en/@ps/documents/digitalasset/dh\_112511.pdf<date accessed 19 November 2001>

Diabetes UK (2010), Diabetes in the UK 2010: Key Statistics on Diabetes, http:// www.diabetes.org.uk/Documents/Reports/Diabetes\_in\_the\_UK\_2010.pdf <date accessed 30 October 2010>

Powers AC (2005). "Diabetes mellitus", In Kasper DL, Braunwald E, Fauci AS, et al.. Harrison's Principles of Internal Medicine (16th ed.). New York, NY: McGraw-Hill. pp. 2152-2180

Tapp RJ, Shaw JE, Harper CA, et al. (2003). "The prevalence of and factors associated with diabetic retinopathy in the Australian population". Diabetes Care 26 (6): 1731-7





# **Appendices**

#### Appendix 1

Freedom of information request for details of Diabetes admissions and treatment Dear Sir/Madam,

I am writing to obtain information about the level of admissions and treatment costs for Diabetes within **xx** Primary Care Trust.

To outline my query as clearly as possible, I am requesting:

- 1. How many people does your Primary Care Trust provide for?
- 2. How many people with Type-1 Diabetes are provided for within your PCT?
- 3. How many 'Diabetes' clinics are there in your PCT?
- 4. How many Accident and Emergency admissions for **Diabetic Ketoacidosis** did your trust have in the previous year?
- 5. For these admissions, can you provide a list of ages?
- 6. Please could you forward any statistics that your trust has for recurrent admission for such persons.
- 7. How much was spent in the previous year by your trust on the treatment of people diagnosed with **Diabetic Ketoacidosis**?
- 8. How much was spent in the previous year by your trust on the treatment of people diagnosed with **Diabetic Neuropathy**?
- 9. How much was spent in the previous year by your trust on the treatment of people diagnosed with **Diabetic Retinopathy**?

My preferred format to receive this information is electronically, but if that is not possible I will gladly accept hard copies. I understand that under the Freedom of Information Act, I am entitled to a response within 20 working days. I would be grateful if you could confirm that you have received this request as soon as possible.

Kind regards,

Liam Mills

Diabetes with Eating Disorders (DWED)

#### **Appendix 2**

NHS Primary Care Trust	NHS Primary Care Trust	NHS Primary Care Trust
Ashton, Leigh and Wigan PCT	East Sussex Downs and Weald PCT	Peterborough PCT
Barnsley PCT	Eastern and Coastal Kent PCT	Plymouth Teaching PCT
Bassetlaw PCT	Gloucestershire PCT	Redbridge PCT
Bedfordshire PCT	Greenwich Teaching PCT	Richmond and Twickenham PCT
Berkshire East PCT	Halton and St Helens PCT	Rotherham PCT
Berkshire West PCT	Hammersmith and Fulham PCT	Sandwell PCT
Birmingham East and North PCT	Hampshire PCT	Sefton PCT





# Appendix 2ctd

NHS Primary Care Trust	NHS Primary Care Trust	NHS Primary Care Trust
Blackburn With Darwen PCT	Havering PCT	Sheffield PCT
Blackpool PCT	Heart Of Birmingham Teaching PCT	Shropshire County PCT
Bolton PCT	Hillingdon PCT	Somerset PCT
Bournemouth and Poole Teaching PCT	Hounslow PCT	South Staffordshire PCT
Bradford and Airedale Teaching PCT	Isle Of Wight NHS PCT	South West Essex PCT
Brent Teaching PCT	Kensington and Chelsea PCT	Southampton City PCT
Brighton and Hove City PCT	Kingston PCT	Southwark PCT
Bristol PCT	Kirklees PCT	Stockport PCT
Bromley PCT	Knowsley PCT	Stoke On Trent PCT
Buckinghamshire PCT	Lambeth PCT	Suffolk PCT
Bury PCT	Leeds PCT	Surrey PCT
Calderdale PCT	Leicester City PCT	Sutton and Merton PCT
Cambridgeshire PCT	Liverpool PCT	Swindon PCT
Camden PCT North of Tyne PCT	Medway PCT	South of Tyne and Wear PCT
Central and Eastern Cheshire PCT	Mid Essex PCT	Tameside and Glossop PCT
Central Lancashire PCT	Middlesbrough PCT	Telford and Wrekin PCT
City and Hackney Teaching PCT	Milton Keynes PCT	Trafford PCT
Cornwall and Isles Of Scilly PCT	Newham PCT	Wakefield District PCT
County Durham PCT	Norfolk PCT	Walsall Teaching PCT
Coventry Teaching PCT	North East Essex PCT	Waltham Forest PCT
Croyden PCT	North Lancashire Teaching PCT	Warrington PCT
Darlington PCT	North Lincolnshire PCT	West Essex PCT
Derby City PCT	North Somerset PCT	West Hertfordshire PCT
Derbyshire County PCT	North Yorkshire and York PCT	West Kent PCT
Devon PCT	Northamptonshire Teaching PCT	West Sussex PCT
Doncaster PCT	Nottingham City PCT	Western Cheshire PCT
Dorset PCT	Portsmouth City Teaching PCT	Westminster PCT
East and North Hertfordshire PCT	Nottinghamshire County Teaching PCT	Wiltshire PCT
East Lancashire Teaching PCT	Oldham PCT	Worcestershire PCT
East Riding Of Yorkshire PCT	Oxfordshire PCT	





# **Appendix 3**

NHS Primary Care Trust	Reason
Barnet PCT	Failed to provide data despite having more than 20 days (statutory limit)
Bath & North East Somerset PCT	Failed to provide data despite having more than 20 days (statutory limit)
Dudley PCT	Failed to provide data despite having more than 20 days (statutory limit)
Ealing PCT	Failed to provide data despite having more than 20 days (statutory limit)
Enfield PCT	Failed to provide data despite having more than 20 days (statutory limit)
Great Yarmouth and Waveney PCT	Failed to provide data despite having more than 20 days (statutory limit)
Harrow PCT	Failed to provide data despite having more than 20 days (statutory limit)
Herefordshire PCT	Failed to provide data despite having more than 20 days (statutory limit)
Heywood, Middleton and Rochdale PCT	Failed to provide data despite having more than 20 days (statutory limit)
Hull Teaching PCT	Failed to provide data despite having more than 20 days (statutory limit)
Islington PCT	Failed to provide data despite having more than 20 days (statutory limit)
Leicestershire County and Rutland PCT	Failed to provide data despite having more than 20 days (statutory limit)
Lincolnshire Teaching PCT	Failed to provide data despite having more than 20 days (statutory limit)
Manchester PCT	Failed to provide data despite having more than 20 days (statutory limit)
North Staffordshire PCT	Failed to provide data despite having more than 20 days (statutory limit)
Salford PCT	Failed to provide data despite having more than 20 days (statutory limit)
South East Essex PCT	Failed to provide data despite having more than 20 days (statutory limit)
Tower Hamlets PCT	Failed to provide data despite having more than 20 days (statutory limit)
Wandsworth PCT	Failed to provide data despite having more than 20 days (statutory limit)
Wirral PCT	Failed to provide data despite having more than 20 days (statutory limit)
Wolverhampton City PCT	Failed to provide data despite having more than 20 days (statutory limit)
Barking and Dagenham PCT	PCT's that claimed not to hold the relevant data
Cumbria Teaching PCT	PCT's that claimed not to hold the relevant data
Lewisham PCT	PCT's that claimed not to hold the relevant data