



Trends in Children's Surgery 1994-2005: Evidence From Hospital Episode Statistics Data

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Executive summary

The 1989 Report of the National Confidential Enquiry into Perioperative Deaths recommended that surgeons and anaesthetists should not undertake occasional paediatric practice and that consultants who take the responsibility for the care of children (particularly in district general hospitals and in single surgical specialty hospitals) must keep up to date and competent in the management of children. Acceptance of these recommendations led to a perceived movement of children's surgery from district general hospitals (DGHs) to paediatric surgical centres.

This paper provides an analysis of data on trends in children's surgery in English NHS hospital Trusts, over the period 1994-95 to 2004-05. Hospital Episode Statistics (HES) data has been used to examine trends in children's surgical activity for DGHs and Specialist Paediatric Centres. An initial report was presented to the Royal College of Surgeons Children's Surgical Forum in November 2005. This report includes some minor amendments to the Trust allocation groups and additional analysis of trends by consultant specialty. Information on some procedures showing an overall increase in finished consultant episodes (FCEs) has also been added, along with information on trends in Moorfields Eye Hospital and Orthopaedic centres.

Data was extracted for all FCEs 1994-05 to 2004-05 in England in which an operation was performed in a patient aged under 18 years. In consultation with the RCS Children's Surgical Forum, Trusts were allocated to the DGH or Specialist Centre groups. Twelve marker conditions were examined in more detail. Coding issues were resolved in pilot data extraction runs. Linear regression models were used where appropriate; regression gradients are a measure of the average year-on-year trend.

The total number of FCEs remained approximately constant (median 542,330, range 534,775 – 576,835). The number of FCEs performed in DGHs fell linearly by approximately 9,700 per year, whilst the number in Specialist Centres rose linearly by approximately 7,000 per year.

$$\text{DGH FCEs} = - 9,699 \times (\text{Year from 1994-95}) + 416,767$$

$$\text{Specialist Centre FCEs} = 7,068 \times (\text{Year from 1994-95}) + 136,744$$

These trends were seen in all age groups but were most marked in 0-4 year olds, the difference in regression coefficients between DGH and Centres being: 0-4 yrs 6,002; 5-10 yrs 5,832; 11-17 yrs 4,933.

Average year-on-year reductions in FCEs for some of the marker conditions used are summarised below:

Procedure	Reduction in DGH FCEs per year	Reduction in all healthcare providers per year	Number of FCEs in 2004-05
Tonsillectomy	2,515	2,620	33,656
Grommets	1,849	1,958	24,444
Adenoidectomy	955	1,045	6,661
Circumcision for health reasons	788	846	9,899
Squint operations	447	472	6,654

The proportion of pyloromyotomies performed in Specialist Centres increased from 48% to 86%, and operations for suspected testicular torsion from 22% to 35%.

The specialty showing the largest annual average decrease in DGHs was Ear Nose & Throat (ENT), which showed a small non-linear increase in Specialist centres. Specialties showing both a linear increase in Specialist Centre FCEs and a linear decrease in DGH FCEs were: Trauma & orthopaedics, plastic surgery, ophthalmology, oncology and haematology, neurology and neurosurgery, cardiology and cardiac surgery, with the rate of shift in activity being greatest for Trauma & orthopaedics amongst these specialties. General Surgery FCEs showed a linear decrease in both DGHs and Specialist Centres.

HES data is limited by the accuracy and completeness of coding, but the magnitude and linearity of the 11 year trends makes them very unlikely to have arisen by chance.

This resource paper confirms that there has been a fall in children's surgical activity in DGHs and a rise in activity in Specialist centres. It quantitates these changes overall, and examines their components with respect to marker procedures and consultant specialty.

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1 Context

- 1.1 The 1989 Report of the National Confidential Enquiry into Perioperative Deaths [1] recommended that surgeons and anaesthetists should not undertake occasional paediatric practice and that consultants who take the responsibility for the care of children (particularly in district general hospitals and in single surgical specialty hospitals) must keep up to date and competent in the management of children. Acceptance of these recommendations led to a perceived movement of children's surgery from district general hospitals (DGHs) to paediatric surgical centres.
- 1.2 An analysis of trends in children's surgery in DGHs and Specialist Centres is presented in this paper (related publications are listed in Appendix 1, [2]-[7]).

2 Data Collection

- 2.1 Data used in this analysis has been extracted from the Information Centre for Health and Social Care Hospital Episode Statistics (HES) database and is based on counting finished consultant episodes (FCEs) for episodes with any surgical procedure and FCEs for a group of operations, listed in Appendix 2.
- 2.2 The analysis is based on hospital episodes for day cases and ordinary admissions and excludes regular attenders.
- 2.3 For the purpose of the analysis in this paper, patients have been classified as children if their age at the start of the FCE was 17 years or under.
- 2.4 See Appendix 3 for notes on the definitions of FCEs, main operation, primary diagnosis and specialty in HES.

3 Methodology

- 3.1 Data was extracted from HES for the eleven-year period 1994-95 to 2004-05. To identify those in whom a surgical operation had been performed, FCEs were sought in whom there was a procedure recorded in the OPCS4 range A01-X59 [8].
- 3.2 Operations were chosen as marker procedures with the expectation that these would fall into one of three groups
- Procedures that should not show a temporal shift from DGHs to Specialist Centres (pyloromyotomy, reduction of intussusception, and surgery for testicular torsion)
 - Procedures that may show a temporal shift (herniotomy, appendicectomy, grommets, squint, fracture)
 - Procedures that are expected to show an overall fall in numbers because of changed practice (circumcision, orchidopexy, tonsillectomy and adenoidectomy).

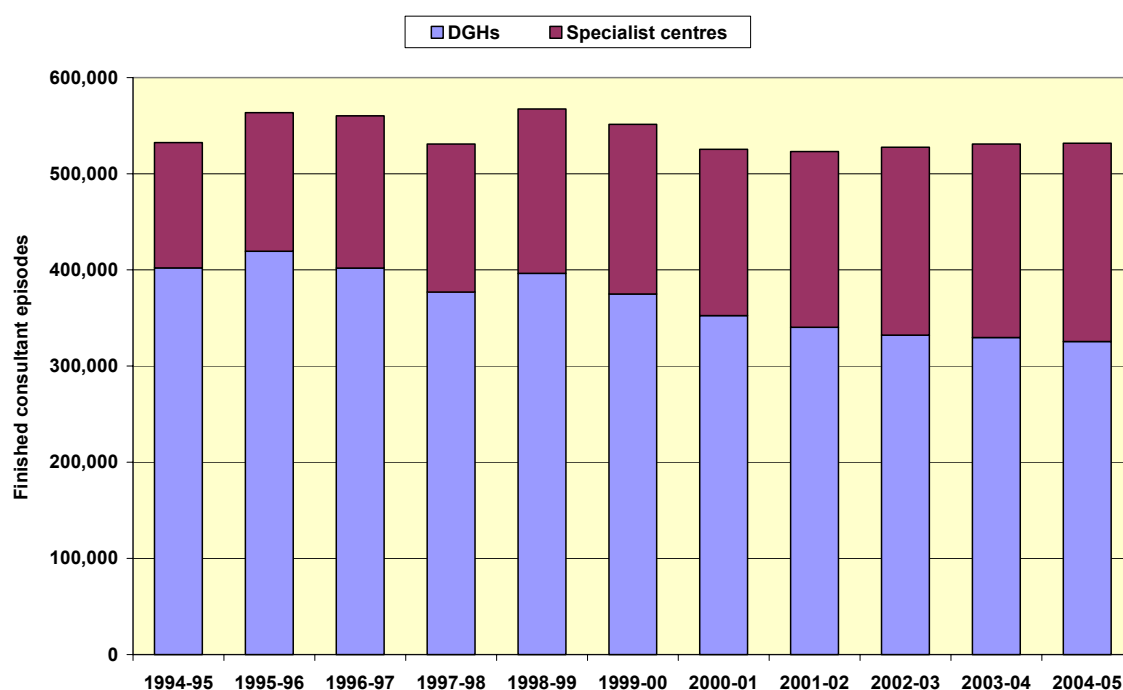
Coding issues were resolved in pilot data extraction runs. In order to ensure that all relevant episodes were counted it was necessary for some procedures to use a combination of both procedure codes and primary diagnosis codes (e.g. for Reduction of intussusception, Surgery for testicular torsion, circumcision - for health/non-health reasons) See Appendix 2 for clinical coding details.

- 3.3 Having found that FCEs for most marker procedures declined in the study period, HES data was re-examined to determine procedures which had substantially increased in numbers.
- 3.4 Trusts were assigned to either the DGH or the Specialist group, using categories from the Healthcare Commission Young Patients Survey 2004 as a starting point [9]. In discussion with the Royal College of Surgeons Children's Surgical Forum, some DGHs were recognised to have a specialist paediatric surgical unit and re-allocated. Some Healthcare providers were omitted from the analysis when comparing shifts between DGHs and Specialist Centres, as they do not fall in either category (e.g. most PCTs and all independent providers). A complete list of the Trusts used for the marker operations analysis in Section 6, and the groups to which they were allocated, is given in Appendix 4.
- 3.5 Where Pearson's correlation coefficient measuring linear correlation between the number of years from 1994-95 and the number of FCEs is significantly different from zero, a linear regression model has been used to describe the trend and a straight line of best fit has been used in graphs. Where the correlation coefficient is not significantly different from zero there is insufficient evidence of a linear trend and a non-linear trend line has been used in graphs

4 Trend for all operations

- 4.1 In 2004-05 there were 13.7m FCEs for patients of all ages, of which 6.8m (50%) had an operation.¹
- 4.2 In 2004-05 there were 1.9m FCEs for children, of which 543,000 (28%) had an operation. 325,000 FCEs for children with an operation were carried out in DGHs and 206,000 in Specialist Centres².
- 4.3 The overall number of FCEs for children with an operation has changed relatively little throughout the 11-year period, whilst trends for the marker operations showed a fall in numbers (see sections 5 and 7 below). The overall number of FCEs for children with an operation ranged from 534,775 to 576,835, with a mean of 551,124.³

Figure 1: Finished consultant episodes for children with an operation, 1994-95 to 2004-05



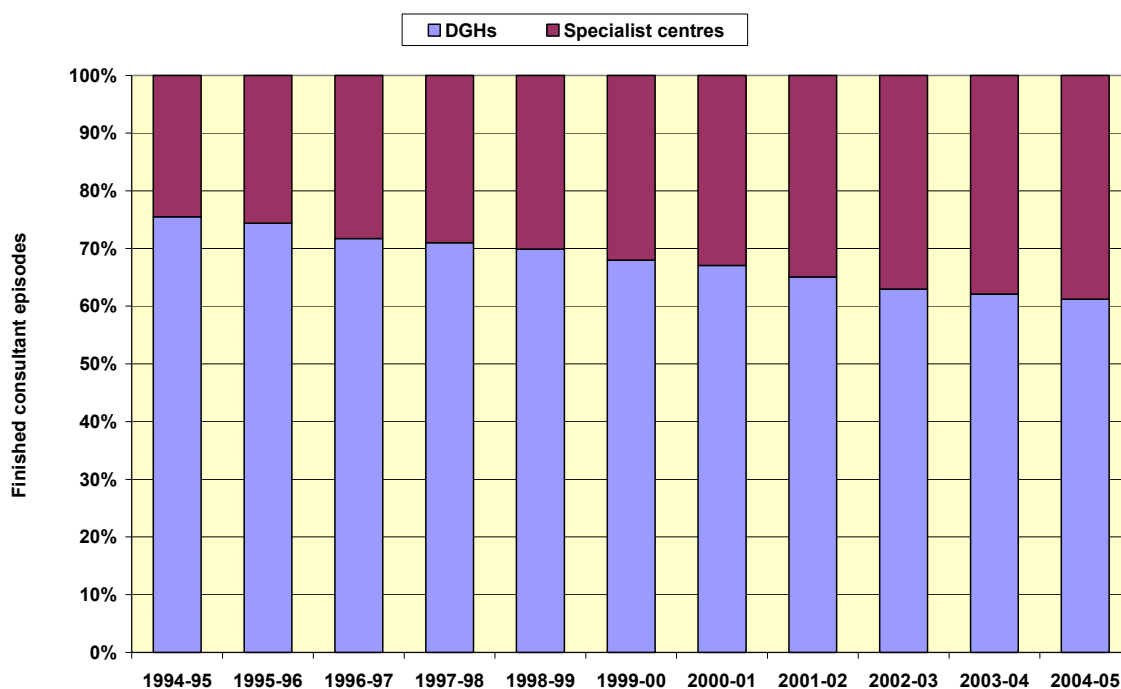
- 4.4 The proportion of FCEs for children with an operation carried out in Specialist Centres has increased from 24% in 1994-95 to 39% in 2004-05 (see Figure 2).

¹ These are FCEs with a main operation OPCS4 code in the range A01 – X59 i.e. a known surgical procedure. On average, around 0.1% of FCEs have an unknown operation.

² In 2004-5, 11,600 FCEs with an operation were carried out in Trusts omitted from the analysis.

³ These figures include the FCEs for trusts omitted from the DGH/Specialist centre analysis.

Figure 2: Proportion of finished consultant episodes with an operation carried out in Specialist Centres and in District General Hospitals, 1994-95 to 2004-05



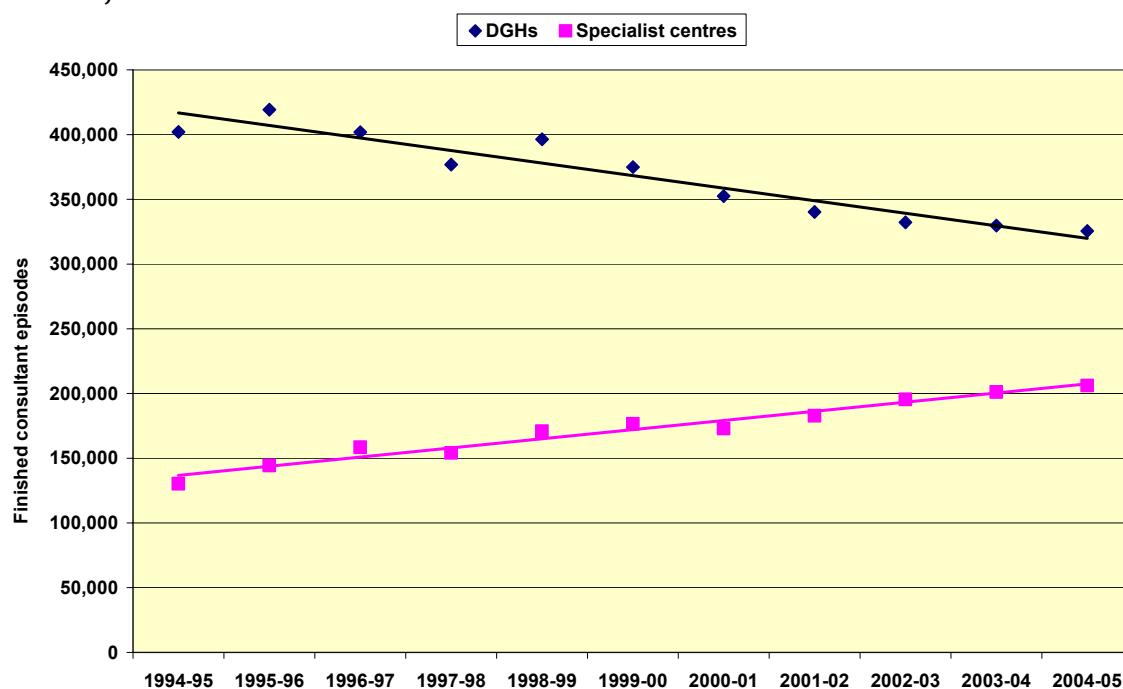
- 4.5 Fitting linear regression models to the data for all children with known operations, for DGHs and Specialist Centres produces the following results:

$$\text{DGH FCEs} = -9,699 \times (\text{Year from 1994-95}) + 416,767$$

$$\text{Specialist Centres FCEs} = 7,068 \times (\text{Year from 1994-95}) + 136,744$$

This means that on average, the number of FCEs with operations carried out on children in DGHs has **decreased** by approximately 9,700 each year over the 11-year period, whilst there has been an **increase** of approximately 7,000 FCEs per year in Specialist Centres. These trends with the linear regression line of best fit are illustrated in Figure 3.

Figure 3: Trend in FCEs with an operation for children in DGHs and Specialist Centres, 1994-95 to 2004-05



4.6 In order to find out whether the DGH to Specialist Centres trend is more marked amongst younger children, linear regression models were fitted for the age groups 0-4, 5-10 and 11-17 years. The resulting correlation coefficients and linear regression coefficients are given in Table 1, and Figure 4 shows the trend lines.

4.7 All age groups show the same trend to treat more children in Specialist Centres and fewer in DGHs, but the trend is more marked within the younger age group, 0-4 years. Using the difference between the regression coefficients as a measure of the rate of convergence of the numbers of episodes carried out in DGHs and Specialist Centres, the convergence rate in the 0 - 4 age group is highest, at approximately 6,000 episodes per year over the 11-year period.

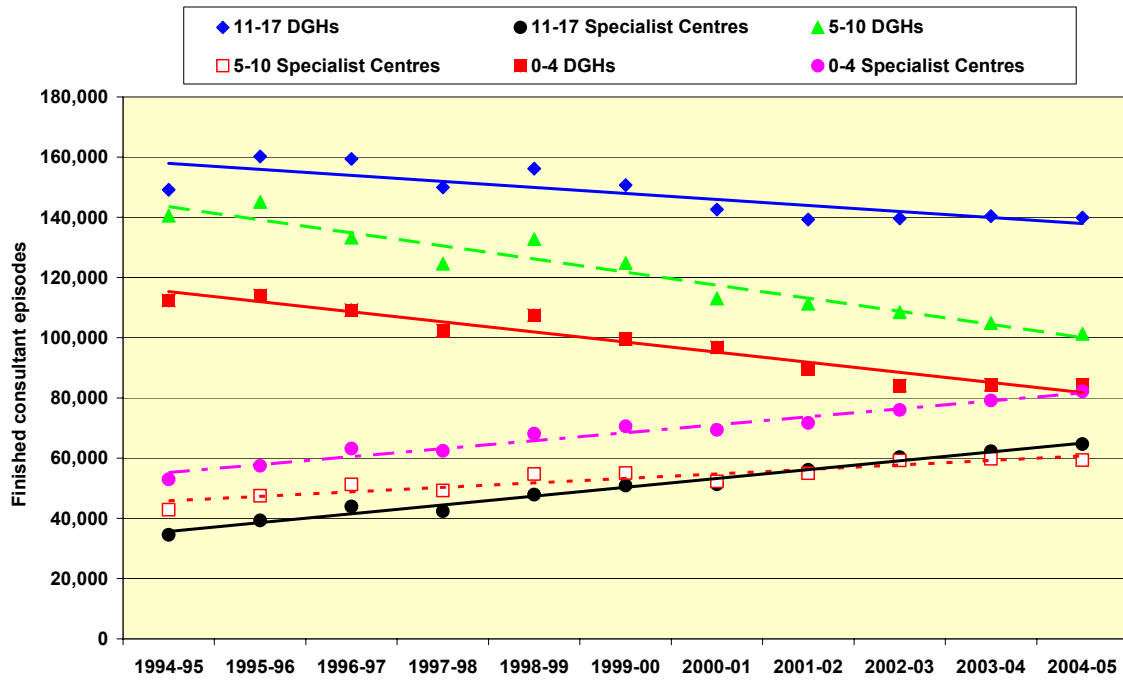
Table 1. Correlation coefficients⁴ and year-on-year changes in finished consultant episodes, measured by linear regression coefficients, by age group and Trust type

Age group	Correlation coefficients		Linear regression gradients		Rate of convergence (FCEs per year) ¹
	DGHs	Specialist Centres	DGHs	Specialist Centres	
0 - 4	-0.967	0.981	-3,358	2,645	6,002
5 - 10	-0.964	0.927	-4,340	1,491	5,832
11 - 17	-0.818	0.991	-2,001	2,932	4,933

1. This is the difference between linear regression gradients. Where there is no evidence of a linear trend, a gradient of zero has been used. Differences may not be equal to the difference between DGH and Specialist Centres gradients given in table due to rounding.

⁴ Pearson's product-moment correlation coefficient, measuring the degree of correlation between the number of years from 1994-95 and FCEs.

Figure 4: Trend in FCEs with an operation for children in DGHs and Specialist Centres, by age group, 1994-95 to 2004-05



4.8 The 95% confidence intervals for the linear regression gradients in both DGH trusts and Specialist centres for the 5-10 and 11-17 age groups do not overlap, meaning that differences between the rates of change for these two age groups are statistically significant.

5 Trends for marker operations, all Trust types⁵

- 5.1 In 2004-05 there were 150,720 FCEs for children with an operation that was one of the 12 marker operations. This represents 28% of all FCEs for children with an operation in 2004-05.
- 5.2 Since 1994-95, there has been a decrease of around 32% in the total number of FCEs for the 12 marker operations. This compares with almost no change in the total FCEs for all operations on children (see Table 2).

Table 2: Finished consultant episodes for children

	Total FCEs	FCEs with an operation	FCEs with a marker operation	% of total FCEs with an operation	% of total FCEs with a marker operation
1994-95	1,715,228	542,330	221,278	32%	13%
1995-96	1,664,819	573,952	225,509	34%	14%
1996-97	1,711,594	568,019	206,291	33%	12%
1997-98	1,880,310	540,841	186,355	29%	10%
1998-99	1,901,158	576,835	195,731	30%	10%
1999-00	1,869,898	562,328	180,106	30%	10%
2000-01	1,820,518	536,751	158,716	29%	9%
2001-02	1,848,706	534,775	157,800	29%	9%
2002-03	1,859,497	541,289	159,784	29%	9%
2003-04	1,905,985	542,283	154,922	28%	8%
2004-05	1,937,579	542,960	150,720	28%	8%

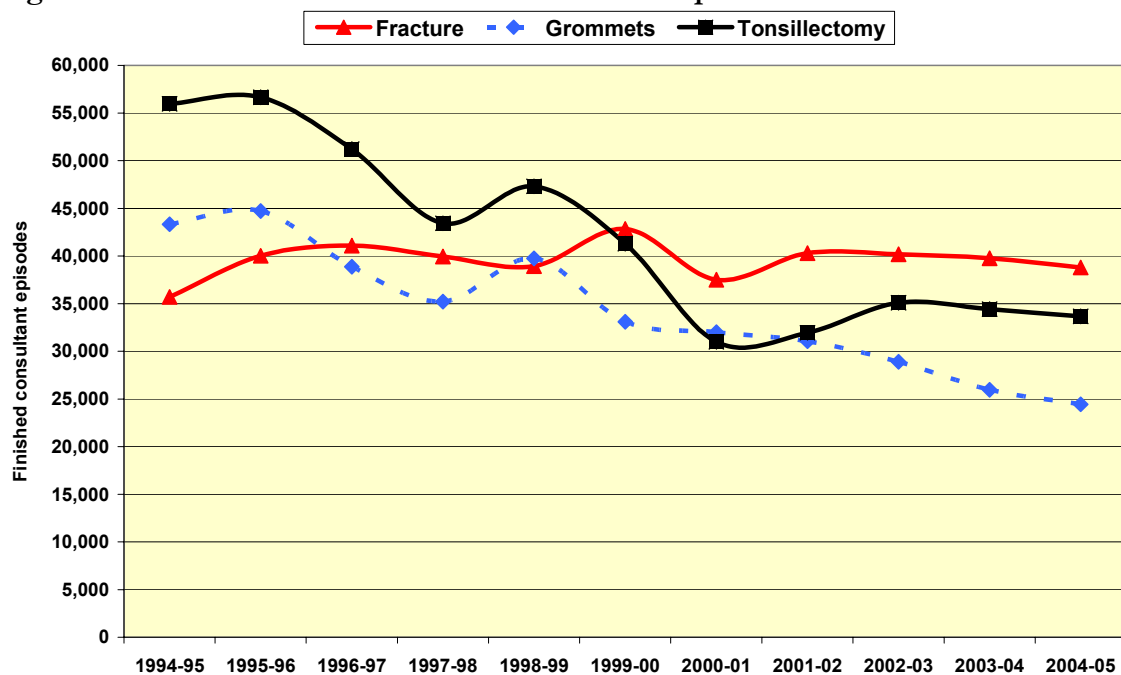
- 5.3 Total FCEs for each of the 12 markers are given in Table 3, with emergency and non-emergency appendicectomies and circumcisions for health reasons and for non-health reasons given separately.
- 5.4 Figures 5 to 7 illustrate the trends for each of the marker operations. Separate charts are used, as there is a wide variation in the overall number of FCEs for the different markers.

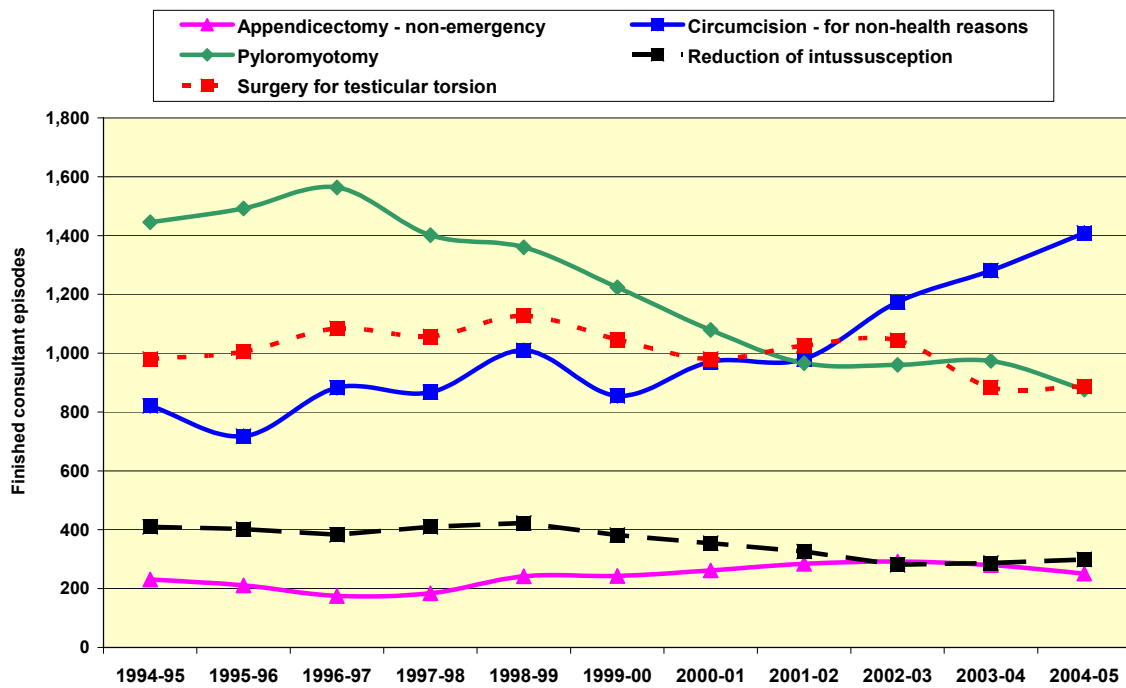
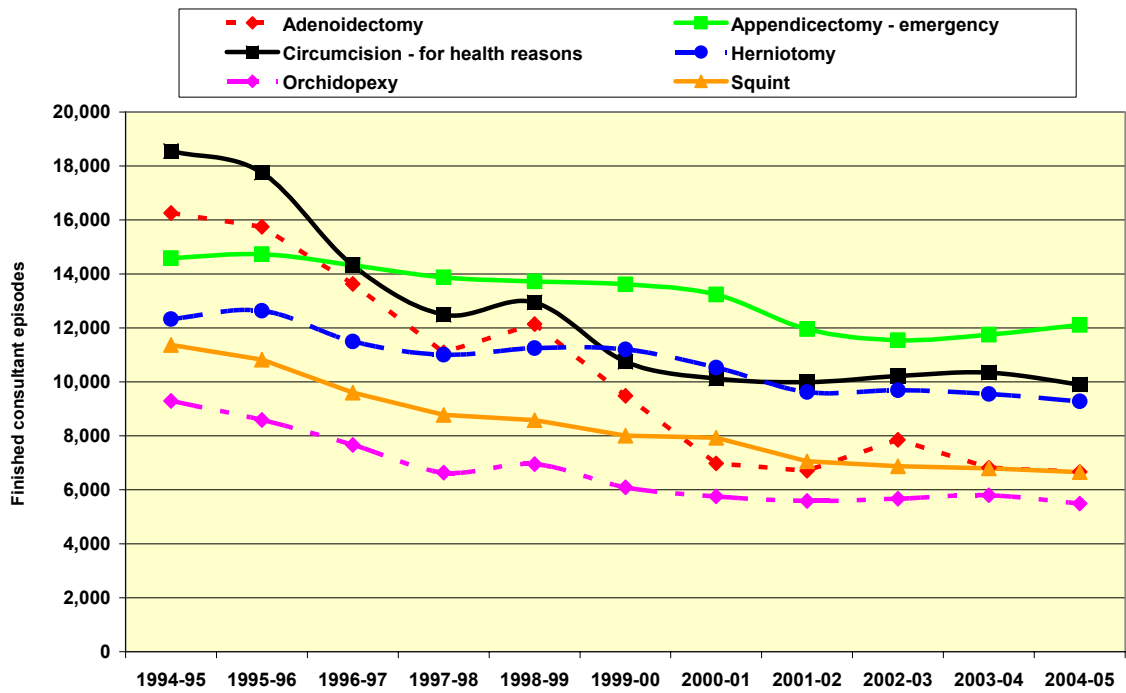
⁵ This section includes DGHs, Specialist Centres and Trusts that have been omitted from Section 6.

Table 3: Finished consultant episodes for marker operations, 1994-95 to 2004-05

Procedure	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Adenoidectomy	16,261	15,747	13,629	11,091	12,143	9,482	6,979	6,707	7,854	6,819	6,661
Appendicectomy - emergency	14,590	14,731	14,319	13,875	13,718	13,613	13,239	11,961	11,545	11,749	12,111
Appendicectomy - non-emergency	231	211	175	184	242	243	262	284	292	280	251
Circumcision - for health reasons	18,554	17,756	14,324	12,489	12,946	10,751	10,125	9,985	10,216	10,343	9,899
Circumcision - for non-health reasons	821	718	883	867	1,010	855	971	980	1,174	1,281	1,409
Fracture	35,705	40,019	41,089	39,941	38,932	42,827	37,509	40,306	40,187	39,769	38,797
Grommets	43,317	44,722	38,864	35,200	39,736	33,086	32,000	31,040	28,893	25,970	24,444
Herniotomy	12,330	12,633	11,497	11,010	11,254	11,203	10,532	9,625	9,695	9,553	9,283
Orchidopexy	9,294	8,584	7,663	6,636	6,948	6,088	5,753	5,589	5,669	5,799	5,493
Pyloromyotomy	1,445	1,492	1,563	1,401	1,360	1,224	1,079	966	960	974	876
Reduction of intussusception	410	402	383	410	423	382	354	326	281	287	299
Squint	11,371	10,828	9,601	8,777	8,583	8,009	7,933	7,055	6,876	6,800	6,654
Surgery for testicular torsion	980	1,005	1,084	1,057	1,127	1,046	980	1,026	1,044	884	887
Tonsillectomy	55,969	56,661	51,217	43,417	47,309	41,297	31,000	31,950	35,098	34,414	33,656
Total	221,278	225,509	206,291	186,355	195,731	180,106	158,716	157,800	159,784	154,922	150,720

Figures 5 to 7: trends in FCEs for selected marker operations





5.5 Linear regression models have been used where appropriate to summarise the trends for the different marker operations, and the coefficient of the 'Year from 1994-95' variable can be used as a measure of the average year-on-year trend (i.e. the gradient of the trend line). The results of this analysis are in Table 4.

Table 4: Year-on-year changes in finished consultant episodes for marker operations, for all Trust types, measured by linear regression gradients⁶, 1994-95 to 2004-05

Procedure	Year-on-year change in FCEs
Tonsillectomy	- 2,620
Grommets	- 1,958
Adenoidectomy	- 1,045
Circumcision - for health reasons	- 846
Squint	- 472
Orchidopexy	- 358
Appendicectomy - emergency	- 336
Herniotomy	- 331
Pyloromyotomy	- 72
Reduction of intussusception	- 14
Appendicectomy - non-emergency	9
Circumcision - for non-health reasons	57
Fracture	n/a
Surgery for testicular torsion	n/a

6 Trends for marker operations in DGHs and Specialist Centres⁷

- 6.1 Over the 11 year period, there was a decrease of 37% in the number of FCEs for marker operations carried out in DGHs and a 20% increase in FCEs for Specialist Centres (see Table 5).
- 6.2 In 1994-95, 14% of all marker operations were carried out in Specialist Centres. There has been a steady increase in this proportion over the 11 year period, and in 2003-04, 24% of all marker operations were carried out in Specialist Centres. The trend in movement of all marker operations between DGHs and Specialist Centres is illustrated in Figure 8.

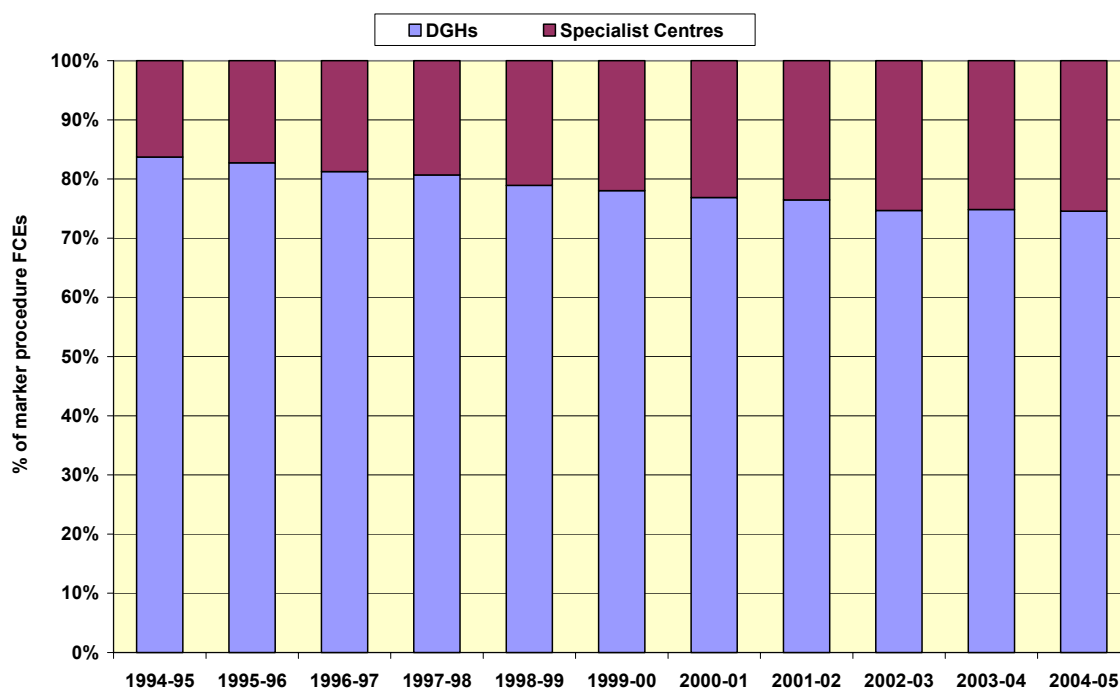
⁶ Where there is insufficient evidence of any correlation between the 'Year from 1994-95' and the number of FCEs, no linear regression model has been fitted to the data.

⁷ Some Trusts have been omitted from this analysis, as they do not fall within either of the DGH or Specialist centre groups (e.g. some PCTs and independent providers).

Table 5: Marker operation FCEs for children, by Trust type

	DGH	Specialist centre	Total	% of total in Specialist centres
1994-95	182,777	35,580	218,357	16%
1995-96	184,613	38,528	223,141	17%
1996-97	166,516	38,461	204,977	19%
1997-98	149,493	35,811	185,304	19%
1998-99	153,568	41,036	194,604	21%
1999-00	139,646	39,317	178,963	22%
2000-01	121,189	36,421	157,610	23%
2001-02	119,790	36,892	156,682	24%
2002-03	118,561	40,171	158,732	25%
2003-04	115,678	38,860	154,538	25%
2004-05	112,118	38,209	150,327	25%

Figure 8: Proportion of marker procedure FCEs for children, by Trust type



6.3 The number of FCEs for each marker operation, by Trust type is given in Table 6.

Table 6: FCEs for marker operations, by Trust type, 1994-95 to 2004-05

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Adenoidectomy											
DGHs	13,567	13,012	11,268	8,928	9,408	7,443	5,364	5,135	5,520	4,935	4,786
Specialist centres	2,484	2,574	2,293	2,118	2,693	2,017	1,580	1,556	2,302	1,880	1,870
% Specialist centres	15%	17%	17%	19%	22%	21%	23%	23%	29%	28%	28%
Appendicectomy - emergency											
DGHs	12,500	12,536	12,154	11,861	11,699	11,502	11,029	9,848	9,221	9,590	9,751
Specialist centres	2,037	2,142	2,111	1,953	1,951	2,040	2,150	2,045	2,247	2,159	2,360
% Specialist centres	14%	15%	15%	14%	14%	15%	16%	17%	20%	18%	19%
Appendicectomy - non-emergency											
DGHs	188	169	137	126	163	154	179	186	181	1,876	166
Specialist centres	42	41	36	58	79	89	83	98	111	94	85
% Specialist centres	18%	20%	21%	32%	33%	37%	32%	35%	38%	5%	34%
Circumcision - for health reasons											
DGHs	15,956	15,289	12,355	10,669	11,019	9,129	8,498	8,245	8,310	8,401	8,030
Specialist centres	2,500	2,359	1,853	1,773	1,851	1,557	1,537	1,671	1,799	1,936	1,858
% Specialist centres	14%	13%	13%	14%	14%	15%	15%	17%	18%	19%	19%
Circumcision - for non-health reasons											
DGHs	475	467	419	413	508	426	416	446	524	513	593
Specialist centres	346	251	464	454	502	429	555	534	650	768	816
% Specialist centres	42%	35%	53%	52%	50%	50%	57%	54%	55%	60%	58%
Fracture											
DGHs	30,023	33,616	34,201	33,133	31,832	34,949	30,353	32,605	32,191	32,146	31,326
Specialist centres	5,521	6,182	6,696	6,616	6,909	7,661	6,959	7,461	7,772	7,542	7,397
% Specialist centres	16%	16%	16%	17%	18%	18%	19%	19%	19%	19%	19%
Grommets											
DGHs	37,089	37,328	31,955	29,518	32,134	26,039	25,122	24,872	22,377	20,396	18,967
Specialist centres	5,598	6,721	6,651	5,501	7,389	6,834	6,716	5,974	6,372	5,557	5,449
% Specialist centres	13%	15%	17%	16%	19%	21%	21%	19%	22%	21%	22%
Herniotomy											
DGHs	7,969	7,840	6,800	6,279	6,303	6,002	5,375	4,816	4,618	4,474	4,299
Specialist centres	4,310	4,753	4,661	4,698	4,901	5,156	5,127	4,767	5,034	5,075	4,977
% Specialist centres	35%	38%	41%	43%	44%	46%	49%	50%	52%	53%	54%
Orchidopexy											
DGHs	7,046	6,335	5,403	4,444	4,698	3,966	3,509	3,241	3,093	3,144	2,851
Specialist centres	2,206	2,217	2,230	2,168	2,211	2,094	2,220	2,320	2,558	2,655	2,640
% Specialist centres	24%	26%	29%	33%	32%	35%	39%	42%	45%	46%	48%
Pyloromyotomy											
DGHs	742	684	642	504	399	292	217	152	141	121	127
Specialist centres	695	805	920	894	956	930	859	811	819	852	749
% Specialist centres	48%	54%	59%	64%	71%	76%	80%	84%	85%	88%	86%
Reduction of intussusception											
DGHs	121	131	94	74	47	47	43	43	17	26	28
Specialist centres	288	271	289	336	376	335	311	283	264	261	271
% Specialist centres	70%	67%	75%	82%	89%	88%	88%	87%	94%	91%	91%
Squint											
DGHs	9,044	8,604	7,535	6,719	6,489	5,969	5,922	4,827	4,798	4,716	4,833
Specialist centres	1,711	1,735	1,566	1,627	1,668	1,603	1,542	1,788	1,720	1,834	1,607
% Specialist centres	16%	17%	17%	19%	20%	21%	21%	27%	26%	28%	25%
Surgery for testicular torsion											
DGHs	763	824	858	825	868	795	695	722	711	584	578
Specialist centres	212	177	223	226	255	247	280	302	328	300	309
% Specialist centres	22%	18%	21%	22%	23%	24%	29%	29%	32%	34%	35%
Tonsillectomy											
DGHs	47,294	47,778	42,695	36,000	38,001	32,933	24,467	24,652	26,859	26,446	25,783
Specialist centres	7,630	8,300	8,468	7,389	9,295	8,325	6,502	7,282	8,195	7,947	7,821
% Specialist centres	14%	15%	17%	17%	20%	20%	21%	23%	23%	23%	23%

- 6.4 Where correlation coefficients measuring the association between the number of years from 1994-95 and the number of FCEs were significantly different from zero, indicating positive or negative correlation, a linear regression model was fitted to the data. Correlation coefficients for each marker operation and Trust type are given in Table 7.
- 6.5 Linear regression models have been used where appropriate to summarise trends for the different marker operations carried out within DGHs and within Specialist Centres. The coefficient of the 'Year from 1994-95' variable is again used as a measure of the average year-on-year trend. The results of this analysis are summarised in Table 7, and the trend lines are shown in Figures 9 to 22.
- 6.6 The marker procedures showing the largest year-on-year falls within DGHs were tonsillectomy, grommets and adenoidectomy. Marker operations showing the largest year-on-year increases in Specialist Centres were fracture and herniotomy.

Table 7: Correlation coefficients⁸ and year-on-year changes in finished consultant episodes, measured by linear regression gradients⁹ for marker operations, by Trust type

Procedure	Correlation coefficients		Year on year changes (linear regression gradients)		Rate of convergence (FCEs per year) ¹
	DGH	Specialist centres	DGH	Specialist centres	
Tonsillectomy	-0.923	-0.176	-2,515	n/a	2,515
Grommets	-0.973	-0.270	-1,849	n/a	1,849
Adenoidectomy	-0.952	-0.633	-955	-73	882
Circumcision - for health reasons	-0.909	-0.560	-788	n/a	788
Orchidopexy	-0.948	0.788	-402	47	450
Squint	-0.959	0.173	-447	n/a	447
Herniotomy	-0.980	0.728	-384	56	439
Appendicectomy - emergency	-0.948	0.608	-355	n/a	355
Fracture	-0.157	0.862	n/a	180	180
Pyloromyotomy	-0.966	-0.041	-70	n/a	70
Circumcision - for non-health reasons	0.562	0.925	n/a	47	47
Surgery for testicular torsion	-0.810	0.930	-25	13	38
Reduction of intussusception	-0.919	-0.305	-11	n/a	11
Appendicectomy - non-emergency	0.330	0.863	n/a	7	7

1. This is the difference between linear regression gradients. Where there is no evidence of a linear trend, a gradient of zero has been used.

- 6.7 The marker procedures showing the largest percentage point changes in the proportion of FCEs carried out in Specialist Centres over the 11-year period are pyloromyotomy, orchidopexy and reduction of intussusception (see Table 8).

⁸ Pearson's product-moment correlation coefficient, measuring the degree of correlation between the number of years from 1994-95 and FCEs.

⁹ Where there is insufficient evidence of any correlation between the 'Year from 1994-95' and the number of FCEs, no linear regression model has been fitted to the data.

Table 8: Proportion of FCEs in Specialist Centres, 1994-95 and 2004-05

Surgical procedure	1994-95	2004-05	change in %
Pyloromyotomy	48%	86%	37%
Orchidopexy	24%	48%	24%
Reduction of intussusception	70%	91%	20%
Herniotomy	35%	54%	19%
Circumcision - for non-health reasons	42%	58%	16%
Appendicectomy - non-emergency	18%	34%	16%
Surgery for testicular torsion	22%	35%	13%
Adenoidectomy	15%	28%	13%
Tonsillectomy	14%	23%	9%
Grommets	13%	22%	9%
Squint	16%	25%	9%
Appendicectomy - emergency	14%	19%	5%
Circumcision - for health reasons	14%	19%	5%
Fracture	16%	19%	4%

Note: change in % figures may not equal the difference between the figures given in the table for 1994-95 and 2004-05 due to rounding.

Figures 9 to 22: Trends in FCEs for marker operations, by trust type

Fig. 9: Adenoidectomy

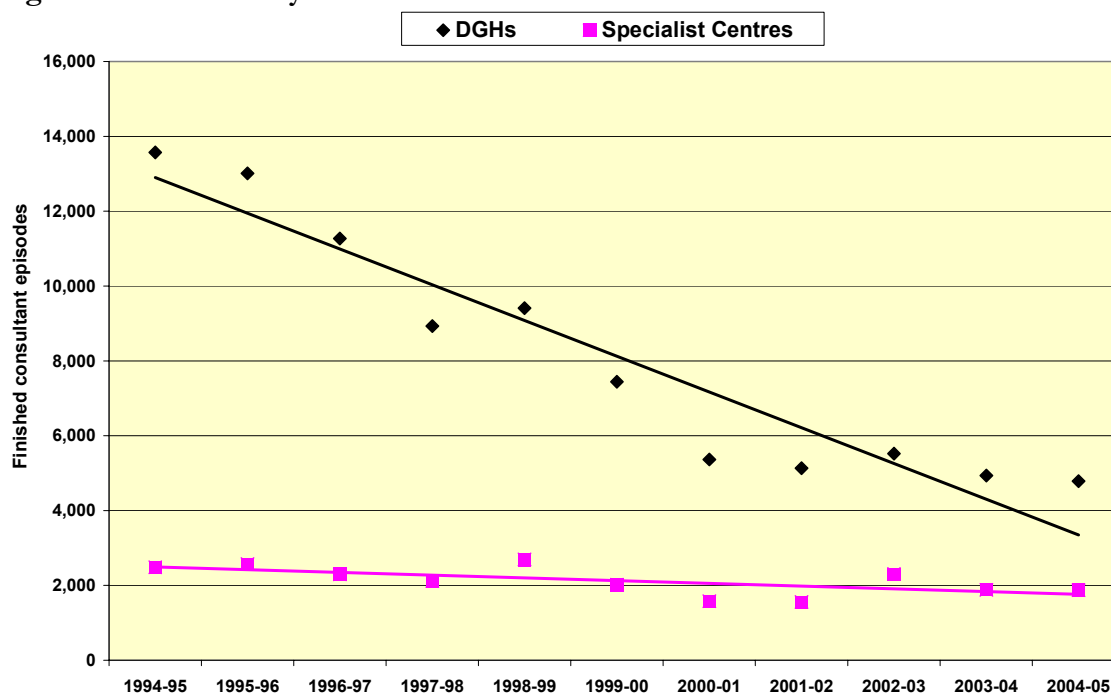


Fig. 10: Appendicectomy - emergency

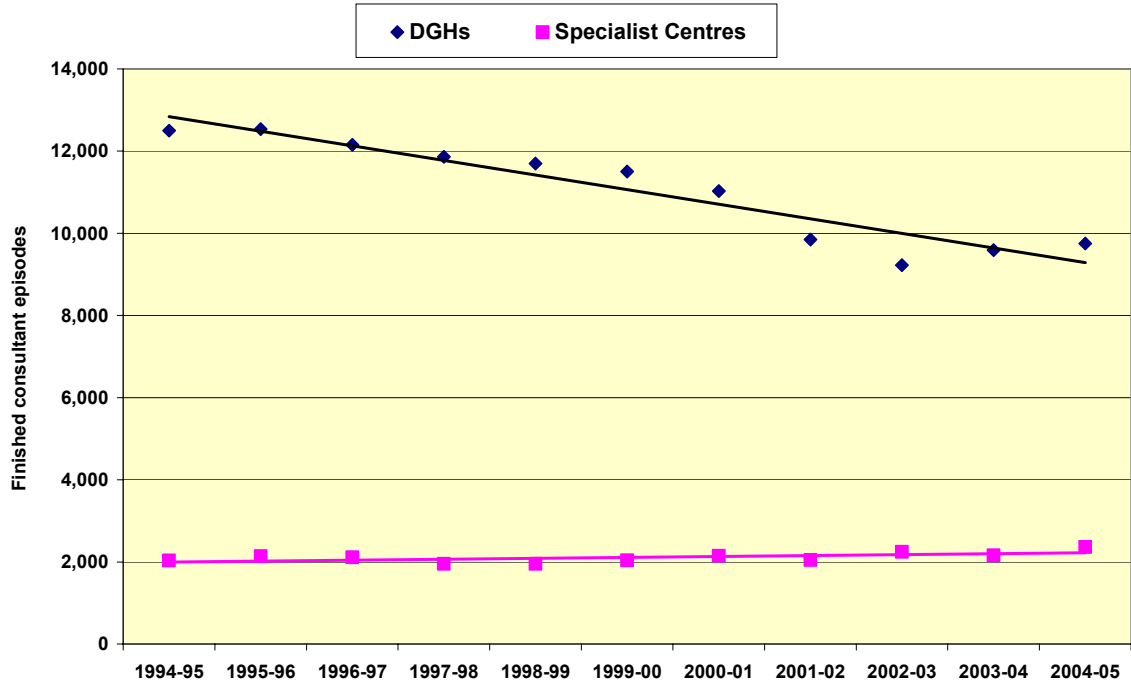


Fig. 11: Appendicectomy – non-emergency

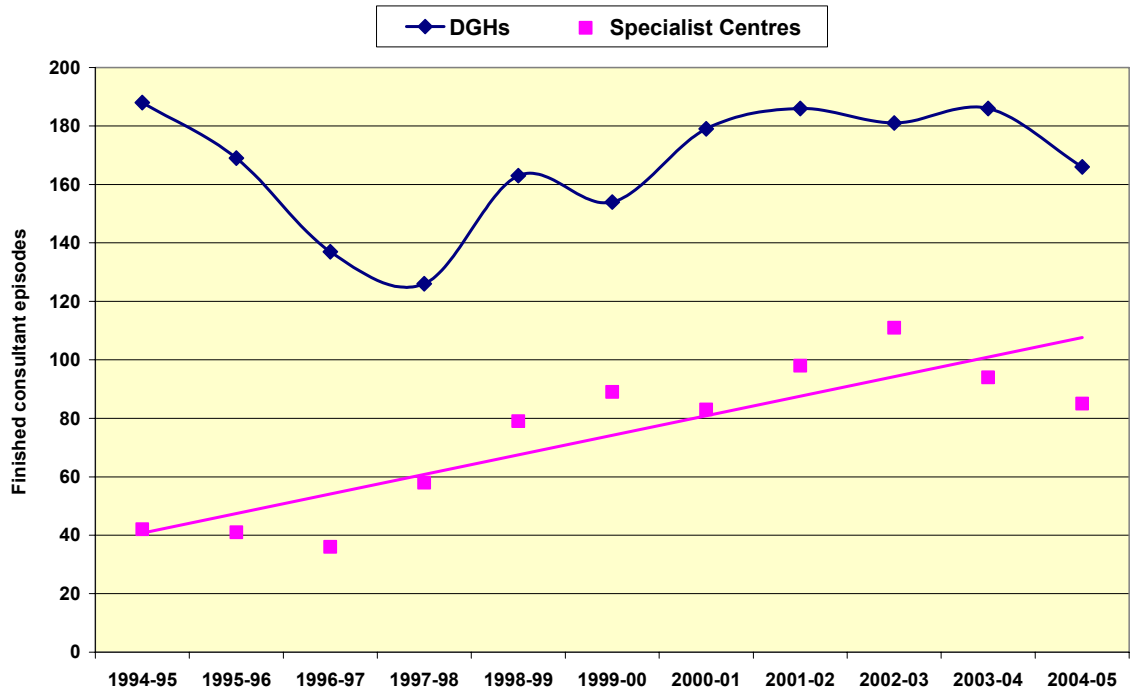


Fig. 12: Circumcision - for health reasons

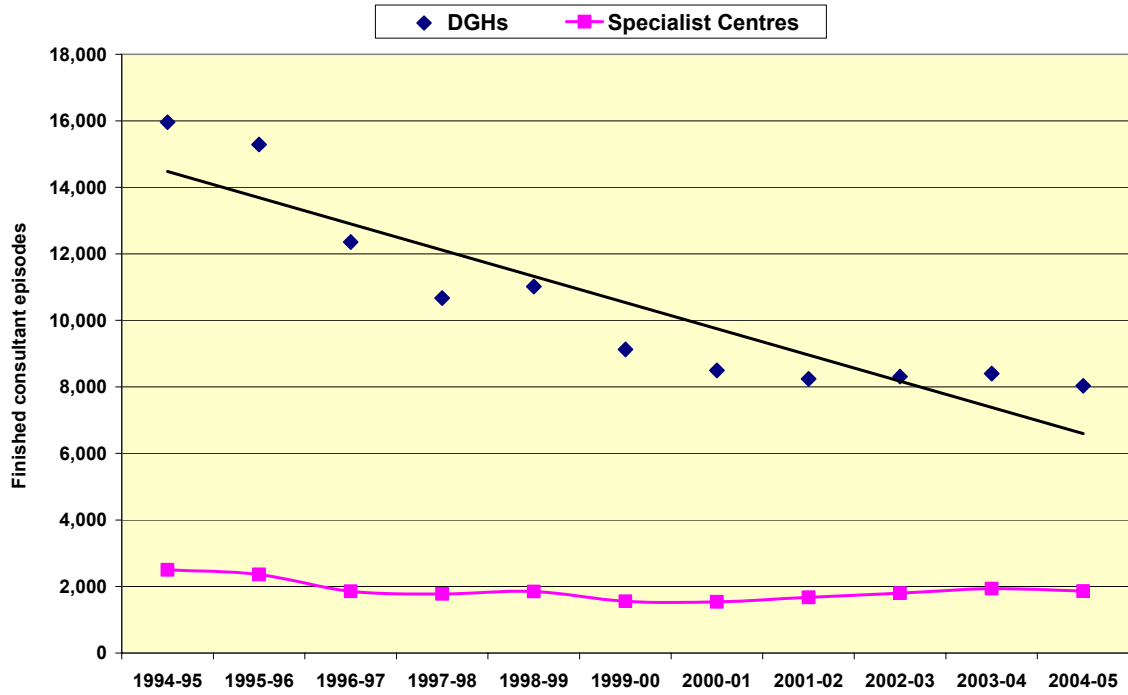


Fig. 13: Circumcision – for non-health reasons

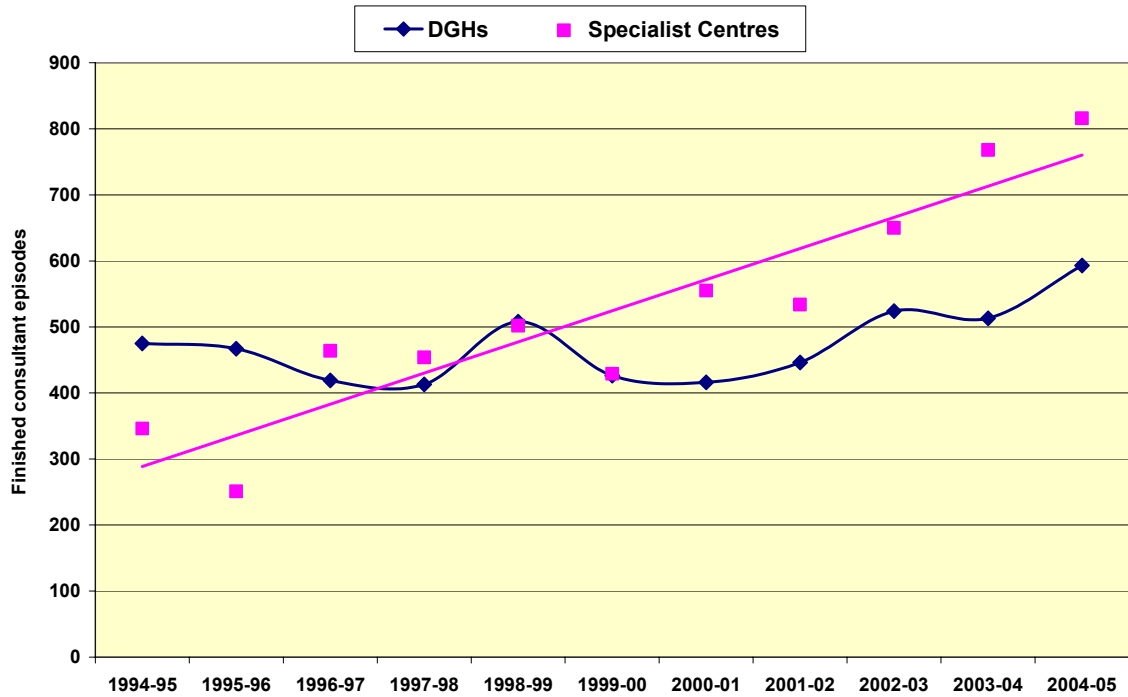


Fig. 14: Fracture

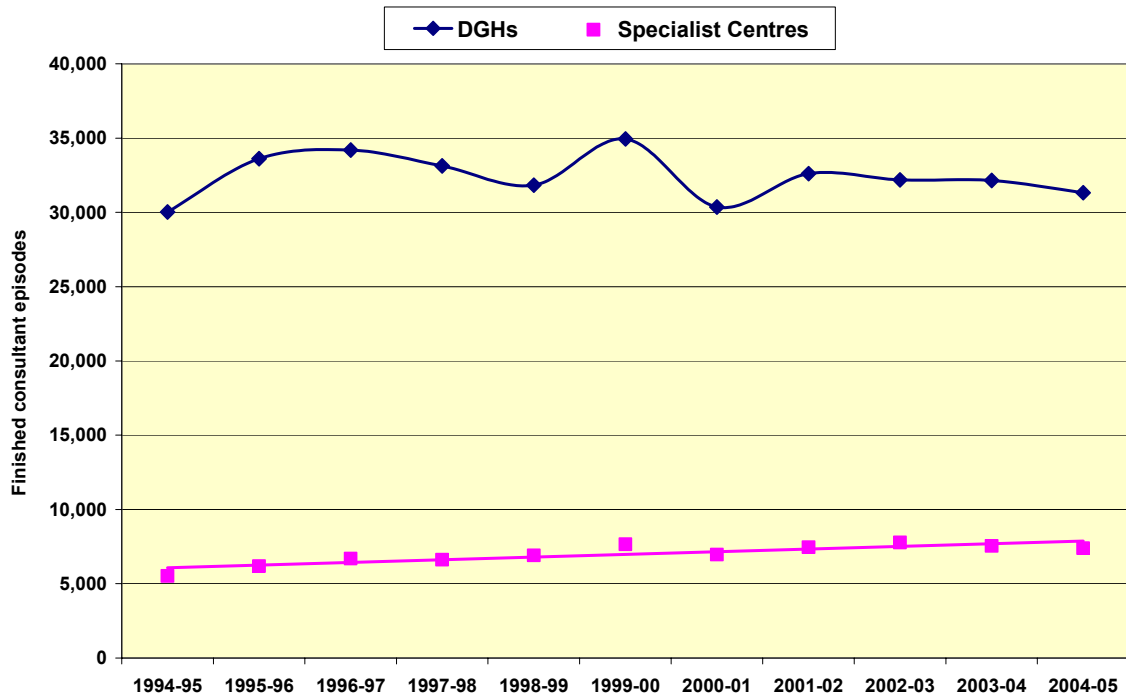


Fig. 15: Grommets

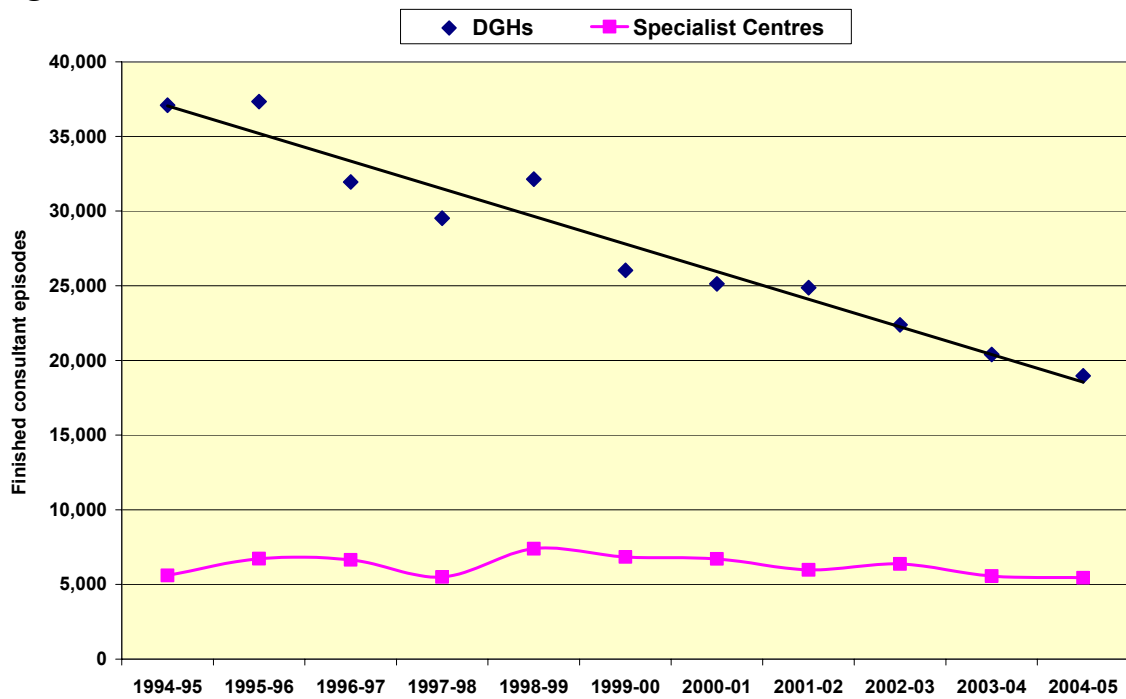


Fig. 16: Herniotomy

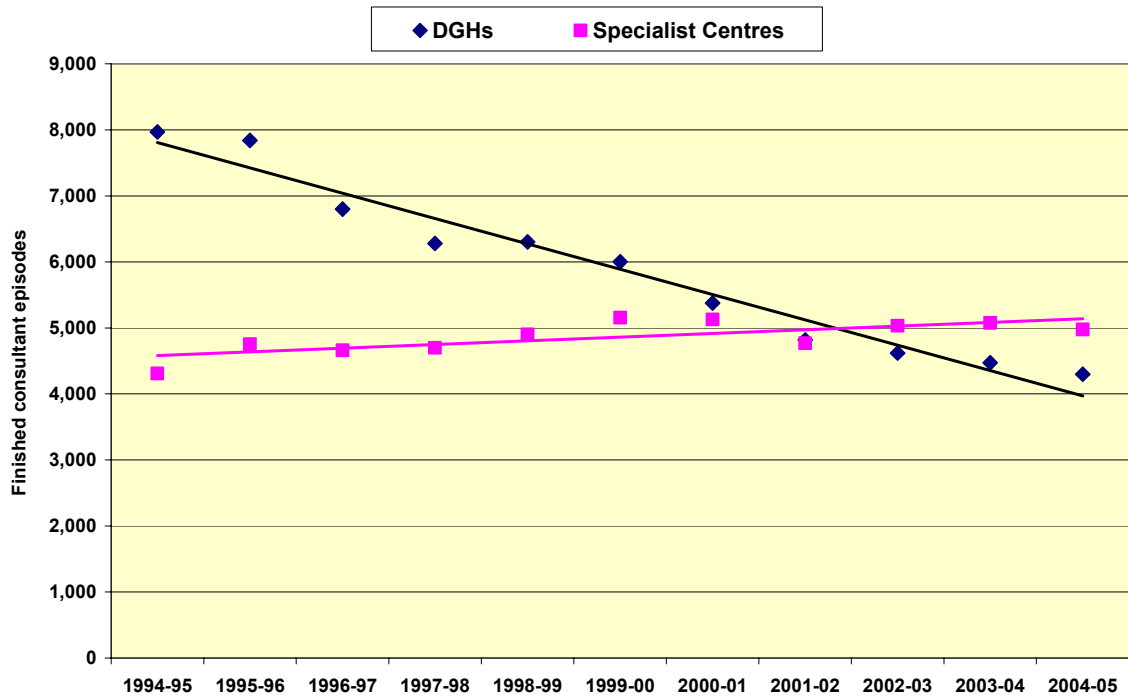


Fig. 17: Orchidopexy

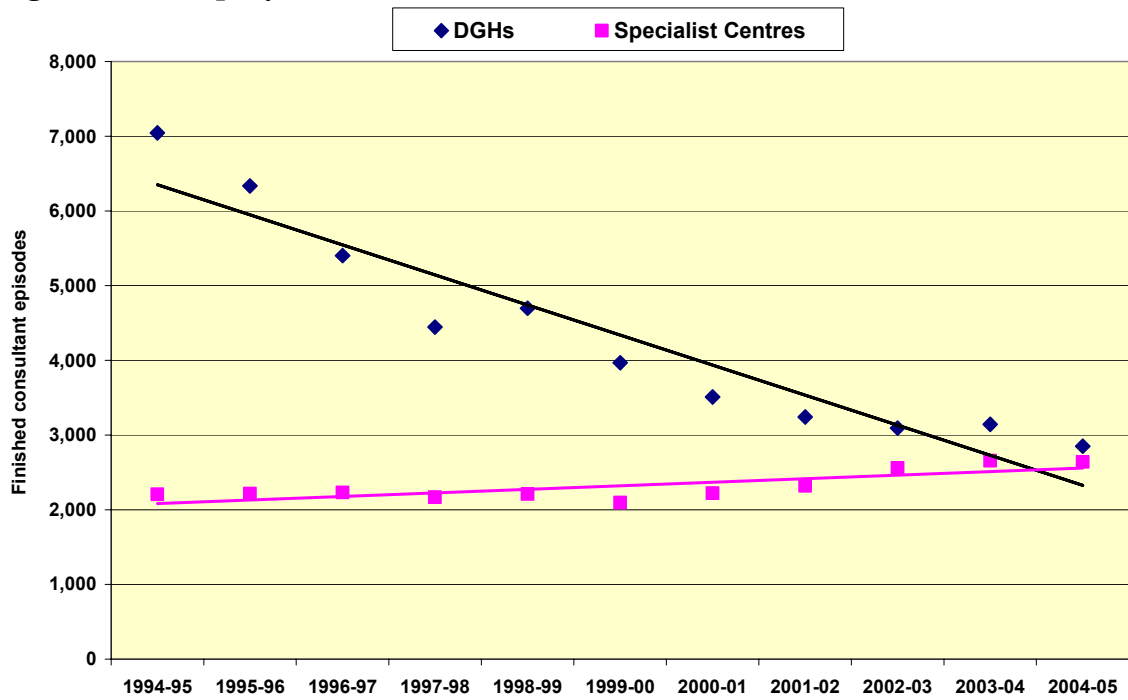


Fig. 18: Pyloromyotomy

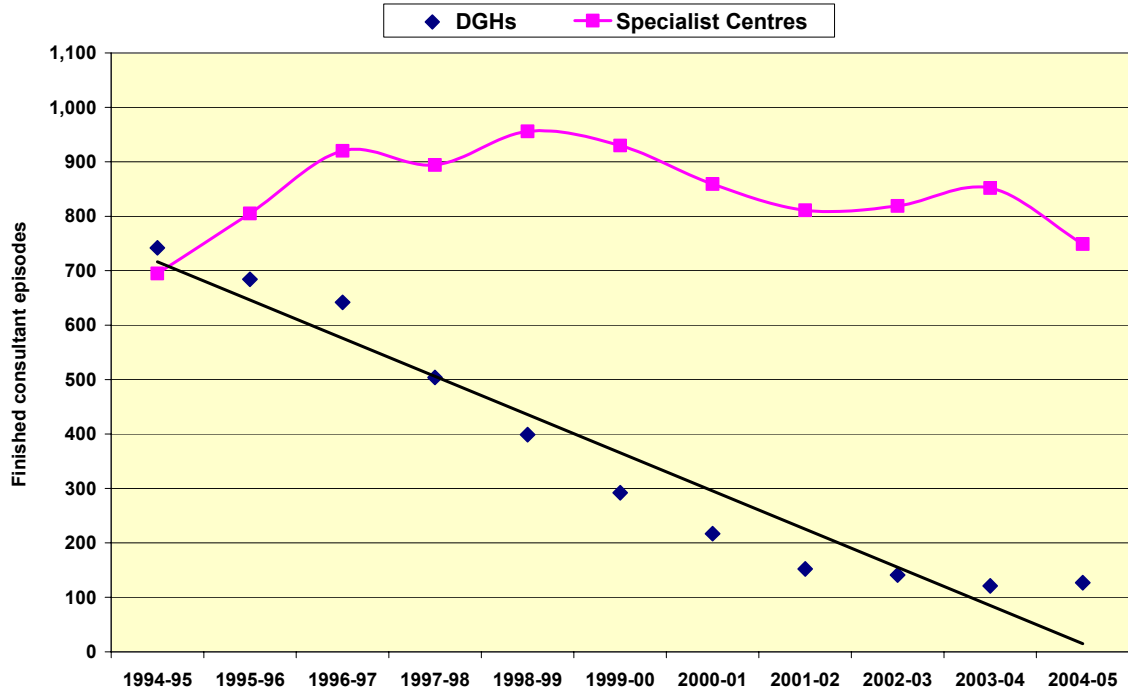


Fig. 19: Reduction of intussusception

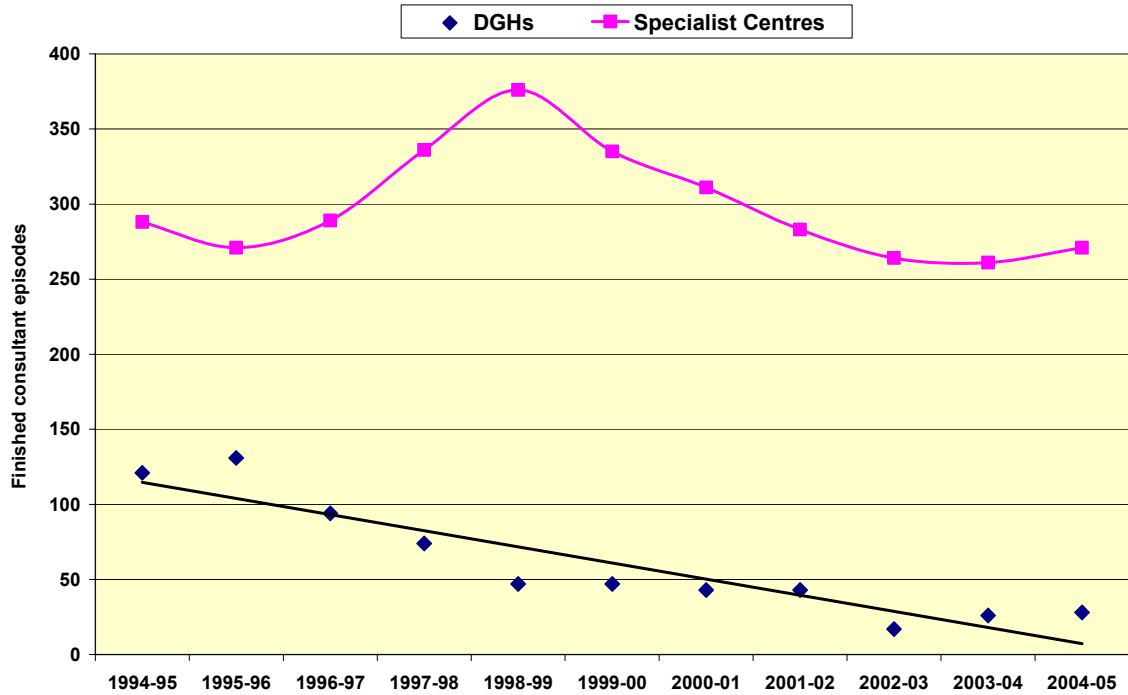


Fig. 20: Squint

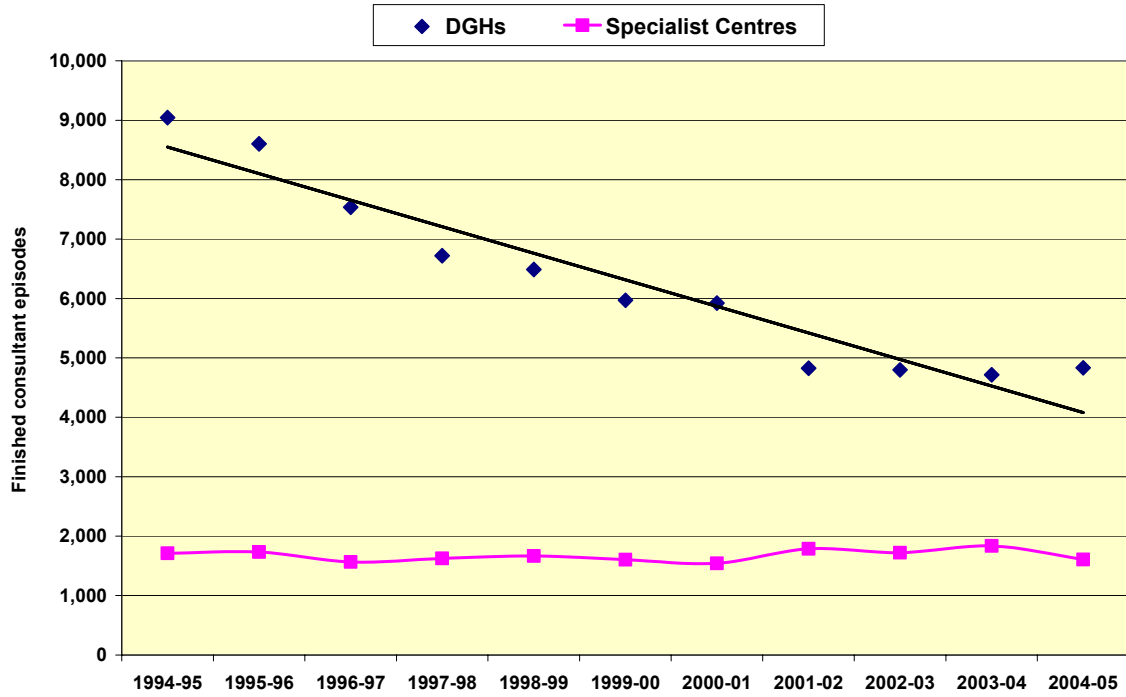


Fig. 21: Surgery for testicular torsion

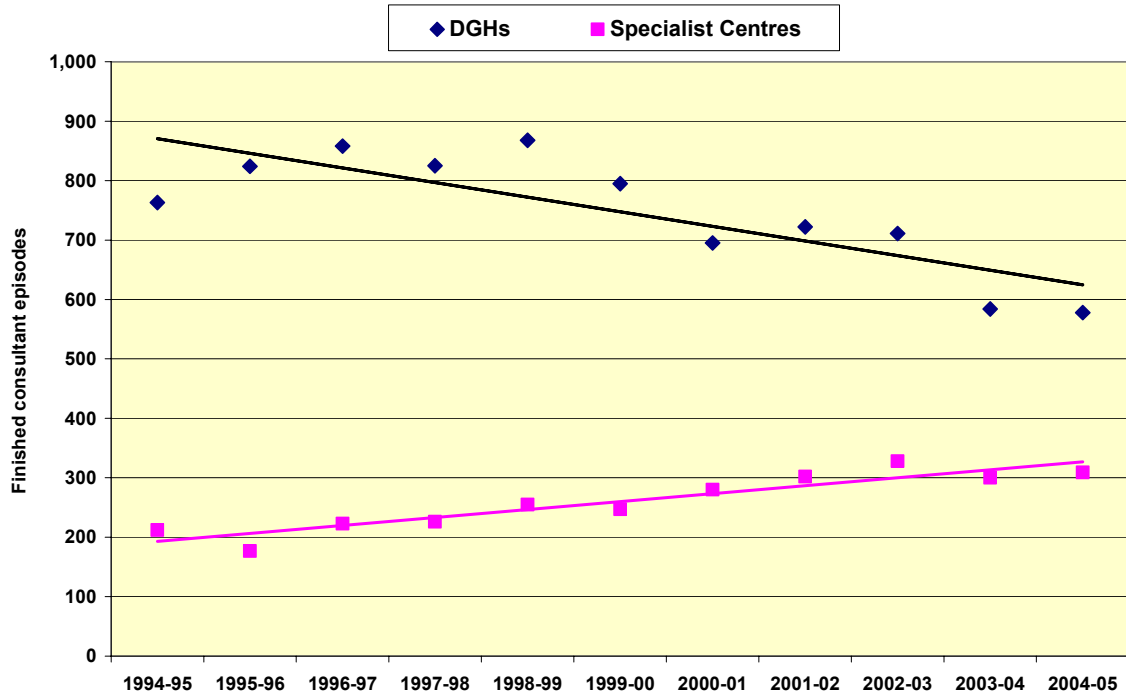
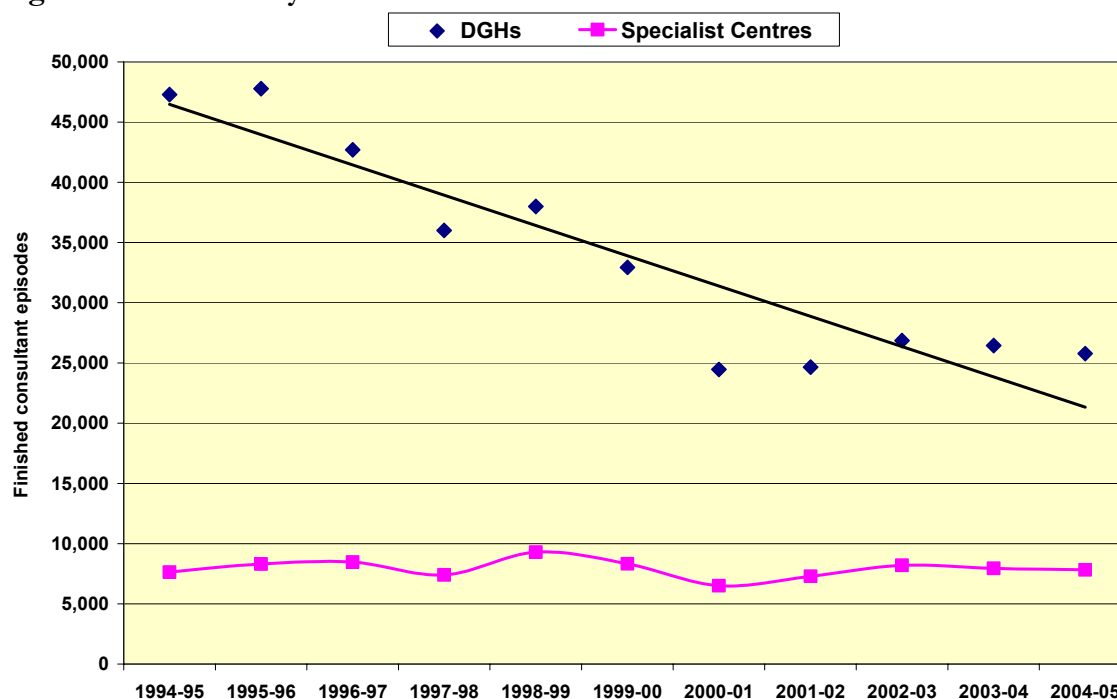


Fig. 22: Tonsillectomy



7 Selected procedure groups showing an increasing number of FCEs

A) All trust groups

7.1 Since the marker procedures all show decreasing numbers of FCEs, whilst the trend for all procedures shows relatively little change, Table 9 provides information for some procedure groups showing increasing numbers of FCEs. OPCS4 codes used for the procedures listed in Table 9 are given in Appendix 2 (b).

7.2 Between 1994-95 and 2004-05, there was an overall decrease for all marker procedures of 70,558. The selected procedure groups listed in Table 9 show an overall increase of 79,345 FCEs during the 11 year period.

7.3 The miscellaneous procedures showing the largest absolute increase in FCEs between 1994-95 and 2004-05 are listed in Table 10.

7.4 During the preparation of this paper additional data in 1999-00 for FCEs with an operation reported by Chelsea & Westminster Healthcare NHS Trust (RQM) was made available, as the result of a data quality update to the database¹⁰. This data has been included in all relevant sections of the paper apart from Section 7. The effect of excluding data for this single trust in 1999-00 is negligible.

¹⁰ HES is a live database and the Information Centre for Health and Social Care HES team regularly carry out updates to the database to improve data quality to correct data deficiencies.

Table 9: Correlation coefficients¹¹, year-on-year changes in finished consultant episodes, as measured by linear regression gradients, and FCEs for selected procedure groups

Procedure group	Correlation coefficient	Year on year changes (linear regression gradients)	FCEs 1994-95	FCEs 2004-05	change in FCEs 94-95 to 04-05	% change in FCEs 94-95 to 04-05
Miscellaneous operations	0.965	4,489	40,307	91,399	51,092	127%
Tooth and gingiva	0.896	1,195	45,395	56,857	11,462	25%
Nervous System	0.808	534	12,727	19,707	6,980	55%
Arteries and veins	0.945	297	6,211	9,188	2,977	48%
Jejunal/Duodenal/ small bowel biopsy	0.963	250	4,227	7,316	3,089	73%
Suture of skin or subcutaneous tissue	0.966	173	3,623	5,413	1,790	49%
Chest wall pleura and diaphragm	0.943	61	1,045	1,765	720	69%
Other operations on spine	0.958	57	687	1,272	585	85%
Colonoscopy	0.783	50	1,814	2,464	650	36%

Table 10: Miscellaneous procedures with the largest absolute increase in FCEs, 1994-95 to 2004-05

Miscellaneous procedure	94-95	04-05	change	% change
X35 Other intravenous injection	6,495	19,137	12,642	195%
X29 Continuous infusion of therapeutic substance	7,097	15,807	8,710	123%
X59 Anaesthetic without surgery	394	7,269	6,875	1,745%
X36 Blood withdrawal	181	5,357	5,176	2,860%
X38 Subcutaneous injection	1,062	6,121	5,059	476%
X37 Intramuscular injection	351	5,395	5,044	1,437%
X33 Other blood transfusion	6,823	11,129	4,306	63%
X30 Injection of therapeutic substance	1,872	4,627	2,755	147%
X40 Compensation for renal failure	322	2,811	2,489	773%
X31 Injection of radiocontrast material	927	1,514	587	63%
X55 Other operations on unspecified organ	34	597	563	1,656%
X21 Correction of congenital deformity of hand	991	1,379	388	39%
Other miscellaneous procedures	13,758	10,256	- 3,502	-25%
All miscellaneous procedures	40,307	91,399	51,092	127%

7.5 Trend lines for procedure groups listed in Table 9 are shown in Figures 23 to 25.

¹¹ Pearson's product-moment correlation coefficient, measuring the degree of correlation between the number of years from 1994-95 and FCEs.

Figures 23 to 25: Trends in FCEs for selected procedure groups

Fig. 23

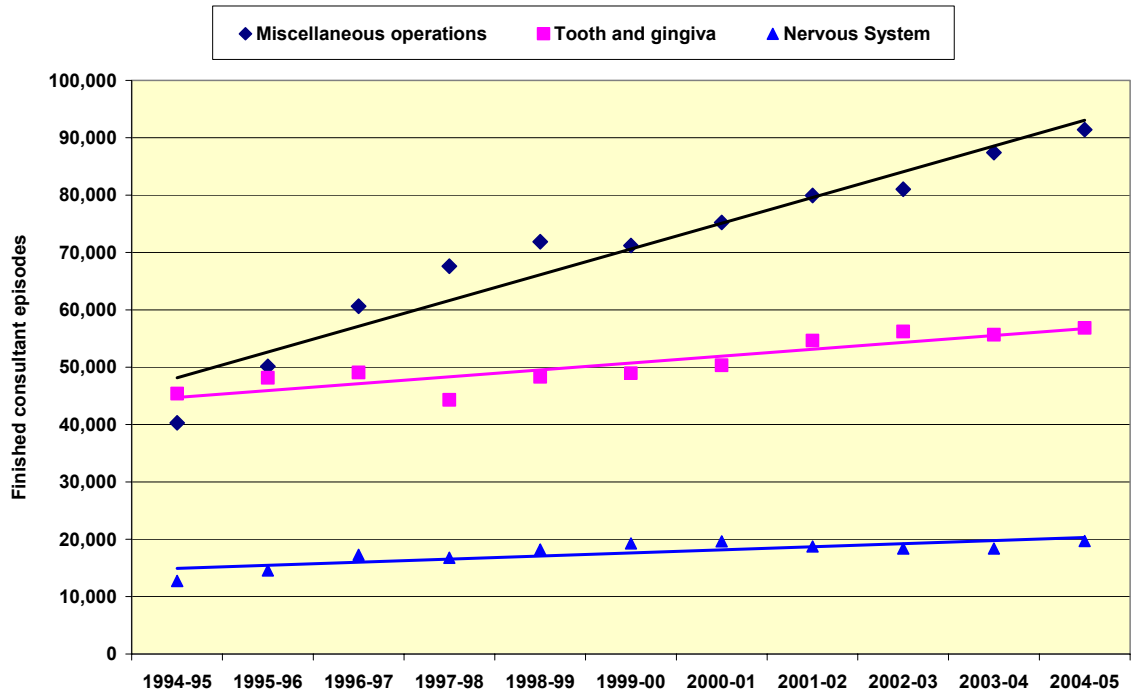


Fig. 24

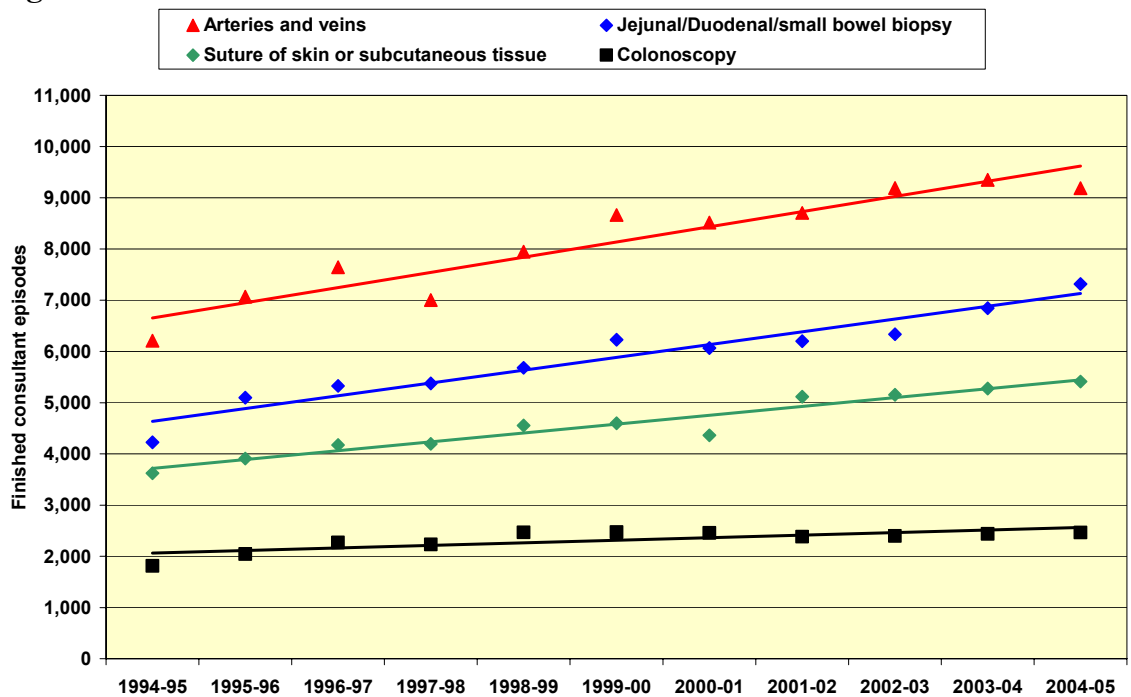
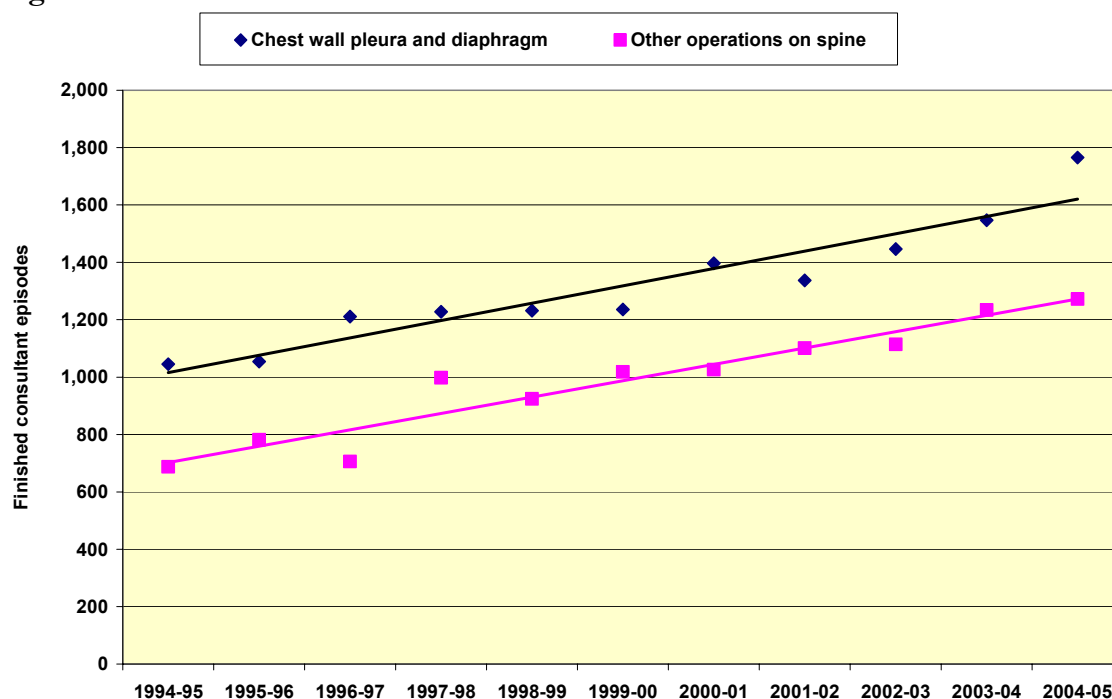


Fig. 25



B) DGHs and Specialist Centres

7.6 The procedure groups with an overall increasing trend do not all show the same trend when DGH and Specialist Centres are compared. Table 11 lists the correlation coefficients and the average year-on-year change in FCEs for the DGH and Specialist Centre trust groups. Trusts omitted from the DGH/Specialist centre analysis have been included in section 7 (A) above, but are excluded from Table 11 and Figures 26-35.

Table 11: Correlation coefficients¹², year-on-year changes in finished consultant episodes, as measured by linear regression gradients, for selected procedure groups, by trust group

Procedure group	Correlation coefficients		Year on year changes (linear regression gradients)	
	DGH	Specialist centres	DGH	Specialist centres
Miscellaneous operations	0.882	0.977	1,697	2,722
Tooth and gingiva	0.813	0.739	494	514
Nervous System	0.081	0.904	n/a	502
Arteries and veins	-0.793	0.961	- 79	334
Jejunal/Duodenal/small bowel biopsy	-0.211	0.981	n/a	259
Suture of skin or subcutaneous tissue	0.864	0.950	81	93
Chest wall pleura and diaphragm	-0.624	0.964	- 9	60
Other operations on spine	-0.760	0.984	- 9	38
Colonoscopy	0.670	0.817	23	28
All above procedure groups	0.870	0.986	2,204	4,552

¹² Pearson's product-moment correlation coefficient, measuring the degree of correlation between the number of years from 1994-95 and FCEs.

Trends for trust groups for each of the procedure groups listed in Table 11 are illustrated in figures 26 to 35.

Figures 26 to 35: Trends in FCEs for selected procedure groups, by Trust group

Fig. 26: All selected procedure groups listed in 'increasing FCEs' Table 11

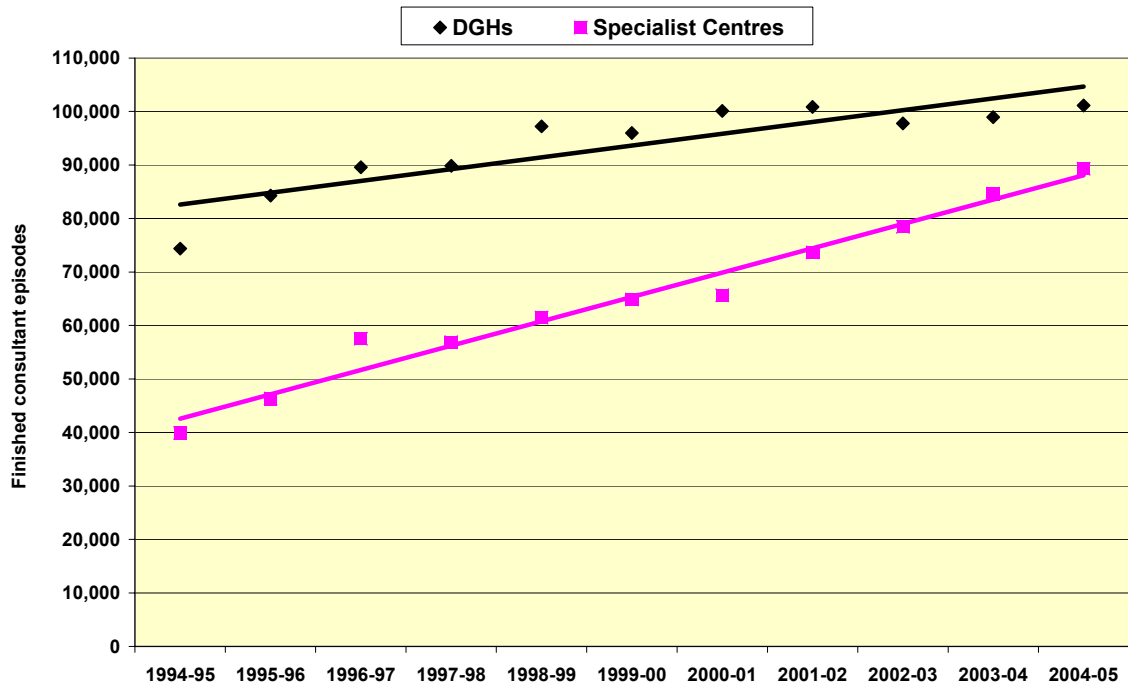


Fig. 27: Miscellaneous operations

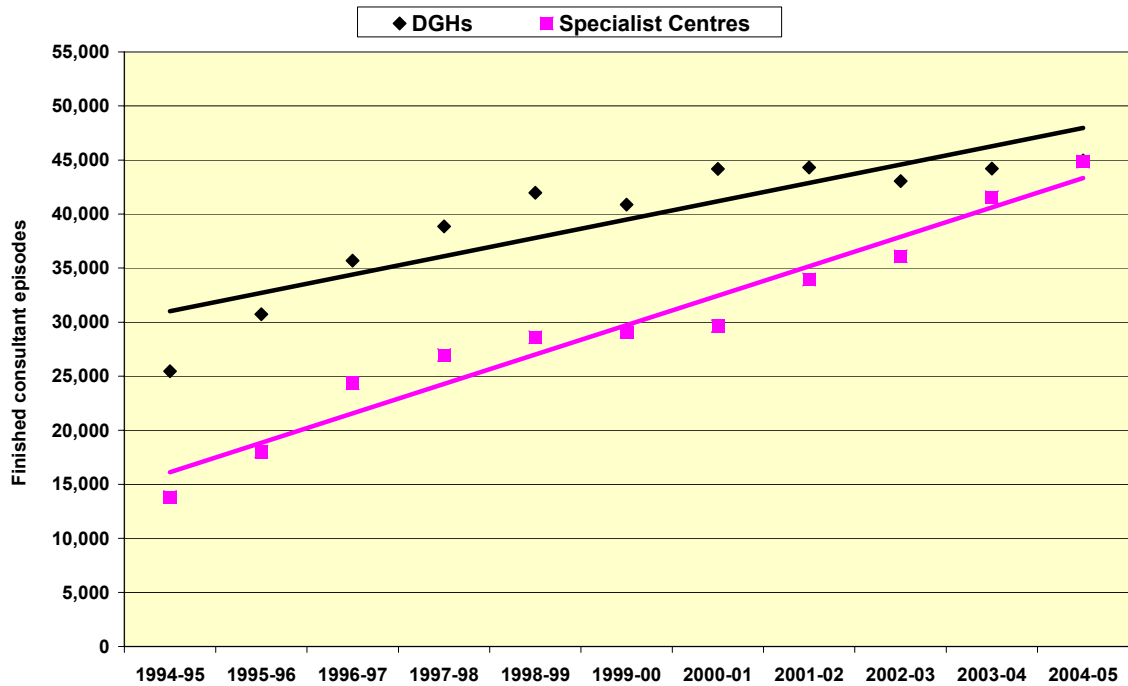


Fig. 28: Tooth and gingiva procedures

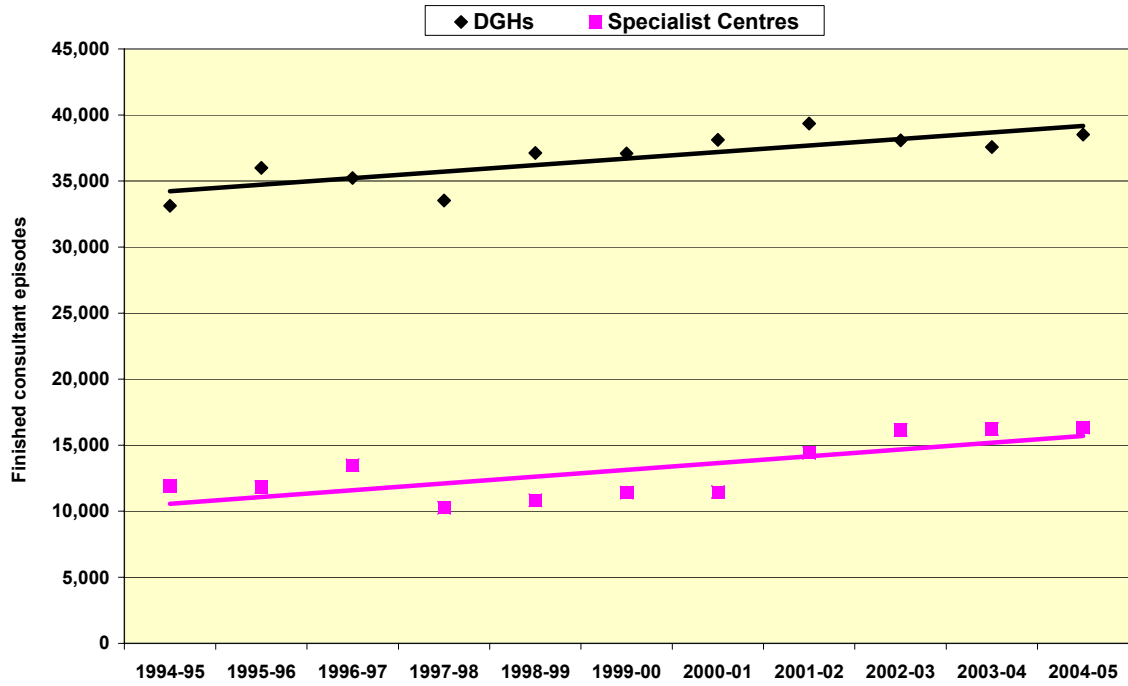


Fig. 29: Nervous system procedures

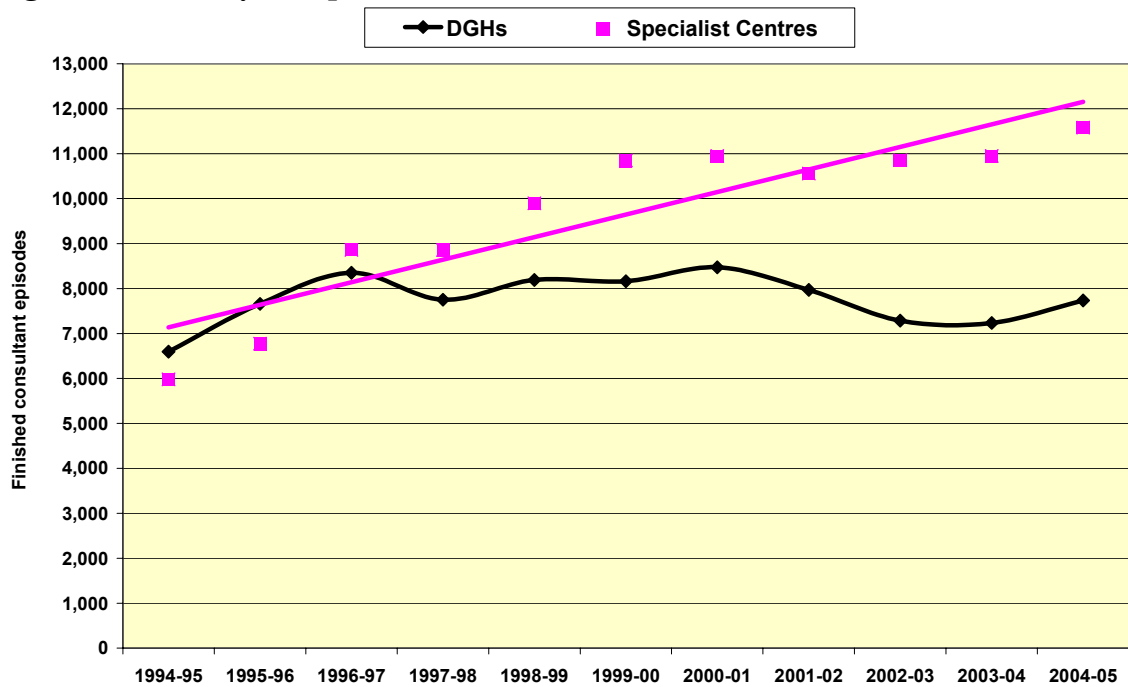


Fig. 30: Arteries and veins procedures

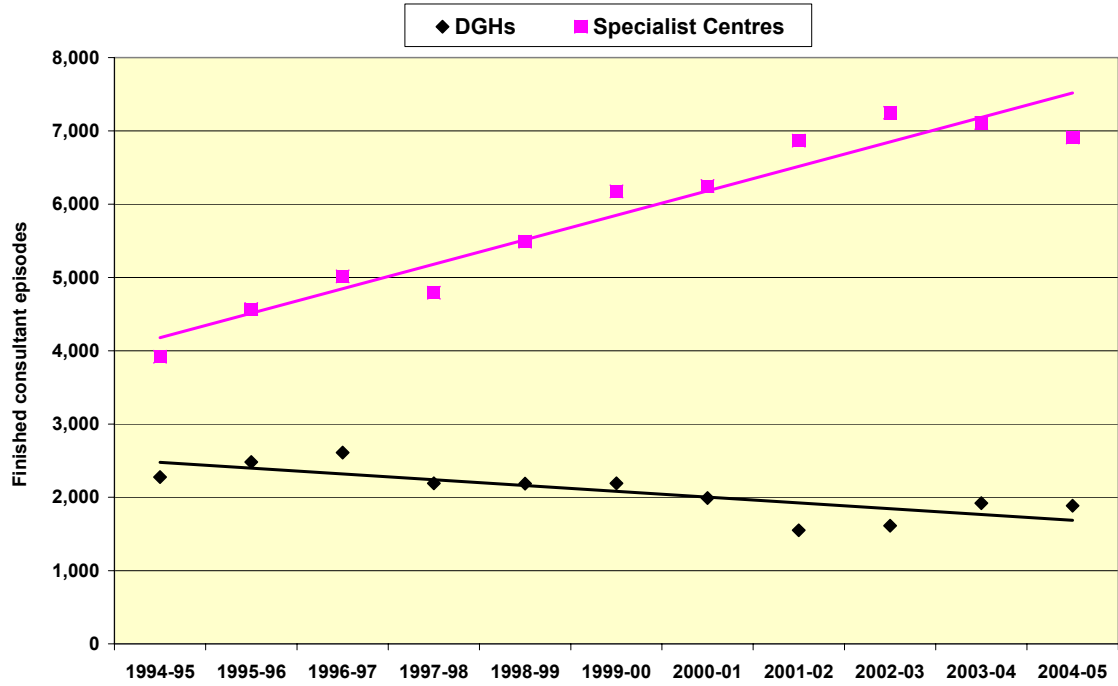


Fig. 31: Jejunal/Duodenal/small bowel biopsy

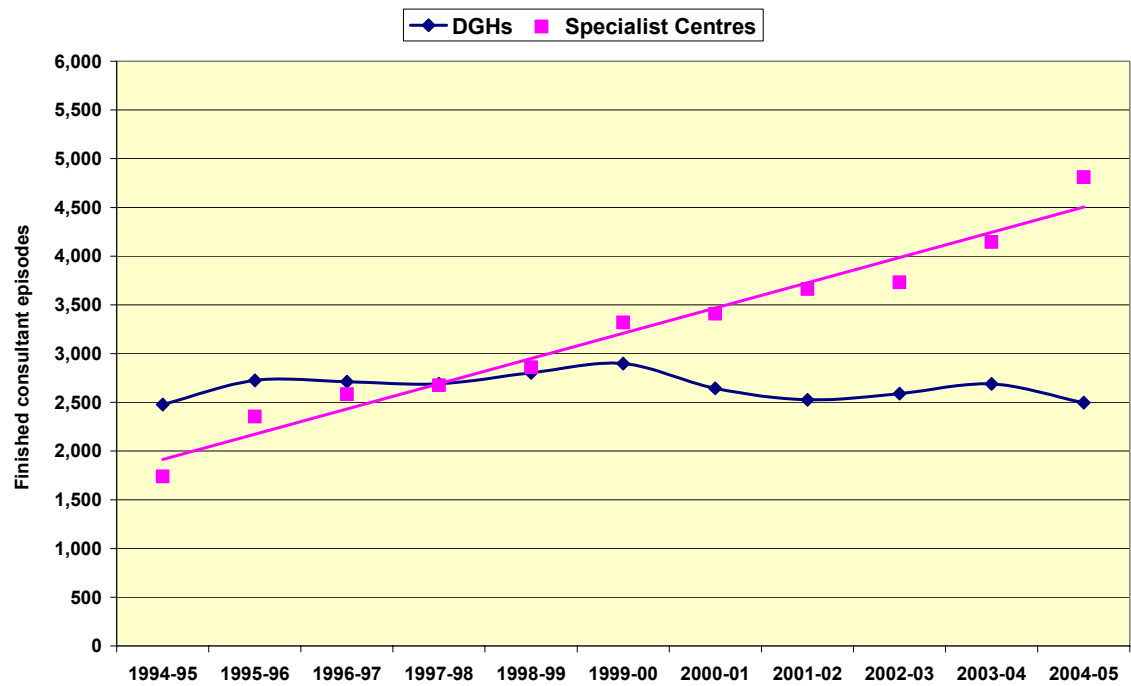


Fig. 32: Suture of skin or subcutaneous tissue

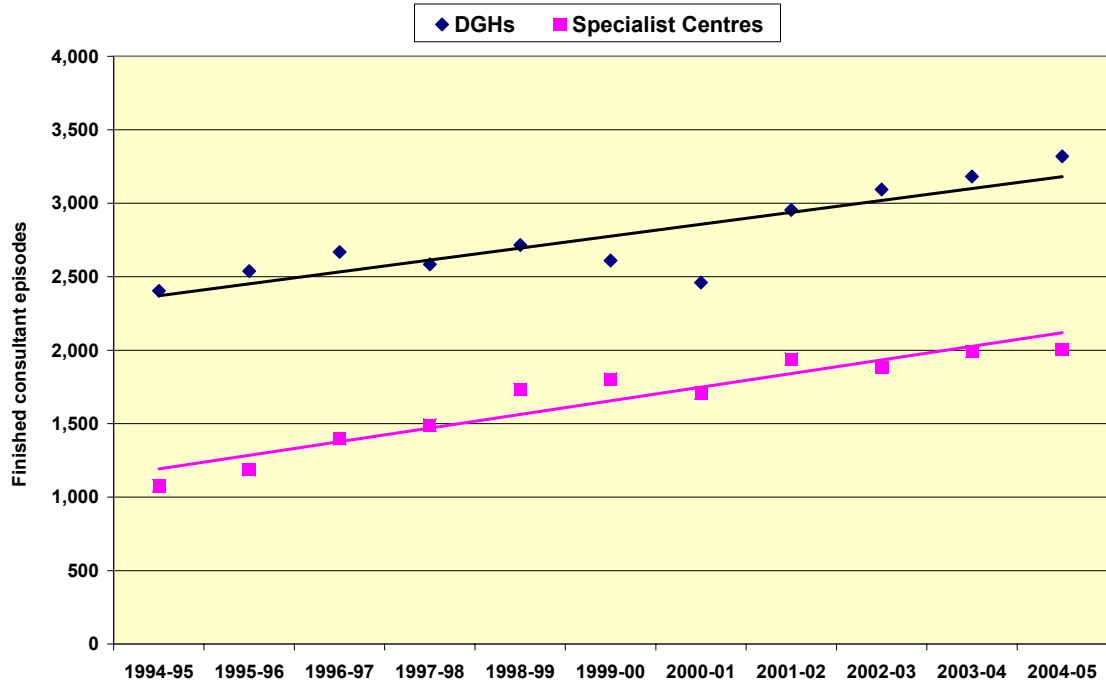


Fig. 33: Chest wall pleura and diaphragm procedures

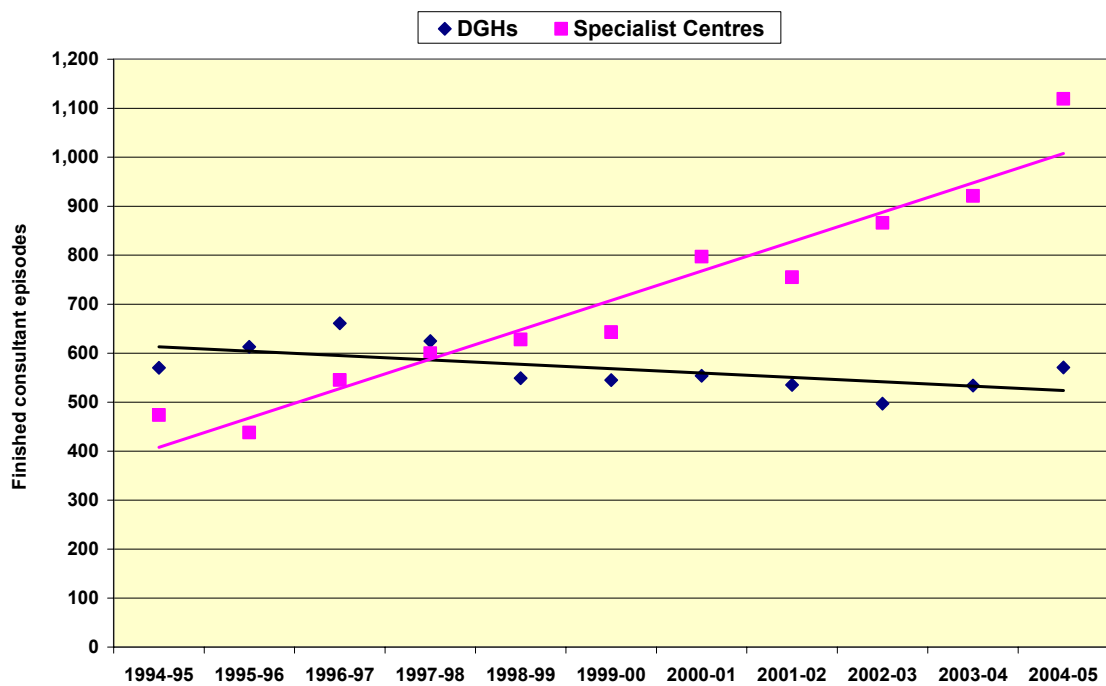


Fig. 34: Other operations on spine

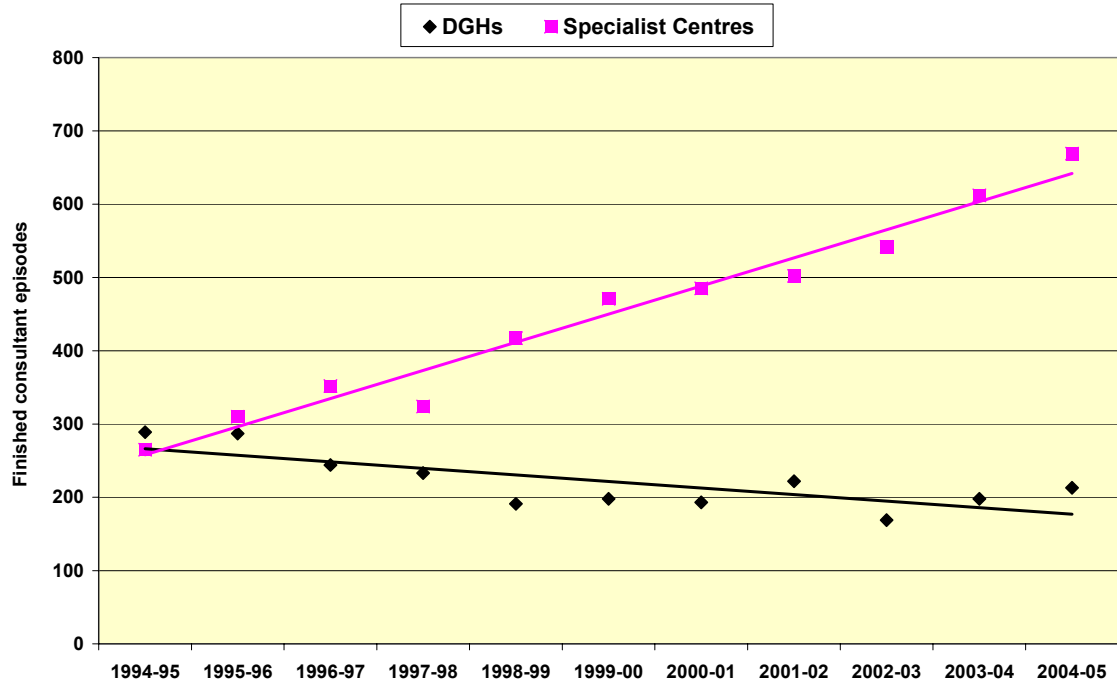
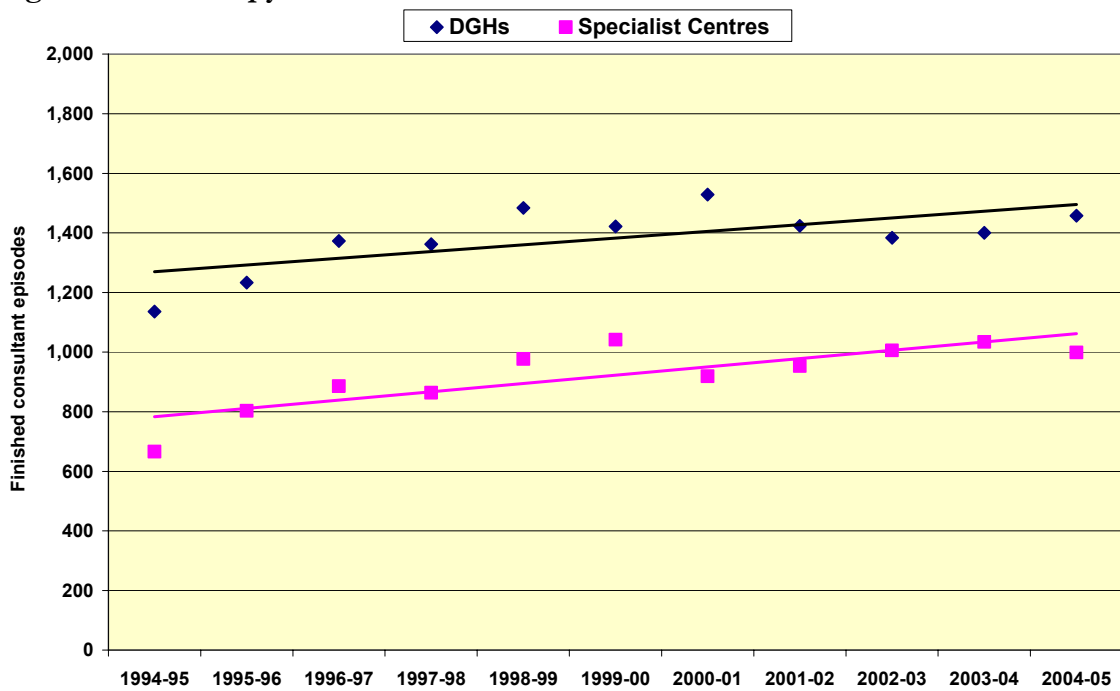


Fig. 35: Colonoscopy



8 Trends for selected consultant specialties

- 8.1 In order to determine which consultant specialties have been most affected by the transfer of activity from DGHs to Specialist Centres, specialties most likely to involve children's surgery were selected for analysis. The chosen specialties, listed in Table 12, account for approximately 98% of children's FCEs with an operation.
- 8.2 Linear regression models have been fitted where appropriate to summarise trends in FCEs for the different specialties carried out within DGHs and within Specialist Centres. The coefficient of the 'Year from 1994-95' variable is used as a measure of the average year-on-year trend. The results of this analysis are summarised in Table 13, and the trend lines are shown in Figures 36 to 53.
- 8.3 Specialties showing both a linear increase in Specialist Centre FCEs and a linear decrease in DGH FCEs were: Trauma & orthopaedics, Plastic surgery, Ophthalmology, Oncology and haematology, Cardiology and cardiac surgery, Neurology and neurosurgery, and 'Other specialties' not listed separately in Table 12, with the rate of shift in activity being greatest for Trauma & orthopaedics. General Surgery showed a linear decrease in both DGHs and Specialist Centres, whilst Gastroenterology, dental specialties and Paediatrics show linear increases in both DGHs and Centres.
- 8.4 Using the difference in linear regression gradients as a measure of the average rate of change in activity between DGHs and Specialist Centres, the specialty showing the highest rate of change in activity is Ear, nose & throat (ENT) (6,243 FCEs per year, assuming no overall change in the number of FCEs carried out in Specialist Centres).
- 8.5 FCEs with an unknown specialty can be used as an indicator of data quality. Taking DGHs and Centres together, the proportion of FCEs with an unknown specialty has been less than 1% of all FCEs with an operation throughout the 11-year period.
- 8.6 A second measure of data quality, indicating coding errors, is the number of FCEs with a specialty Geriatric medicine. The proportion of FCEs reported with Geriatric medicine as main specialty has been 0.2% or less during the 11-year period.

Table 12: FCEs by selected consultant specialty and Trust type, 1994-95 to 2004-05

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05
Ear, nose & throat (ENT)											
GPs	12957	11705	11924	11449	11001	10124	11242	11244	11024	11111	11111
Specialist non-ox	22534	24792	21721	21553	20503	19022	24757	24123	22707	20513	18157
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Paediatrics											
GPs	2744	2621	2324	2149	21241	20124	21242	21244	21024	21111	21111
Specialist non-ox	22534	24792	21721	21553	20503	19022	24757	24123	22707	20513	18157
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Trauma & orthopaedics											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Dental and related specialties											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Paediatric surgery											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
General surgery											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Plastic surgery											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Obstetrics, gynaecology and midwifery specialties											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Ophthalmology											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Oncology and haematology											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Neurology											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Neurology and neurosurgery											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Cardiology and cardiac surgery											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Not known											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Gastroenterology											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
General medicine											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Nephrology											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Geriatric medicine											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Other specialties											
GPs	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist non-ox	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124	11124
Specialist consultants	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Table 13: Correlation coefficients¹³, year-on-year changes in finished consultant episodes as measured by linear regression coefficients

Specialty	Correlation coefficients		Linear regression gradients		Rate of convergence (FCEs per year) ¹
	DGHs	Specialist centres	DGHs	Specialist centres	
Ear, nose & throat (ENT)	-0.966	0.368	-6,243	n/a	6,243
General surgery	-0.982	-0.975	-2,917	-215	2,702
Trauma & orthopaedics	-0.838	0.959	-885	520	1,405
Plastic surgery	-0.796	0.987	-339	906	1,245
Ophthalmology	-0.965	0.941	-714	160	874
Oncology and haematology	-0.822	0.923	-151	689	841
Paediatric surgery	0.196	0.965	n/a	783	783
Other specialties	-0.953	0.962	-314	458	772
Cardiology and cardiac surgery	-0.897	0.951	-272	275	547
Obstetrics, gynaecology and midwifery specialties	-0.732	0.306	-379	n/a	379
Neurology and neurosurgery	-0.669	0.917	-32	258	290
Gastroenterology	0.856	0.950	31	251	220
Nephrology	-0.408	0.919	n/a	130	130
Urology	-0.273	0.878	n/a	127	127
Dental and related specialties	0.727	0.786	479	596	117
General medicine	-0.734	0.551	-81	n/a	81
Paediatrics	0.858	0.960	1,902	1,826	-76
Not known	0.715	0.282	200	n/a	n/a
Geriatric medicine	0.639	0.169	4	n/a	n/a

1. This is the difference between linear regression gradients. Where there is no evidence of a linear trend, a gradient of zero has been used.

¹³ Pearson's product-moment correlation coefficient, measuring the degree of correlation between the number of years from 1994-95 and FCEs.

Figures 36 to 53: Trends in FCEs for selected specialties, by trust type

Fig. 36: Ear, nose & throat (ENT)

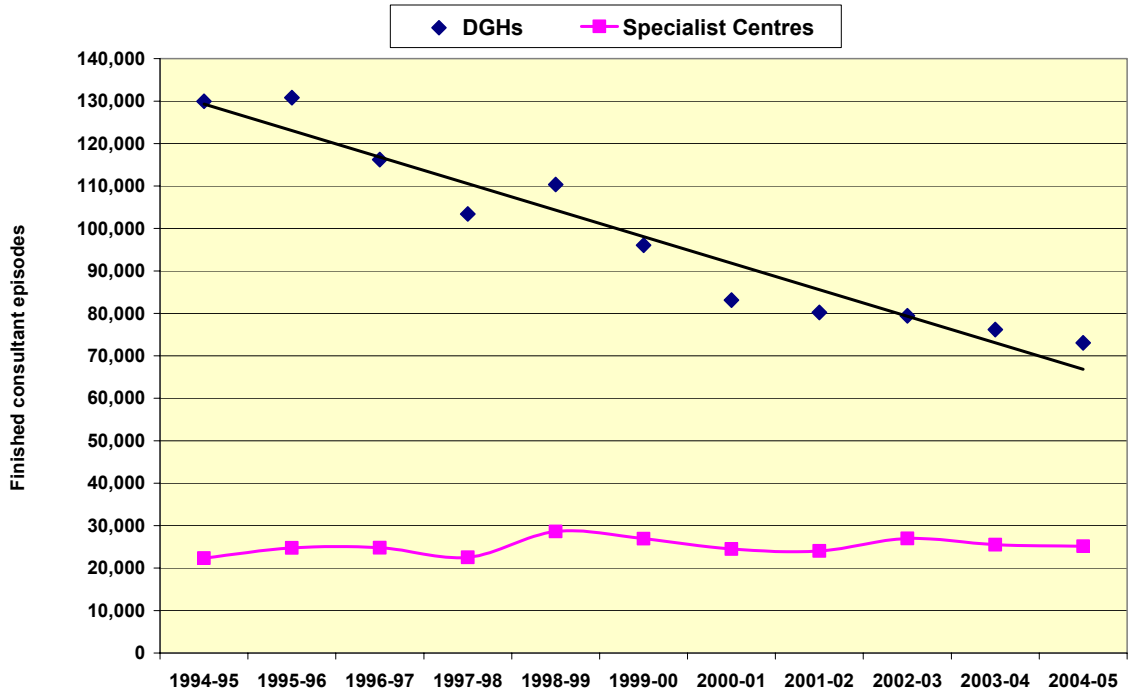


Fig. 37: Paediatrics

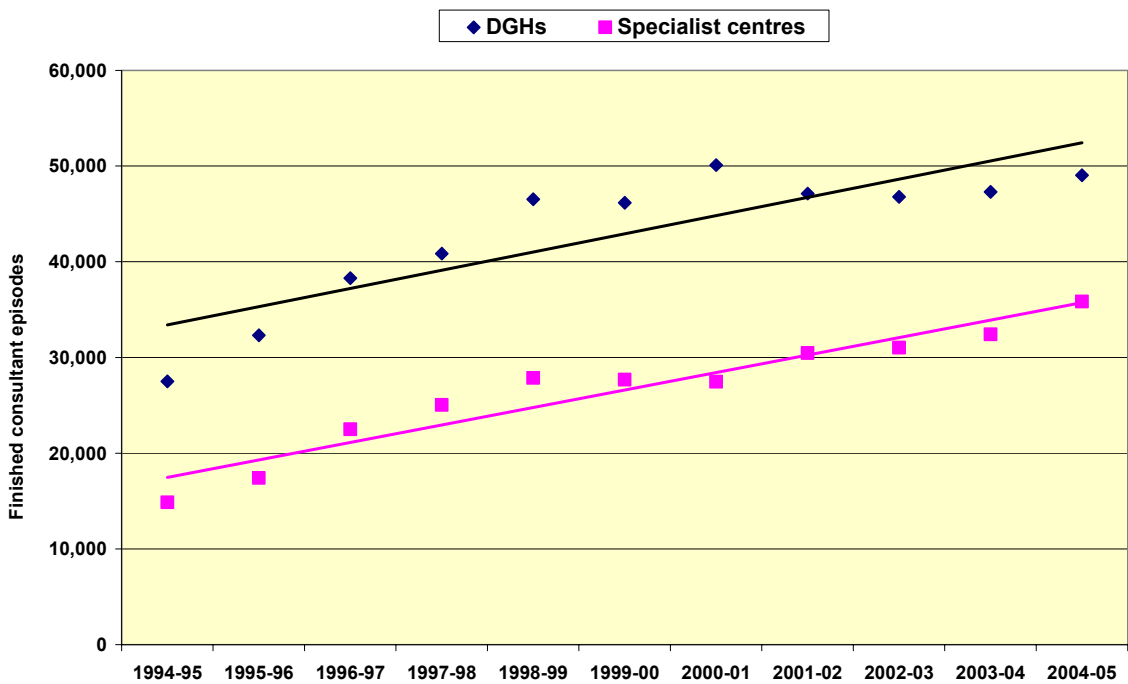


Fig. 38: Trauma & orthopaedics

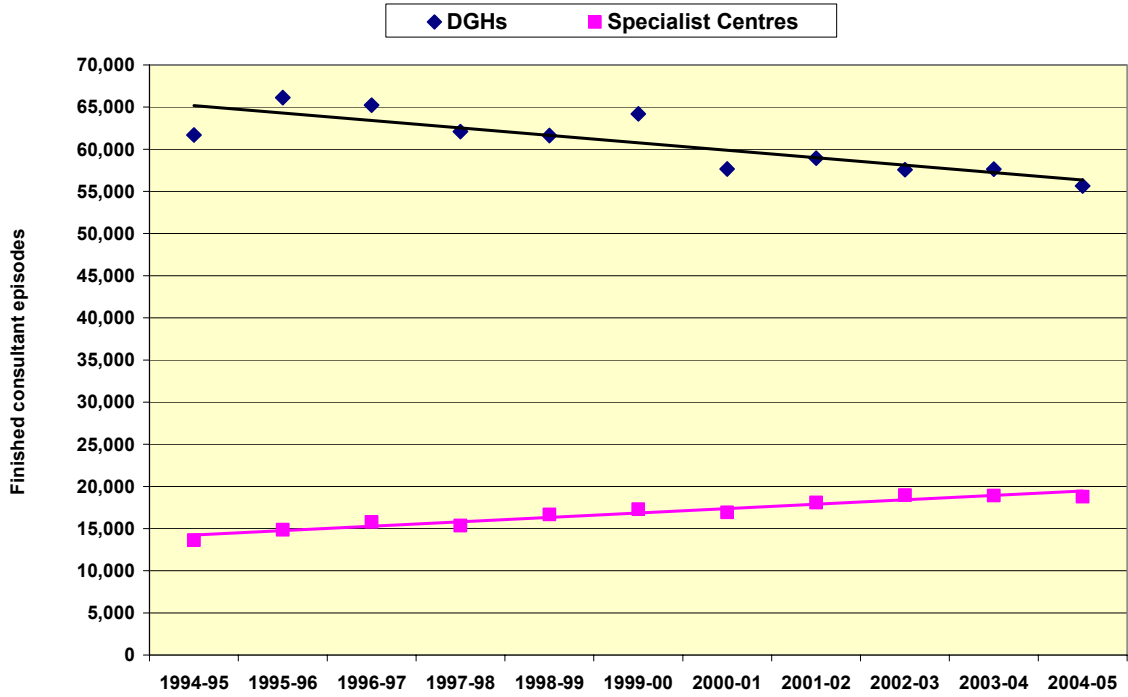


Fig. 39: Dental and related specialties

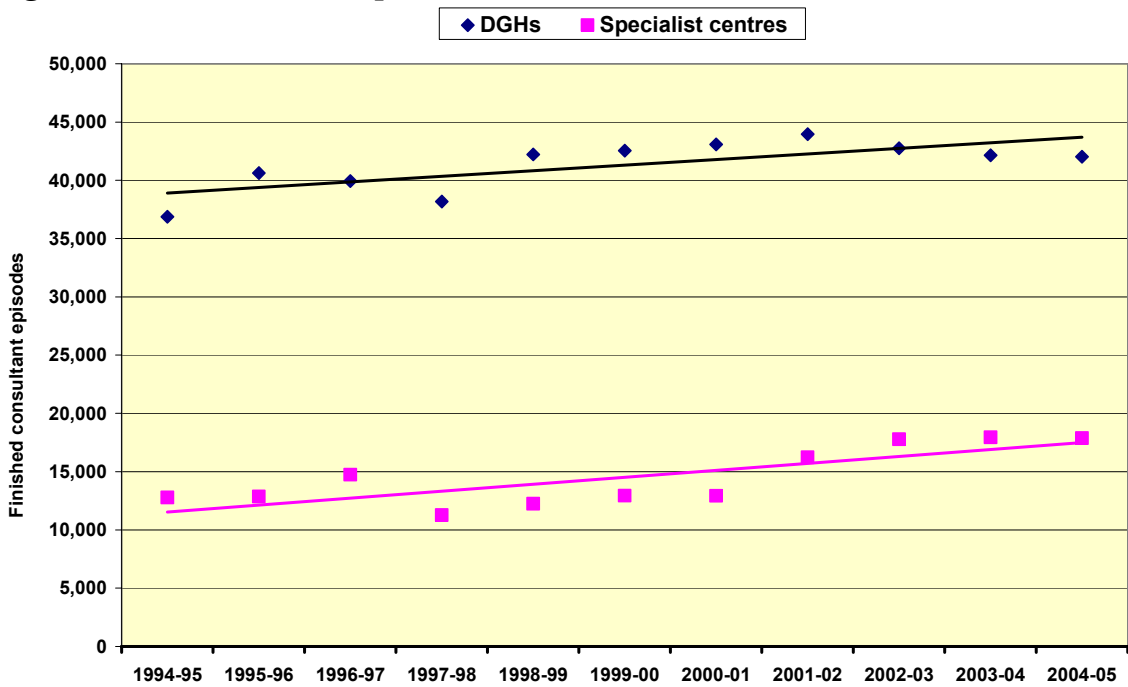


Fig. 40: Paediatric surgery

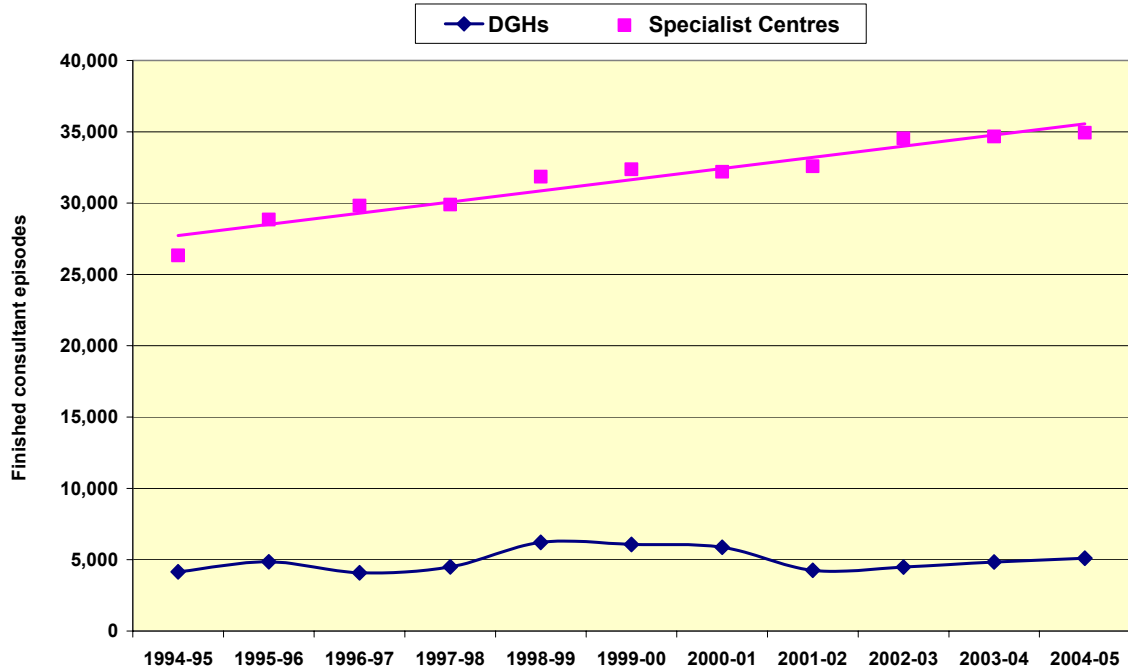


Fig. 41: General surgery

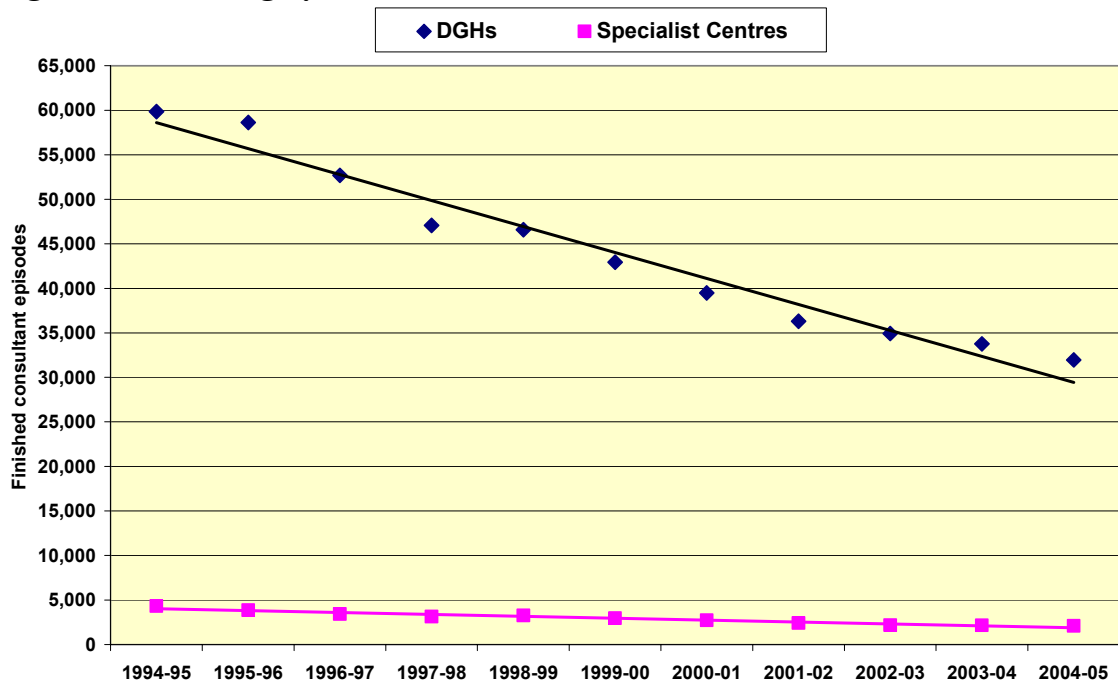


Fig. 42: Plastic surgery

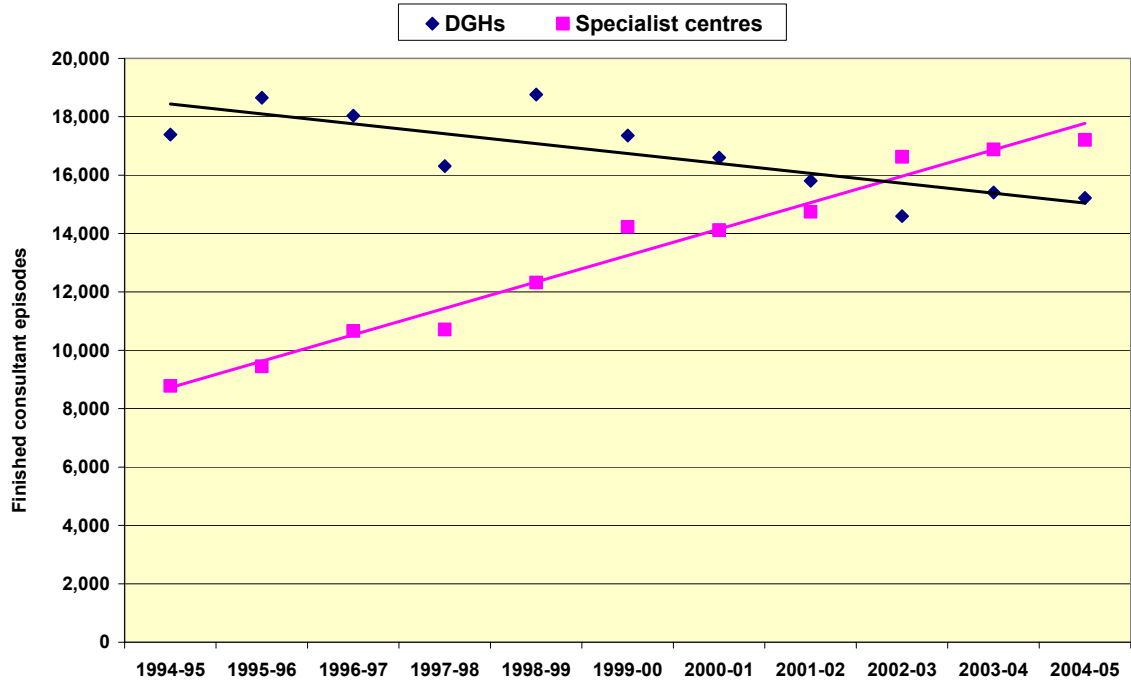


Fig. 43: Obstetrics, gynaecology and midwifery specialties

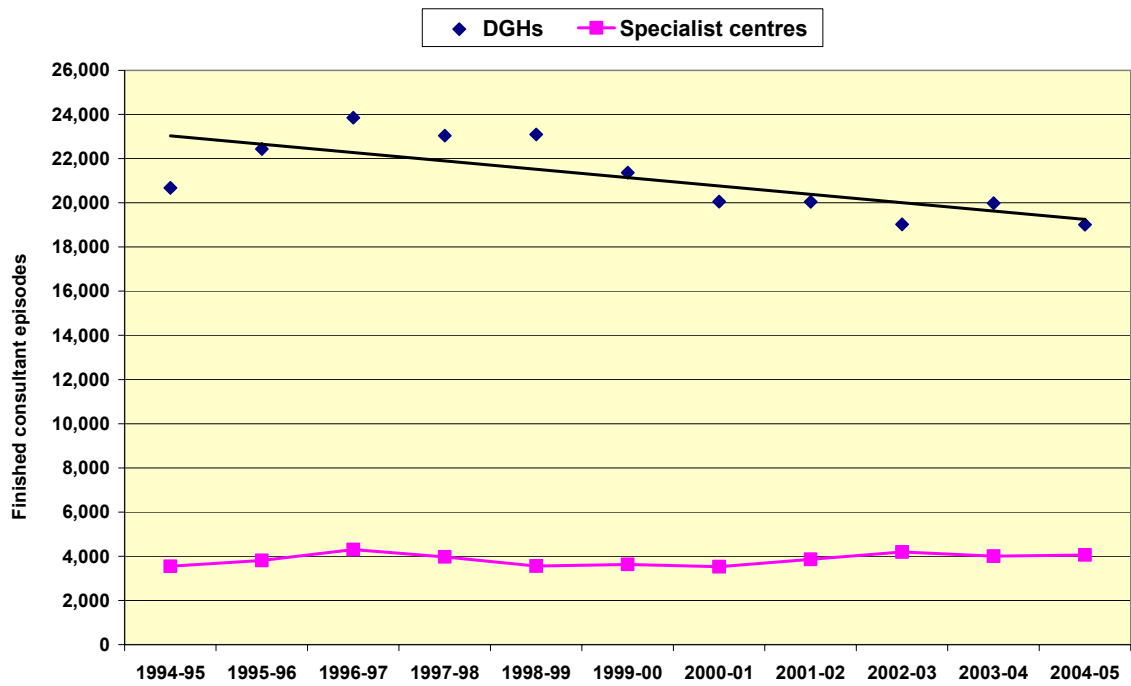


Fig. 44: Ophthalmology

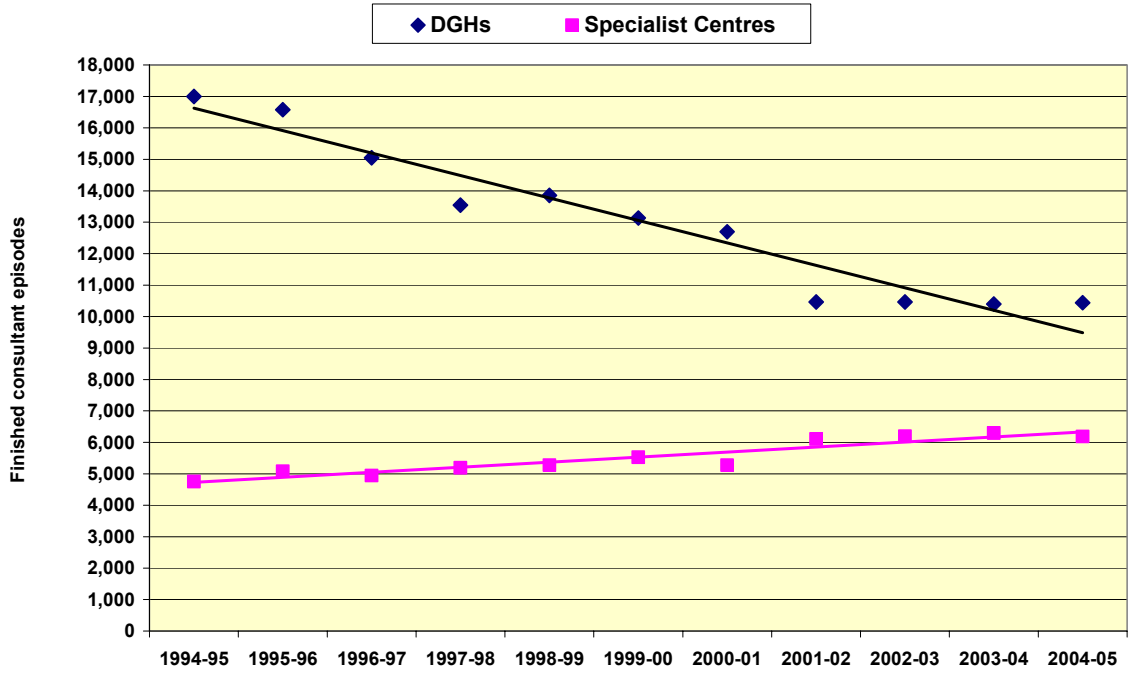


Fig. 45: Oncology and haematology

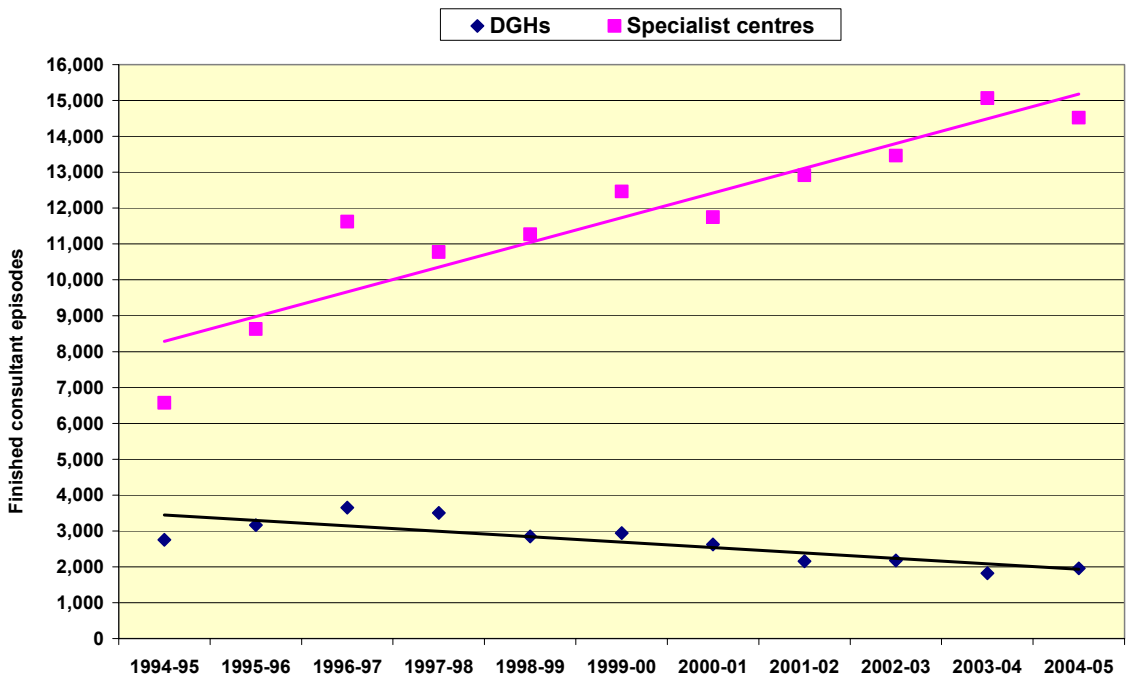


Fig. 46: Urology

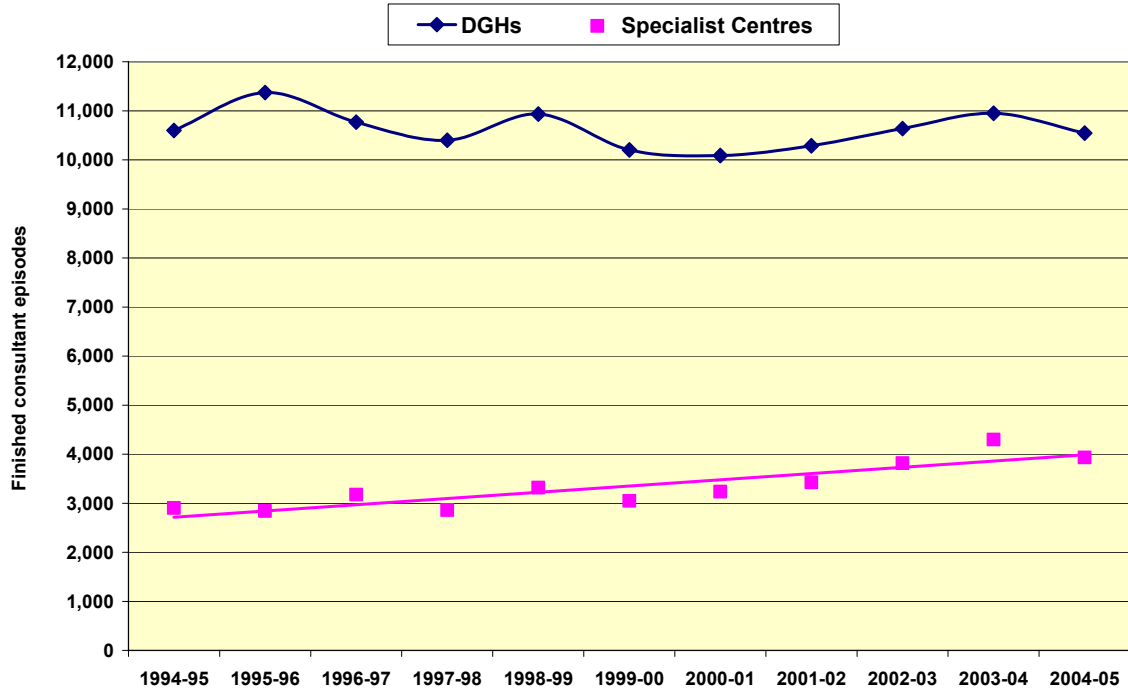


Fig. 47: Neurology and neurosurgery

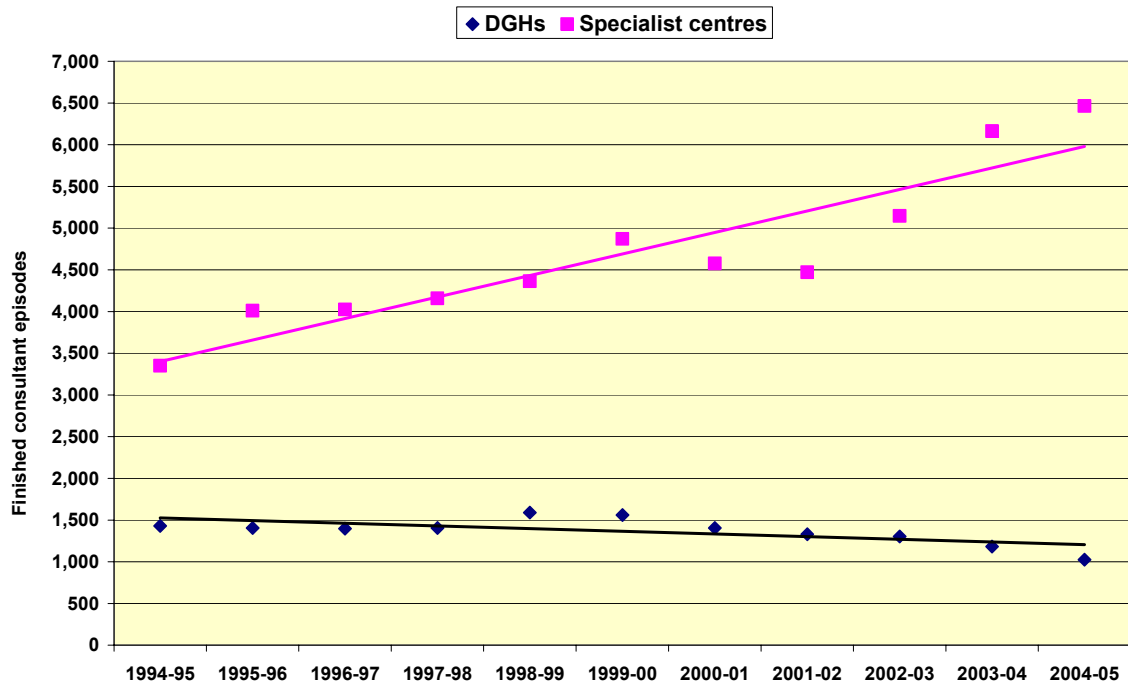


Fig. 48: Cardiology and cardiac surgery

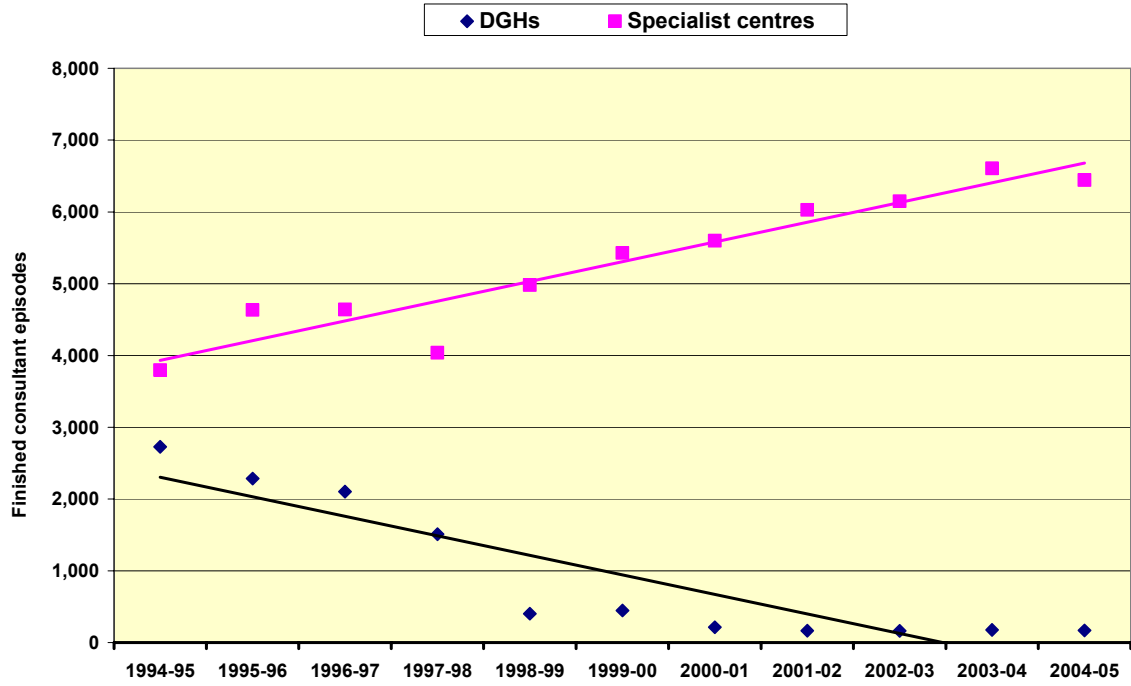


Fig. 49: Specialty not known

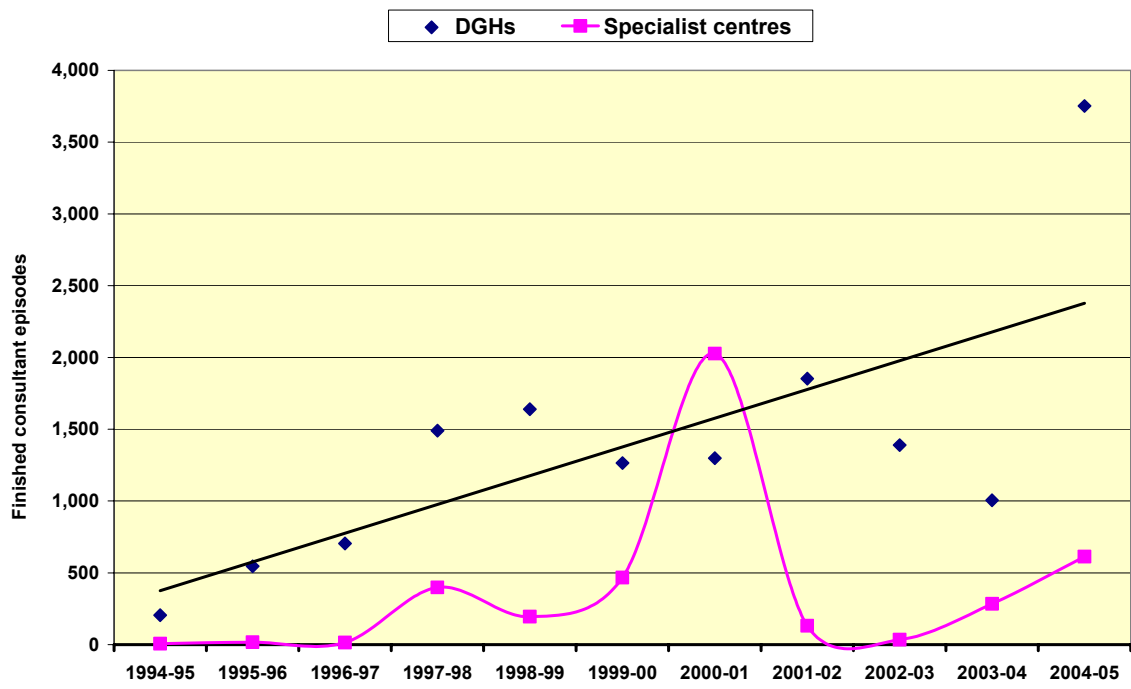


Fig. 50: Gastroenterology

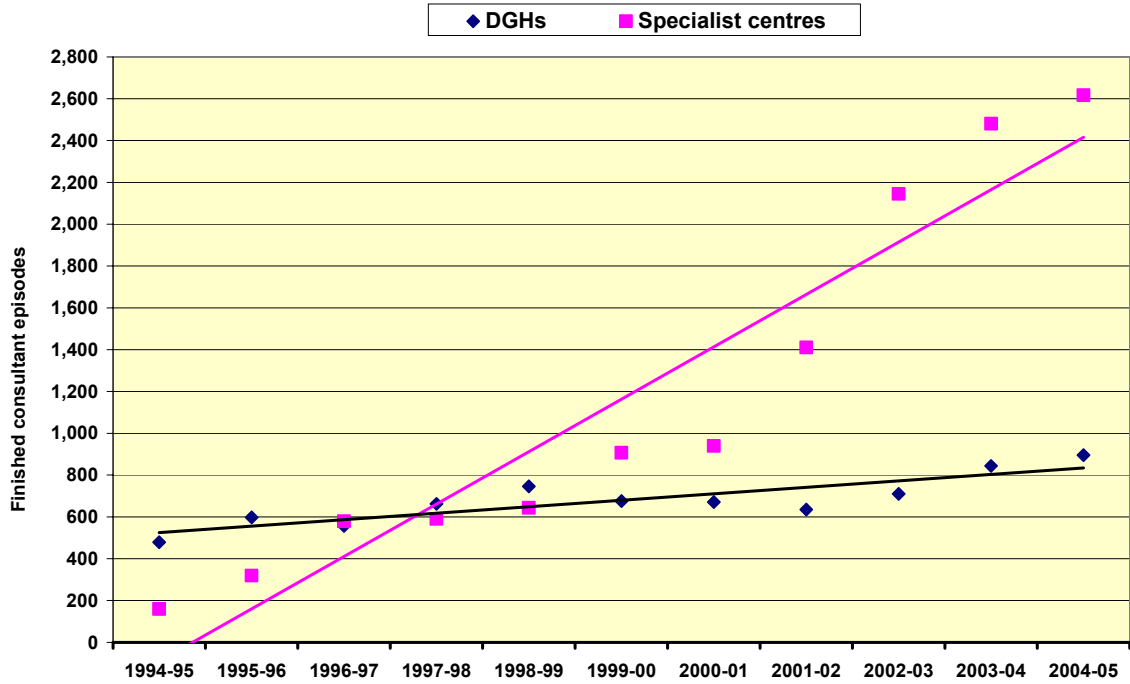


Fig. 51: General medicine

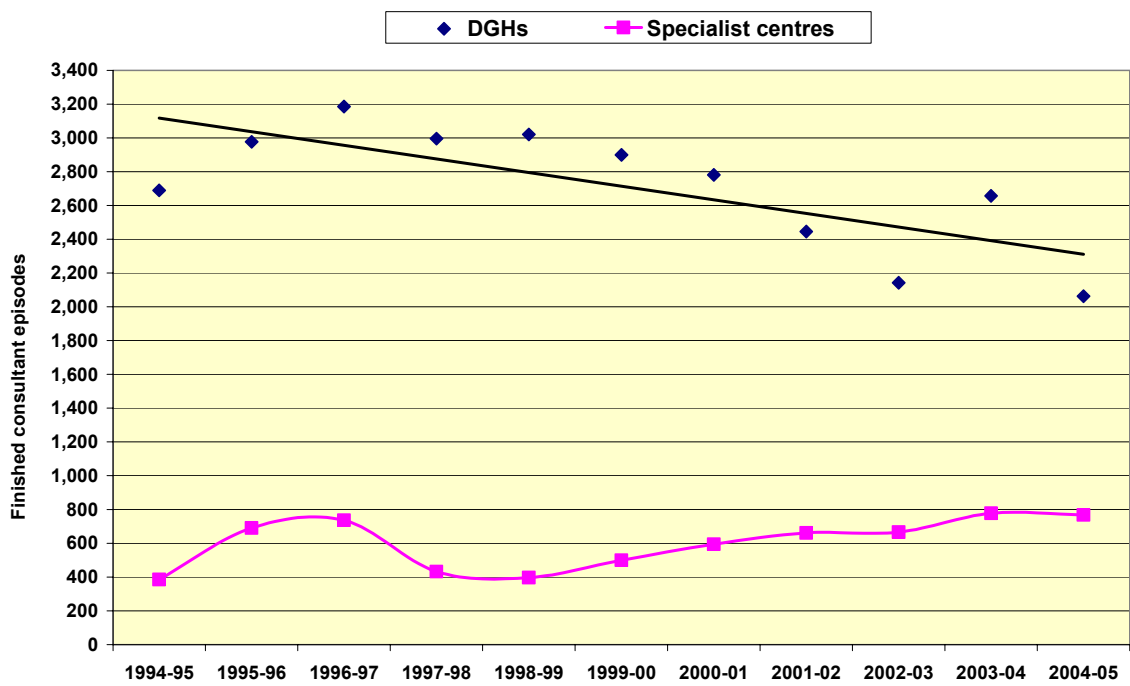


Fig. 52: Nephrology

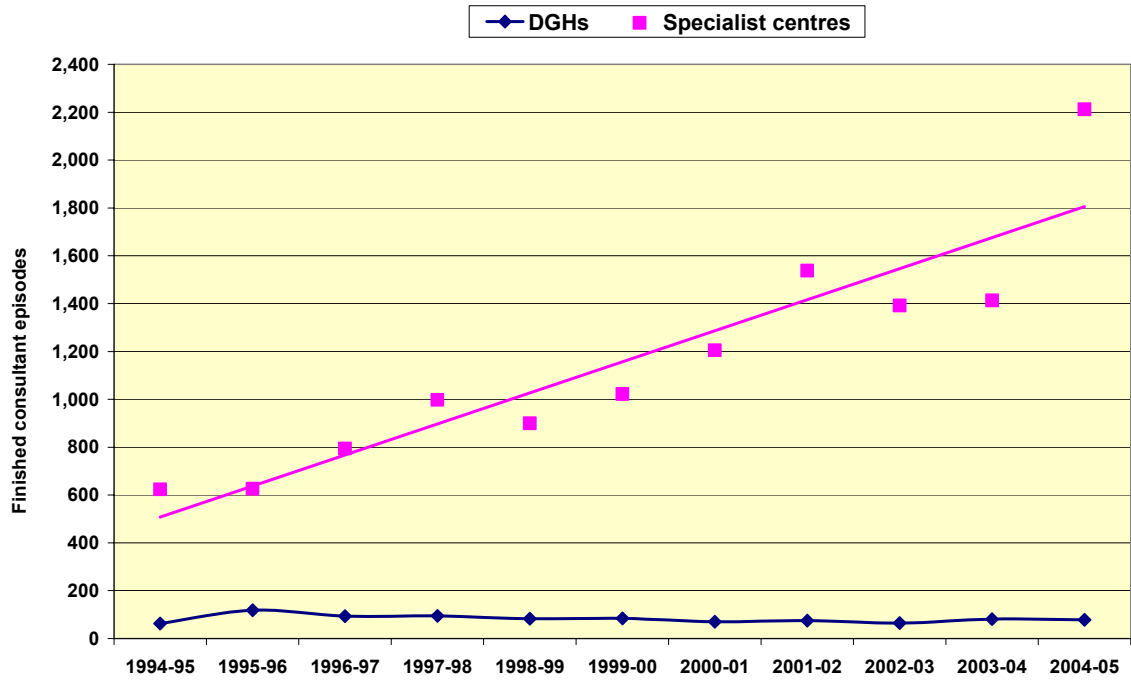
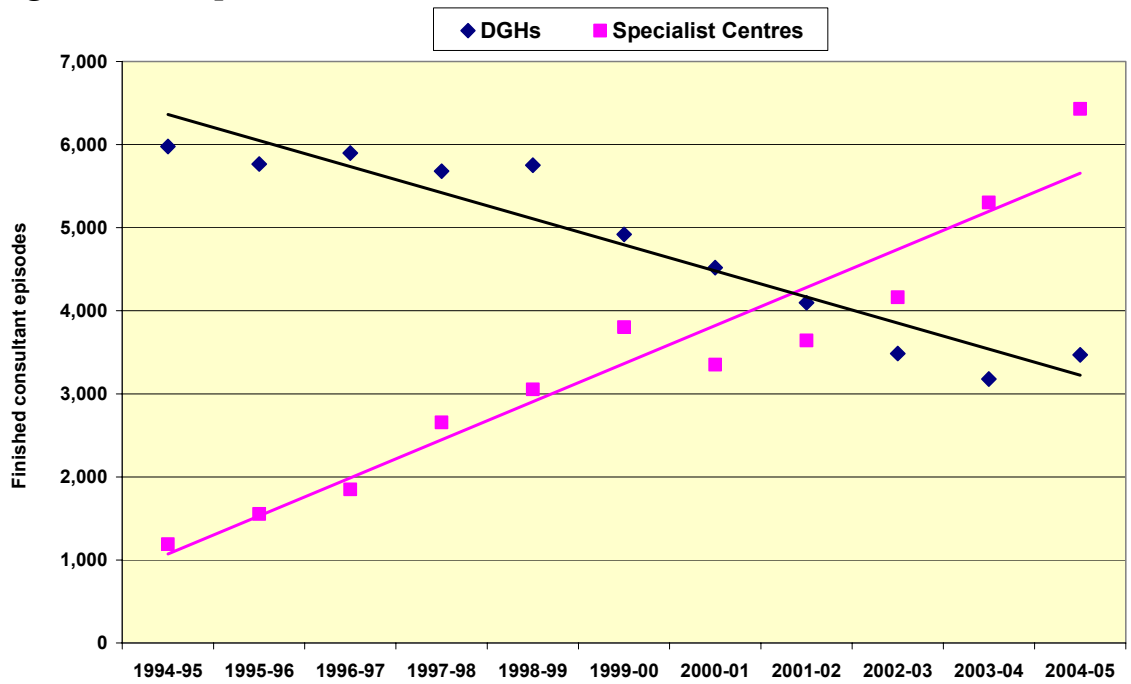


Fig. 53: Other specialties



9 Trends in Moorfields Eye Hospital and Orthopaedic centres

Moorfields Eye Hospital and Orthopaedic centres were omitted from the analysis of trends in DGHs and Specialist Centres, as they are very specialised centres. A summary of activity in these centres is presented separately below. This analysis was carried out in order to establish whether very specialised centres were being overloaded with minor procedures (squint procedures in the case of Moorfields): there was no evidence of this being the case.

9.1 Moorfields Eye Hospital

- 9.1.1 The number of FCEs for children aged 0-17 with an operation reported by Moorfields Hospital has fluctuated during the 11 year period, with average (mean) of 1,542 FCEs per year. In recent years the trust has reported a decreasing number of FCEs with an operation for children (see Table 14 and Figure 54).
- 9.1.2 The number of correction of squint procedures for children shows a linear trend, decreasing on average by 20 FCEs per year.

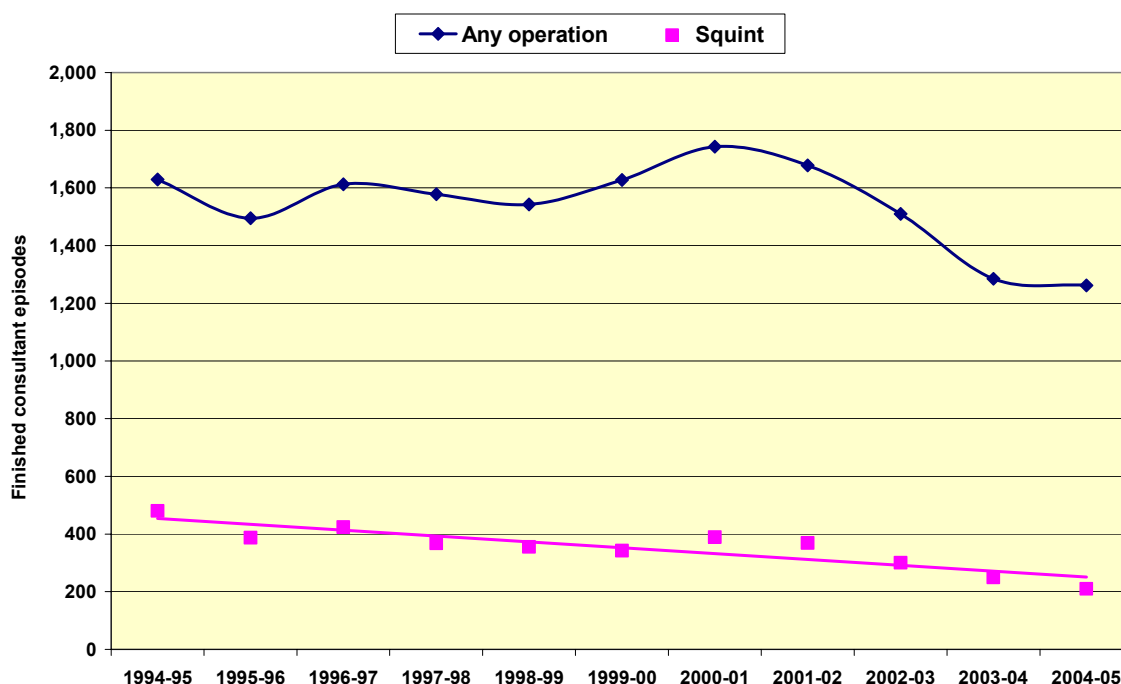
Table 14: Finished consultant episodes for children aged 0-17 years, by type of procedure, Moorfields Eye Hospital NHS Trust

	Other eye operation	Squint	Other operation (not an eye operation)	No operation	Unknown operation
1994-95	1,130	480	19	106	0
1995-96	1,101	387	7	66	25
1996-97	1,176	424	13	70	45
1997-98	1,201	368	9	99	40
1998-99	1,174	355	14	95	49
1999-00	1,285	342	*	96	42
2000-01	1,341	389	13	106	40
2001-02	1,296	369	13	123	52
2002-03	1,202	300	8	129	32
2003-04	1,031	249	*	146	62
2004-05	1,046	210	6	246	*

* suppressed: between 1 and 5 FCEs

- 9.1.3 Comparing the number of squint procedures reported by Moorfields with the number reported by DGHs and Specialist Centres, the proportion of all squint procedures carried out by Moorfields has averaged around 4% over the 11 year period.

Figure 54: Finished consultant episodes with an operation for children reported by Moorfields Eye Hospital



9.2 Orthopaedic centres

9.2.1 In order to analyse trends in children’s surgery carried out in Orthopaedic Centres during the 11 year period, data from the following trusts has been used:

- The Royal National Orthopaedic Hospital NHS Trust (RAN)
- Nuffield Orthopaedic NHS Trust (RBF)
- Stoke Mandeville Hospital NHS Trust (RNT, RXQ02 in 2003-04 and 2004-05)
- Royal Orthopaedic Hospital NHS Trust (RRJ, MQ9 in 1994-95)

In 2003-04 Stoke Mandeville Hospital NHS Trust merged with South Buckinghamshire NHS Trust (RH2) to form Buckinghamshire Hospitals NHS Trust (RXQ). Data for 2003-04 and 2004-05 is Stoke Mandeville Hospital (site code RXQ02).

There are data quality problems for The Royal National Orthopaedic Hospital NHS Trust (RAN) in 1996-97 and 1997-98: there are no FCEs for RAN in 1996-97, whilst the number of FCEs reported in 1997-98 is around twice the number reported 1998-99. In Table 15 and Figure 44 both the unadjusted data submitted by all Orthopaedic Centres and adjusted figures are used for 1996-97 and 1997-98. The adjusted figures have been derived by reallocating half of the FCEs reported by RAN in 1997-98 to 1996-97.

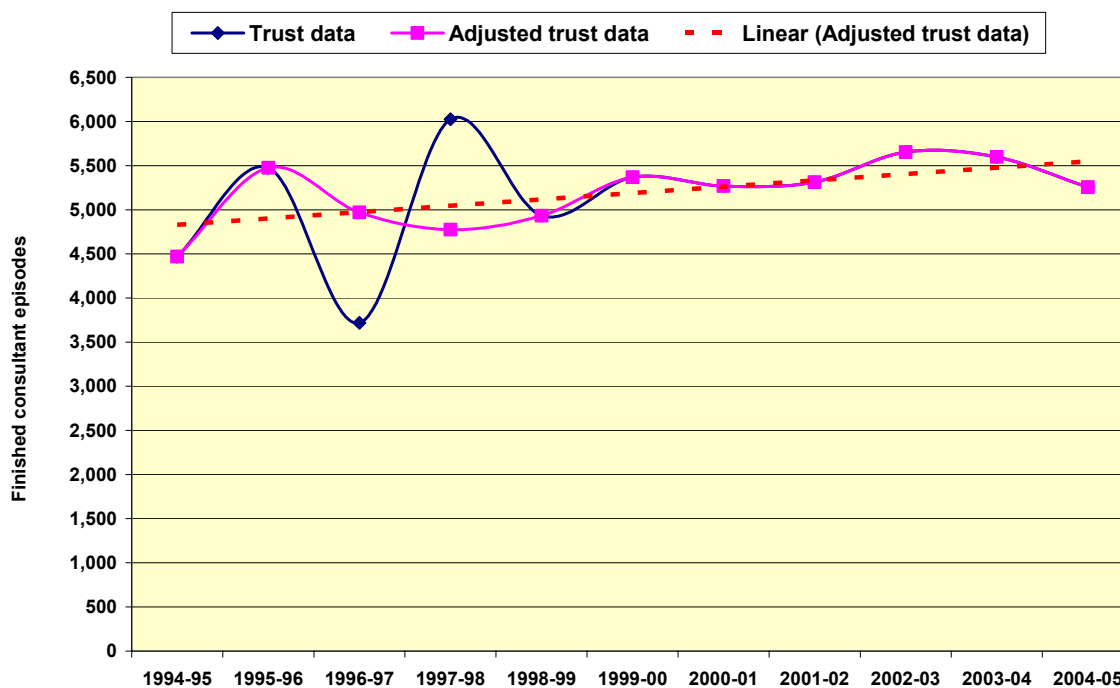
Table 15: Finished consultant episodes with an operation for children aged 0-17 years in Orthopaedic Centres

	Trust data	Adjusted trust data
1994-95	4,468	4,468
1995-96	5,476	5,476
1996-97	3,719	4,970
1997-98	6,025	4,774
1998-99	4,933	4,933
1999-00	5,369	5,369
2000-01	5,268	5,268
2001-02	5,313	5,313
2002-03	5,653	5,653
2003-04	5,598	5,598
2004-05	5,256	5,256

9.2.2 The adjusted number of FCEs for children aged 0-17 with an operation reported by Orthopaedic centres has fluctuated during the 11 year period, with average (mean) of 5,159 FCEs per year.

9.2.3 Using the adjusted number of FCEs, there is evidence of a linear increase in the number of FCEs carried out in Orthopaedic Centres. The linear regression gradient shows an average increase of 72 FCEs per year over the 11-year period.

Figure 55: Finished consultant episodes with an operation for children aged 0-17 years in Orthopaedic Centres



10 Summary and discussion

- 10.1 Over the 11-year period to 2004-05, there have been relatively small percentage changes in the overall number of FCEs for children with an operation. However, there has been a noticeable overall fall in the number of FCEs reported for the marker operations chosen for this analysis.
- 10.2 The data from HES provides strong evidence that there has been a shift in children's surgery from DGHs to Specialist Centres over the 11-year period 1994-95 to 2004-05.
- 10.3 All the marker operations chosen showed a shift from DGHs to Specialist Centres. In proportionate terms, this shift is most noticeable for pyloromyotomy, orchidopexy and reduction of intussusception.
- In 1994-95, only less than half of pyloromyotomies were carried out in Specialist Centres, whereas in 2003-04, 86% were in Specialist Centres.
 - The proportion of orchidopexy operations carried out in Specialist Centres has doubled in the 11-year period.
 - In 1994-95 less than three-quarters of reduction of intussusception operations were carried out in Specialist Centres; by 2004-05 over 90% took place in Specialist Centres.
- 10.4 In terms of average year-on-year changes, the number of FCEs for children's surgery within DGHs **decreased** by approximately 9,700 each year over the 11-year period, whilst there was an **increase** of approximately 7,000 FCEs per year in Specialist Centres.
- 10.5 Where linear regression models were appropriate, the marker operations with the greatest year-on-year decreases within DGHs were tonsillectomy, grommets and adenoidectomy. Marker operations showing the largest year-on-year increases in Specialist Centres are fracture and herniotomy.
- 10.6 There has been a fall in the number of operations for the three markers where changes in practice meant this was expected: orchidopexy, tonsillectomy and adenoidectomy.
- 10.7 The shift to Specialist Centres occurred in all the age groups 0 – 4, 5 – 10 and 11 – 17 years, but was most marked amongst younger children, age 0 – 4.
- 10.8 The largest contribution to the fall in DGH FCEs was ENT, largely accounted for by falling numbers of FCEs for tonsillectomy, adenoidectomy, and insertion of grommets (2,515, 955, and 1,849 FCEs/year respectively). There was no concomitant increase in ENT FCEs in centres. Specialties showing both a linear increase in Specialist Centre FCEs and a linear decrease in DGH FCEs were: Trauma & orthopaedics, Plastic surgery, Ophthalmology, Oncology and haematology, Cardiology and cardiac surgery, Neurology and neurosurgery, and 'Other specialties', with the rate of shift in activity being greatest for Trauma & orthopaedics. General Surgery showed a linear decrease in both DGHs and Specialist Centres, whilst Gastroenterology, dental specialties and Paediatrics show linear increases in both DGHs and Centres.
- 10.9 The size of the database analysed and the linearity and magnitude of the trends observed show that this data is robust. Nevertheless, the limitations of this study are recognised. It is based upon Hospital Episode Statistics, the accuracy and completeness of which depend upon coding and data entry by Trusts. During the study period, there were some changes in

Trust configurations, and some new FCE codes. 53-103 FCEs/year had a recorded consultant specialty of geriatric medicine, almost certainly a coding error. 211-4,364 (mean 1,758, median 1,731) had no recorded consultant specialty. These errors affect <1% of the database, but suggest that caution is needed in further sub-analysis of smaller patient groups. The increase in FCEs for which the consultant specialty was Paediatrics in both DGHs and centres proved largely to comprise minor medical procedures. It is unclear whether this is a genuine increase in activity or an increase in coding completeness as Trust income has become more directly linked to recorded activity. As HES data applies only to England, this study takes no account of patient flows between countries. Despite these limitations, the findings in this study have important implications.

- 10.10 For the centres, the increased activity imposes a pressure on a resource-limited system. The increase in activity in centres has three components:
- the recorded paediatric activity increased.
 - there is an apparent shift from DGHs to centres in general and in paediatric surgery, trauma & orthopaedics, plastic surgery, and ophthalmology in particular. Further analysis is necessary to determine whether these are operations which could be performed in DGHs, or whether the shift is due to greater complexity or newer techniques, available mainly in centres.
 - there is an increase in the number of FCEs in complex specialties likely to be concentrated in centres, these include: cardiology & cardiothoracic surgery; neurosurgery; gastroenterology, for which the increase in centres is likely to be due to endoscopic procedures; haematology and oncology. A fuller picture of the changing workload of centres would be gained by examining case by case the complexity of cases, length of stay, and complications.
- 10.11 FCEs for the 12 marker procedures showed that there has been an absolute fall in the numbers of tonsillectomies, adenoidectomies, insertion of grommets, orchidopexy, operations for squint, and circumcisions for medical reasons. The trend lines for each of these were still falling in 2004-5, in which year these operations accounted for 86,495 procedures.
- 10.12 This resource paper confirms that there has been a fall in children's surgical activity in DGHs and a rise in activity in Specialist centres. It quantitates these changes overall, and examines their components with respect to marker procedures and consultant specialty.

Appendix 1

References

1. Campling EA, D.H., Lunn JN, *The Report of the National Enquiry into Perioperative Deaths*. 1989.
2. Arul, G.S. and R.D. Spicer, *Where should paediatric surgery be performed?* Arch Dis Child, 1998. **79**(1): p. 65-70; discussion 70-2.
3. NCEPOD, *Who operates when? (WOW II). The 2003 Report of the National Confidential Enquiry into Perioperative Deaths*. 2003.
4. Tomlinson, A., *Anaesthetists and care of the critically ill child*. Anaesthesia, 2003. **58**(4): p. 309-11.
5. Rollin, A.M., *Paediatric anaesthesia--who should do it? The view from the district general hospital*. Anaesthesia, 1997. **52**(6): p. 515-6.
6. McNicol, R., *Paediatric anaesthesia--who should do it? The view from the specialist hospital*. Anaesthesia, 1997. **52**(6): p. 513-5.
7. DH. *The acutely or critically sick or injured child in the District General Hospital: a team approach* 2006 [cited; Available from: http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4140405&chk=xtTZRT].
8. NHS Connecting for Health [cited; Available from: <http://www.connectingforhealth.nhs.uk/datadictionary/>]
9. Survey, H.C.Y.P. 2004 [cited; Available from: http://www.healthcarecommission.org.uk/NationalFindings/Surveys/PatientSurveys/fs/en?CONTENT_ID=4004320&chk=BOfOB4].

Appendix 2

i) OPCS4 procedure codes, ICD-10 and ICD-9 diagnosis codes used to define marker procedures.

	Surgical procedure	OPCS4 codes (main operation unless otherwise stated)		ICD-10	ICD-9
1	Pyloromyotomy	G401			
2	Reduction of intussusception	G761, G821, H171, H301, H461, H462			
OR					
2	Reduction of intussusception ¹	G01 - G82, H01 - H62	AND	primary diagnosis K561	primary diagnosis 5600
3	Surgery for testicular torsion	N133, N15			
OR					
3	Surgery for testicular torsion ²	N06 or N07	AND	primary diagnosis N44X	primary diagnosis 6082
4	Herniotomy	T191, T192, T193, T198, T199, T202, T208, T209, T219			
5a	Appendicectomy - emergency	main op. or secondary op. in list H011, H012, H013, H018, H019			
5b	Appendicectomy - non-emergency	main op. or secondary op. in list H021, H022			
6	Grommets	D151, D202			
7	Squint	C31 - C37			
8	Fracture	W19 - W26, V08, V09, V15, V45			
9a	Circumcision - for health reasons ¹	N303	AND	primary diagnosis not Z41	primary diagnosis not V50
9b	Circumcision - for non-health reasons	N303	AND	primary diagnosis Z41	primary diagnosis V50
10	Orchidopexy	N08, N09			
11	Tonsillectomy	F341, F342, F343, F344, F345, F346, F348, F349			
12	Adenoidectomy	E201			

1. Reduction of intussusception

There were a significant number of episodes with a primary diagnosis of K56.1 Intussusception where the main operation was **not** one of the following:

G761 Intraabdominal manipulation of ileum, Open reduction of intussusception of ileum
G821 Other operations on ileum, Radiological reduction of intussusception of ileum using barium enema,

H171 Intraabdominal manipulation of colon, Open reduction of intussusception of colon
H301 Other operations on colon, Radiological reduction of intussusception of colon using barium enema

H461 Other operations on rectum, Radiological reduction of intussusception of rectum using barium enema

H462 Other operations on rectum, Hydrostatic reduction of intussusception of rectum

In order to capture all reduction of intussusception episodes the following were included:

a) episodes with procedures G761, G821, H171, H301, H461, H462

and

b) episodes with a primary diagnosis of K56.1 Intussusception and one of the following procedure codes: G01-G82 Upper digestive tract procedures OR H01-H82 Lower digestive tract procedures

2. Surgery for testicular torsion

In order to capture all episodes of surgery for testicular torsion the following were included:

a) episodes with one of the following procedures:

N133 Other operations on testis, Reduction of torsion of testis

N15 Operations on epididymis

and

b) episodes with a primary diagnosis of N44 Torsion of testis where one of the following procedures was carried out:

N06 Other excision of testis

N07 Extirpation of lesion of testis

3. Circumcision

Where circumcisions were carried out (procedure N303 Circumcision), the following primary diagnosis code was used to distinguish between circumcisions for health reasons and those for non-health reasons:

Z41 Procedures for purposes other than remedying health status

ii) OPCS4 procedure codes used for procedure groups showing increasing numbers of FCEs (in Section 7 of the report).

Procedure group	OPCS-4 codes
Arteries and veins	L01-L97
Chest wall pleura and diaphragm	T01-T17
Colonoscopy	H20-H25
Jejunum/Duodenal/small bowel biopsy	G44-G45, G54-G55, G65
Miscellaneous operations	X01-X59
Nervous System	A01-A84
Other operations on spine	V37-V50, V54
Suture of skin or subcutaneous tissue	S41-S42
Tooth and gingiva	F08-F20

Appendix 3

Notes on HES data

Finished Consultant Episode (FCE)

An FCE is defined as a period of admitted patient care under one consultant within one healthcare provider. Please note that the figures do not represent the number of patients, as a person may have more than one episode of care within the year.

Main Operation

The main operation is the first recorded operation in the HES data set and is usually the most resource intensive procedure performed during the episode. It is appropriate to use main operation when looking at admission details, e.g. time waited, but the figures for "all operations count of episodes" give a more complete count of episodes with an operation.

All Operations count of Episodes (used for appendicectomies)

These figures represent a count of all FCE's where the procedure was mentioned in any of the 12 (4 prior to 2002-03) operation fields in a HES record. A record is only included once in each count, even if an operation is mentioned in more than one operation field of the record.

Diagnosis (Primary Diagnosis)

The primary diagnosis is the first of up to 14 (7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was in hospital.

Specialty

Care is needed when analysing HES data by specialty, or by groups of specialties (such as Acute). Trusts have different ways of managing specialties and attributing codes so it is better to analyse by specific diagnoses, operations or other recorded information.

Ungrossed Data

Figures have not been adjusted for shortfalls in data (i.e. the data are ungrossed).

Further information on HES is available from the Information Centre for Health and Social Care website at <http://www.hesonline.org.uk>

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Appendix 4

Trust allocation to DGH, Specialist or Omit groups.

Trust Code	Trust	Trust Group
RGT	Addenbrooke's NHS Trust	SPECIALIST
RNJ	Barts & The London NHS Trust	SPECIALIST
RQ3	Birmingham Children's Hospital NHS Trust	SPECIALIST
RW3	Central Manchester And Manchester Children's University NHS Trust	SPECIALIST
RQM	Chelsea & Westminster Healthcare NHS Trust	SPECIALIST
RP4	Great Ormond Street Hospital For Children NHS Trust	SPECIALIST
RJ1	Guy's & St Thomas' NHS Trust	SPECIALIST
RJZ	King's Healthcare NHS Trust	SPECIALIST
RXN	Lancashire Teaching Hospitals NHS Trust	SPECIALIST
RR8	Leeds Teaching Hospitals NHS Trust	SPECIALIST
RFD	Leicester Royal Infirmary NHS Trust	SPECIALIST
RCS	Nottingham City Hospital NHS Trust	SPECIALIST
RTH	Oxford Radcliffe Hospital NHS Trust	SPECIALIST
RFK	Queen's Medical Centre, Nottingham University Hospital NHS Trust	SPECIALIST
RAL	Royal Free Hampstead NHS Trust	SPECIALIST
RBS	Royal Liverpool Children's NHS Trust	SPECIALIST
MQ6	S BIRMINGHAM CHILDREN'S UNIT	SPECIALIST
PR3	SALFORD CHILDREN'S SERV'S UNIT	SPECIALIST
RCU	Sheffield Children's Hospital NHS Trust	SPECIALIST
RHQ	Sheffield Teaching Hospitals NHS Trust	SPECIALIST
RM2	South Manchester University Hospitals NHS Trust	SPECIALIST
RHM	Southampton University Hospitals NHS Trust	SPECIALIST
RJ7	St George's Healthcare NHS Trust	SPECIALIST
RAD	ST JAMES UNIVERSITY HOSP TRUST	SPECIALIST
RQR	St James's & Seacroft University Hospitals NHS Trust	SPECIALIST
RJ5	St Mary's Hospital NHS Trust	SPECIALIST
RQ7	The Manchester Children's Hospital NHS Trust	SPECIALIST
RTD	The Newcastle Upon Tyne Hospitals NHS Trust	SPECIALIST
RA7	United Bristol Healthcare NHS Trust	SPECIALIST
RAC	United Leeds Hospitals Trust	SPECIALIST
RQS	United Leeds Teaching Hospital NHS Trust	SPECIALIST
RRV	University College London Hospitals NHS Trust	SPECIALIST
RWE	University Hospitals Of Leicester NHS Trust	SPECIALIST
RNX	Oxford Radcliffe Hospital NHS Trust	SPECIALIST
FBX	Queen Elizabeth Hospital for Children	SPECIALIST
RJ2	The Lewisham Hospital NHS Trust	SPECIALIST
RCK	The Royal Victoria Infirmary & Associated Hospitals NHS Trust	SPECIALIST
REM	Aintree Hospitals NHS Trust	DGH
RCF	Airedale NHS Trust	DGH
RM9	Alexandra Healthcare NHS Trust	DGH
RHN	Andover District Community Health Care NHS Trust	DGH
RTK	Ashford & St. Peter's Hospitals NHS Trust	DGH
RCY	Ashford Hospital NHS Trust	DGH
RF4	Barking, Havering & Redbridge Hospitals NHS Trust	DGH
RVL	Barnet And Chase Farm Hospitals NHS Trust	DGH
RFF	Barnsley District General Hospital NHS Trust	DGH
RDD	Basildon & Thurrock University Hospitals NHS Trust	DGH
RCP	Bassetlaw Hospital & Community NHS Trust	DGH
RC1	Bedford Hospitals NHS Trust	DGH
RR1	Birmingham Heartlands & Solihull (Teaching) NHS Trust	DGH

RL7	Birmingham Heartlands NHS Trust	DGH
RLA	Bishop Auckland Hospitals NHS Trust	DGH
RMB	Blackburn, Hyndburn & Ribble Valley Health Care NHS Trust	DGH
RMR	Blackpool Victoria Hospital NHS Trust	DGH
RXL	Blackpool, Fylde And Wyre Hospitals NHS Trust	DGH
RML	Blackpool, Wyre & Fylde Community Health Services NHS Trust	DGH
RMC	Bolton Hospitals NHS Trust	DGH
RAE	Bradford Hospitals NHS Trust	DGH
RXH	Brighton And Sussex University Hospitals NHS Trust	DGH
RGU	Brighton Health Care NHS Trust	DGH
RBR	BROADGREEN HOSPITAL TRUST	DGH
RG3	Bromley Hospitals NHS Trust	DGH
RXQ	Buckinghamshire Hospitals NHS Trust	DGH
REU	Burnley Healthcare NHS Trust	DGH
RJF	Burton Hospitals NHS Trust	DGH
RMN	Bury Health Care NHS Trust	DGH
RWY	Calderdale & Huddersfield NHS Trust	DGH
RGA	Calderdale Healthcare NHS Trust	DGH
RLG	Carlisle Hospitals NHS Trust	DGH
RBU	Central Manchester Healthcare NHS Trust	DGH
RAU	Central Middlesex Hospital NHS Trust	DGH
RFJ	Central Nottinghamshire Healthcare NHS Trust	DGH
RCV	Central Sheffield University Hospital NHS Trust	DGH
RG9	Chase Farm Hospitals NHS Trust	DGH
RFS	Chesterfield & North Derbyshire Royal Hospital NHS Trust	DGH
RLK	Cheviot & Wansbeck NHS Trust	DGH
RJU	Chorley & South Ribble NHS Trust	DGH
RBV	Christie Hospital NHS Trust	DGH
RLW	City Hospital NHS Trust	DGH
RLN	City Hospitals Sunderland NHS Trust	DGH
RFE	Community Health Services Southern Derbyshire NHS Trust	DGH
L21	Cornwall & Isles of Scilly	DGH
RJ8	Cornwall Healthcare NHS Trust	DGH
RJR	Countess Of Chester Hospital NHS Trust	DGH
RXP	County Durham And Darlington Acute Hospitals NHS Trust	DGH
RHE	Crawley Horsham NHS Trust	DGH
RLB	Darlington Memorial Hospital NHS Trust	DGH
RN7	Dartford & Gravesham NHS Trust	DGH
RFP	Derby City General Hospital NHS Trust	DGH
RK8	Derbyshire Royal Infirmary NHS Trust	DGH
RMW	Dewsbury Healthcare NHS Trust	DGH
C10	Doncaster	DGH
RP5	Doncaster & Bassetlaw Hospitals NHS Trust	DGH
RAG	Doncaster Royal Infirmary & Montagu Hospital NHS Trust	DGH
RN6	Dorset Community NHS Trust	DGH
RDY	Dorset Healthcare NHS Trust	DGH
RNA	Dudley Group of Hospitals NHS Trust	DGH
RC3	Ealing Hospital NHS Trust	DGH
RWH	East & North Hertfordshire NHS Trust	DGH
RHZ	East Berkshire Community Health NHS Trust	DGH
RJN	East Cheshire NHS Trust	DGH
RA5	East Gloucestershire NHS Trust	DGH
RC4	East Hertfordshire NHS Trust	DGH
RVV	East Kent Hospitals NHS Trust	DGH
RXR	East Lancashire Hospitals NHS Trust	DGH

RA4	East Somerset NHS Trust	DGH
RHH	East Surrey hospital & community	DGH
RXC	East Sussex Hospitals NHS Trust	DGH
RMU	East Yorkshire Community Healthcare NHS Trust	DGH
RF3	East Yorkshire Hospitals NHS Trust	DGH
RGX	Eastbourne & County Healthcare NHS Trust	DGH
RDL	Eastbourne Hospitals NHS Trust	DGH
RA1	Epsom Healthcare NHS Trust	DGH
RVR	Epsom/St Helier NHS Trust	DGH
RQV	Essex & Hertfordshire Community Healthcare NHS Trust	DGH
FBT	ESSEX & HERTS COMMON SERVICES	DGH
RDE	Essex Rivers Healthcare NHS Trust	DGH
REA	Exeter & District Community Health NHS Trust	DGH
FBN	FAMILY & COMMON SERVICES	DGH
RDF	Forest Healthcare NHS Trust	DGH
RQT	Fosse Health NHS Trust, Leicestershire	DGH
RFN	FOSSE HEALTH,LEICS. COMM.TRUST	DGH
REB	Frenchay Healthcare NHS Trust	DGH
RDU	Frimley Park Hospital NHS Trust	DGH
RM8	Furness Hospitals NHS Trust	DGH
RR7	Gateshead Health NHS Trust	DGH
RE2	Gateshead Hospitals NHS Trust	DGH
RLT	George Eliot Hospital NHS Trust	DGH
RFL	Glenfield Hospital NHS Trust	DGH
RTE	Gloucestershire Hospitals NHS Trust	DGH
RH6	Gloucestershire Royal NHS Trust	DGH
RJH	Good Hope Hospital NHS Trust	DGH
RQU	Grantham & District Hospital NHS Trust	DGH
CPM	GRANTHAM & KESTEVEN GENERAL	DGH
RG2	Greenwich Healthcare NHS Trust	DGH
RJS	Halton General Hospital NHS Trust	DGH
RC5	Harefield Hospital NHS Trust	DGH
RCD	Harrogate Healthcare NHS Trust	DGH
RRY	Hartlepool & East Durham NHS Trust	DGH
RLJ	Hartlepool & Peterlee Hospital NHS Trust	DGH
RDM	Hastings & Rother NHS Trust	DGH
RG7	Havering Healthcare NHS Trust	DGH
RD7	Heatherwood & Wexham Park Hospital	DGH
RLQ	Hereford Hospitals NHS Trust	DGH
RWR	Hertfordshire Partnership NHS Trust	DGH
RQQ	Hinchingbrooke Healthcare NHS Trust	DGH
RCM	HINCHINGBROOKE H'LTHCARE TRUST	DGH
RQX	Homerton University Hospital NHS Trust	DGH
FBR	HOMMERTON HOSPITAL	DGH
RH3	Horton General Hospital NHS Trust	DGH
RGB	Huddersfield NHS Trust	DGH
RWA	Hull & East Yorkshire Hospitals NHS Trust	DGH
RGQ	Ipswich Hospital NHS Trust	DGH
RR2	Isle Of Wight Healthcare NHS Trust	DGH
RGP	James Paget Healthcare NHS Trust	DGH
RGW	Kent & Canterbury Hospitals NHS Trust	DGH
RPD	Kent & Sussex Weald NHS Trust	DGH
RNQ	Kettering General Hospital NHS Trust	DGH
RJB	Kidderminster Healthcare NHS Trust	DGH
RCX	Kings Lynn & Wisbech Hospitals	DGH

RAX	Kingston Hospital NHS Trust	DGH
REV	Lancaster Acute Hospitals NHS Trust	DGH
RFB	Leicester General Hospital NHS Trust	DGH
RT5	Leicestershire & Rutland Healthcare NHS Trust	DGH
RK2	Leicestershire Mental Health NHS Trust	DGH
RRX	Lincoln & Louth NHS Trust	DGH
RKZ	Lincoln Hospitals NHS Trust	DGH
RK3	Louth & District Healthcare NHS Trust	DGH
RC9	Luton & Dunstable Hospital NHS Trust	DGH
RWF	Maidstone & Tunbridge Wells NHS Trust	DGH
RJ6	Mayday Healthcare NHS Trust	DGH
RPA	Medway NHS Trust	DGH
RDG	MID ESSEX HOSPITAL SERVS TRUST	DGH
RQ8	Mid Essex Hospitals NHS Trust	DGH
RG1	Mid Kent Healthcare NHS Trust	DGH
RJD	Mid Staffordshire General Hospitals NHS Trust	DGH
RPS	Mid Sussex NHS Trust	DGH
RXF	Mid Yorkshire Hospitals NHS Trust	DGH
RD8	Milton Keynes General Hospital NHS Trust	DGH
RTX	Morecambe Bay Hospitals NHS Trust	DGH
RQL	Mount Vernon & Watford Hospital	DGH
FBJ	NETR PLASTIC SURG & BURNS UNIT	DGH
RRH	Newham Community Health Services NHS Trust	DGH
RNH	Newham Healthcare NHS Trust	DGH
RM1	Norfolk & Norwich Healthcare NHS Trust	DGH
RVJ	North Bristol NHS Trust	DGH
RWW	North Cheshire Hospitals NHS Trust	DGH
RNL	North Cumbria Acute Hospitals NHS Trust	DGH
RLE	North Durham Acute Hospitals NHS Trust	DGH
RR9	North Durham Healthcare NHS Trust	DGH
RF6	North East Lincolnshire NHS Trust	DGH
RN5	North Hampshire Hospitals NHS Trust	DGH
RHK	North Hampshire, Loddon Community NHS Trust	DGH
RAQ	North Hertfordshire NHS Trust	DGH
RMK	North Manchester Healthcare NHS Trust	DGH
RAP	North Middlesex University Hospital NHS Trust	DGH
RJE	North Staffordshire Hospital NHS Trust	DGH
RVW	North Tees And Hartlepool NHS Trust	DGH
RCH	North Tees Health NHS Trust	DGH
RLC	North Tyneside Healthcare NHS Trust	DGH
RGK	North West Anglia Healthcare NHS Trust	DGH
RV8	North West London Hospitals NHS Trust	DGH
RCA	Northallerton Health Services NHS Trust	DGH
RNS	Northampton General Hospital NHS Trust	DGH
RBZ	Northern Devon Healthcare NHS Trust	DGH
RAF	Northern General Hospitals NHS Trust	DGH
RJL	Northern Lincolnshire & Goole Hospitals NHS Trust	DGH
RTF	Northumbria Healthcare NHS Trust	DGH
RFZ	Northwick Park & St. Marks NHS Trust	DGH
REX	Oldham NHS Trust	DGH
RW6	Pennine Acute Hospitals NHS Trust	DGH
RGN	Peterborough Hospitals NHS Trust	DGH
RK1	Pilgrim Health NHS Trust	DGH
RR4	Pinderfields & Pontefract Hospitals NHS Trust	DGH
RGE	Pinderfields Hospitals NHS Trust	DGH

RK9	Plymouth Hospitals NHS Trust	DGH
RGG	Pontefract Hospitals NHS Trust	DGH
RD3	Poole Hospitals NHS Trust	DGH
RHU	Portsmouth Hospitals NHS Trust	DGH
RNG	Premier Health NHS Trust	DGH
RMF	Preston Acute Hospitals NHS Trust	DGH
FBS	PRINCESS ALEXANDRA HOSPITAL	DGH
RGZ	Queen Mary's Sidcup NHS Trust	DGH
RG4	Redbridge Healthcare NHS Trust	DGH
RHG	Richmond, Twickenham & Roehampton healthcare	DGH
RL1	Robert Jones & Agnes Hunt Orthopaedic and DH NHS Trust	DGH
REZ	Rochdale Healthcare NHS Trust	DGH
RFR	Rotherham General Hospitals NHS Trust	DGH
RHW	Royal Berkshire & Battle Hospitals NHS Trust	DGH
RDZ	Royal Bournemouth & Christchurch Hospitals NHS Trust	DGH
RPX	Royal Brompton Hospital NHS Trust	DGH
REF	Royal Cornwall Hospitals NHS Trust	DGH
RH8	Royal Devon & Exeter Healthcare NHS Trust	DGH
RF2	Royal Hull Hospitals NHS Trust	DGH
RQ6	Royal Liverpool & Broadgreen Hospitals Universities NHS Trust	DGH
RBM	ROYAL LIVERPOOL UNIV HPL TRUST	DGH
RLZ	Royal Shrewsbury Hospitals NHS Trust	DGH
RA2	Royal Surrey County Hospital NHS Trust	DGH
RD1	Royal United Hospital Bath NHS Trust	DGH
RPR	Royal West Sussex NHS Trust	DGH
RBJ	Rugby NHS Trust	DGH
RM3	Salford Royal Hospitals NHS Trust	DGH
RNZ	Salisbury Healthcare NHS Trust	DGH
RXK	Sandwell And West Birmingham Hospitals NHS Trust	DGH
RNE	Sandwell Healthcare NHS Trust	DGH
RCC	Scarborough & North East Yorkshire Healthcare NHS Trust	DGH
RF7	Scunthorpe & Goole Hospitals NHS Trust	DGH
BP3	SEACROFT, K'BECK & WHARFEDALE	DGH
RH7	Severn NHS Trust	DGH
RXW	Shrewsbury And Telford Hospitals NHS Trust	DGH
RL2	Shropshire Community Health Service NHS Trust	DGH
MV1	Solihull Hospital	DGH
MQ4	SOUTH BIRMINGHAM ACUTE UNIT	DGH
RH2	South Buckinghamshire NHS Trust	DGH
RA9	South Devon Healthcare NHS Trust	DGH
RLP	South Durham Healthcare NHS Trust	DGH
RTA	South Durham Healthcare NHS Trust	DGH
RRW	South Durham NHS Trust	DGH
RWN	South Essex Mental Health & Community Care NHS Trust	DGH
RN8	South Kent Community Healthcare NHS Trust	DGH
RPF	South Kent Hospitals NHS Trust	DGH
RRE	South Staffordshire Healthcare NHS Trust	DGH
RCJ	South Tees Acute Hospitals NHS Trust	DGH
RTR	South Tees Hospitals NHS Trust	DGH
RE9	South Tyneside Healthcare NHS Trust	DGH
RJC	South Warwickshire General Hospitals NHS Trust	DGH
RHS	Southampton Community Health Services NHS Trust	DGH
RAJ	Southend Hospital NHS Trust	DGH
RTG	Southern Derbyshire Acute Hospitals NHS Trust	DGH
REE	Southmead Health Services NHS Trust	DGH

REQ	Southport & Formby Hospitals NHS Trust	DGH
RVY	Southport & Ormskirk NHS Trust	DGH
RPW	St Albans & Hemel Hempstead NHS Trust	DGH
RBN	St Helens & Knowsley Hospitals NHS Trust	DGH
RAZ	St Helier NHS Trust	DGH
RHT	St Mary's (IOW) Hospital NHS Trust	DGH
RDV	St Peter's Hospital NHS Trust	DGH
RMS	STOCKPORT ACUTE SERVICES NHS T	DGH
RMT	Stockport Healthcare NHS Trust	DGH
RWJ	Stockport NHS Trust	DGH
RTP	Surrey & Sussex Healthcare NHS Trust	DGH
RN3	Swindon & Marlborough NHS Trust	DGH
RMP	Tameside & Glossop Acute Services NHS Trust	DGH
RMQ	Tameside & Glossop Community & Priority Services NHS Trust	DGH
RBA	Taunton & Somerset NHS Trust	DGH
RGV	Thanet Healthcare NHS Trust	DGH
RAB	The Freeman Group of Hospitals NHS Trust	DGH
RQN	The Hammersmith Hospitals NHS Trust	DGH
RAS	The Hillingdon Hospital NHS Trust	DGH
RK5	The Kings Mill Centre for Healthcare NHS Trust	DGH
RBT	The Mid Cheshire Hospitals NHS Trust	DGH
RQW	The Princess Alexandra Hospital NHS Trust	DGH
RKF	The Princess Royal Hospital NHS Trust	DGH
RHV	The Radcliffe Infirmary NHS Trust	DGH
RPY	The Royal Marsden Hospital NHS Trust	DGH
RL4	The Royal Wolverhampton Hospitals NHS Trust	DGH
RFM	The West Lindsey NHS Trust	DGH
RM4	Trafford Healthcare NHS Trust	DGH
RWD	United Lincolnshire Hospitals NHS Trust	DGH
RQP	University College London Hospital NHS Trust	DGH
RRK	University Hospital Birmingham NHS Trust	DGH
RKB	University Hospitals Coventry And Warwickshire NHS Trust	DGH
RGF	Wakefield & Pontefract Community NHS Trust	DGH
RBK	Walsall Hospitals NHS Trust	DGH
RET	Walton Centre for Neurology & Neurosurgery NHS Trust	DGH
RKC	Warrington Hospital NHS Trust	DGH
RDC	Wellhouse NHS Trust	DGH
RH4	West Berkshire Priority Healthcare Services NHS Trust	DGH
RE7	West Cumbria Healthcars NHS Trust	DGH
RBD	West Dorset General Hospitals NHS Trust	DGH
RWG	West Hertfordshire Hospitals NHS Trust	DGH
RJV	West Lancashire NHS Trust	DGH
RFW	West Middlesex University NHS Trust	DGH
RGR	West Suffolk Hospitals NHS Trust	DGH
RE5	Westmorland Hospital NHS Trust	DGH
RA3	Weston Area Health NHS Trust	DGH
RGC	Whipps Cross University Hospital NHS Trust	DGH
RKE	Whittington Hospital NHS Trust	DGH
RJY	Wigan & Leigh Health Services NHS Trust	DGH
RD4	Wiltshire Healthcare NHS Trust	DGH
RN1	Winchester & Eastleigh Healthcare NHS Trust	DGH
RBL	Wirral Hospital NHS Trust	DGH
RLR	Worcester Royal Infirmary NHS Trust	DGH
RWP	Worcestershire Acute Hospitals NHS Trust	DGH
RWQ	Worcestershire Community & Mental Health NHS Trust	DGH

RRZ	Worcestershire Community Healthcare NHS Trust	DGH
RPL	Worthing & Southlands Hospitals NHS Trust	DGH
REY	Wrightington Hospital NHS Trust	DGH
RRF	Wrightington Wigan & Leigh NHS Trust	DGH
RCB	York Health Services NHS Trust	DGH
5DQ	Burntwood, Lichfield And Tamworth PCT	DGH
5GF	Huntingdonshire PCT	DGH
5C5	Newham PCT	DGH
NT2	Nuffield Hospitals (HQ)	OMIT
NT8	CAPIO UK	OMIT
8CR	8CR73 + 8CR76 Hampshire Private Hospitals	OMIT
5JC	Charnwood And North West Leicestershire PCT	OMIT
5ER	Erewash PCT	OMIT
5JA	Hinckley And Bosworth PCT	OMIT
5EH	Melton, Rutland & Harborough PCT	OMIT
RP6	Moorfields Eye Hospital NHS Trust	OMIT
5A1	New Forest PCT	OMIT
5DK	Newbury & Community PCT	OMIT
899	Non-UK provider or Non-NHS UK provider where no organisation code has been issued.	OMIT
5CD	North Dorset PCT	OMIT
RBF	Nuffield Orthopaedic NHS Trust	OMIT
NTY	Other Private Healthcare Providers	OMIT
RT3	Royal Brompton & Harefield NHS Trust	OMIT
RAM	Royal National Throat, Nose & Mouth Hospital	OMIT
MQ9	Royal Orthopaedic Hospital	OMIT
RRJ	Royal Orthopaedic Hospital NHS Trust	OMIT
5FW	Somerset Coast PCT	OMIT
5FN	South And East Dorset PCT	OMIT
5FP	South West Dorset PCT	OMIT
RNT	Stoke Mandeville Hospital NHS Trust	OMIT
5LT	Sussex Downs And Weald PCT	OMIT
RPC	The Queen Victoria Hospital NHS Trust	OMIT
RAN	The Royal National Orthopaedic Hospital NHS Trust	OMIT