

## The United Kingdom Insulin Pump Audit- Service Level Data

### Introduction

NICE technology appraisal 151 (1) was published in 2008. It recommended continuous subcutaneous insulin infusion (CSII) therapy for adult patients and children over 12 years of age with type 1 diabetes who were suffering from recurrent hypoglycaemia despite optimized multiple dose injection insulin regimes. They also recommended CSII in adult patients and children over 12 years old with type 1 diabetes who were had an HbA1c of > 8.5% despite multidose injections (MDI) of insulin. CSII therapy is recommended as a treatment option for children younger than 12 years with type 1 diabetes mellitus provided that MDI therapy is considered to be impractical or inappropriate, and children on insulin pumps would be expected to undergo a trial of MDI therapy between the ages of 12 and 18 years. NICE recommended that CSII should only be commenced by trained healthcare professionals. Finally, specialist teams should provide structured education programmes and advise on diet, lifestyle and exercise appropriate for people using CSII.

There are currently no routinely recorded data that allow us to estimate the use of CSII in the UK. An earlier attempt to collect data for England by the York and Humber Public Health Observatory (YHPHO) was of limited success (2).

With this background it was proposed that there should be a UK wide audit of CSII therapy. Joint sponsors for the national CSII audit project included DUK, JDRF and ABCD. A national tender was announced in July 2011 and was won by a combined Cheshire and Merseyside bid. The expert reference group (ERG) for the Cheshire and Merseyside bid is listed in Appendix 1. The project manager for the audit was Heather Stephens from Innove. The DiabetesE (3) online self assessment tool was used to allow ease of data entry and instant analysis of results. The following timeline was set and met:

Key Milestone deliverable description	Delivery Date
Agree the metrics for the audit.	November 30 <sup>th</sup> 2011
Software requirements document to be compiled by Innove and Innove Solutions	December 31 <sup>st</sup> 2011
Establish an audit lead for all eligible sites	January 6 <sup>th</sup> 2012
Software requirements document to be approved by ERG	January 13 <sup>th</sup> 2012
Software development to be completed	March 30 <sup>th</sup> 2012
Undertake pilot site testing	April 27 <sup>th</sup> 2012
Refine and release software	May 25 <sup>th</sup> 2012

Undertake audit	June 2012
Data analysis completed	September 28 <sup>th</sup> 2012
Submit abstract for Diabetes UK	September 2012
Collate results, produce final project report, draft recommendations and draft quality standards	December 2012
Present at Diabetes UK	March 2013

Table 1: Service level audit timeline

The audit was overseen by a steering group chaired by Dr Ian Gallen whose original proposal as a NICE Fellow led to the development of the audit. The following comprised the steering group:

Contact	Title	Organisation
Ian Gallen	Consultant Physician and Endocrinologist	Buckinghamshire Hospitals NHS Trust
Rudy Bilous	Professor of Clinical Medicine	South Tees Hospital NHS Foundation Trust
Fiona Campbell	Consultant Paediatrician and Diabetologist	Leeds Teaching Hospitals NHS Trust
Stephanie Amiel	Professor of Diabetic Medicine	Kings College Hospital NHS Foundation Trust
Peter Hammond	Consultant Physician	Harrogate and District NHS Foundation trust
Lesley Jordan	Chief Executive	INPUT
Bridget Turner	Head of Policy and Care Improvement	Diabetes UK
John McKnight	Consultant Physician	NHS Scotland
Sarah Johnson	Director of Communications and Policy	JDRF
Rowan Hillson (ad hoc)	National Clinical Director for Diabetes	DH

The audit was divided in to 2 parts in an attempt to avoid audit fatigue and the service level audit commenced June 2012. This audit was completed in September 2012 and the data is presented in this report. The patient level audit commenced in January 2013 and data collection is on going. A further report will be issued when this data collection is complete along the following time line:

- Adult patient level data collection January – March 2013
- Peadiatric patient level data collection January – April 2013

## Audit Metrics

The metrics were set by the ERG agreed by the steering committee and were aligned to NICE TA 151. The audit developed similar but separate tools for adult patients (>18 years of age) and paediatric (<18 years old). The service level metrics are shown in appendix 2.

### Identification of CSII Providers.

Innovate contacted all hospital trusts in the UK and asked if they provided an insulin pump therapy service. Those centres that said they did were invited to participate in the pump audit. The participation rates for the audit and the total number of identified pump users are tabulated below:

<b>ADULTS</b>					
<b>Country</b>	<b>Participating Sites</b>	<b>%</b>	<b>Non-participating sites</b>	<b>Total sites</b>	<b>Pumps</b>
England	147	97.4%	4	151	11985
Scotland	13	100.0%	0	13	678
Wales	13	100.0%	0	13	578
Northern Ireland	5	83.3%	1	6	187
<b>Total</b>	<b>178</b>	<b>97.3%</b>	<b>5</b>	<b>183</b>	<b>13428</b>

Table 2: Adult sites returning audit data.

<b>PAEDIATRIC</b>					
<b>Country</b>	<b>Participating Sites</b>	<b>%</b>	<b>Non-participating sites</b>	<b>Total sites</b>	<b>Pumps</b>
England	138	95.2%	7	145	4447
Scotland	9	75.0%	3	12	251
Wales	14	100.0%	0	14	237
Northern Ireland	5	100.0%	0	5	159
<b>Total</b>	<b>166</b>	<b>94.3%</b>	<b>10</b>	<b>176</b>	<b>5094</b>

Table 3: Paediatric sites returning audit data.

### Key Findings for Adult Patients (Appendix 3)

The average number of adult patients managed by centres is 74 with an average of 14 new patients commencing pump therapy per year. Out of hours technical support is provided by pump companies in 92% of centres. Out of hours clinical support is provided, at least in part, by pump companies in 43% of centres.

Staffing questions identified an average of 0.69 whole time equivalent nurse specialist time provided

for all aspects of pump therapy care. This reduces further to 0.64 WTE who have explicit funding for pump therapy care. On average 2 DNS per centre have attended a formal CSII training course. 40% of centres have access to a structured CSII education programme for their patients whilst only 30% of centres run education programmes that meet NICE/DUK guidelines. Patients appear to be taught in a combination of group and individual sessions. 72% of centres involve the pump company representatives in the training of their patients. Only 19% of centres have consultant involvement in their patient CSII training programmes.

51% of pump centres make individual funding requests for CSII. 18% of commissioning bodies have a fixed quota of pump starts per year. Only 5% of centres have had funding declined in the past year for patient who fulfilled the NICE criteria for CSII.

37% of centres have written guidelines for when pump users are admitted to hospital. 74% of centres have clinical provision for the patient to self-manage their diabetes using CSII whilst in hospital. Data were also collected for the use of continuous glucose monitoring systems (CGMS). 83% of centres caring for adult patients with type 1 diabetes use CGMS. In contrast to the CSII data funding for CGMS is automatically approved in only 13% of centres. 11% of adult centres used CGMS as a routine in patients using CSII.

Finally, questions were asked about awareness of referral criteria for islet transplantation and 88% of centres were aware of these. 89% of centres knew who to refer patients to for consideration of islet transplantation.

#### **Key Findings for Paediatric Patients (Appendix 4)**

The average number of paediatric CSII patients managed by centres is 30 with 10 new patients starting pump therapy per year. Out of hours technical support is provided by pump companies in 93% of centres. Out of hours clinical support is provided, at least in part, by pump companies in 37% of centres.

Staffing issues: on average 0.98 WTE paediatric DSN are delivering care for CSII therapy users. This falls to 0.74 WTE who have explicit funding for pump therapy care. On average 1 paediatric DSN per centre has attending a formal CSII training course.

51% of paediatric centres have access to or run a structured CSII education programme for their patients. Patients are taught in a combination of group and one to one sessions. 87% of centres involve the pump company representatives in their patient training. 41% of centres have consultant involvement in their training programmes.

9% of paediatric pump centres have had funding declined for patients who fulfill the NICE criteria.

56% of centres have written guidelines for when pump users are admitted to hospital. 86% of centres have provision for patients to self manage their CSII whilst an inpatient.

Only 31% of centres ensure that patients starting CSII < 12 years of age have a trial of MDI between 12-18 years old.

CGMS data for paediatric services were similar to adult services with 76% of centres using CGMS in the past year. Again, funding was an issue with only 13% of centres having automatic approval for CGMS. 14% of paediatric centres considered CGMS as standard practice in every patient treated with CSII.

## **Discussion**

### **Adults**

DUK estimates that there are 221000 adult patients with type 1 DM in the UK (4). Assuming all 13308 adult CSII treated patients identified by the audit have type 1 DM this equates to 6% being treated with insulin pumps at the time of the audit (further detail of individual patients will be available after the completion of the patient level audit). This probably overestimates the percentage of type 1 DM patients treated with CSII. The YPHO audit of pump therapy in England, even with incomplete data, identified 35 patients with type 2 diabetes treated with CSII. It has been estimated that between 15-20% of adult patients with type 1 diabetes would meet the NICE criteria for CSII (5). Some European countries such as Germany and Norway have >15% of type 1 patients treated with CSII. Estimates from the USA suggest as many as 40% of American patients with type 1 DM may be treated with CSII (6).

Funding does not seem to be an obstacle to CSII use for the UK based on the data from the audit. 90%+ of centres have no issues securing funding for patients who fulfill the TA151 criteria. Only 18% of commissioning organizations have set a fixed quota of adult patients for funding CSII. Nationally, the day to day clinical care for patients with type 1 DM is provided by diabetes nurse specialists. For adult patients treated with CSII therapy only 0.69 WTE nurse specialist time is available. Of this specialist time only 0.64WTE has dedicated funding. This may explain why a significant number of centres still use the pump representatives, at least in part, to deliver training to their CSII users. Only half of the total number of DNSs per centre have attended formal training for CSII therapy. Similarly for consultants, on average, only 1 consultant per centre has attended formal CSII training.

If we assume that CSII is standard therapy for patients with type 1 DM and simply another option for patients requiring intensive insulin therapy the lack of DNS provision and other trained health care professionals this may explain why the UK continues to lag behind other countries in Europe with regards to CSII use. There would appear to be a need for greater access to CSII structured training aligned to NICE/DUK guidelines for professionals and for CSII users.

CGMS use is in its infancy and the technology is still finding its place as an adjunct to intensive insulin therapy with CSII. Funding is an obstacle to use and NICE have yet to look at CGMS.

### **Paediatrics**

DUK estimates 26500 children with type 1 DM. The audit therefore identified 19% of patients <18 years old are treated with CSII therapy (it can be more safely assumed that all identified patients <18 years old have type 1 DM).

CSII therapy is recommended as a primary treatment option for patients <12 years of age. However, these patients are expected to be tried on MDI between the ages of 12-18 years. This does not happen in the majority of centres. From clinical experience patients treated with CSII are reluctant to consider a return to MDI owing to the greater flexibility and lifestyle benefits of CSII offers as well as the clinical benefits of few hypoglycaemic episodes and lower HbA1c.

For the majority of pump centres funding does not seem to be an issue for patients who fulfill the NICE criteria.

Again there is less than 1 WTE paediatric nurse specialist with specific funding for CSII therapy. Only half of centres have access to a paediatric specific CSII structured education programme. This may explain why the majority of centres use the pump representatives, at least in part, to deliver CSII training to their patients.

### **Summary**

- This is the first national audit of CSII therapy.
- There was a remarkable level of engagement from clinical teams.
- Approximately 6% of adult patients with type 1 DM are treated with CSII.
- Approximately 19% of paediatric patients with type 1 DM are treated with CSII.
- The majority of centres have no issues with funding for CSII for patients who fulfill the NICE TA 151 criteria.
- The UK continues to lag behind other European countries in the numbers of type 1 DM patients treated with CSII.
- This may, in part, be due to a lack of training capacity for professional staff and a lack of whole time equivalent diabetes nurse specialists with CSII expertise.

## References

1. NICE Technology Appraisal 151. Continuous subcutaneous insulin infusion for the treatment of diabetes mellitus. 2008. <http://www.nice.org.uk/nicemedia/pdf/TA151Guidance.pdf>
2. York and Humber Public Health Observatory Insulin pump audit- findings for England. 2010. <http://www.yhpho.org.uk/resource/item.aspx?RID=91531>
3. <http://www.innove.co.uk/Pages/Services/DiabetesE/>
4. <http://www.diabetes.org.uk/documents/reports/diabetes-in-the-uk-2011-12.pdf>
5. Pickup J. Are pumps underutilized in type 1 diabetes? Yes. *Diabetes Care* 2006; **29**: 1449-1452.
6. Pickup J. Insulin pumps. *Int J Clin Pract Suppl.* 2011; **170**: 16

## Appendix 1.

### Cheshire and Merseyside Expert Reference Group

Contact	Title	Organisation
Niru Goenka (Organisational Lead)	Consultant Physician and Diabetologist	Countess of Chester NHS Foundation Trust
Philip Weston (Clinical Lead)	Consultant Physician and Diabetologist	The Royal Liverpool and Broadgreen University Hospitals NHS Trust
Helen White	Consultant Physician and Diabetologist	Aintree University Hospitals NHS Foundation Trust
Niall Furlong	Consultant Physician and Diabetologist	St Helens & Knowsley Teaching Hospitals NHS Trust
Simon Saunders	Consultant Physician and Diabetologist	Warrington and Halton Hospitals NHS Foundation Trust
Gill Morrison	Diabetes Specialist Nurse	The Royal Liverpool and Broadgreen University Hospitals NHS Trust
Princy Paul	Consultant Paediatrician with an interest in Diabetes	Alder Hey Children's NHS Foundation Trust
Atrayee Ghatak	Consultant Paediatrician with an interest in Diabetes	Alder Hey Children's NHS Foundation Trust
Paul Langridge	Paediatric Diabetes Specialist Nurse	Countess of Chester NHS Foundation Trust
Andrew Lavender	Patient representative and CSII user	Chair of Chester Branch of Diabetes UK
Heather Stephens	Project Manager	Innove
John Keogh	IT Lead	Innove Solutions
Karen Townsend (co-opted as required)	Business Support Manager	Countess of Chester NHS Foundation Trust
Catherine Wall (co-opted as required)	GP Diabetes Commissioning Lead	Western Cheshire Health Consortium

## Appendix 2

### Adult Data

#### Insulin Pump Service Audit (Adults)

For each question in the UK Insulin Pump Service Audit module, the table below displays:

The total number of insulin pump services in the UK that have answered the question.

The average figure entered by insulin pump services in the UK for questions requiring a numerical answer.

The percentage of insulin pump services in the UK that have answered Yes, No, Don't Know and Not Applicable to the question.

Please note: This is live data, therefore, the contents may change on a daily basis as more services answer the questions.

	Questions	No. of Sites	UK Average	% Yes	% No	% Don't Know	% N/A
	<b>GENERAL POPULATION DEMOGRAPHICS SERVICE INFORMATION</b>						
1	Enter the year (eg 2010) the adult CSII service was started	177	2004				
2	How many adult patients (in total) do you manage on CSII?	178	75				
3	How many adult patients has your service started on CSII in the past 12 months? <b>(Please note: this should be ≤ Q2)</b>	178	14				
4	Do your adult patients on CSII have access to 24 hour clinical and technical support?	173		64%	36%	0%	0%
5	If you answered 'yes' to Q4, who provides the out of hours <b>clinical</b> support for your adult patients on CSII? (Select all that apply)						
5a	Consultant	149		12%	68%	0%	19%
5b	DSN	152		23%	59%	0%	18%
5c	Dietitian	148		5%	77%	0%	18%

5d	Pump company representative	155		43%	38%	1%	17%
5e	Another CSII site	147		1%	80%	0%	18%
5f	Other (please enter details in comments box below)	151		10%	44%	0%	38%
6	If you answered 'yes' to Q4, who provides the out of hours <b>technical</b> support for your adult patients on CSII? (Select all that apply)						
6a	Consultant	150		5%	81%	1%	13%
6b	DSN	150		7%	79%	0%	14%
6c	Dietitian	149		1%	85%	1%	14%
6d	Pump company	166		92%	1%	0%	8%
6e	Another CSII site	148		1%	84%	1%	14%
6f	Other (please enter details in comments box below)	140		4%	61%	1%	34%
	<b>STAFFING</b>						
7	Enter the total number of consultant programmed activities per week dedicated to the adult diabetes services.	153	9.04				
8	Enter the number of individual consultants providing the adult CSII service	172	1				
9	Enter the total number of consultant programmed activities (funded and unfunded) dedicated to delivering the adult CSII service (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q7)</b>	160	1.13				
10	Enter the total number of <b>funded</b> consultant programmed activities, recognised in job planning, dedicated to delivering the adult CSII service (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q9)</b>	160	1.01				
11	Enter the number of individual DSNs providing adult diabetes services	170	4				
12	Enter the number of whole time equivalent DSNs dedicated to delivering the adult CSII service (includes clinics, service planning, admin time, CPD, etc.)	164	0.69				
13	Enter the number of whole time equivalent DSNs <b>with explicit funding for the time</b> dedicated to delivering the adult CSII service (includes clinics, service planning, admin	165	0.64				

	time, CPD, etc.) <b>(Please note: this should be ≤ Q12)</b>						
14	Enter the number of individual dietitians providing adult diabetes services	166	1				
15	Enter the number of whole time equivalent dietitians dedicated to delivering the adult CSII service (including carbohydrate counting, clinics, service planning, admin time, CPD, etc.)	162	0.37				
16	Enter the number of whole time equivalent dietitians <b>with explicit funding for the time</b> dedicated to delivering the adult CSII service (including carbohydrate counting, clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q15)</b>	165	0.32				
17	Enter the number of whole time equivalent clinical psychologists dedicated to delivering the adult CSII service (includes clinics, service planning, admin time, CPD, etc.)	168	0.53				
18	Enter the number of whole time equivalent clinical psychologists <b>with explicit funding for the time</b> dedicated to delivering the adult CSII service (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q17)</b>	168	0.32				
	<b>ACCESS</b>	<b>No. of Sites</b>	<b>UK Average</b>	<b>% Yes</b>	<b>% No</b>	<b>% Don't Know</b>	<b>% N/A</b>
19	Enter the number of adult patients <b>formally</b> offered CSII in the last 12 months	156	18				
20	Enter the number of adult patients who declined a formal offer of CSII therapy in the last 12 months <b>(Please note: this should be ≤ Q19)</b>	158	5				
21	Enter the number of adult patients who have requested CSII in the last 12 months that have been declined on clinical grounds	158	5				
22	Is funding for CSII automatically approved by your main commissioning organisation for any adult patient referred? (If you do not have a 'main' commissioner please explain your situation in the comments box below)	171		50%	44%	2%	3%
23	If you answered 'no' to Q22, then is funding for CSII automatically approved by your main commissioning organisation for any adult patient <b>fulfilling NICE criteria</b> ?	154		43%	17%	1%	40%

24	Do you have to make an individual application for funding for each adult patient referred for CSII?	170		51%	47%	0%	2%
25	Does your main commissioning organisation have a fixed quota for adult CSII starts per annum?	171		18%	68%	12%	2%
26	Has funding for CSII therapy ever been declined in an adult patient who fulfils NICE criteria?	169		5%	91%	1%	2%
27	If you answered 'yes' to Q26, how many of these adult patients were refused funding in the past 12 months?	71	4				
28	Which of the following brands of insulin pumps do you use? (Select all that apply)						
28a	Animas	172		65%	35%	1%	0%
28b	Roche	171		84%	16%	0%	0%
28c	Medtronic	173		97%	3%	0%	0%
28d	Omnipod	166		25%	75%	1%	0%
28e	Other (please enter details in the comments box below)	150		10%	54%	1%	32%
29	Are you <b>restricted</b> to using any of the following brands of insulin pumps? (Select all that apply)						
29a	Animas	169		9%	84%	2%	5%
29b	Roche	168		16%	81%	0%	3%
29c	Medtronic	169		15%	82%	0%	3%
29d	Omnipod	166		19%	69%	3%	9%
29e	Other (please enter details in the comments box below)	155		5%	58%	2%	31%
	<b>HEALTH CARE PROFESSIONAL EDUCATION</b>						
30	Enter the number of consultants who deliver CSII services who have attended a formal CSII training course	166	1				
31	Enter the number of DSNs who deliver CSII services who have attended a formal CSII training course	167	2				

32	Enter the number of dietitians who deliver CSII services who have attended a formal CSII training course	166	1				
33	Enter the number of dietitians who deliver CSII services who have been trained in carbohydrate counting	167	1				
	<b>PATIENT EDUCATION</b>						
34	Does your service run or have access to a structured education programme for adults with type 1 diabetes?	172		89%	11%	0%	0%
35	If you answered 'yes' to Q34, does this meet NICE and Diabetes UK guidelines?	167		80%	7%	5%	8%
36	Does your service run or have access to a structured education programme for adults with type 2 diabetes?	168		85%	14%	0%	1%
37	If you answered 'yes' to Q36, does this meet NICE and Diabetes UK guidelines?	162		79%	6%	4%	10%
38	Does your service run or have access to a carbohydrate counting course for adults?	173		92%	8%	0%	1%
39	If you answered 'yes' to Q38, does this meet NICE and Diabetes UK guidelines?	171		75%	9%	7%	8%
40	Does your service run or have access to a CSII structured education course for adults?	171		40%	57%	2%	0%
41	If you answered 'yes' to Q40, does this meet NICE and Diabetes UK guidelines?	149		30%	8%	12%	50%
42	Are adult patients taught how to use their CSII on a one-to-one basis?	169		91%	9%	0%	1%
43	Are adult patients taught how to use their CSII in group sessions?	173		71%	28%	0%	1%
44	Which of the following members of staff train adult patients on how to use their CSII? (Select all that apply)						
44a	Consultant	165		19%	80%	0%	1%
44b	DSN	172		97%	2%	0%	1%
44c	Dietitian	168		42%	57%	1%	1%
44d	Pump company representative	170		72%	26%	1%	1%
44e	Other (please enter details in the comments box below)	144		4%	52%	1%	42%
	<b>INPATIENTS</b>	<b>No. of Sites</b>	<b>UK Average</b>	<b>% Yes</b>	<b>% No</b>	<b>% Don't Know</b>	<b>% N/A</b>

45	Is there a written policy/guideline for the management of adult patients with diabetes on CSII who are admitted to hospital?	171		37%	62%	1%	0%
46	Is there a written policy/guideline for the management of adult patients with diabetes on CSII who are undergoing surgery?	170		27%	73%	0%	0%
47	Is there provision for adult patients with diabetes on CSII to continue and self-manage (when clinically appropriate) after admission to hospital?	172		74%	24%	2%	0%
	<b>PREGNANCY</b>						
48	Is there a written policy/guideline for the management of patients with diabetes on CSII who are pregnant?	170		34%	63%	2%	2%
49	Is there provision for continuing and self-managing CSII (when clinically appropriate) for women with diabetes in labour?	169		60%	34%	4%	2%
	<b>cGMS</b>						
50	Does your adult diabetes service use cGMS? (If you answer 'no', please go to Q66)	171		83%	16%	1%	0%
51	Enter the year (eg 2010) that your service started using cGMS	144	2006				
52	How many adult patients has your service started on cGMS in the past 12 months?	139	22				
53	Is funding for <b>diagnostic</b> cGMS automatically approved by your main commissioning organisation for any adult patient referred? (If you do not have a 'main' commissioner please explain your situation in the comments box below)	157		24%	57%	4%	15%
54	Do you have to make an individual application for funding for each adult patient referred for diagnostic cGMS?	157		19%	57%	2%	22%
55	Does your main commissioning organisation have a fixed quota for adult diagnostic cGMS starts per annum?	157		3%	55%	17%	25%
56	Has funding for diagnostic cGMS (in adult patients in whom it is clinically appropriate) ever been declined?	157		8%	52%	5%	35%
57	If you answered 'yes' to Q56, how many of these patients were refused funding in the past 12 months?	69	6				

58	Is funding for <b>therapeutic</b> cGMS automatically approved by your main commissioning organisation for any adult patient referred? (If you do not have a 'main' commissioner please explain your situation in the comments box below)	156		13%	61%	4%	21%
59	Do you have to make an individual application for funding for each adult patient referred for therapeutic cGMS?	155		55%	18%	3%	24%
60	Does your main commissioning organisation have a fixed quota for adult therapeutic cGMS starts per annum?	154		2%	52%	23%	23%
61	Has funding for therapeutic cGMS (in adult patients in whom it is clinically appropriate) ever been declined?	156		28%	40%	3%	28%
62	If you answered 'yes' to Q61, how many of these patients were refused funding in the past 12 months?	86	3				
63	Which of the following brands of cGMS do you use? (Select all that apply)						
63a	Dexcom Seven Plus CGM	150		21%	68%	2%	9%
63b	Freestyle Navigator	152		27%	62%	2%	9%
63c	Medtronic CGM System	158		85%	5%	1%	9%
63d	Other (please enter details in comments box below)	140		5%	56%	3%	35%
64	Are you restricted to using any of the following brands of cGMS? (Select all that apply)						
64a	Dexcom Seven Plus CGM	153		5%	73%	5%	18%
64b	Freestyle Navigator	153		6%	73%	4%	17%
64c	Medtronic CGM System	153		14%	69%	3%	14%
64d	Other (please enter details in comments box below)	147		2%	58%	4%	33%
65	Is cGMS used as standard in everybody who is considered for CSII?	159		11%	81%	2%	6%
	<b>ISLET CELL TRANSPLANTATION</b>						
66	Are you aware of the referral criteria for islet cell transplantation?	170		88%	11%	1%	0%
67	Do you know who to refer your potential islet cell transplant patients to?	170		89%	10%	1%	0%

## Paediatric Data

### Insulin Pump Service Audit (Paediatrics)

For each question in the UK Insulin Pump Service Audit module, the table below displays:

The total number of insulin pump services in the UK that have answered the question.

The average figure entered by insulin pump services in the UK for questions requiring a numerical answer.

The percentage of insulin pump services in the UK that have answered Yes, No, Don't Know and Not Applicable to the question.

Please note: This is live data, therefore, the contents may change on a daily basis as more services answer the questions.

	Questions	No. of Sites	UK Average	% Yes	% No	% Don't Know	% N/A
	<b>GENERAL POPULATION DEMOGRAPHICS SERVICE INFORMATION</b>						
1	Enter the year (eg 2010) the paediatric CSII service was started?	166	2006				
2	How many paediatric patients (in total) do you manage for their diabetes?	166	156				
3	How many paediatric patients (in total) do you manage on CSII? <b>(Please note: this should be ≤ Q2)</b>	166	30				
4	How many paediatric patients has your service started on CSII in the past 12 months? <b>(Please note: this should be ≤ Q3)</b>	165	10				
5	Do your paediatric patients on CSII have access to 24 hour clinical and technical support?	161		83%	17%	0%	0%
6	If you answered 'yes' to Q5, who provides the out of hours <b>clinical</b> support for your paediatric patients on CSII? (Select all that apply)						

6a	Consultant	147		44%	48%	1%	7%
6b	DSN	145		47%	46%	1%	6%
6c	Dietitian	143		4%	89%	0%	8%
6d	Pump company representative	147		37%	56%	1%	6%
6e	Another CSII site	142		6%	85%	1%	8%
6f	Other (please enter details in comments box)	149		46%	30%	0%	19%
7	If you answered 'yes' to Q5, who provides the out of hours <b>technical</b> support for your paediatric patients on CSII? (Select all that apply)						
7a	Consultant	145		12%	82%	0%	6%
7b	DSN	144		19%	76%	0%	5%
7c	Dietitian	144		0%	94%	1%	5%
7d	Pump company	155		93%	4%	0%	3%
7e	Another CSII site	143		4%	90%	1%	5%
7f	Other (please enter details in comments box)	140		5%	71%	1%	20%
	<b>STAFFING</b>						
8	Enter the total number of paediatric consultant programmed activities per week dedicated to the diabetes services.	154	2.89				
9	Enter the number of individual paediatric consultants providing the CSII service	158	1				
10	Enter the total number of paediatric consultant programmed activities (funded and unfunded) dedicated to delivering the CSII service (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q8)</b>	145	0.95				
11	Enter the total number of <b>funded</b> paediatric consultant programmed activities, recognised in job planning, dedicated to delivering the CSII service (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q10)</b>	149	0.99				
12	Enter the number of individual paediatric DSNs providing the CSII service	159	2				
13	Enter the number of whole time equivalent paediatric DSNs dedicated to delivering the CSII	150	0.98				

	service (includes clinics, service planning, admin time, CPD, etc.)						
14	Enter the number of whole time equivalent paediatric DSNs <b>with explicit funding for the time</b> dedicated to delivering the CSII service (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q13)</b>	150	0.74				
15	Enter the number of individual dietitians providing the CSII service to paediatric patients	158	1				
16	Enter the number of whole time equivalent dietitians dedicated to delivering the CSII service to paediatric patients (including carbohydrate counting, clinics, service planning, admin time, CPD, etc.)	148	0.34				
17	Enter the number of whole time equivalent dietitians <b>with explicit funding for the time</b> dedicated to delivering the CSII service to paediatric patients (including carbohydrate counting, clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q16)</b>	152	0.48				
18	Enter the number of whole time equivalent clinical psychologists dedicated to delivering the CSII service to paediatric patients (includes clinics, service planning, admin time, CPD, etc.)	153	0.36				
19	Enter the number of whole time equivalent clinical psychologists <b>with explicit funding for the time</b> dedicated to delivering the CSII service to paediatric patients (includes clinics, service planning, admin time, CPD, etc.) <b>(Please note: this should be ≤ Q18)</b>	153	0.2				
	<b>ACCESS</b>	<b>No. of Sites</b>	<b>UK Average</b>	<b>% Yes</b>	<b>% No</b>	<b>% Don't Know</b>	<b>% N/A</b>
20	Enter the number of paediatric patients <b>formally</b> offered CSII in the last 12 months	151	13				
21	Enter the number of paediatric patients who declined a formal offer of CSII therapy in the last 12 months <b>(Please note: this should be ≤ Q20)</b>	151	3				
22	Enter the number of paediatric patients who have requested CSII in the last 12 months who have been declined on clinical grounds	151	2				
23	Is funding for CSII automatically approved by your main commissioning organisation for any paediatric patient? (If you do not have a 'main' commissioner please explain your situation in the	159		54%	42%	4%	1%

	comments box below)						
24	If you answered 'no' to Q23, then is funding for CSII automatically approved by your main commissioning organisation for any paediatric patient <b>fulfilling NICE criteria</b> ?	143		48%	17%	2%	32%
25	Do you have to make an individual application for funding for each paediatric patient referred for CSII?	160		54%	45%	1%	1%
26	Does your main commissioning organisation have a fixed quota for paediatric CSII starts per annum?	159		15%	65%	19%	1%
27	Has funding for CSII therapy ever been declined in a paediatric patient who fulfils NICE criteria?	158		9%	88%	1%	2%
28	If you answered 'yes' to Q27, how many of these paediatric patients were refused funding in the past 12 months?	77	6				
29	Which of the following brands of insulin pumps do you use? (Select all that apply)						
29a	Animas	148		55%	45%	0%	1%
29b	Roche	154		80%	19%	0%	1%
29c	Medtronic	152		86%	12%	0%	1%
29d	Omnipod	145		25%	74%	0%	1%
29e	Other (please enter details in comments box)	136		9%	68%	0%	21%
30	Are you <b>restricted</b> to using any of the following brands of insulin pumps? (Select all that apply)						
30a	Animas	157		7%	90%	1%	3%
30b	Roche	158		10%	89%	1%	0%
30c	Medtronic	156		10%	88%	0%	1%
30d	Omnipod	156		12%	78%	7%	3%
30e	Other (please enter details in comments box)	150		3%	71%	4%	17%
	<b>HEALTH CARE PROFESSIONAL EDUCATION</b>						
31	Enter the number of paediatric consultants who deliver CSII services who have attended a formal CSII training course ( <b>Please note: this should be <math>\leq</math> Q9</b> )	159	1				

32	Enter the number of paediatric DSNs who deliver CSII services who have attended a formal CSII training course ( <b>Please note: this should be ≤ Q12</b> )	159	1				
33	Enter the number of dietitians who deliver CSII services to paediatric patients who have attended a formal CSII training course ( <b>Please note: this should be ≤ Q15</b> )	158	1				
34	Enter the number of dietitians who deliver CSII services to paediatric patients who have been trained in carbohydrate counting ( <b>Please note: this should be ≤ Q15</b> )	158	1				
	<b>PATIENT EDUCATION</b>						
35	Does your service run or have access to a structured education programme for paediatric type 1 diabetes?	159		75%	25%	0%	1%
36	Does your service run or have access to a structured education programme for paediatric type 2 diabetes?	159		11%	82%	0%	7%
37	Does your service run or have access to a paediatric CSII structured education course?	158		51%	49%	0%	0%
38	Are paediatric patients taught how to use their CSII on a one-to-one basis ?	160		93%	7%	0%	0%
39	Are paediatric patients taught how to use their CSII in group sessions?	160		67%	33%	0%	0%
40	Which of the following members of staff train paediatric patients on how to use their CSII? (Select all that apply)						
40a	Consultant	158		41%	58%	0%	1%
40b	DSN	160		98%	1%	0%	1%
40c	Dietitian	158		46%	53%	1%	1%
40d	Pump company representative	159		87%	13%	0%	1%
40e	Other (please enter details in comments box)	144		9%	57%	0%	29%
	<b>INPATIENTS</b>						
41	Is there a written policy/guideline for the management of paediatric patients with diabetes on CSII who are admitted to hospital?	158		56%	42%	1%	1%
42	Is there a written policy/guideline for the management of paediatric patients with diabetes on CSII who are undergoing surgery?	159		56%	42%	1%	1%

43	Is there provision for paediatric patients with diabetes continuing and self-managing CSII (when clinically appropriate) who are admitted to hospital?	159		86%	11%	3%	1%
	<b>MULTIPLE INJECTIONS</b>	<b>No. of Sites</b>	<b>UK Average</b>	<b>% Yes</b>	<b>% No</b>	<b>% Don't Know</b>	<b>% N/A</b>
44	Do you ensure that paediatric patients started on CSII before age of 12 have a trial on multiple injections between ages of 12 and 18?	159		31%	55%	3%	11%
	<b>cGMS</b>						
45	Does your paediatric diabetes service use cGMS? <b>(If you answer 'no', do not answer the rest of this section)</b>	160		76%	24%	0%	0%
46	Enter the year (eg 2010) that your paediatric diabetes service started cGMS	120	2007				
47	How many paediatric patients has your service started on cGMS in the past 12 months? <b>(Please note: this should be ≤ Q2)</b>	120	9				
48	Is funding for <b>diagnostic</b> cGMS automatically approved by your main commissioning organisation for any paediatric diabetes patient referred? (If you do not have a 'main' commissioner please explain your situation in the comments box below)	135		21%	52%	5%	21%
49	Do you have to make an individual application for funding for each paediatric patient referred for diagnostic cGMS?	136		23%	49%	4%	25%
50	Does your main commissioning organisation have a fixed quota for paediatric diagnostic cGMS starts per annum?	136		2%	47%	25%	26%
51	Has funding for diagnostic cGMS (in paediatric patients in whom it is clinically appropriate) ever been declined?	136		4%	51%	4%	41%
52	If you answered 'yes' to Q51, how many of these patients were refused funding in the past 12 months?	71	2				
53	Is funding for <b>therapeutic</b> cGMS automatically approved by your main commissioning organisation for any paediatric diabetes patient referred? (If you do not have a 'main' commissioner please explain your situation in the comments box below)	135		13%	47%	15%	26%

54	Do you have to make an individual application for funding for each paediatric patient referred for therapeutic cGMS?	137		46%	17%	8%	29%
55	Does your main commissioning organisation have a fixed quota for paediatric therapeutic cGMS starts per annum?	135		1%	35%	39%	24%
56	Has funding for therapeutic cGMS (in paediatric patients in whom it is clinically appropriate) ever been declined?	136		16%	42%	7%	35%
57	If you answered 'yes' to Q56, how many of these patients were refused funding in the past 12 months?	72	2				
58	Which of the following brands of cGMS do you use? (Select all that apply)						
58a	Dexcom Seven Plus CGM	131		9%	82%	1%	8%
58b	Freestyle Navigator	132		20%	71%	1%	8%
58c	Medtronic CGM System	135		86%	5%	1%	8%
58d	Other (please enter details in comments box)	124		7%	67%	1%	23%
59	Are you <b>restricted</b> to using any of the following brands of cGMS? (Select all that apply)						
59a	Dexcom Seven Plus CGM	134		4%	66%	12%	17%
59b	Freestyle Navigator	133		5%	69%	10%	17%
59c	Medtronic CGM System	134		17%	65%	7%	11%
59d	Other (please enter details in comments box)	129		5%	63%	9%	22%
60	Is cGMS used as standard in every paediatric diabetes patient who is considered for CSII?	138		14%	77%	1%	7%