

The Scottish tonsillectomy audit

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Summary

Regional specialist societies offer a valuable mechanism for the conduct of medical audit. The experience of the audit sub-committee of The Scottish Otolaryngological Society in conducting an audit on laryngeal cancer encouraged us to undertake a larger audit of tonsillectomy practice in Scotland. Although the number of tonsillectomies performed has declined over the last 10 years, they still account for about 20 per cent of all operations performed by otolaryngologists and as such are a major consumer of resources (Personal communication – Directorate of Information Services, Information and Statistics Division, NHS in Scotland, Management Executive, Edinburgh). The Scottish tonsillectomy audit was devised to define current practice, review indications for surgery and recommend such modifications in practice as may be necessary to optimise patient care and the use of resources. Funding was obtained from the Clinical Resource and Audit Group (CRAG) of the Scottish Home and Health Department.

Data on current practice was collected during the period February 1992 to January 1993. Proformas were completed by medical, administrative and secretarial staff in all participating hospitals, collected by an audit secretary and passed to the relevant data collection centre. Data was then entered into a specially designed database before being forwarded to the audit co-ordinator based in Dundee for collation. Six and 12 months following surgery, all inpatients were sent a questionnaire to obtain data on the efficacy of the operation.

Data were obtained from a total of 9 773 patients. Two thousand and seventy-nine of these were seen as both outpatients and inpatients, 4 309 were outpatients only and 3 385 were inpatients only. Four thousand, one hundred and one patients returned at least one follow-up questionnaire.

The topics audited included source and reason for referral, indications for surgery, grade of staff involved, type of surgery and length of stay in hospital. In agreement with previous studies (H.M.S.O., 1989), differences were found in the rates of tonsillectomy performed in different Health Boards. Although the highest referral and operation rates were found in the Highland region, referral and operation rates did not correlate in all other areas. Recurrent tonsillitis was the most frequent principal reason for the decision to operate although there were differences between Health Boards for other indications including obstructive symptoms. Most patients had symptoms for two to three years although some patients had been affected for 40 years prior to being listed for tonsillectomy. Some area ENT services were consultant-based while others involved more junior staff. The grade of staff involved did not appear to affect the decision made at the Outpatient Department (OPD) or the outcome of the operation.

Ninety-eight per cent of patients who returned the questionnaire were glad that the operation had been performed.

Recommendations regarding changes in tonsillectomy practice are given.

Key words: Audit; Tonsillectomy; Scotland

Introduction

In a speciality such as Otolaryngology, departmental audit tends to examine the work of single individuals. To avoid this the Scottish Otolaryngological Society (SOS) established an audit sub-committee in the summer of 1989 to promote, develop and conduct audit within the speciality in Scotland. The umbrella of the Scottish society allows audit to be conducted in a larger, but still manageable group. Every

Consultant and Senior Registrar in Otolaryngology in Scotland is a member of the Society and meetings are held twice yearly in different parts of the country. The membership of the audit sub-committee comprises one consultant otolaryngologist from each Health Board area in Scotland in which an ENT service is based, with two consultants representing the Greater Glasgow area because of its large population. A chairman and a secretary have

From the Departments of Otolaryngology, Ninewells Hospital and Medical School, Dundee*, and Raigmore Hospital, Inverness†, and the Medical Computing Unit‡, University of Dundee, Ninewells Hospital and Medical School, Dundee, UK.

been appointed. A constitution ensuring periodic rotation of the members and office bearers has been established.

A specialist society of this kind, with an active membership of around 70, and with total geographic representation, provides a unique means of conducting regional and supra-regional audit. The SOS, like most such specialist societies, enjoys the active participation and goodwill of its members and activities such as audit are seen to be 'owned' by the membership.

The audit sub-committee first met formally in September 1989 and agreed that initially a limited audit should be undertaken to familiarize the membership of the Society with the mechanisms of audit. An assessment of the resources required to conduct audit on a regular basis was also made. The sub-committee recognized the difficulties inherent in obtaining agreement about the standards of acceptable practice on a national basis and recognized the need to determine the sources of variation in practice within the speciality throughout Scotland.

Audit of laryngeal cancer

Laryngeal cancer was seen as a suitable topic for an initial nation-wide audit as this is a clinical entity familiar to all practising otolaryngologists and one of major clinical importance. The number of patients presenting in Scotland with laryngeal cancer in a single year is sufficiently small to allow analysis on a national basis without the need for complex information gathering technology. A retrospective audit of the management of patients presenting with laryngeal cancer in 1986 was completed and is the subject of a separate publication (Blair and McKerrow, 1994).

Audit of tonsillectomy practice

Encouraged by the widespread acceptance by the society's membership of the concept of audit, the audit sub-committee agreed to undertake a more ambitious project provided this could be adequately funded. The main source of funding for audit in Scotland is the Clinical Resource and Audit Group (CRAG) of the Scottish Home and Health Department. A review of ENT services in Scotland by the Scottish Health Service Planning Council in 1989 had revealed considerable variation in rates of tonsillectomy/adenoidectomy throughout the country (H.M.S.O., 1989) (Figure 1).

No explanation for this was readily apparent and therefore the sub-committee felt that tonsillectomy practice was an appropriate subject for audit. Tonsillectomy and adenoidectomy are still the most commonly performed otolaryngological operations in Scotland although the number of such operations has declined over the last 20 years. Tonsils and/or adenoids were removed from 15 563 patients in 1976 and 12 358 patients in 1986. In 1990, 8 996 tonsillectomies alone were carried out and 8 142 in 1992. This represents a major expenditure of resources and accounts for about 20 per cent of all operations performed by otolaryngologists. Several studies in the United Kingdom (Mills and Hibbert, 1983; Laing and McKerrow, 1991) and North America (Paradise *et al.*, 1984) have attempted to define the indications for, and outcome of, tonsillectomy, but to date there is still wide variation in practice in western societies.

Organization of the audit

The audit sub-committee of the Scottish Otolaryngological Society sees audit as an ongoing activity. An essential component of audit is regular review of previous audits to determine whether

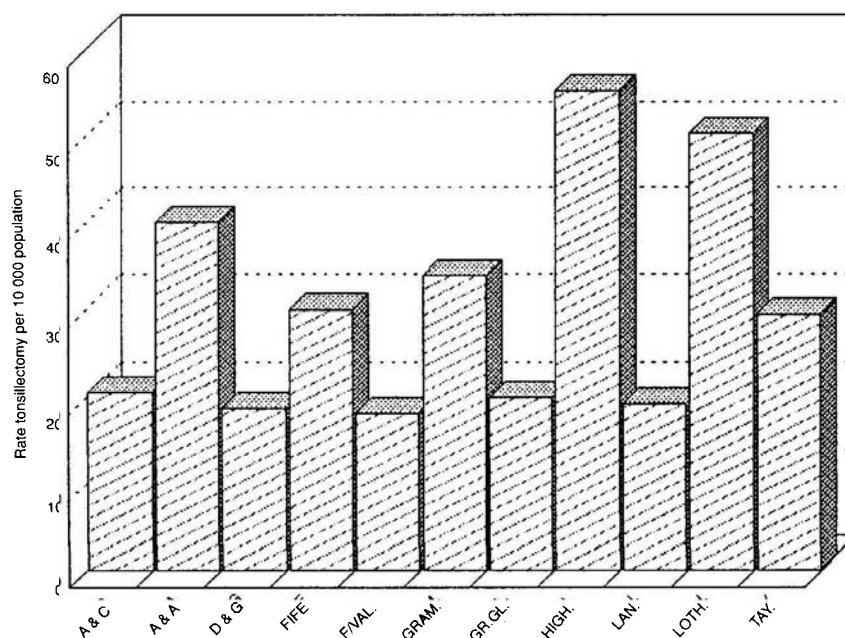


FIG. 1

The rate of tonsillectomies and adenoidectomies per 10 000 population in 1986, from SHHD report 1989. (See Appendix for abbreviations)

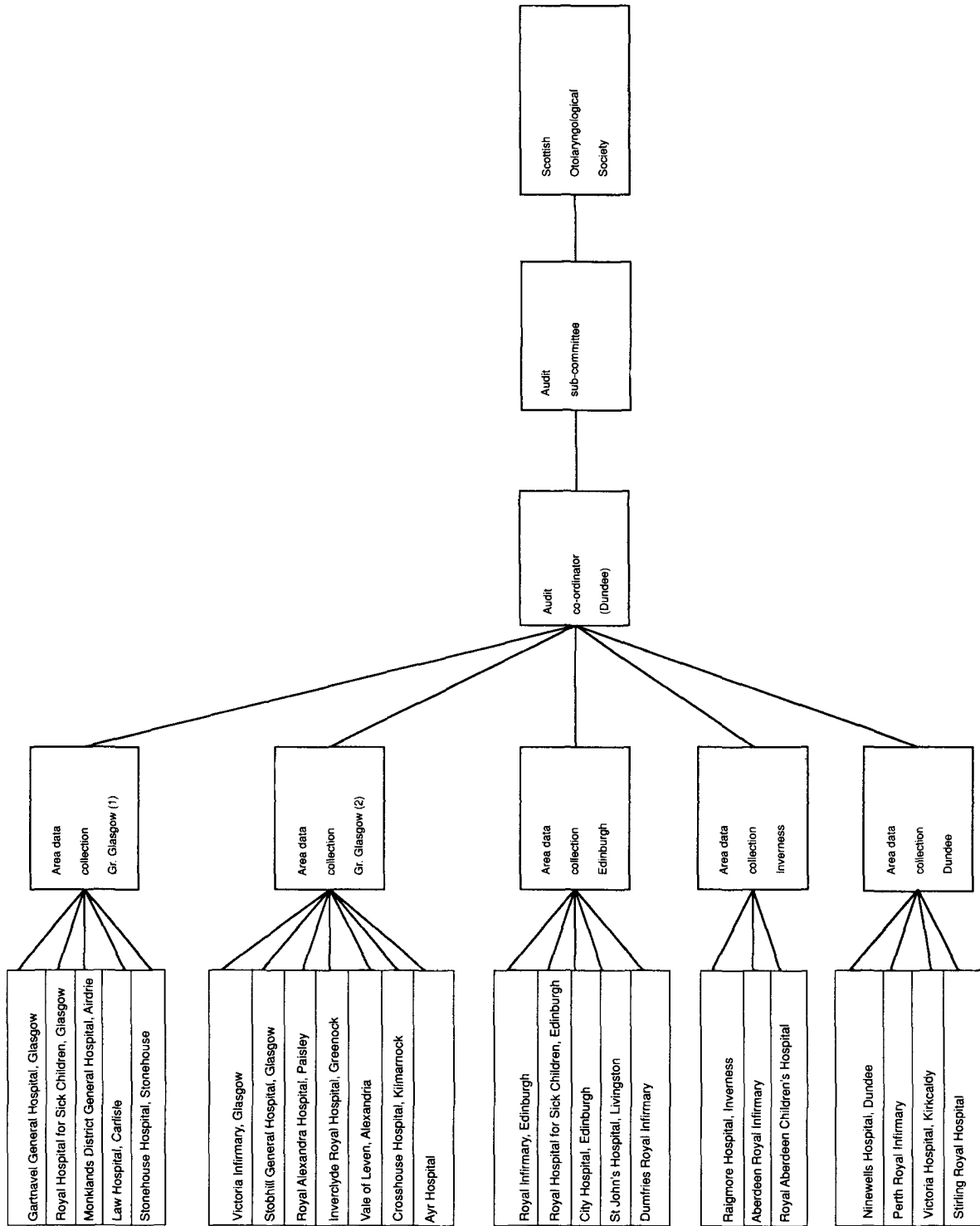


Fig. 2
Organization of the audit.

recommendations have altered practice. It was felt desirable to establish a system of ongoing audit of otolaryngological practice in Scotland and funding was requested to establish a computerized information gathering network throughout the country. Figure 2 shows the organization of the audit. A central audit facility was established in Dundee and a senior secretary was appointed as audit co-ordinator to deal with correspondence, agendas, protocols, questionnaires, typing, photocopying and collating of audit results from the various centres. Four sub-centres were established in Glasgow (2), Edinburgh and Inverness to co-ordinate data gathering at a regional level. Data from these sub-centres were fed into the central facility.

The Medical Computing Unit of the University of Dundee (MCU) installed hardware together with local and central data collection and analysis software. The audit sub-committee and the MCU devised appropriate protocols (Appendices 2 and 3). A pilot audit was conducted for a six-week period in five hospitals throughout Scotland and the protocols were modified to take account of unanticipated difficulties. Implicit in the structure of this audit was the notion that there should be uniform standards of practice throughout the country, although these were deliberately not explicitly defined.

Data gathering in hospitals began throughout Scotland in February 1992 and was completed one year later. During this period data was collected on three categories of patient (1) outpatient only, (2) inpatient only, (3) both inpatient and outpatient.

Follow-up questionnaires were sent to all inpatients at six and 12 months after their operation and the data-gathering process was completed in February 1994.

The aims of the audit project were to seek to answer the following questions:

- (1) How many tonsillectomy and adenotonsillectomy operations are performed in adults and children in Scotland?
- (2) How many referrals to otolaryngologists from general practitioners are received requesting consideration of these operations?
- (3) Do rates of referral vary significantly between Health Board areas? If so why?
- (4) What percentage of patients referred for consideration of surgery is actually listed for surgery?
- (5) What are the indications currently used for listing patients for tonsillectomy and adenotonsillectomy?
- (6) Are separate indications used routinely for tonsillectomy and adenotonsillectomy in children?
- (7) At what level of seniority of medical staff is the decision to operate made?
- (8) What percentage of patients referred for consideration of surgery is rejected? Does this rate relate to referral rate and/or grade of surgeon assessing patients?
- (9) What percentage of patients referred to surgery

are not scheduled for surgery, but are given review appointments? What are the variations in practice throughout the country?

- (10) How long do patients wait for surgery? Is any group(s) of patients given priority?
- (11) What are the factors that influence waiting time?
- (12) What type of surgery is performed e.g. dissection tonsillectomy, guillotine tonsillectomy?
- (13) What grade of surgical staff performs the operation?
- (14) What is the average duration of the patient's stay in hospital? If there is a variation, why is this? Can we define an optimal period of hospital stay?
- (15) What percentage of patients undergoing surgery has complications? What are these complications?

The outcomes of tonsillectomy and adenotonsillectomy post-surgery were assessed post-operatively by a postal questionnaire sent to all patients six months and one year after surgery. The following questions were asked:

- (a) Following surgery is the patient's appetite better/same/worse (children only).
- (b) How does the patient's throat feel now? Better/Same/Worse.
- (c) In general, how does the patient feel now? Better/Same/Worse.
- (d) How long after treatment was normal activity resumed?
- (e) Following surgery has there been less/more time lost off school/work?
- (f) How much has the treatment helped? Not at all/Some/Greatly.
- (g) Is the patient glad the operation was performed? Yes/No.

Information about the progress of the audit was disseminated on a regular basis by the members of the audit sub-committee to all senior and junior colleagues involved in data collection. Formal reports on the audit were given at the twice yearly meetings of the Scottish Otolaryngological Society to allow all members of the Society to comment and criticize.

Results

Data collection began in February 1992. A total of 9 773 patients participated in the audit. There were 4 309 who were outpatients only, 3 385 inpatients

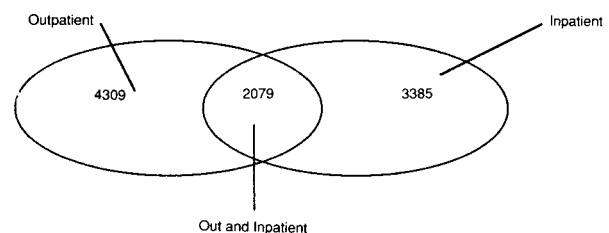


FIG. 3

Number of patients in each category of the audit.

TABLE I
NUMBER OF PATIENTS INVOLVED IN AUDIT

	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.	Total
Outpatient only	274	427	89	131	191	351	886	177	562	834	387	4309
Inpatient only	279	240	137	222	64	324	747	182	245	644	301	3385
Outpatient and inpatient	132	43	116	171	107	229	353	240	188	305	195	2079
Follow-up (6 months)	262	225	217	318	137	471	680	356	288	741	406	4101
Follow-up (12 months)	137	135	162	224	89	317	329	219	122	447	289	2931

only, and 2 079 patients had both outpatient and inpatient records (Figure 3). Four thousand, one hundred and one of the inpatients completed at least one of the follow-up questionnaires (Table I).

Rate of tonsillectomy

To measure the efficacy of data collection, SMR1 (Scottish Morbidity Record 1) data on discharges for tonsillectomy by Health Board of treatment were obtained for the same time period as the audit. These records are admission forms for medical record purposes containing the patient's personal details, general practitioner, next of kin, admission details and discharge summary including diagnosis and operations (coded). To eliminate the effect of differences in population, the rate of tonsillectomy in each Health Board is presented as number of operations per 10 000 population.

Comparison of the numbers obtained in this audit with the SMR1 data for the same period shows varying degrees of compliance in different Health Board areas (Figure 4). Over 67 per cent of the tonsillectomies performed in Scotland during this period were recorded in the inpatient part of the audit. Tayside shows 100 per cent compliance undoubtedly due to the audit co-ordinator's active involvement in reminding staff to fill in the profor-

mas. Dumfries and Galloway and Highland both show over 95 per cent compliance. However, in Ayrshire and Arran only 34 per cent of patients identified by SMR1 data were included in the audit.

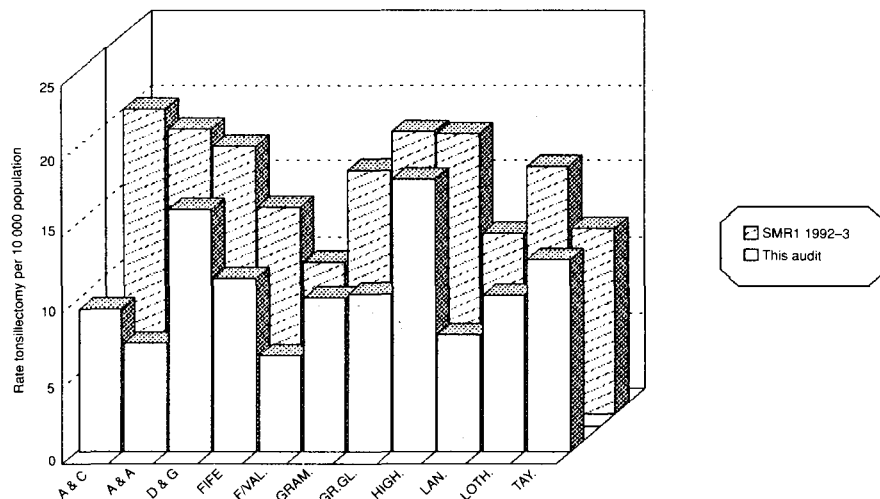
Both sets of data in Figure 4 confirm the findings of the SHHD report of 1989 (Figure 1) that there are large differences in the rates of tonsillectomy throughout the country. Because the SHHD report, which reflects clinical activity in 1986, does not differentiate between the surgical categories of tonsillectomy alone, tonsillectomy and adenoidectomy or adenoidectomy alone it is difficult to be sure that there has been a reduction in the rate of tonsillectomy between 1986 and 1992.

Process of patient management

The following results are presented in the order of the aims of the audit.

(1) *How many tonsillectomy and adenotonsillectomy operations are performed in adults and children in Scotland? (Child is <14 years of age)*

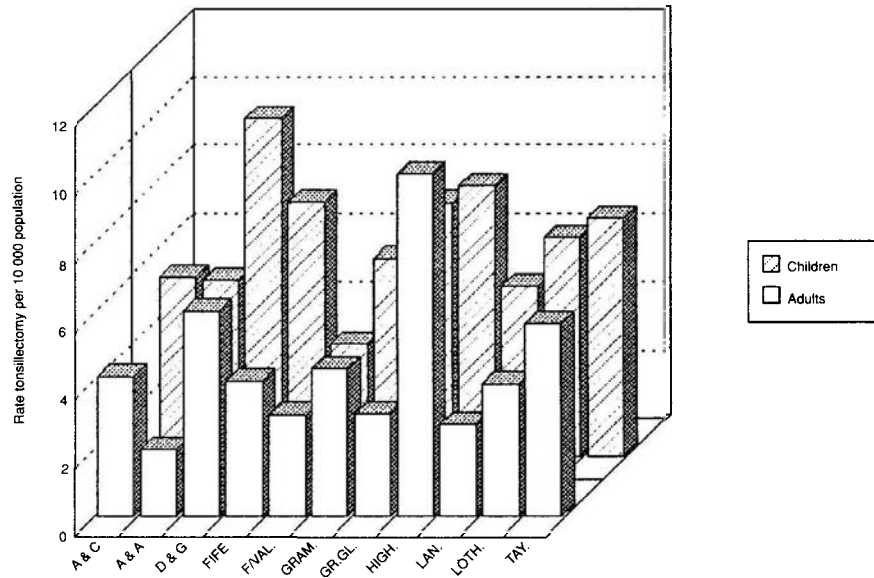
Figure 5 shows a striking variation in the adult-child ratio in tonsillectomy throughout the country. For example, in Ayrshire and Arran and Greater Glasgow over 72 per cent of operations were carried out in children. Highland was the only area where



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
This audit	9.33	7.11	15.9	11.4	6.28	10.09	10.39	17.9	7.68	10.26	12.6
SMR1 1992	20.03	18.76	17.5	13.6	9.96	16	18.56	18.4	11.84	16.22	12.6

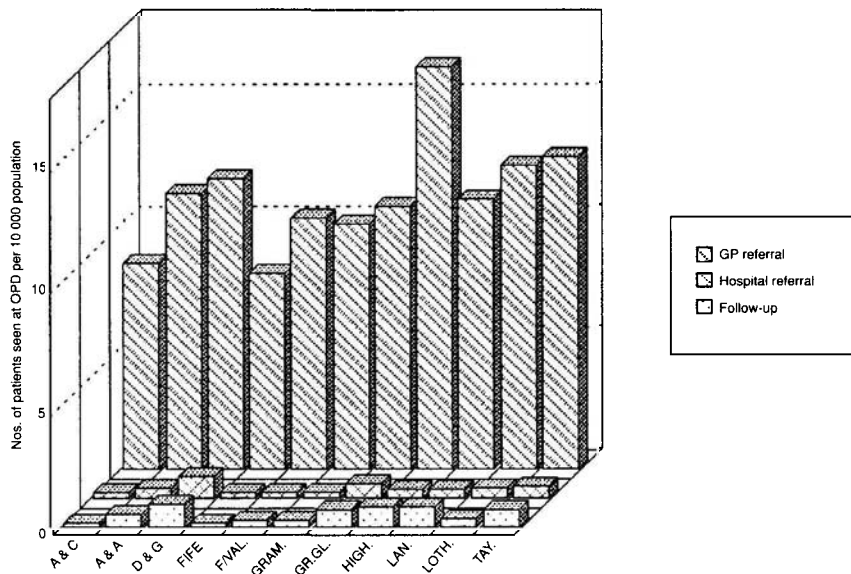
FIG. 4

The rate of tonsillectomy this audit and SMR1 data per 10 000 population by Health Board of treatment.



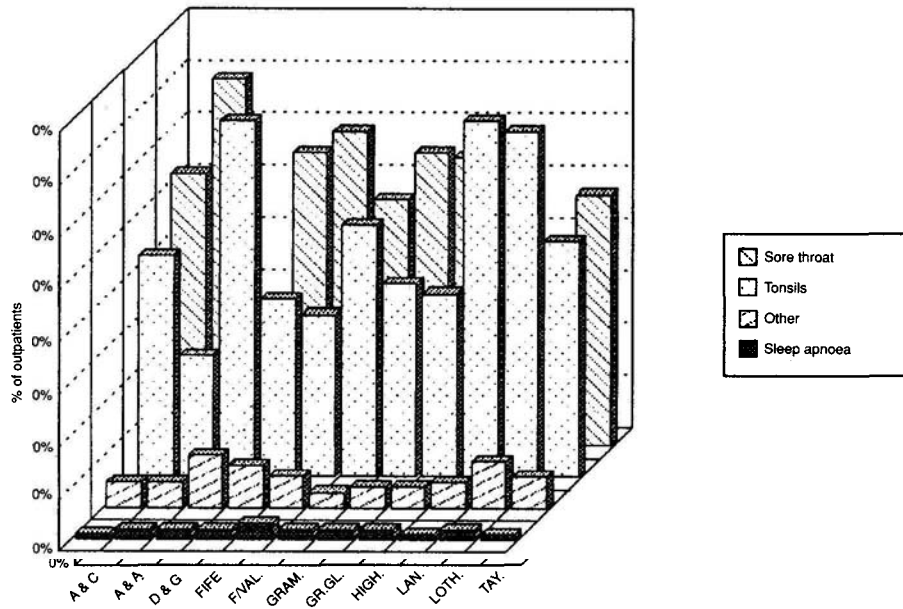
	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Children	5.22	5.12	9.86	7.41	3.39	5.75	7.38	7.88	4.96	6.36	6.93
Adults	4.11	1.99	6.04	3.99	2.89	4.34	3.01	10.02	2.72	3.9	5.67
C/A ratio	1.27	2.57	1.63	1.86	1.17	1.32	2.45	0.79	1.82	1.63	1.22

FIG. 5
The rate of tonsillectomies per 10 000 population performed in adults and children.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
GP referral	8.42	11.29	11.93	8.01	10.3	10.04	10.78	16.5	11.09	12.46	12.8
Hospital referral	0.25	0.45	0.88	0.26	0.22	0.22	0.59	0.34	0.36	0.41	0.48
Follow-up	0.2	0.53	0.94	0.2	0.33	0.31	0.74	0.85	0.82	0.39	0.74

FIG. 6
Referral rates per 10 000 population by source of referral.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Sore throat	52.1	70.0	19.2	55.7	60.2	47.1	56.4	55.4	27.5	20.2	48.4
Tonsils mentioned	42.3	23.5	68.4	34.5	31.0	47.9	37.3	35.5	66.2	68.6	44.6
Other	5.0	4.6	10.4	8.2	6.1	3.5	4.4	7.2	5.4	9.2	5.9
Sleep apnoea	0.6	2.0	2.0	1.7	2.7	1.5	1.9	1.9	0.9	2.0	1.1

FIG. 7
Principal referral reason as a percentage of outpatients

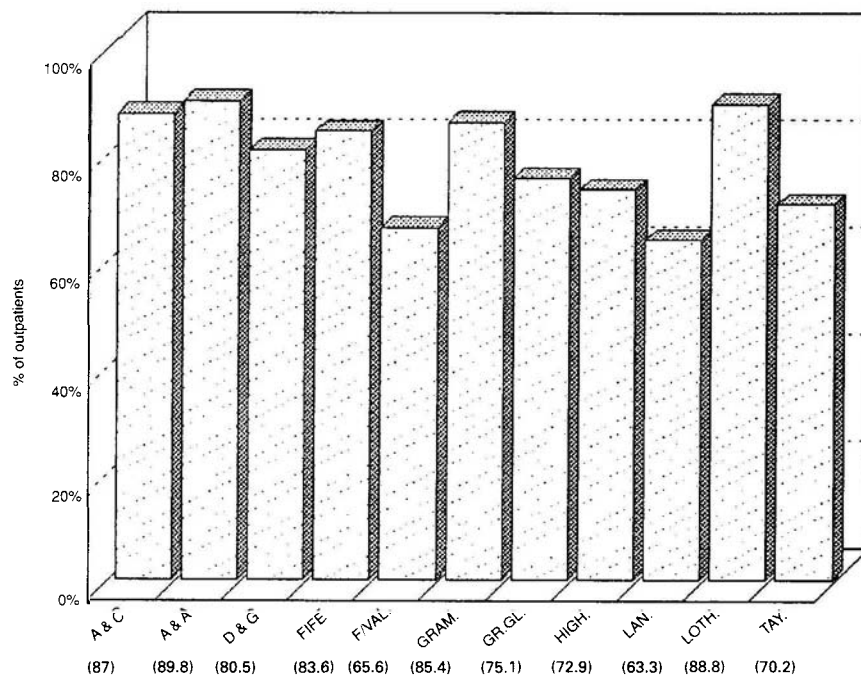
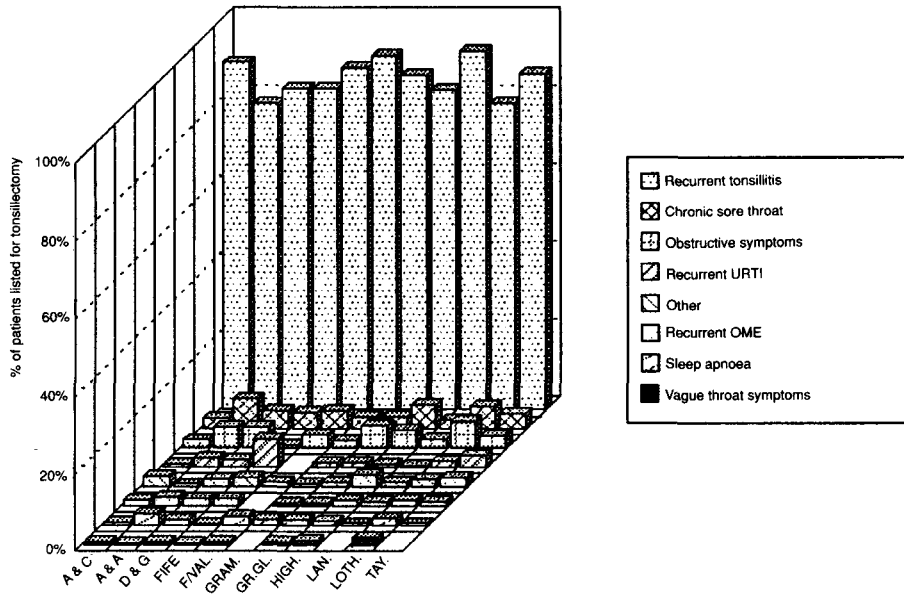


FIG. 8
Percentage of patients seen at OPD who are listed for tonsillectomy.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Recurrent tonsillitis	89.2	78.6	82.6	82.5	87.9	90.9	85.9	82.2	92.1	78.7	86.2
Chronic sore throat	2.7	8.0	4.5	4.1	4.6	3.0	3.1	6.3	2.4	5.9	3.8
Obstructive symptoms	2.1	5.2	5.2	0.8	3.4	2.0	5.8	4.6	2.4	6.8	3.1
Recurrent URTI	0.6	2.2	1.9	7.3	0.0	1.2	1.1	0.7	0.2	1.6	3.1
Other	2.7	0.5	1.9	2.4	1.1	0.6	1.2	3.0	1.2	1.7	2.3
Recurrent OME	1.5	2.2	1.9	2.0	0.0	0.8	0.8	1.3	1.2	1.5	1.0
Sleep apnoea	0.6	3.0	1.3	0.4	2.3	1.4	1.6	1.0	0.5	1.8	0.5
Vague throat symptoms	0.6	0.2	0.6	0.4	0.6	0.0	0.5	1.0	0.0	1.9	0.0

FIG. 9
Principal reason for listing patient for tonsillectomy.

more operations were performed on adults than children.

(2) How many referrals to otolaryngologists from general practitioners are received requesting consideration of these operations?

Figure 6 shows the referral rate by source. The highest rate of referral was found in Highland which also had the highest rate of tonsillectomy performed, as shown in Figure 4. However, the lowest rates of referral in Fife and Argyll and Clyde did not reflect a corresponding low rate of tonsillectomy. Not surpris-

ingly, by far the greatest referral source was general practitioners (GPs).

(3) Do rates of referral vary significantly between Health Board areas? If so why?

Referral rates do vary significantly between Health Boards as shown previously in Figure 6. The chi-squared test statistic was highly significant ($p < 0.001$) showing wide variation between Health Boards. There were more referrals than expected for 'sore throat' in Ayrshire and Arran, for 'tonsils

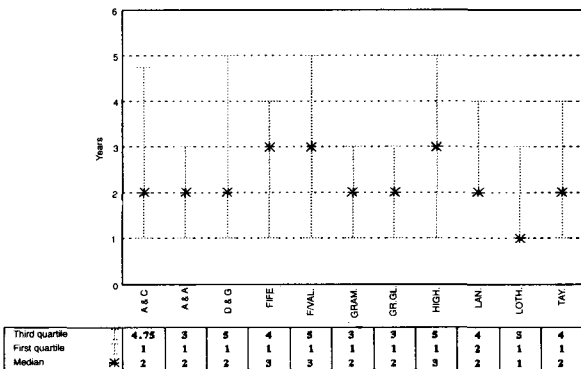


FIG. 10
Length of duration of symptoms.

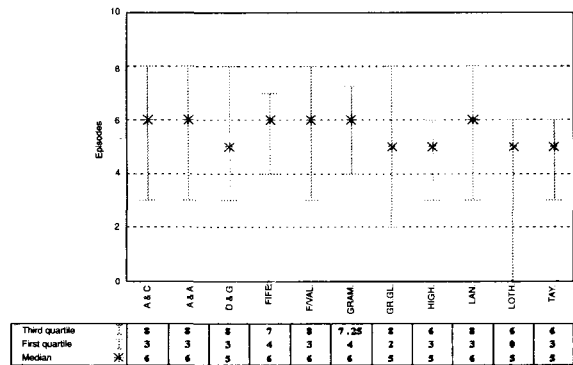


FIG. 11
The number of episodes per year.

mentioned' in Lanark and Lothian and for 'other reasons' in Lothian. There were fewer than expected referrals for 'sore throat' in Lothian and for 'tonsils mentioned' in Ayrshire and Arran.

This audit did not examine the decision-making processes of GPs in referring patients for consideration of tonsillectomy. It was felt that involvement of GPs would add an extra dimension to an already complex audit. However the principal referral reason was extracted from the referral letter. This was done in an attempt to assess how many patients were specifically referred for tonsillectomy as opposed to those who were sent for other reasons such as sore throat, sleep apnoea etc. The thinking behind the question was to assess the perception of GPs vis-à-vis hospital staff regarding the need for tonsillectomy. In retrospect it would have been better to label the box 'tonsils mentioned' as 'tonsillectomy requested', although often the GP's letter was not framed in these terms. In all areas most referral letters either mentioned recurrent sore throats or tonsils, with all other reasons for consultation being relatively insignificant as shown in Figure 7.

(4) *What percentage of patients referred for consideration of surgery is actually listed for surgery?*

Figure 8 illustrates the percentage of patients listed for tonsillectomy at the first outpatient clinic visit. The results vary significantly between Health Boards ($p < 0.001$), mainly due to more than expected listings in Lothian and Ayrshire and Arran, but fewer than expected in Lanarkshire and Forth Valley. This does not appear to relate to referral

rates (Figure 6), nor does grade of staff assessing the patients seem to influence decision-making.

(5) *What are the indications currently used for listing patients for tonsillectomy and adenotonsillectomy?*

Figure 9 illustrates, not surprisingly, that most patients listed for tonsillectomy have recurrent tonsillitis as the indication for the operation. However, in some Health Board areas, for example Ayrshire and Arran, sleep apnoea accounted for three per cent of the indications for surgery. It appears likely that with increasing awareness of sleep apnoea by GPs, referrals for this problem and for snoring will increase.

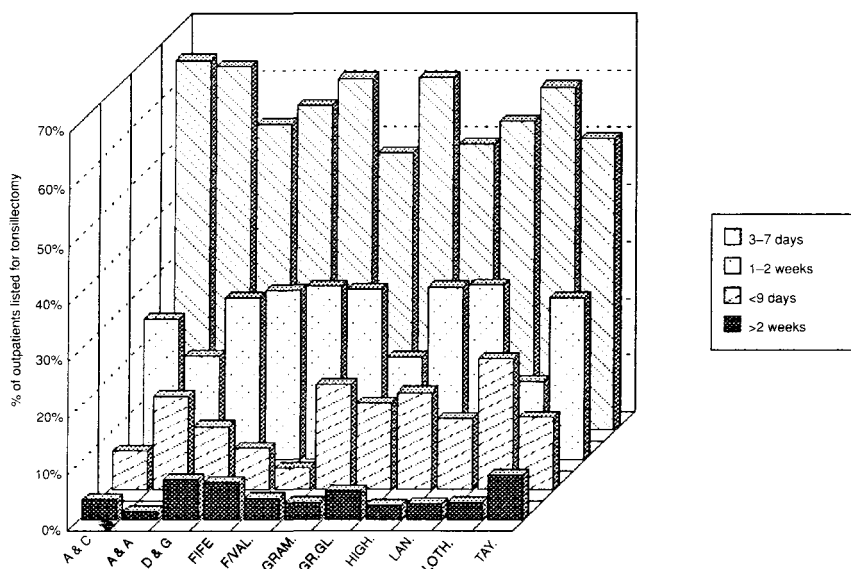
The interquartile range for patients in Ayrshire and Arran, Grampian and Highland was two years but was four years in Dumfries and Galloway, Forth Valley and Highland (Figure 10).

The median number of episodes before listing for tonsillectomy was five to six per year and this was uniform throughout the country. The length of each episode is illustrated in Figure 11.

Figure 12 shows that the time for which the majority of patients were incapacitated per episode is usually between three to seven days with a substantial proportion of patients having symptoms lasting for one to two weeks.

(6) *Are separate indications used routinely for tonsillectomy and adenotonsillectomy in children?*

Recurrent tonsillitis is the most frequent reason given for listing patients for tonsillectomy and adenotonsillectomy (Figures 13 and 14). When obstructive symptoms and sleep apnoea are present,



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
3-7 days	65.0	63.8	53.5	56.8	61.7	48.6	61.9	50.0	54.1	60.2	51.1
1-2 weeks	24.8	18.3	28.5	29.7	30.6	30.0	17.9	30.4	30.8	13.7	28.5
<3 days	6.8	16.5	11.1	7.2	3.8	18.5	15.3	17.1	12.4	23.1	12.7
>2 weeks	3.5	1.5	6.9	6.4	3.8	2.9	4.9	2.4	2.7	2.9	7.7

FIG. 12
Time incapacitated per episode.

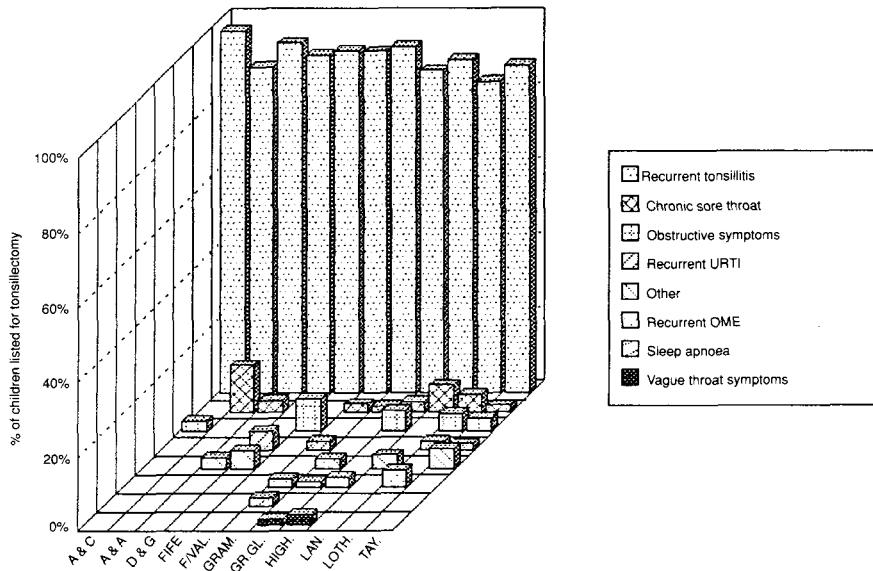


FIG. 13
Indications used for listing children for tonsillectomy.

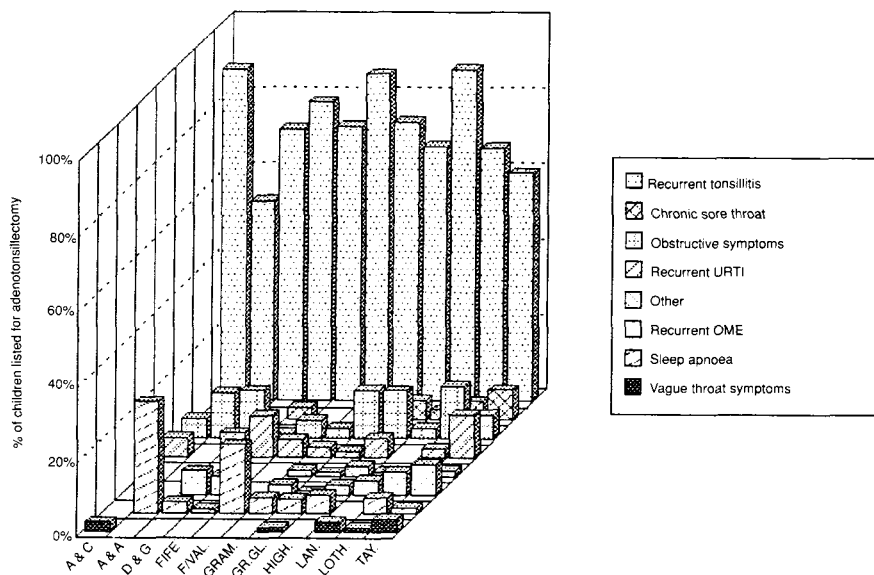
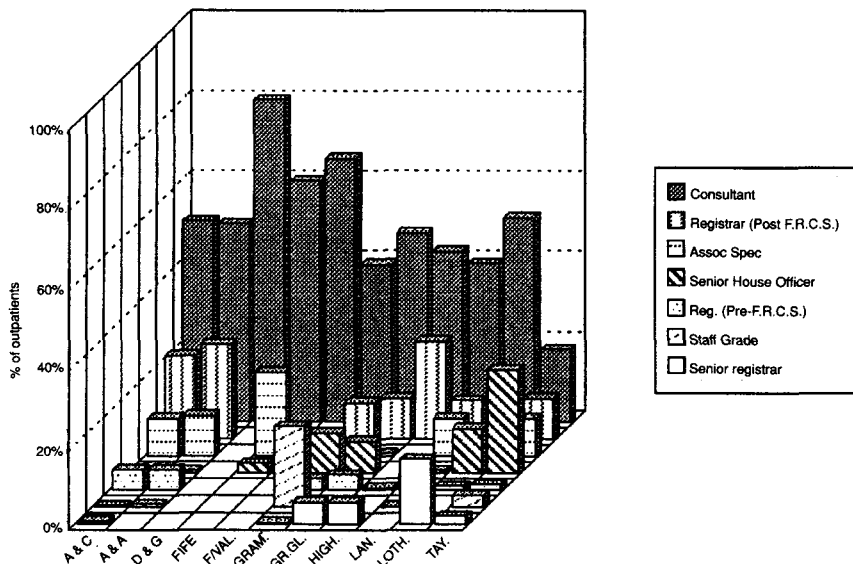


FIG. 14
Indications used for listing children for adenotonsillectomy.

	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Recurrent tonsillitis	97.2	87.5	93.8	90.5	91.7	91.5	93.0	86.5	89.3	83.7	87.9
Chronic sore throat	0.0	12.5	3.1	0.0	0.0	2.1	1.4	2.7	7.1	4.7	1.7
Obstructive symptoms	2.8	0.0	0.0	0.0	8.3	0.0	0.0	5.4	0.0	4.7	3.4
Recurrent URTI	0.0	0.0	0.0	4.8	0.0	2.1	0.0	0.0	0.0	2.3	1.7
Other	0.0	0.0	3.1	4.8	0.0	0.0	2.8	0.0	3.6	0.0	5.2
Recurrent OME	0.0	0.0	0.0	0.0	0.0	2.1	1.4	2.7	0.0	4.7	0.0
Sleep apnoea	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
Vague throat symptoms	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.7	0.0	0.0	0.0
	2.4	0.0	0.0	0.0	0.0	0.0	0.9	0.0	2.5	1.2	3.2

Figures in italics are for adenotonsillectomy.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Consultant	50.1	49.3	80.5	60.1	65.6	39.2	47.0	42.4	39.4	50.9	18.3
Registrar (Post-F.R.C.S.)	20.8	23.8		0.3		9.0	10.1	24.5	9.6	8.6	10.1
Associated specialist	9.4	10.2		20.8		3.3	0.6		9.4	0.7	9.4
SHO	0.5	0.7		2.4		10.2	8.1	0.0	0.7	11.2	25.9
Registrar (Pre-F.R.C.S.)	5.2	5.1				2.9	3.8	0.5	4.0	1.0	1.4
Staff grade	0.3	0.7				20.3			0.1		3.0
Senior Registrar	0.8					0.5	5.4	5.5		16.4	2.0
Total OP listed	87.0	89.8	80.5	83.6	65.6	85.4	75.1	72.9	63.3	88.8	70.2

FIG. 15
Percentage of outpatients listed for tonsillectomy by grade of staff making the decision at OPD.

adenotonsillectomy rather than tonsillectomy alone is most likely to be undertaken in children. Adenoidectomy alone was not examined in this audit but will be studied in a further Scottish Otolaryngological Society audit on otitis media with effusion.

(7) *At what level of seniority of medical staff is the decision to operate made?*

In certain parts of the country where there is a consultant-based otolaryngology service all patients are assessed by consultant staff. In other areas, such as Tayside, large numbers of patients are seen by Senior House Officers working to protocols for surgery devised by consultant staff (Figure 15).

(8) *What percentage of patients referred for consideration of surgery is rejected? Does the proportion rejected for operation relate to referral rate and/or grade of surgeon assessing patients?*

A rejection of OPD was defined as neither a listing for tonsillectomy nor for a review appointment. The rate of rejection appears not to relate to rate of referral (as shown on Figure 6). Highland which had the highest referral rate did not have the highest rejection rate. The lowest rejection rate was in Grampian although it did not have the lowest referral rate (Figure 16).

In Health Board areas where the service is consultant-based, the possibility of rejection cannot depend on the grade of surgeon assessing the patient

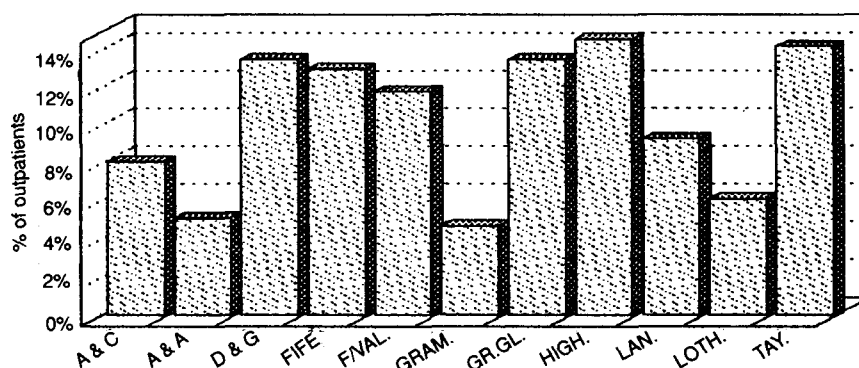
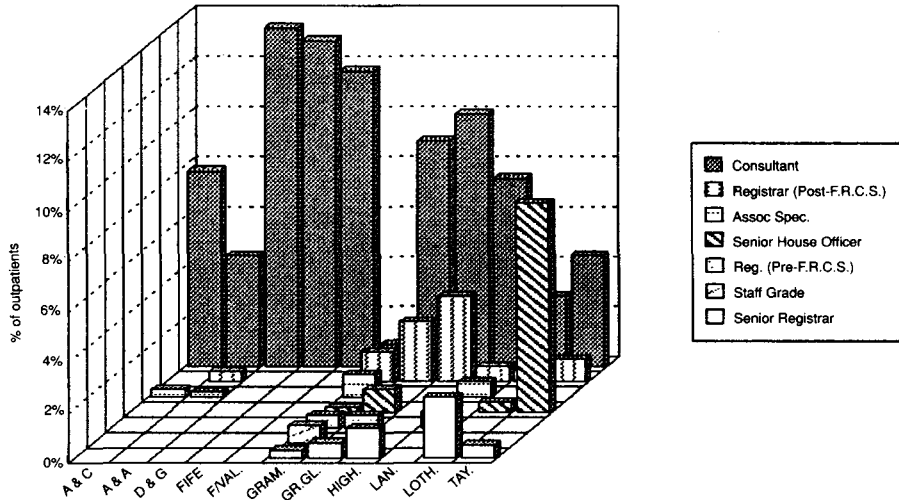


FIG. 16
Percentage of patients rejected at OPD.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Consultant	7.8	4.4	13.5	13.0	11.8	0.9	9.0	10.1	7.5	2.8	4.4
Registrar (Post-F.R.C.S.)	0.0	0.4		0.0		1.2	2.4	3.4	0.6	0.5	0.9
Assoc. spec.	0.3	0.2		0.0		0.9	0.0		0.6	0.0	0.0
SHO	0.0	0.0		0.0		0.2	0.9	0.0	0.0	0.4	8.3
Registrar (Pre-F.R.C.S.)	0.0	0.0				0.5	0.5	0.0	0.6	0.0	0.0
Staff grade	0.0	0.0				0.7			0.0		0.0
Senior Registrar	0.0					0.3	0.6	1.2		2.4	0.5
Total OP rejected	8.1	5.0	13.5	13.0	11.8	4.7	13.4	14.7	9.3	6.1	14.1

FIG. 17
Percentage of outpatients rejected by grade of staff at OPD.

(Figure 17). There is a statistically significant variation in listing rates between grades of staff (chi-squared of 42.8 on 6 degrees of freedom, $p < 0.001$). Associate specialists reject fewer patients than expected while consultants reject more. The percentage of patients rejected by SHOs in Tayside

is higher than in other areas. Tayside SHOs work to guidelines drawn up by consultants.

(9) What percentage of patients referred for consideration of surgery are not scheduled for surgery, but are given review appointments? What are the variations in practice throughout the country?

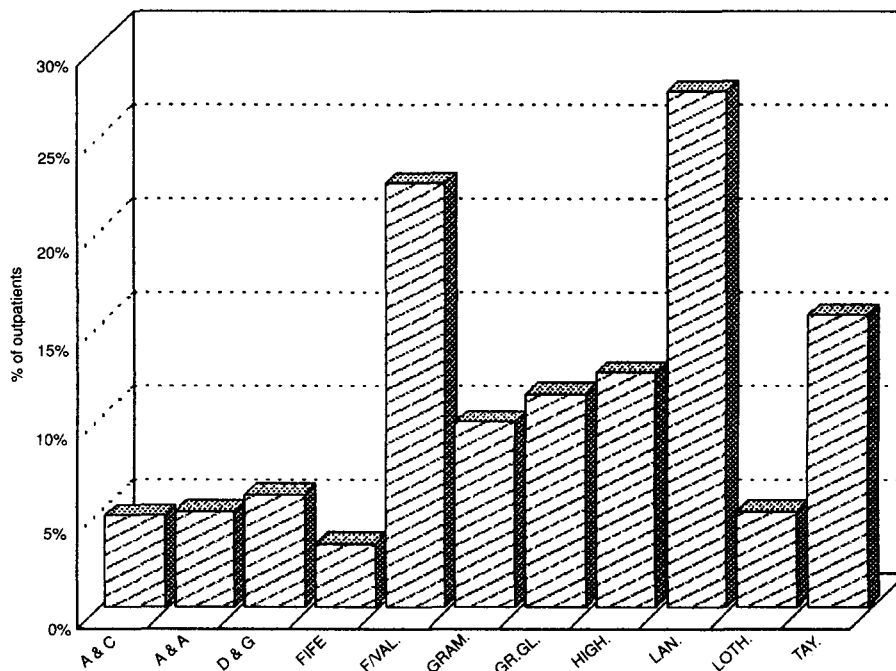


FIG. 18
Percentage of outpatients given a review appointment.

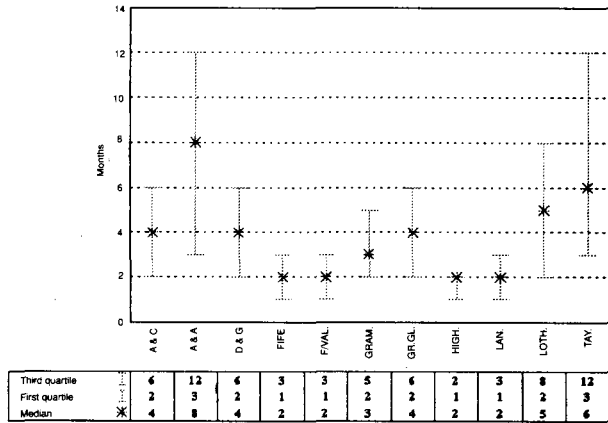


FIG. 19
Time on waiting list.

Some regions such as Lanarkshire and Forth Valley appear to operate a policy of reassessment at a follow-up ENT appointment whereas this is clearly not the case in other areas. These patients were not followed further in this audit to determine if they were listed for tonsillectomy at a further outpatient appointment (Figure 18).

(10) How long do patients wait for surgery? Is any group(s) of patients given priority?

The length of time which patients had to wait for surgery varied between regions (Figure 19). The interquartile range was lowest in Highland but highest in Ayrshire and Arran and Tayside. There appears to be no relationship to rate of referral or rate of operation. For example Fife and Lanarkshire show similar waiting time but markedly different rates of referral and of surgery (see Figures 4 and 6). The number of surgeons available to perform

tonsillectomy in each region was not assessed in this audit.

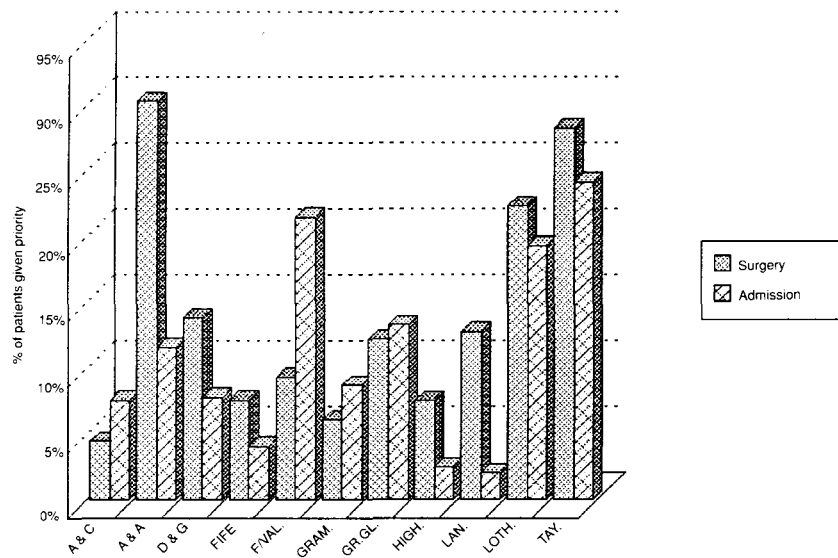
Outpatients given priority for surgery and inpatients given priority admission were recorded. Figure 20 shows patients listed at the time of the clinic visit for priority (priority for surgery) and those at the time of admission who appeared to have had their admission expedited (priority admission).

There was considerable variation in the percentages of patients given priority for surgery and priority admission between Health Boards. In Forth Valley, 21 per cent of admissions for tonsillectomy were given some priority, whereas in Fife only four per cent of patients were given priority. In both of these Health Boards the interquartile range of time on the waiting list was two months.

There were differences in the patterns of priority at the outpatient and inpatient stages. This may be because different surgeons completed the proformas at the different stages and assessed priority differently.

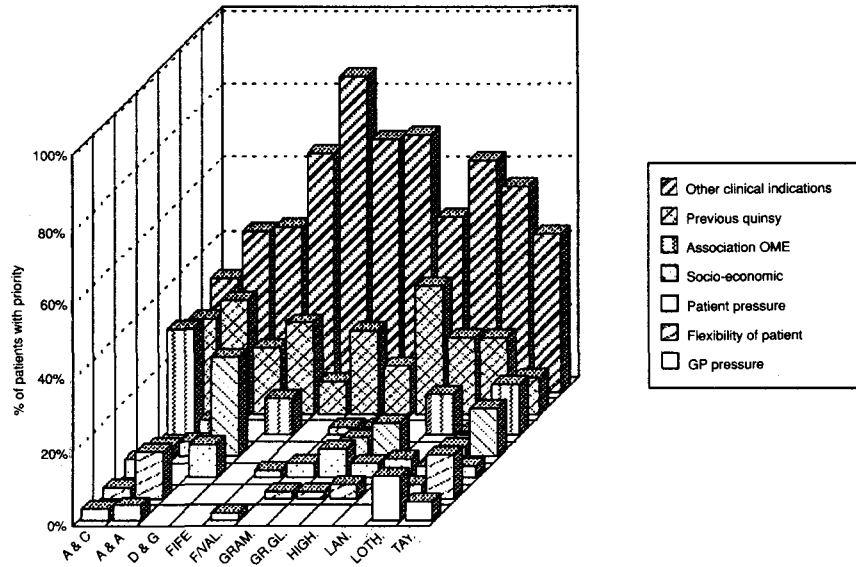
(11) What are the factors that influence waiting time?

In all Health Board areas 'other clinical indications' was given as the most common reason for priority admission. A 'previous quinsy' was cited relatively frequently as a reason for priority admission. In Argyll and Clyde association with otitis media with effusion was given considerable priority, whereas in Dumfries and Galloway, Forth Valley and Highland this was never given as a reason for priority admission. Other Health Board areas gave responses between these two extremes. Pressure from GP, patients and parents were relatively unimportant reasons for expediting admission in most Health Board areas (Figure 21).



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Priority for surgery	4.5	30.2	13.8	7.6	9.3	6.1	12.2	7.5	12.8	22.3	28.2
Priority admission	7.6	11.6	7.8	4.1	21.5	8.7	13.3	2.5	2.1	19.3	24.1

FIG. 20
Patients given priority.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Other clinical indications	31	44	45	65	86	69	70	48	63	56	43
Previous quinsy	26	31	18	25	9	23	13	35	21	21	10
Associated OME	29	4	0	10	0	2	2	0	11	1	14
Socio-economic	3	4	27	0	0	0	5	9	0	3	13
Patient pressure	5	0	9	0	2	4	8	4	5	3	3
Flexibility of patient	3	13	0	0	0	2	2	4	0	4	12
GP pressure	3	4	0	0	2	0	0	0	0	12	5

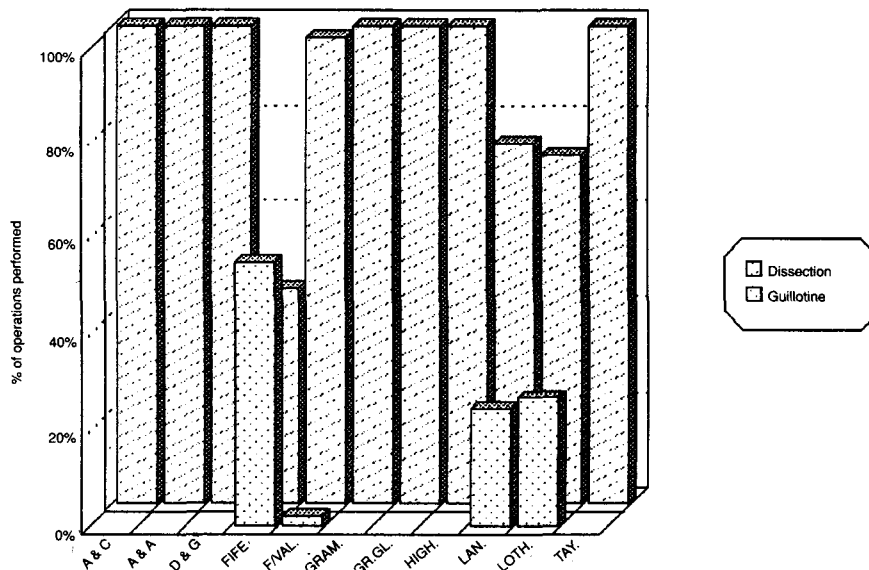
FIG. 21

Reason for priority admission expressed as a percentage of those given priority.

(12) What type of surgery is performed e.g. dissection tonsillectomy, guillotine tonsillectomy?

Figure 22 indicates that dissection tonsillectomy is the most favoured surgical technique in Scotland. In some Health Board areas guillotine tonsillectomy is

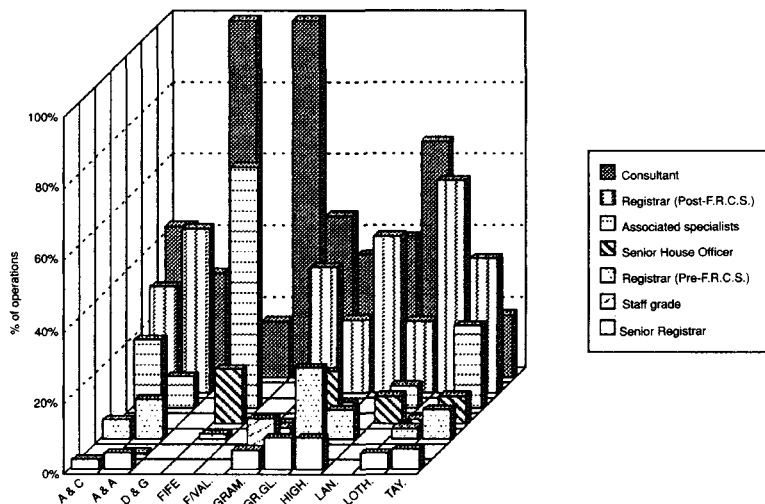
still practised by a few surgeons. Guillotine tonsillectomy was used only in children and was a matter of individual surgeon's preference. Different types of dissection tonsillectomy were not examined in this audit.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Dissection	100	100	100	44.7	97.6	100	100	100	75.2	72.9	100
Guillotine	0	0	0	55.3	2.4	0	0	0	24.8	27.1	0

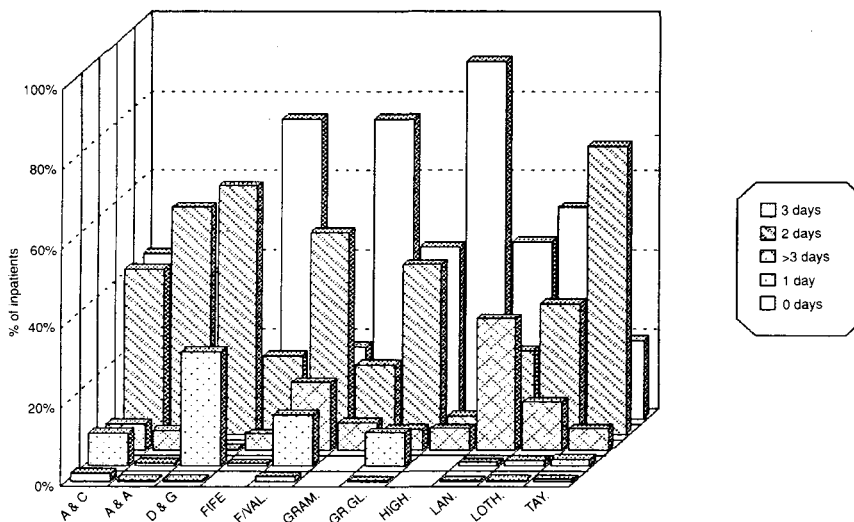
FIG. 22

Type of surgery.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Consultant	42.4	29.2	100.0	15.9	100.0	45.2	34.3	39.3	66.1	32.1	17.6
Registrar (Post-F.R.C.S.)	29.6	45.9		0.0		35.1	20.5	43.8	20.1	59.3	37.5
Associated Specialist	19.3	8.9		67.4		0.9	1.7		6.2	0.0	23.3
Senior House Officer	0.8	0.0		15.4		0.2	14.6	0.0	7.6	1.2	7.7
Registrar (Pre-F.R.C.S.)	5.3	11.0		1.3		3.3	20.0	8.1	0.0	2.9	8.1
Staff grade	0.0	0.4				9.9	0.1		0.0		0.0
Senior Registrar	2.8	4.6				5.4	8.8	8.8		4.6	5.7

FIG. 23
Grade of staff performing operation.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
3 days	41.5	36.8	7.9	75.6	18.1	75.6	43.3	90.0	44.5	53.3	19.8
2 days	41.5	57.3	62.6	19.8	50.9	17.5	42.7	4.5	21.2	32.9	72.6
>3 days	6.6	4.9	0.4	4.1	17.0	6.9	5.3	5.5	33.2	12.1	5.4
1 day	8.2	0.7	28.7	0.5	12.9	0.0	8.5	0.0	0.9	1.4	1.6
0 days	2.1	0.3	0.4	0.0	1.2	0.0	0.2	0.0	0.2	0.3	0.6

FIG. 24
Total length of stay.

(13) *What grade of surgical staff performs the operation?*

Variation between the areas reflects differences in the grade of staff available to perform surgery (Figure 23).

(14) *What is the average duration of the patient's stay in hospital? If there is a variation, why is this? Can we define an optimal period of hospital stay?*

Total stay is made up of a pre- and post-operation stay, Table II illustrates the patterns of these in each Health Board.

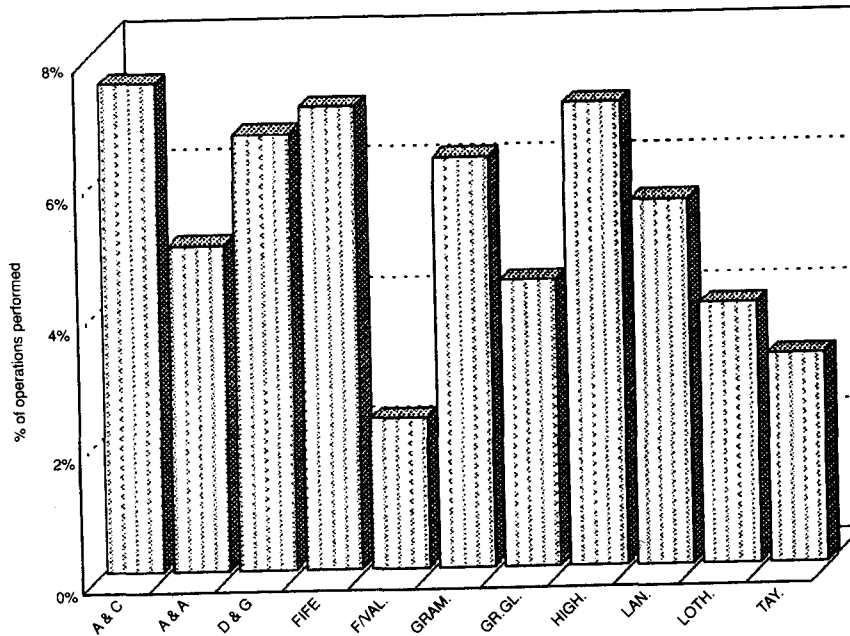
The majority of tonsillectomy patients across

Scotland are admitted on the day prior to surgery, although some units admit patients on the day of surgery. In Scotland pre-admission clinics are becoming established and it seems likely that in future years admissions on the day of surgery will become more common. However, in many parts of Scotland distances are long, winter daylight is short, the climate is inclement and public transport is inadequate. It is therefore unlikely that day of admission surgery will become universal throughout the country. The provision of patient hotels, however, could result in a change in practice.

Most patients had a post-operative stay of one or two days. Geographical factors did not appear to be

TABLE II
PATTERNS OF PRE- AND POST-OPERATION STAY IN EACH HEALTH BOARD

		rost-op stay					rost-op stay						
		A & C	0	1	2	≥3	Total	Gr. Gl.	0	1	2	≥3	Total
Pre-op stay	0	2.1	1.4	11	2.8	17.3	0	0.2	7.9	7.8	1	16.9	
	1	6.8	30.5	40.4	4.5	82.2	1	0.6	34.9	42.5	3.5	81.5	
	≥2	0.0	0.5	0	0	0.5	≥2	0	1	0.6	0	1.6	
Total		8.9	32.4	51.4	7.3	100	Total		0.8	43.8	50.9	4.5	100
		Post-op stay					Post-op stay						
		A & A	0	1	2	≥3	Total	High.	0	1	2	≥3	Total
Pre-op stay	0	0.3	0.3	0.3	0.3	1.2	0	0	0	0.2	0	0.2	
	1	0.3	56.9	36.5	4.8	98.5	1	0	4.3	89.8	4.3	98.4	
	≥2	0	0	0.3	0	0.3	≥2	0	0.4	1	0	1.4	
Total		0.6	57.2	37.1	5.1	100	Total		0	4.7	91	4.3	100
		Post-op stay					Post-op stay						
		D & G	0	1	2	≥3	Total	Lan.	0	1	2	≥3	Total
Pre-op stay	0	0.4	27.6	0.8	0.4	29.2	0	0.2	0.2	1.4	0.9	2.7	
	1	1.2	61.7	7.5	0.4	70.8	1	0.7	19.9	42.2	32.7	95.5	
	≥2	0	0	0	0	0	≥2	0	1.4	0.2	0.2	1.8	
Total		1.6	89.3	8.3	0.8	100	Total		0.9	21.5	43.8	33.8	100
		Post-op stay					Post-op stay						
		Fife	0	1	2	≥3	Total	Loth.	0	1	2	≥3	Total
Pre-op stay	0	0	0.5	0.3	0	0.8	0	0.3	0.7	27.9	2.6	31.5	
	1	0	19.7	75.3	3.9	98.9	1	0.6	5.2	50.9	10.7	67.4	
	≥2	0	0.3	0	0	0.3	≥2	0	0.4	0.5	0.2	1.1	
Total		0	20.5	75.6	3.9	100	Total		0.9	6.3	79.3	13.5	100
		Post-op stay					Post-op stay						
		F/Val.	0	1	2	≥3	Total	Tay.	0	1	2	≥3	Total
Pre-op stay	0	1.2	12.3	11.7	8.2	33.4	0	0.6	1.6	0	0	2.2	
	1	0.6	39	11.7	15.3	66.6	1	0	72.6	19.6	5.2	97.4	
	≥2	0	0	0	0	0	≥2	0	0.2	0.2	0	0.4	
Total		1.8	51.3	23.4	23.5	100	Total		0.6	74.4	19.8	5.2	100
		Post-op stay					Post-op stay						
		Gram.	0	1	2	≥3	Total						
Pre-op stay	0	0	0	0	0	0							
	1	0	17.5	75.5	6.4	99.4							
	≥2	0.2	0.2	0.2	0	0.6							
Total		0.2	17.7	75.7	6.4	100							



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Number complications	32	13	17	28	4	36	42	32	25	43	21
Number IP	411	283	253	393	171	553	1100	422	433	949	496
% complications	7.8	4.6	6.7	7.1	2.3	6.5	3.8	7.6	5.8	4.5	4.2

FIG. 25

Complication rate as a percentage of operations performed.

of great importance as in some rural areas, such as Dumfries and Galloway, a one-day post-operative stay was common, whereas in Highland a two-day post-operative stay appeared to be the norm.

Prolonged stays in a cost-conscious Health Service are of great interest to both doctors and managers. For the purposes of this audit prolonged stay was simply defined as a discharge later than the norm for the unit concerned. Overall less than three per cent of patients had a prolonged stay, the most common reason being a complication. However, less than one quarter of patients with a complication had a prolonged stay (Figure 24).

(15) *What percentage of patients undergoing surgery has complications? What are these complications?*

The complication rate was extremely low throughout the country. Fewest complications appear to be encountered in Forth Valley where the Otolaryngology service is entirely consultant-based. However, Tayside, where most tonsillectomies are performed by junior staff, had the third lowest rate of complication.

The pattern of complications varied between Health Boards but overall it was found that infection was the most common complication with reactionary

haemorrhage being second. Multiple complications were extremely infrequent (Figure 25).

Prophylactic antibiotics are not routinely used in Scotland in patients undergoing tonsillectomy except in Fife and Grampian where a small percentage of patients was given prophylactic antibiotics. Recent evidence suggests that prophylactic antibiotic therapy does indeed reduce post-operative discomfort, fever and mouth odour (Telian *et al.*, 1986). However, the number of patients given prophylactic antibiotics in Scotland during the period of this audit is too small to allow any statistically valid conclusion. In Forth Valley where the complication rate was lowest, no prophylactic antibiotics were given (Figure 26).

Outcome

Patient questionnaire

Response rate

Follow-up questionnaires were sent to patients at six and 12 months following surgery. Table III below shows the percentage returns.

The response to the follow-up questionnaires was extremely high with some areas reporting over 80 per cent returns at six months. Overall the rate of

TABLE III
RESPONSE TO FOLLOW-UP QUESTIONNAIRES (%)

	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.	Total
Follow-up 6 months	64	80	86	81	80	85	62	84	66	78	82	75
Follow-up 12 months	33	48	64	57	52	57	30	52	28	47	58	45

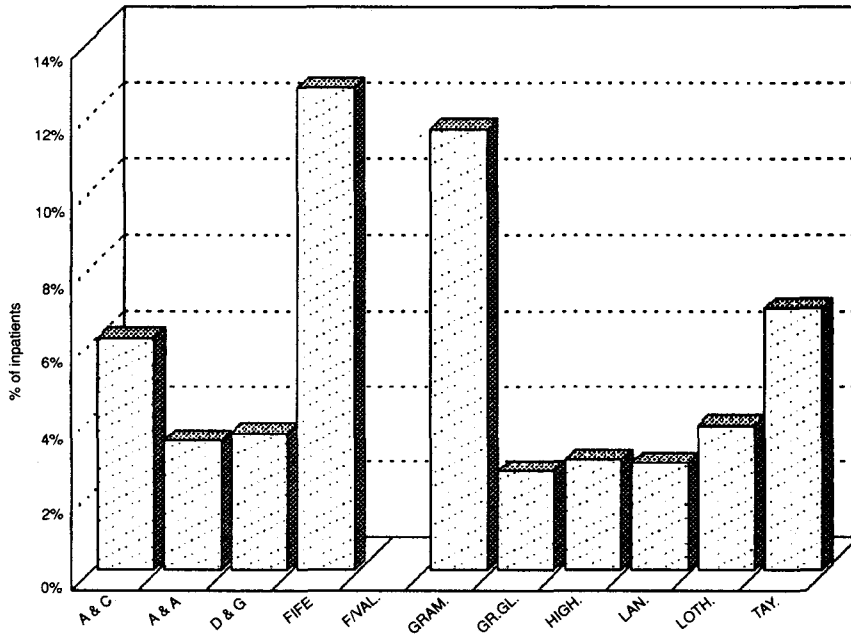


FIG. 26
Administration of prophylactic antibiotics

return for the six month questionnaire was 75 per cent which dropped to 45 per cent at 12 months. There were no substantial differences in the response to the questions between the six and 12 month follow-ups.

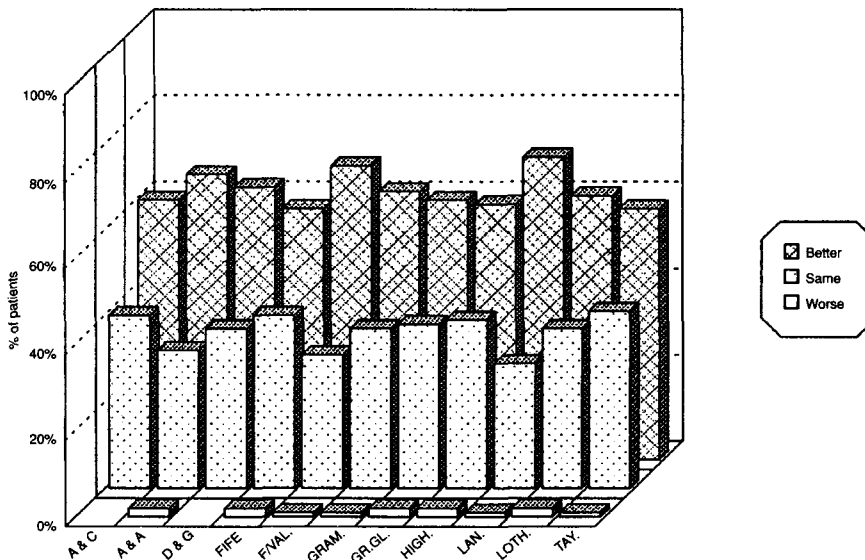
proportion of patients was appetite reported as being worse, with the remainder reporting appetite unchanged.

(a) *Following surgery how is the child's appetite?*

Figure 27 shows that in children (under age 14) appetite was improved in approximately two-thirds of patients undergoing tonsillectomy. Only in a small

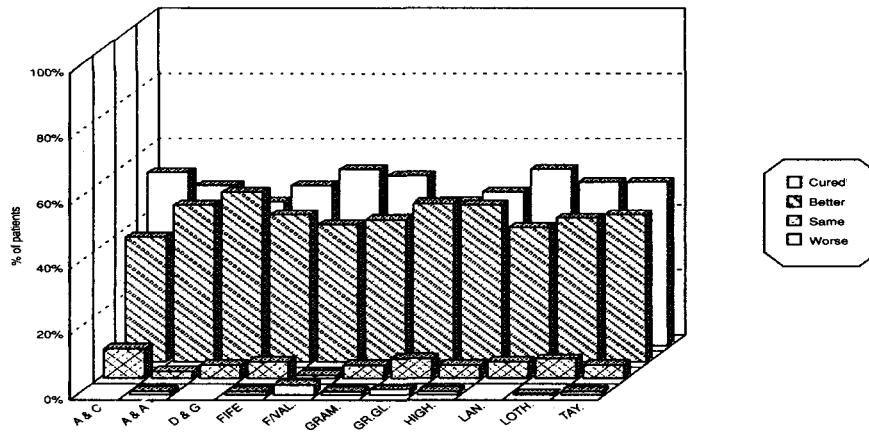
(b) *How does the patient's throat feel?*

Over 94 per cent of patients reported that their throats were 'better' or 'cured' and this figure remained constant between the six-month and one-year follow-up. Approximately half of all patients undergoing tonsillectomy reported that they were



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Better	60	66	63	58	68	62	60	59	70	61	58
Same	40	32	37	40	31	37	38	39	29	37	41
Worse	0	2	0	2	1	1	2	2	1	2	1

FIG. 27
Child's appetite.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Cured	53	49	44	49	54	52	44	47	54	50	50
Better	38	48	52	45	42	43	48	48	41	44	45
Same	9	2	4	5	1	4	6	4	5	6	4
Worse	0	1	0	1	3	1	2	1	0	0	1

FIG. 28
How does your throat feel?

'cured' and only a small percentage in each area reported that the throat felt worse (Figure 28).

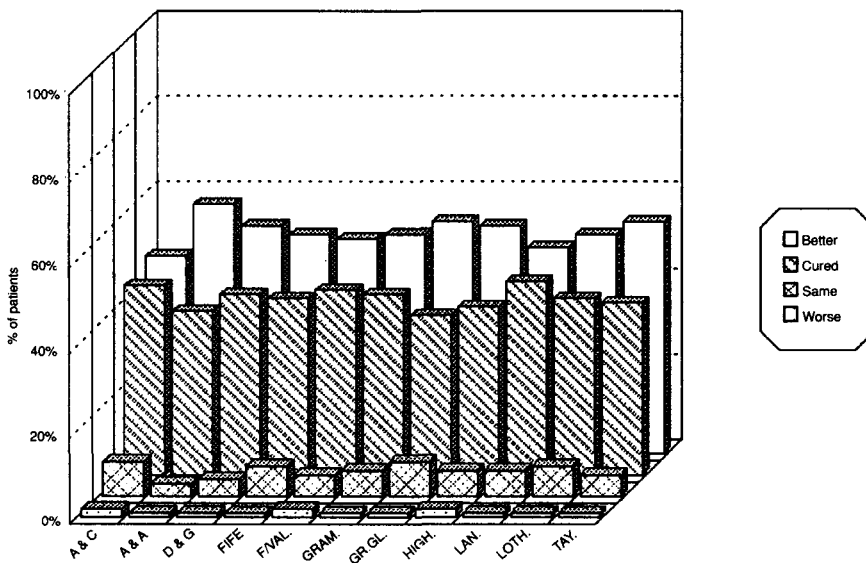
(c) *In general, how does the patient feel?*

The response to this question closely mirrored the response to the previous question. A rather greater, but still very small, percentage of patients reported that they felt the same or worse, over 90 per cent of patients in all areas reporting that they were better or 'cured'. Again there was little difference between the six-month and 12-month follow-up (Figure 29).

(d) *How long after treatment was normal activity resumed?*

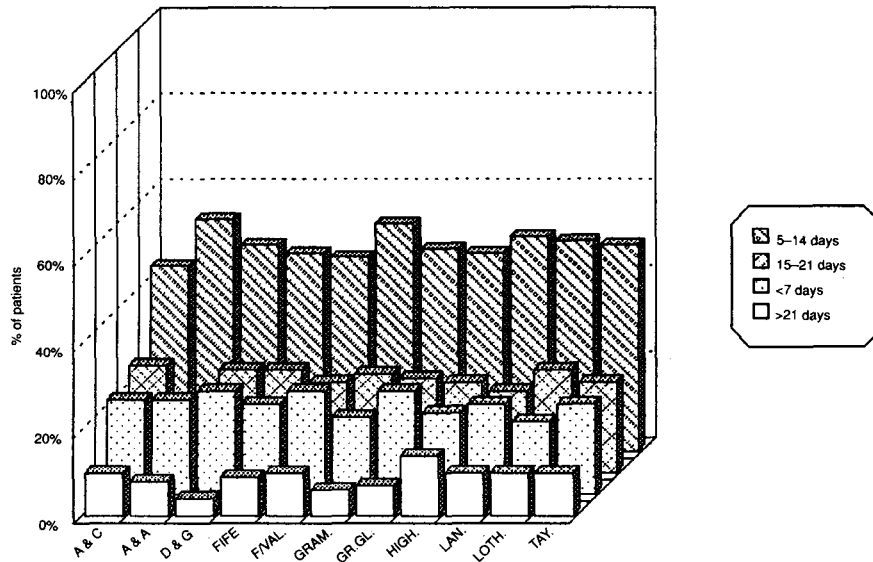
In about two-thirds of patients normal activity was resumed during the second post-operative week. In about one-fifth of patients normal activity was resumed in the first week, but there were patients in all areas who did not get back to normal until after three weeks (Figure 30).

Complications post-operatively delayed resumption of normal activity in relatively few cases and then only by a few days.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Better	46	58	53	51	50	51	54	53	48	51	54
Cured	44	38	42	41	43	42	37	39	45	41	40
Same	8	3	4	7	5	6	8	6	6	7	5
Worse	2	1	1	1	2	1	1	2	1	1	1

FIG. 29
In general, how do you feel?



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
8-14 days	43	54	48	46	45	53	47	46	50	49	48
15-21 days	25	16	24	24	21	23	22	21	19	24	21
<7 days	22	22	24	21	24	18	24	19	21	17	21
>21 days	10	8	4	9	10	6	7	14	10	10	10

FIG. 30
Time to resumption of normal activity.

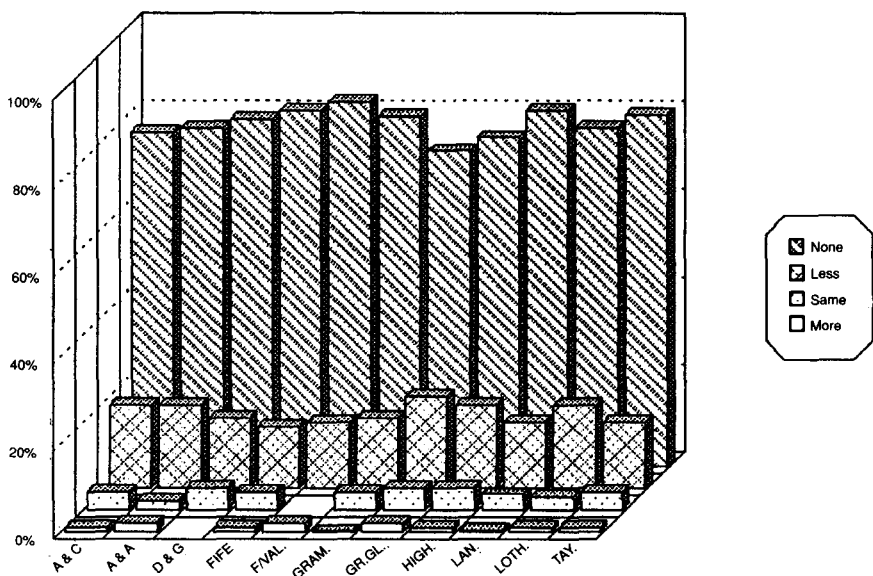
(e) *How much time spent off work/school?*

Almost 80 per cent of patients after tonsillectomy reported that they had lost no time off work or school in the six- and 12-month periods after operation. Over 15 per cent reported that they had spent less time off work or school and fewer than one

per cent reported that they had more time off (Figure 31).

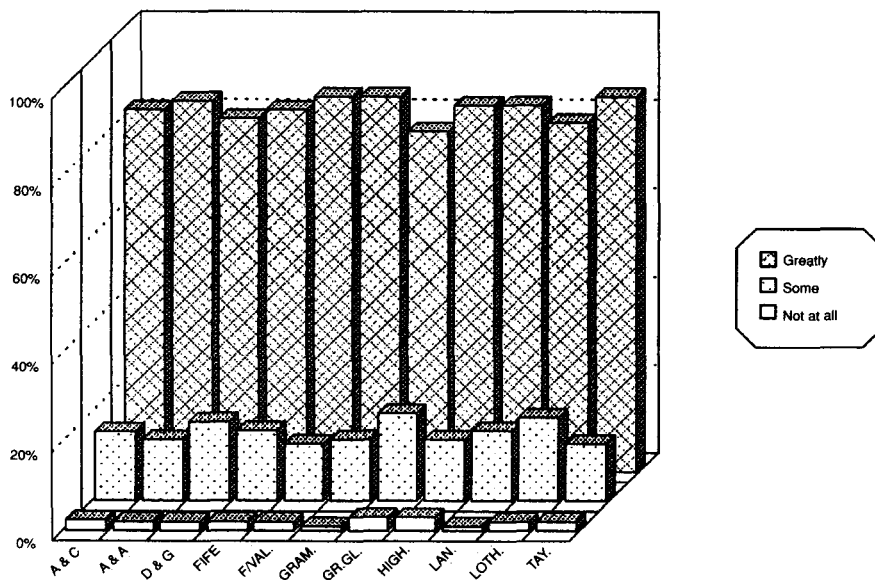
(f) *How much has the treatment helped?*

Overall, over 82 per cent of patients reported that



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
None	76	77	79	81	83	80	72	75	81	77	80
Less	19	19	16	14	15	16	21	19	15	19	15
Same	4	2	5	4	0	4	5	5	4	3	4
More	1	2	0	1	2	0	2	1	0	1	1

FIG. 31
Time spent off work/school.



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Greatly	82	84	80	82	85	85	77	83	83	79	85
Some	15	14	18	16	13	14	20	14	16	19	13
Not at all	3	2	2	2	2	1	3	3	1	2	2

FIG. 32

How much has the treatment helped?

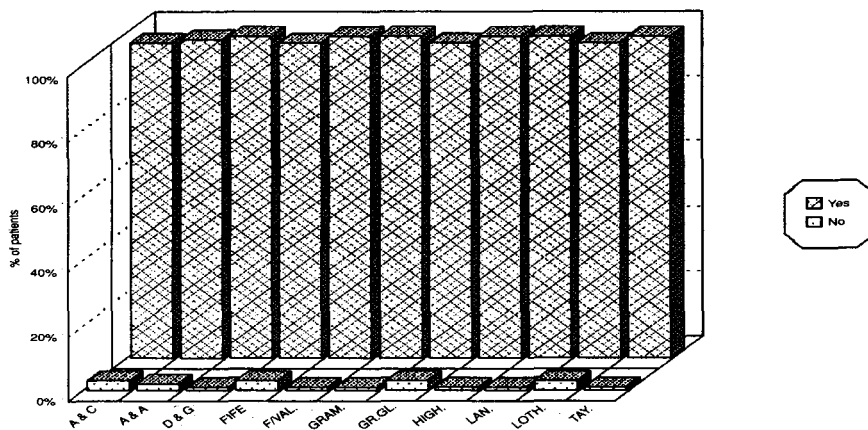
tonsillectomy had greatly improved their throat symptoms. A further 15 per cent acknowledged that the treatment had helped somewhat, but two per cent reported that the operation had not helped at all (Figure 32). Again little difference was noted at the responses at the six- and 12-month follow-ups.

(g) *Is the patient glad the operation was performed?*

The overwhelming response to this question was that the patients were very glad that they had undergone surgery. No more than three per cent of patients in any area reported that they wished they had not had surgery (Figure 33).

(h) *Free text.*

Approximately one-third of the returned patient questionnaires contained some free text. Comments were usually complimentary about the patient's hospital stay, but occasional criticisms of specific aspects of patient management were made. A recurring theme was that the patient (usually a child) was a changed person following tonsillectomy. Comments regarding improvements in behaviour, development and general well-being were common. Many patients commented that they felt they had to fight their GP to obtain a referral to hospital and sometimes had to overcome an apparent resistance on the part of the



	A & C	A & A	D & G	Fife	F/Val.	Gram.	Gr. Gl.	High.	Lan.	Loth.	Tay.
Yes	98	97	99	97	98	98	97	99	99	97	99
No	2	3	1	3	2	2	3	1	1	3	1

FIG. 33

Are you glad that you had the operation?

surgeon to list them for tonsillectomy. 'The operation should have been done years ago' was a commonly expressed view.

Conclusions

All Departments of Otolaryngology in Scotland participated in this audit. When the number of inpatient cases included in this audit was compared with the SMR1 data for the same period differences were found. Some areas showed extremely high participation for example Dumfries and Galloway, Highland and Tayside.

Differences were found in almost all of the parameters examined in the patient management part of the audit. However, outcome as measured by patient satisfaction in follow-up, was uniform throughout the country.

The rate of tonsillectomy was found to vary between Health Boards (Figure 4). The ratio of adult/children operated on also varied (Figure 5). Rates of referral also differed between areas (Figure 6). The main source of referrals throughout Scotland was GPs. 'Sore throat' or 'tonsils mentioned' were the commonest reasons for referral (Figure 7). The criteria used for listing for surgery appear to be uniform throughout the country with 'recurrent tonsillitis' cited as the principal reason for in all areas (Figure 9). The presence of sleep apnoea or obstructive symptoms was more likely to lead to adenotonsillectomy rather than tonsillectomy alone in children (Figures 13 and 14). The duration of symptoms differed (Figure 10) but the median number of episodes per year was 5 to 6 (Figure 11) with most people being incapacitated for three to seven days per episode (Figure 12).

There are differences in staff availability throughout the country both for outpatients (Figures 15 and 17) and inpatients (Figure 23). In some regions the service is consultant-based while in others many grades of staff are involved. Differences in the decision made at OPD (Figures 8, 16 and 18) are not apparently related to referral rates as shown by a high rate of referral not corresponding to a high rate of rejection. Some regions appear to operate a policy of reassessment at a follow-up appointment. Differences in waiting list time did not appear to be related to rate of referral (Figure 19). Assessment of priority showed differences between out and inpatients and between regions (Figure 20). Of the patients who were given priority other 'clinical indicators' was the most common reason (Figure 21).

Dissection tonsillectomy was the most favoured surgical technique in every area except Fife (Figure 22).

The length of inpatient stay varied between areas (Figure 24). This variation was generally due to the length of the post-operation stay because the majority of patients were admitted the day prior to operation. In some areas surgery is performed on the day of admission. The complication rate was very low (Figure 25), with infection being the most common complication reported. Administration of

prophylactic antibiotics varied between areas, but did not appear to affect the complication rate (Figure 26).

Patient participation in the six-month follow-up was 75 per cent but 45 per cent for the 12-month follow-up. Responses varied little between the two. Most of the replies showed the operation had been a success in alleviating patient's symptoms. About two thirds of patients resumed normal activity within the second post-operative week (Figure 30). The vast majority of patients felt their throat 'better' or 'cured' (Figure 29) and had spent less or no time off work or school since the operation (Figure 31). Only a small percentage of patients in some areas reported their throat felt worse and that they had spent more time off work or school. Two per cent felt that the operation had not helped at all (Figure 32). Overall more than 97 per cent of patients were glad that the operation had been performed (Figure 33).

Recommendations

The commonest criterion for listing patients for tonsillectomy during this audit appears to be five to six episodes of tonsillitis per year. It may be that, in the light of patients' comments, this is too stringent and three to four episodes per year may be more appropriate. The traditional considerations of time off school or work remain of value as do the numbers of episodes of tonsillitis over several years.

In parts of the country where, following initial consultation, return outpatient clinic appointments are common, consideration should be given to adopting a policy, at the first consultation, of making a decision to operate or of returning the patient to the GP for re-referral if necessary.

There does not appear to be a need for patients to stay in hospital for more than one night following tonsillectomy. Units should consider a policy of day of admission surgery in conjunction with pre-admission clinics. Currently no unit in Scotland appears to undertake tonsillectomy on a day-case base. Given socio-economic and geographical constraints it seems unlikely that tonsillectomy will be undertaken routinely on a day-case basis in Scotland in the near future. The provision of patient hotels may alter this.

Most patients appear to return to work or to school within three weeks following tonsillectomy and it seems that three weeks is the maximum time that it should be necessary to remain off work post-tonsillectomy, with most patients being able to resume normal activities in the second post-operative week.

The views expressed are those of the authors and not necessarily those of the Scottish Office Department of Health.

Acknowledgements

The Audit Sub-committee of the Scottish Otolaryngological Society wish to acknowledge the energy, commitment and dedication of Miss Karyn Wilson,

the audit co-ordinator for this project, without whom this audit could not have been completed. They also wish to acknowledge the contribution of Miss D. T. Benvie of the Medical Computing Unit who was instrumental in the establishment and organization of this audit and of Mrs C. Hau of the Department of Epidemiology and Public Health, University of Dundee, who performed statistical analysis of the data.

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Appendix 1

Abbreviations used in this report are:

- A & C Argyll & Clyde
- A & A Ayrshire & Arran
- D & G Dumfries & Galloway
- F/Val. Forth Valley
- Gram. Grampian
- Gr.Gl. Greater Glasgow
- High. Highland
- Lan. Lanarkshire
- Loth. Lothian
- Tay. Tayside

Appendix 2

Outpatient proforma

SCOTTISH NATIONAL TONSILLECTOMY AUDIT
OUTPATIENT AUDIT

Hospital: Ninewells

Region: Tayside

Register No. _____

Date at OPD / /	Private Patient <input type="checkbox"/>	
Grade of staff at OPD	<input type="checkbox"/> Consultant <input type="checkbox"/> Registrar (Post-F.R.C.S.) <input type="checkbox"/> SHO <input type="checkbox"/> Staff grade	<input type="checkbox"/> Senior Registrar <input type="checkbox"/> Registrar (Pre-F.R.C.S.) <input type="checkbox"/> Associate Specialist
Consultant in charge of care		
Date referred / /	DNA <input type="checkbox"/>	
Reason for attendance	<input type="checkbox"/> GP referral <input type="checkbox"/> Follow-up visit	<input type="checkbox"/> Hospital referral
Principal referral reason	<input type="checkbox"/> Sore throat <input type="checkbox"/> Sleep apnoea	<input type="checkbox"/> Tonsils mentioned <input type="checkbox"/> Other
Socio-economic group		
Duration of symptoms (yrs) <input type="checkbox"/>	Average episodes (per year) <input type="checkbox"/>	
Average time incapacitated (per episode)	<input type="checkbox"/> <3 days <input type="checkbox"/> 1-2 weeks	<input type="checkbox"/> 3-7 days <input type="checkbox"/> >2 weeks
Smoking	<input type="checkbox"/> Patient <input type="checkbox"/> Mother <input type="checkbox"/> No	<input type="checkbox"/> Partner <input type="checkbox"/> Father
N.B. Two boxes may be ticked.		
Initial decision at OPD	<input type="checkbox"/> Return to GP <input type="checkbox"/> Follow-up at ENT OP <input type="checkbox"/> Tonsillectomy/Adenotonsillectomy	<input type="checkbox"/> Sleep monitoring <input type="checkbox"/> Other treatment
Principal reason for decision	<input type="checkbox"/> Recurrent tonsillitis <input type="checkbox"/> Chronic sore throat <input type="checkbox"/> Vague throat symptoms <input type="checkbox"/> Obstructive symptoms	<input type="checkbox"/> Recurrent URTI <input type="checkbox"/> Recurrent OME <input type="checkbox"/> Sleep apnoea <input type="checkbox"/> Other
Priority for surgery If Yes, principal reason	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Previous quinsy <input type="checkbox"/> Associated OME <input type="checkbox"/> Other clinical indications <input type="checkbox"/> Socio-economic factors <input type="checkbox"/> Patient/parent pressure <input type="checkbox"/> GP pressure <input type="checkbox"/> Flexibility of patient re admission	

N.B. Unless otherwise stated, please tick only one box per question

Appendix 3

Inpatient proforma

SCOTTISH NATIONAL TONSILLECTOMY AUDIT
Inpatient Audit

Hospital: Ninewells

Region: Fife

Register No. _____

Section 1: To be completed by DOCTOR.

Private patient <input type="checkbox"/>		
Priority admission	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If Yes, reason:	<input type="checkbox"/> Previous quinsy	<input type="checkbox"/> Associated OME
	<input type="checkbox"/> Clinical indications	<input type="checkbox"/> Socio-economic factors
	<input type="checkbox"/> GP pressure	<input type="checkbox"/> Patient/parent pressure
	<input type="checkbox"/> Flexibility of patient re admission	
Surgery type	<input type="checkbox"/> Dissection	<input type="checkbox"/> Guillotine
Surgery additional to tonsillectomy	<input type="checkbox"/> Adenoids	<input type="checkbox"/> Other
Prophylactic antibiotics	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Complications	<input type="checkbox"/> None	<input type="checkbox"/> Reactionary haemorrhage
	<input type="checkbox"/> Secondary haemorrhage	<input type="checkbox"/> Haemorrhage/re-operation
	<input type="checkbox"/> Infection	<input type="checkbox"/> Anaesthetic complications
	<input type="checkbox"/> Severe pain	<input type="checkbox"/> Other
	<input type="checkbox"/> General debility (delayed discharge)	
<i>N.B. More than 1 box may be ticked</i>		
If prolonged stay: reason	<input type="checkbox"/> Geographical factors	<input type="checkbox"/> Complications
	<input type="checkbox"/> Family/social factors	<input type="checkbox"/> Other

Section 2: To be completed by SECRETARY/ADMINISTRATOR.
Please note: Only complete this section if Section 1 has been completed by the DOCTOR.

Admission date	/ /	Discharge date	/ /
Surgery date	/ /	Time on W/L	<input type="checkbox"/> (months)
Category	<input type="checkbox"/> Adult tonsillectomy <input type="checkbox"/> Child (<14 yrs) tonsillectomy <input type="checkbox"/> Adult adenotonsillectomy <input type="checkbox"/> Child (<14 yrs) adenotonsillectomy		
Grade of staff surgery	<input type="checkbox"/> Consultant <input type="checkbox"/> SHO <input type="checkbox"/> Staff Grade		
	<input type="checkbox"/> Senior Registrar <input type="checkbox"/> Registrar (Pre-F.R.C.S.) <input type="checkbox"/> Associate specialist		
Consultant in charge of care			

N.B. Unless otherwise stated, please tick only one box per question.