



# Comparison of the Recording of Procedures on QRESEARCH and Hospital Episode Statistics

*An analysis using QRESEARCH  
For the Department of Health*

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## 2 EXECUTIVE SUMMARY

This report examines the scope for using QRESEARCH to determine rates for common hospital procedures over 4 years; the age and gender profile of recorded procedures in 2002; and to examine for the possibility of analysing by “place of procedure”.

The analysis presented in this report suggests that some procedures are reasonably well recorded by the practices contributing to pilot version of QRESEARCH. These are ones where the clinical implications longer term attach to the procedure rather than the underlying diagnosis. These include gall bladder surgery, hernia repair and hip operations.

However procedural investigations, such as endoscopies, are not well recorded, perhaps because the underlying diagnosis remains and retains the most clinical significance in the record. This might also explain the low rate for CABG in this report’s comparison.

QRESEARCH cannot be usefully used to throw light on the location of a procedure.

### 3 AIMS

To use QRESEARCH to:

- To determine annual rates of common hospital procedures per 1,000 population and compare them with HES derived rates for four years 1998 to 2001.
- To determine rates of procedures by age and sex for one year (2002).
- To investigate whether the ‘place of procedure’ yields any useful information.

### 4 METHODOLOGY

We selected 13 procedures as requested in the specification by the Department of Health. The OPCS codes for each of the procedures are shown in the table below along with the corresponding Read codes that seems to be equivalent.

**Table 1: OPCS and equivalent Read codes for 13 procedures**

<b>Read code description</b>	<b>Read code</b>	<b>OPCS codes</b>
Hip joint operations	7K20. – 7K25.	W37 – W39
Coronary artery bypass graft operations	7920. – 7926.	K40 – K46
PTCA	7928. – 7929.	K49 – K50
Cataract removal	7263., 7264., 7266. , 7267.	C71, C72, C74, C75
Tooth extraction	7511. – 7512.	F09 – F10
Hernia repair	760K., 7H10. – 7H18.	T20 – T27
Gall bladder operations	7810. – 7817.	J18 – J26
Varicose vein operations	7A67. – 7A69.	L85 – L87
Skin lesion removal	7G00. – 7G09.	S04 – S06
Gastroscopy	761D. – 761F.	G43, G45
Colonoscopy	771E., 771G., 771H., 771J., 771K., 771L.	H18, H20 – H22, H26, H28
Hysteroscopy	7E0D. – 7E0E.	Q17 – Q18
Cystoscopy	7B1B., 7B2A., 7B29.	M28 - M30; M42 - M45

Our numerator was therefore number of people who first had a Read code for the relevant procedure during each year and our denominator was the mid year population for each year 1990 to 2003 as shown in the table below. The mid year population was defined as all patients who were registered on 1<sup>st</sup> July each year. In order to exclude temporary residents, patients also needed to have been registered for all of the preceding six months. We used these data to calculate the rate of operations per 1000.

**Table 2: Mid year population for QRESEARCH pilot database 1990 to 2003**

Year	Mid year population
1990	144,640
1991	168,197
1992	183,221
1993	195,168
1994	205,597
1995	212,504
1996	217,770
1997	223,442
1998	229,870
1999	239,605
2000	245,817
2001	248,651
2002	250,131
2003*	251,325

\* Note 2003 is upto 23/10/2003

## 5 COMPARATIVE DATA

We derived comparative numerator data from HES for 1993 to 2002. Our denominator population was the mid year population estimate for each year, created from Office for National Statistics data (Health Statistics Quarterly, No 20, Winter 2003)

**Table 3: Rates of procedures per 1000 population derived from HES data**

	<b>98-99</b>	<b>Rate</b>	<b>99-00</b>	<b>Rate</b>	<b>00-01</b>	<b>Rate</b>	<b>01-02</b>	<b>Rate</b>
	<b>count</b>	<b>per</b>	<b>count</b>	<b>per</b>	<b>count</b>	<b>per</b>	<b>count</b>	<b>per</b>
		<b>1000</b>		<b>1000</b>		<b>1000</b>		<b>1000</b>
Hip surgery	47,004	0.97	47,008	0.96	49,606	1.01	49,919	1.01
CABG operations	23,996	0.49	23,698	0.49	24,947	0.51	24,425	0.49
PTCA	19,294	0.40	22,341	0.46	26,409	0.54	30,221	0.61
Cataract removal	207,257	4.26	216,213	4.43	245,239	5.01	250,094	5.07
Tooth extraction	141,851	2.92	136,947	2.80	130,115	2.66	127,763	2.59
hernia repair	105,032	2.16	101,414	2.08	104,832	2.14	100,502	2.04
Gall bladder operation	40,333	0.83	40,820	0.84	44,129	0.90	44,840	0.91
Varicose vein operations	57,536	1.18	49,642	1.02	47,090	0.96	42,989	0.87
Skin lesion removal	183,279	3.77	178,862	3.66	184,857	3.77	178,978	3.63
Gastroscopy	515,434	10.59	524,560	10.74	519,951	10.61	483,341	9.79
Colonoscopy	196,234	4.03	210,059	4.30	213,291	4.35	201,504	4.08
Hysteroscopy	116,999	2.40	121,120	2.48	122,297	2.50	120,602	2.44
Cystoscopy	316,802	6.51	316,026	6.47	328,609	6.71	313,120	6.34

## 6 RESULTS

The database used for these analyses is the pilot QRESEACRH database containing data from 43 practices, downloaded on 23/10/2003. A full description of this version of the database is contained in Report 2: Description of the QRESEARCH database, January 2003.

The following table shows the number of patients who had each procedure recorded for the very first time in each year and the rate per 1000 population using the mid year population from that year.

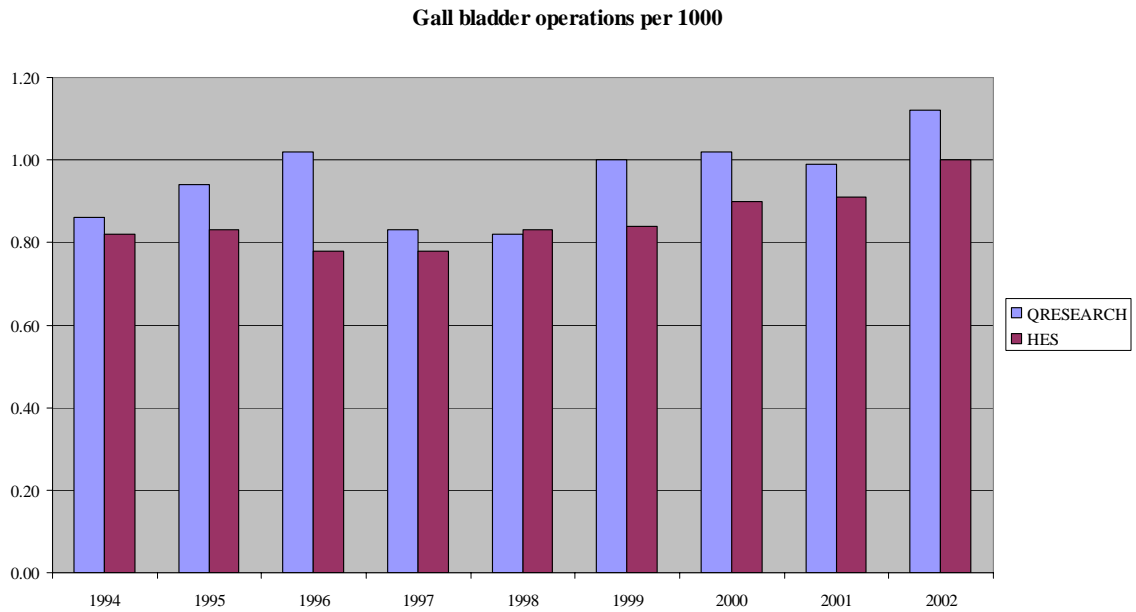
**Table 4: Comparison of the operation rates per 1000 population from the pilot QRESEARCH database and HES for 1998 to 2001**

YEAR	1998 QRESEAR CH	1998 HES	1999 QRESEAR CH	1999 HES	2000 QRESEAR CH	2000 HES	2001 QRESEAR CH	2001 HES
CABG	0.45	0.49	0.41	0.49	0.43	0.51	0.53	0.49
Cataract	2.02	4.26	2.05	4.43	2.16	5.01	2.77	5.07
Colonoscopy	1.7	4.03	1.54	4.30	1.77	4.35	1.56	4.08
Cystoscopy	1.5	6.51	1.55	6.47	1.48	6.71	1.55	6.34
Gall bladder operations	0.82	0.83	1.00	0.84	1.02	0.90	0.99	0.91
Gastroscopy	2.68	10.59	2.33	10.74	2.24	10.61	2.94	9.79
Hernia repair	1.6	2.16	1.50	2.08	1.64	2.14	1.54	2.04
Hip operation	0.8	0.97	0.87	0.96	0.94	1.01	0.9	1.01
Hysteroscopy	1.51	2.40	1.50	2.48	1.46	2.50	1.28	2.44
PCTA	0.13	0.40	0.18	0.46	0.19	0.54	0.27	0.61
Skin lesion removal	4.33	3.77	4.31	3.66	3.67	3.77	3.55	3.63
Tooth extraction	1.04	2.92	0.97	2.80	0.91	2.66	0.79	2.59
Varicose vein	0.94	1.18	0.82	1.02	0.54	0.96	0.51	0.87

More detailed data containing counts and rates for each calendar year for 1990 to 2003 for QRESEARCH are found in table 3 in the accompanying Excel workbook. The confidence intervals for the QRESEARCH data were based on Poisson distribution.

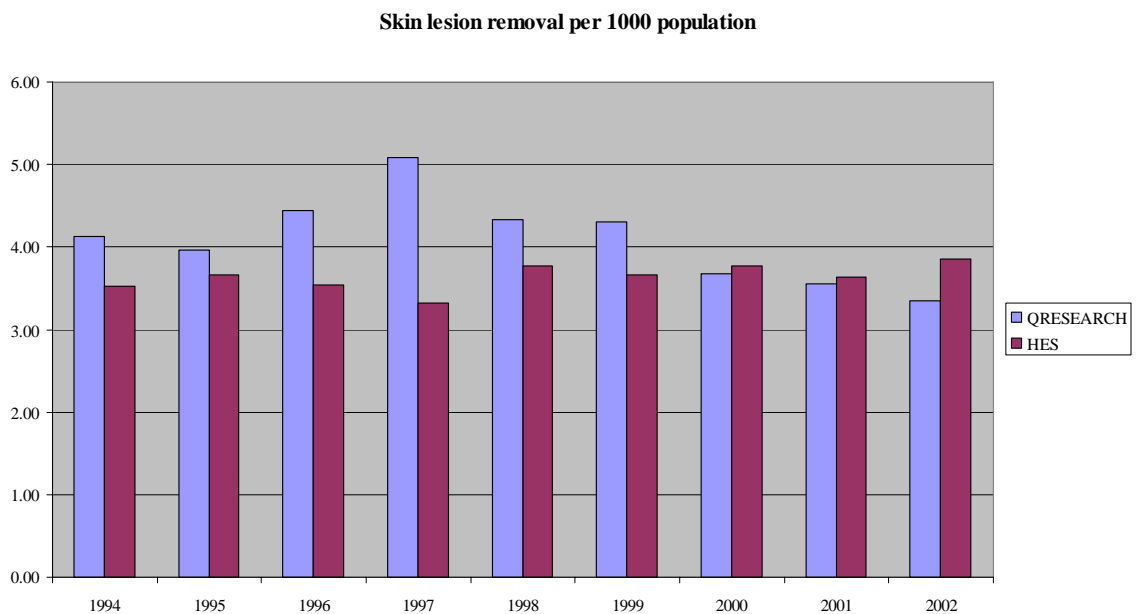
## 6.1 Gall bladder surgery

Gall bladder surgery is shown next. Our rate is very slightly higher in almost all years.



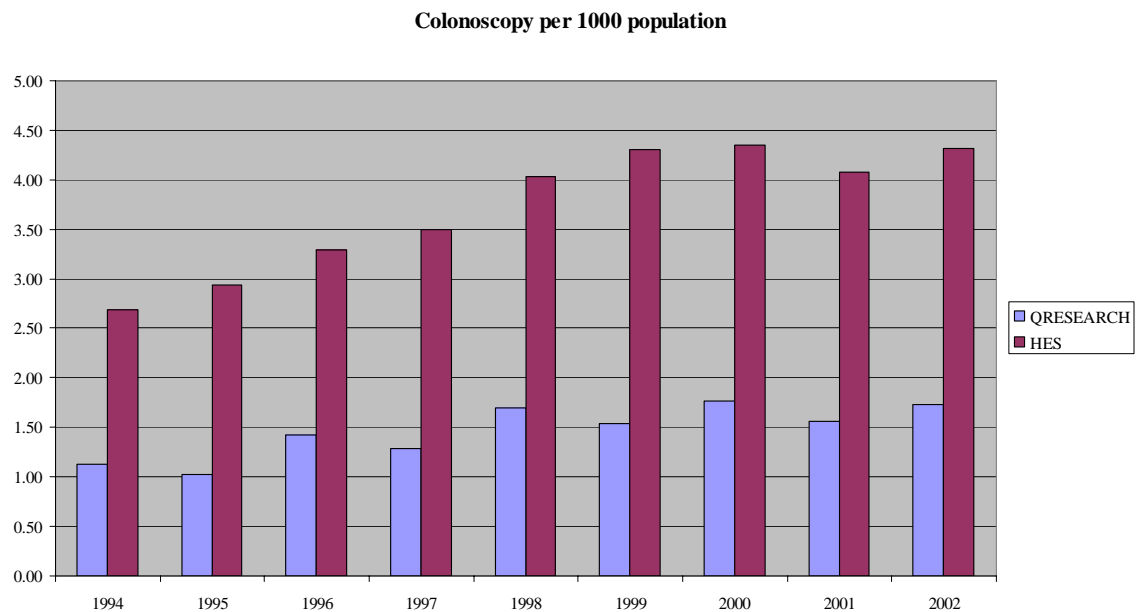
## 6.2 Skin lesion operations

The next chart shows the skin lesion operations per 1000 population



### 6.3 Colonoscopy

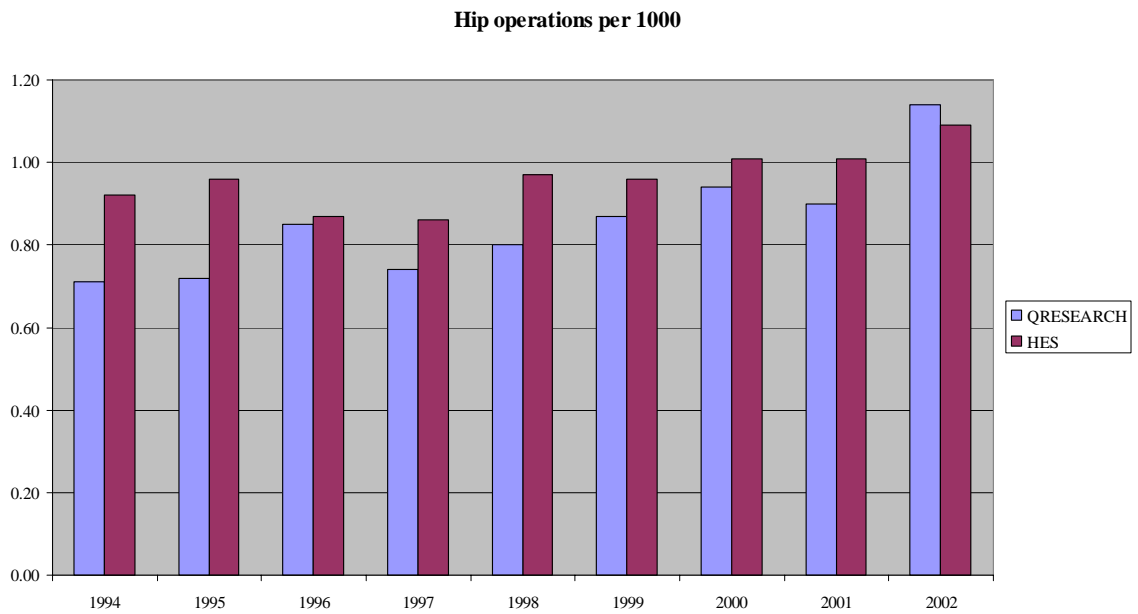
Colonoscopy rates are much lower. This is a recording issue – we think GPs are more likely to record major operations (such as hip operation) but when it comes to investigations, what is important is the diagnosis. So if a person had a colonoscopy and a diagnosis of ulcerative colitis was made, then ulcerative colitis would be recorded rather than colonoscopy.



Rates for the other endoscopy (gastroscopy, hysteroscopy and cystoscopy) were similarly lower.

## 6.4 Hip operations

The following chart shows the rate of hip surgery per 1,000 for 1994 to 2002. There is a reasonable correspondence between the rates. Our definition only allows each person to have one hip operation which may explain why our rates are marginally less in most years.





## 6.5 Rates by age and sex

The rates of hip operation in the QRESEARH pilot database by age and sex are shown here. The rates of each procedure by age and sex are shown in Table E4 of the accompanying Excel workbook.

**Table 5: Hip operation rates by age and sex per 1000 population for 2002**

gender	Ageband	Sample population	Number of patients having procedure	Rate per 1000
M	1 to 4 years	5,595	0	0
M	5 to 14 years	16,246	0	0
M	15 to 24 years	14,464	1	0.07
M	25 to 44 years	37,083	1	0.03
M	45 to 64 years	32,966	2	0.06
M	65 to 74 years	10,524	7	0.67
M	75 plus	7,951	23	2.89
F	1 to 4 years	5,196	0	0
F	5 to 14 years	15,416	0	0
F	15 to 24 years	14,114	0	0
F	25 to 44 years	35,990	1	0.03
F	45 to 64 years	31,798	2	0.06
F	65 to 74 years	11,295	6	0.53
F	75 plus	12,667	29	2.29

## 6.6 Minor surgery

Some minor types of surgery are carried out in GP practices. The following table shows the rates for four specific procedures. As with hip operations, we counted only the first event for each of these minor procedures. The second table shows the claims made by GPs for undertaking minor surgery identified using the administrative codes. Again, only the first mention for each patient is counted. There is some overlap between the two tables: patients with an administrative code and a specific procedure recorded were contributed to the rate in each table.

**Table 6: Minor surgery for specific procedures: rate per 1000 population**

	Aspiration	Cautery	Excision or incision	Injection
1990	0.00	0.01	0.01	0.26
1991	0.09	0.01	0.21	0.23
1992	0.04	0.02	0.24	0.15
1993	0.03	0.03	0.23	0.18
1994	0.02	0.02	0.17	0.30
1995	0.05	0.16	0.23	0.33
1996	0.12	0.87	0.48	0.80
1997	0.18	2.01	1.72	3.50
1998	0.27	3.05	2.60	5.31
1999	0.25	2.78	3.41	5.64
2000	0.18	2.07	2.98	3.42
2001	0.23	2.01	2.54	3.39
2002	0.18	2.03	2.58	5.65

**Table 7: Minor surgery recorded using administrative codes: rate per 1000 population**

	Rate
1990	0.46
1991	1.45
1992	3.03
1993	5.40
1994	5.54
1995	8.96
1996	11.09
1997	13.68
1998	14.90
1999	14.98
2000	14.91
2001	16.05
2002	13.88

## **6.7 Location of procedure**

For the vast majority of procedures, no location was recorded (they came within the category of miscellaneous). This is likely to be because the data were entered by administrative staff direct from a hospital letter, rather than by a clinician in the consultation.

We think that even where a location was associated with the computer recorded Read code for the procedure, this was the location of the consultation about the procedure rather than the procedure itself.

A good example of this is the consultations by telephone that were associated with 8 coronary artery bypass grafts, 9 cataract removals, 14 gall bladder operations and 12 hip operations. These were likely to be the first consultation following the operative procedure where the GP recorded the information for the first time on computer.

Our conclusion is that the place of procedure for hospital interventions refers to where the GP and patient were located when they discussed the procedure rather than where the procedure was done.

When it comes to the location of procedures undertaken in general practice, the “place of procedure” code should be more useful. So for skin excisions, aspirations and incisions, for example, we should be able to rely on the place of procedure code. The problem arises from the entry of those similar procedures carried out in a hospital setting. If a skin lesion is excised by a plastic surgeon, the computer entry will look identical to that for an excision carried out in the practice.

The distinguishing feature for primary care based procedures is the cods entered in order to ensure effective claim for minor surgery payment. These are the administrative codes (table 7) and these in fact give a higher incidence rate than the aggregation of procedure codes for aspiration, cautery, excision and injection. This suggests that some such procedures are recorded only with an administrative code.

## **6.8 Private vs NHS**

There is no direct way to determine the proportion of patients who have the procedure under the NHS or under private care. There are codes for private referral and it would be possible to determine what proportion of patients undergoing a procedure also had a private outpatient referral. However, this wouldn't guarantee that the patient had the procedure privately in addition to the referral as patients transfer to the NHS on occasions.

## 7 CONCLUSIONS

For some operative procedures the QRESEARCH database can provide data that are reasonably comparable to data from, for example HES. These include major procedures such as gall bladder surgery, hip operations, CABG and hernia operations. The reason for this is that these procedures themselves are of considerable significance to the primary care clinician. A general practitioner needs to know, for example, if a patient with abdominal pain has or has not still got a gall bladder.

For other procedures, the underlying disease process is the important feature for the clinicians. Thus endoscopy and other diagnostic investigations have a lower rate of recording on QRESEARCH.

Our rates of cataract were just over half the rate from HES. Since we identified patients from the database according to their date of first procedure, each patient in the QRESEARCH analysis will only have had one cataract procedure contribute to the rate. We know that cataract affects both eyes and that most patients have both eyes operated on, and hence this might explain why the QRESEARCH rate was about half the HES rate (which will count both cataract procedures from an individual patient as two operations)

Lastly there is one group of procedures – skin lesion removal – where the QRESEARCH rate exceeds the HES rate. This is not surprising to us. Many practices undertake minor surgery which includes removal of skin lesions. These operative procedures will be substantially, if not wholly, different from the hospital operative procedures; and these two rates should not be compared. If further work justified it, they might be added to yield an overall population rate for removal of skin lesions.

This report has also demonstrated that QRESEARCH is not suitable to determining the location of the operative procedure itself. However there are suggestions for further analyses that could be done on the database.