Essential dataset for ambulatory ear, nose, and throat care in general practice: an aid for quality assessment

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Abstract

Objective—To describe the documentation of care for the usual range of ear, nose, and throat (ENT) problems seen in primary care as a basis for developing a computerised information system to aid quality assessment.

Design—Descriptive study of the pattern of ENT problems and diagnoses and treatment as recorded in individual case notes.

Setting—The primary health care centre in Mjölby, Sweden.

Patients—Consultations for ENT problems from a 10% sample randomly selected from all consultations (n=22 600) in one year. From this sample 375 consultations for ENT problems (16% of all consultations) by 272 patients were identified.

Main measures—The detailed documentation of each consultation was retrieved from the individual records and compared with the data required for a computer based information system designed to help in quality management.

Results—Although the overall picture gained from the data retrieved from the notes suggested that ENT care was probably adequate, the recorded details were limited. The written case notes were insufficient when compared with the details required for a computerised system based on an essential dataset designed to allow assessment of diagnostic accuracy and appropriateness of treatment of ENT problems in primary care.

Conclusion—There is a gap between the amount and the type of information needed for accurate and useful quality assessment and that which is normally included in case notes. More detailed information is needed if general practitioners' notes are to be used for regular quality assessment of ENT problems but that would mean more time spent on keeping notes. This would be difficult to justify.

Implications—The routine information systems used at this primary healthcare centre did not produce sufficient documentation for quality assessment of ENT care. This dilemma might be resolved by specially designed desktop computer software accessed through an essential dataset.

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Keywords: care provision; ear nose and throat; general practice; quality improvement.

One of the aims of current developments in health care in many countries including Sweden, is to increase the role of primary care.¹⁻³ More people are likely to be cared for entirely in the primary care setting. To ensure that (with the increased emphasis on primary care) the delivery of ambulatory care is of good quality, co-ordination between the primary healthcare centres and hospital specialist services is essential.¹⁻³ Our group and others⁴⁻¹⁴ have shown that the integration and communication between the two sectors will be enhanced with the development of appropriate information support systems.^{4 5 15 16} These systems require, for each distinct area of care or specialty, a common register of basic terms (thesaurus) ideally mediated by interactive clear text desktop computer software.^{6 8-10 16}

Ear, nose, and throat (ENT) problems account for a large proportion of consultations in primary health care in Sweden.^{17 18} An important initiative by the Swedish Association of General Practice and ear, nose, and throat specialists has led to the development of a written agreement (called "PRIMEAR" — PRIMary care EAR, nose, and throat agreement) that outlines the respective roles of general practitioners and ENT specialists in the care of patients with ENT problems (table 1).¹⁹ This agreement covers a wide range of ENT conditions and includes statements about differential diagnosis and indications for referral to specialist care. The care of most people with ENT problems presenting to primary healthcare teams in Sweden is conducted along these guidelines²⁰ — even though this agreement itself has not yet been ratified by many ENT clinics. Many consultations for ENT symptoms with Swedish general practitioners are for minor, usually self limiting problems.^{17 18} The PRIMEAR agreement recognises this and the diagnosis of common cold is not included in the PRIMEAR agreement as it is too unspecific.

The aim of the agreement is to ensure that patients with ENT problems are seen rapidly and thoroughly assessed for the appropriate level of care — which for most cases is a local primary care centre. Thus the basis for developing information systems that could link primary and secondary care and could provide easy access to the sort of information necessary for quality assessment is already established.

Transference from paper record to desk top computer systems may be more than a matter of a change in technology. We were keen to find

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Table 1 Example from the PRIMEAR agreement. (PRIMary care EAR, nose, and throat)

Diagnosis	Primary care	Specialist clinic or admission
ENT diagnosis (general)	Most patients with acute ENT diseases can be diagnosed, treated, and controlled within the primary healthcare service. Expected fraction 70%–90%	Acute respiratory obstruction, acute dysphagia, foreign bodies in throat or oesophagus, exacerbations, complications, etc, education cases. Expected fraction 10%–30%
Otitis media	All cases except	Complications, treatment failure, >4 earlier occasions, age <2 y, hearing impairment, chronic disease
Eustachian catarrh	All cases except	Complications, treatment failure, >4 earlier occasions, age <2 y, hearing impairment, chronic disease, duration >8 weeks
Wax in the ear	All cases except	Removal failure, complications membrane rupture, status unclear
Hearing impairment	Primary investigations	Further investigation, treatment hearing aids
Vertigo	Primary classification	In most cases admission to ENT or neurological or other specialist
Epistaxis	Primary treatment in all cases	Tampon failure, complications, control of posterior tamponade, tumour, or other organic background
Sinusitis	Primarily all cases except	Frontal sinusitis, children with ethmoidal sinusitis, treatment failure, complications
Allergic rhinoconjunctivitis	All cases except	Unclear diagnosis or status, treatment failure, need for specialist allergy investigations
Laryngotracheobronchitis	Mild cases	Respiratory stridor, treatment failure

Sociodemographic data:	Medical history of symptoms:
Age	For how long
Sex	Initial symptom
Other Data:	Seriousness
Body temperature	What kind:
Concurrent disease	If pain:
Concurrent medication	Type
Hearing impairment	Intensity
Discharge:	Where
If yes:	If vertigo:
From where	Severity
	Type

Preliminary essential data for ambulatory primary health care of ENT patients diagnosed as having: allergic rhinitis, epistaxis, eustachian catarrh, laryngotracheobronchitis, neck swellings, hearing impairment, external otitis, otitis media, pharyngitis, sinusitis, tinnitus, tonsillitis, vasomotor rhinitis, vertigo, wax in the ear.

out what sort of information is normally recorded in primary care case notes when people present with ENT problems. This paper reports the result of a study that assessed the quality of recorded data in case files of patients with ENT problems presenting to one primary healthcare centre and looked at these as a resource for quality improvement. The working hypothesis of the investigation was that the information recorded in patients' notes is unlikely to provide sufficient documentation for this purpose.

Both the hypothesis and the approach have practical implications. The World Health Organisation has stated that today's information systems do not provide the kinds of information necessary to achieve the targets or to measure progress towards achieving them,²⁶ and that one of the most important performance measures of health care is compliance with practice guidelines. An approved method complying with such guidelines is often measuring rates of clinical performance to provide information for quality improvement.²⁷

To construct an essential dataset containing information about the diagnosis of ambulatory care of the ENT problems likely to be seen in general practice²⁵ that could be used to support quality assessment, we used a model⁶ based on a variety of sources including the standard authoritative textbooks (box).^{21 22 24} We then

tested this essential dataset on the range of ENT problems seen in routine practice in a primary healthcare centre and thus were able to examine the practicalities of using performance measures for quality assessment and improvement.

Materials and methods

In this study we focused on the 30 most frequent ENT diagnoses described in the PRIMEAR agreement. All case notes in the primary healthcare centre of Mjölby (catchment population about 23 000) were searched. A 10% sample representative of age and sex was selected by including any visit to the centre between 1 July 1988 to 30 June 1989 by anyone born on the 2nd, 12th, and 22nd of each month. We investigated all consultations from this sample that had been for any ENT problem outlined in the PRIMEAR agreement. These were identified from the diagnostic data base kept by the primary healthcare centre in Mjölby. Details of the top 10 diagnoses and other comparative data were also taken in a standard way from the same source for the quality assessment.^{27–32}

Each individual case file was read and the following details were collected by one of us (T af K): (a) the diagnosis in terms described in the essential dataset;²⁵ (b) all criteria relevant to the ENT problems.

As well as collecting all information relevant to the diagnosis that had been recorded, we also noted the absence of information that would have been required by the information system to make the diagnosis. All of the case notes in the study sample were examined once more so that at least one year had passed between the studied visits and the follow up to find any late mishap after the diagnoses studied.

The data were transferred to a computer program for statistics (StatView 4.0 Abacus Concepts 1992) and compared with the data^{27 31–34} required for the computerised essential data system for ENT care (table 2).^{21–24} To test whether the data were representative and compensated for selection bias of the ENT

Table 2 Attributes, outcomes, and examples from the data base

Age (y)	Sex	Body temperature °C	Duratin of symptoms	Onset of symptoms	Quantity of symptoms	Type of symptoms	Where symptoms	If pain: what kind?	If pain: how bad?	If pain: where	If vertigo: how bad?	If vertigo: what kind?	Concurrent disease	Concurrent medication	Discharge	Hearing	Diagnose /outcome
Divisions within each attribute or outcome:																	
5–10 y	M	36–37	1–4 h	Instantaneous	Continuously	Bleeding	Bronchia	Grinding	Intermediate	Ear	Intermediate	Rotatory (inside)	Common cold	Nose decongestants	None	Bad	Otitis media
11–15 y	F	37–38	4–24 h	<1 h	On and off	Buzzing in the ear	Ear	Piercing	Light	External ear	Light	Rotatory (outside)	Diabetes	Pain killer	None	Normal	Eustachian catarrh
16–20 y		38–39	1–5 day	>1 h	Once	Cough	External ear	Pulsating	Severe	Face	Severe	Swinging	Heart disease	Psycho-drugs		Intruding sound	Tonsillitis
21–30 y		39–40	>5 day	>1 day	Regularly	Deafness	Face	None	None	Head	None	None	Hypertension	Other		Sense of deafness	Sinusitis
41–60 y		>40		>1 month		Discharge	Head			Jaw			Other	None			External otitis
61–80 y				>1 y		Increased temperature	Mouth			Stomach			Systemic disease				Wax in the ear
>80 y						Hoarseness	Nose			Throat			None				Pharyngitis
						Itch	Throat			None							Allergic rhinitis
						Pain	None										Vertigo
						Pressure											Epistaxis
						Rash											Common cold
						Rash and pain											Poor hearing
						Sense of deafness											Miscellaneous
						Swelling											
						Tumour											
						Vertigo											
						Other											
Representative examples of database entries (n=375):																	
<5 y	F	37–38	4–24 h	<1 h	Continuous	Pain	Ear	Piercing	Severe	Ear	—	—	Common cold	Pain killer	—	—	Otitis media
<5 y	F	37–38	1–5 day	>1 day	On and off	Pain	Ear	Grinding	Intermediate	Ear	—	—	Common cold	—	—	Normal	Eustachian catarrh
<5 y	F	36–37	1–5 day	>1 day	Continuous	Pain	Throat	Grinding	Light	Throat	—	—	Other	—	—	—	Tonsillitis
<5 y	M	37–38	4–24 h	<1 h	Continuous	Pain	Ear	Grinding	Intermediate	Throat	—	—	Common cold	Antibiotics	Ear	—	Otitis media
31–40 y	M	36–37	1–5 day	>1 day	On and off	Pain	Auditory meatus	Grinding	Light	Ear	—	—	None	—	—	Sense of deafness	Wax in the ear
5–10 y	F	38–39	4–24 h	>1 h	Continuous	Pain	Ear	Grinding	Intermediate	Ear	—	—	Common cold	—	Nose	—	Otitis media
5–10 y	M	36–37	4–24 h	>1 h	Continuous	Pain	Ear	Grinding	Intermediate	Ear	—	—	Common cold	—	—	—	Otitis media
5–10 y	M	38–39	>5 day	>1 day	On and off	Pain	Ear	Grinding	Intermediate	Throat	—	—	None	—	—	Normal	Otitis media
21–30 y	M	36–37	1–5 day	>1 h	Continuous	Pain	Face	Grinding	Intermediate	Face	—	—	None	—	Nose	—	Sinusitis
21–30 y	M	36–37	>5 day	>1 day	On and off	Allergy	Nose	None	—	—	—	—	Other	—	—	—	Allergic rhinitis
5–10 y	F	37–38	4–24 h	>1 h	Continuous	Pain	Ear	Grinding	Intermediate	Ear	—	—	Common cold	None	—	—	Otitis media
61–80 y	F	36–37	>5 day	>1 month	On and off	Deafness	Auditory meatus	None	—	—	—	—	Other	—	—	Bad	Wax in the ear
41–60 y	M	37–38	4–24 h	>1 h	Continuous	Pain	meatus	Grinding	Intermediate	Ear	—	—	Other	—	—	—	Otitis media
41–60 y	M	36–37	>5 day	>1 day	Continuous	Hoarse	Nose	None	—	Throat	—	—	Other	—	—	Normal	Miscellaneous
61–80 y	M	36–37	>5 day	>1 y	Continuous	Deafness	Ear	None	—	—	—	—	None	—	—	Bad	Bad hearing
31–40 y	M	36–37	1–5 day	>1 day	On and off	Itch	Auditory meatus	None	—	—	—	—	—	—	—	Normal	Extotit
21–30 y	M	36–37	>5 day	>1 day	On and off	Itch	Auditory meatus	None	—	—	—	—	—	—	—	Normal	Extotit
41–60 y	F	37–38	>5 day	>1 h	On and off	Pain	meatus	Grinding	Light	Throat	—	—	Common cold	—	—	—	Tonsillitis
41–60 y	F	36–37	1–4 h	Instantaneous	Once	Bleeding	Throat	None	None	None	Intermediate	Rotatory (out)	None	None	Nose	—	Epistaxis
61–80 y	M	—	4–24 h	<1 h	On and off	Vertigo	Head	None	—	—	—	—	Hypertension	None	—	Normal	Vertigo
61–80 y	M	—	>5 day	>1 month	On and off	Vertigo	Head	None	—	—	Light	Rotatory (in)	Hypertension	Other	—	Normal	Vertigo
61–80 y	M	—	>5 day	>1 month	On and off	Vertigo	Head	None	—	—	Light	Swinging	Hypertension	None	—	Normal	Vertigo

diagnosis sample, they were compared with the total number of visits to the same primary healthcare centre the next year (table 3).

Results

The study sample consisted of 343 visits by 272 patients. One hundred and nine patients (40%) were men. Ages ranged from one to 86, with a median of 18 reflecting the high frequency of ENT problems occurring in childhood. In the study period, the total number of diagnoses made in the primary healthcare centre was 25 345 (22 614 visits in 19 876 different patients) and for the sample 2566 (2290 visits in 2084 patients).

The number of individual ENT diagnoses, as defined by the Swedish primary care ENT agreement, in the 272 patients was 375. The 10 most frequent ENT diagnoses constituted 94%, and the five most frequent ENT diagnoses almost 85% of all ENT diagnoses (table 3). The most frequent diagnosis was otitis media which made up one third of the total. The top five ENT diagnoses accounted for about 16% of all diagnoses for all patients attending the Mjölby primary healthcare centre in the study period.

Only 12 of the 343 consultations for ENT problems resulted in a referral for specialist opinion. All these were within the guidelines of the PRIMEAR agreement.

For many of the cases much of the information that would be required as essential data for computer was not included in the case notes (table 2). Some of the prescribed practice guidelines^{21-24 27} were recorded frequently and others rarely.

The number of discrete pieces of essential information for the computer to support the diagnosis of any condition varies. The greatest being 16 for vertigo (table 2). But the mean number of pieces of information actually recorded in the notes was usually less than that required for the essential dataset. For example in otitis media the mean number recorded in the medical notes was seven compared with 15 required for the computer; for tonsillitis four out of 10; sinusitis eight of 13; external otitis seven of 11; wax in the ear four of 13; eustachian catarrh five of 10; acute pharyngitis four of five; laryngotracheobronchitis six of six; allergic rhinitis five of 14; vasomotor rhinitis seven of 14; vertigo six of 11; and epistaxis eight of eight. Table 2 shows examples of the variation in recording data in case notes.

Table 3 Examples of ENT diagnoses from control and sample data

Diagnosis	Control			Sample	
	Number	% Of ENT	% Of total	Number	% Of ENT
Otitis media	1725	21.7	5.7	126	33.6
Sinusitis	784	9.9	2.6	66	17.6
Wax in the ear	335	4.2	1.1	25	6.7
Vertigo	257	3.2	0.9	16	4.3
Eustachian catarrh	191	2.4	0.6	8	2.1
Epistaxis	77	1.0	0.3	7	1.9
Laryngotracheobronchitis	19	0.2	0.1	1	0.3
Other specified ENT diagnoses	256	3.2	0.1	10	2.9
Top 10 ENT diagnoses	5698	94.5	19.0	361	96.3
Total diagnoses per period	30040	—	—	25345	—
Total ENT diagnoses	6030	100	20.1	375	100

There was no significant difference between controls and samples.

Discussion

Systems that strengthen documentation and provide a basis for evaluation and feedback about decision making are important for quality improvement.²⁷ But this survey has shown that the documentation of clinical details about patients presenting to a primary care centre for ENT problems are limited, and therefore unlikely to be of much use for detailed quality assessment. In all, only 46% of the clinical details necessary for setting up a computerised information system based on an essential dataset were in fact recorded in the written case notes.

The case mix and the proportion of work that involved ENT problems at the Mjölby primary healthcare centre are representative of the situation in Sweden and are close to the PRIMEAR estimations. There was nothing in our follow up to suggest that the clinical performance of the practitioners of the Mjölby primary healthcare centre was anything other than satisfactory. The number of patients seen and the types of diagnoses made were similar to those expected from the PRIMEAR estimations. Moreover, during the study period no complaints were filed and no unexpected events were recorded in the study sample. Thus physicians seemed to make the appropriate diagnoses, draw the right conclusions, and refer the right cases to the hospital. But as the details recorded in the notes were limited this remains a subjective assessment.

Some further broad judgements about the process of consultation can be inferred from the patterns of the clinical details that were recorded. Most doctors when dealing with common and straightforward problems — for instance, with cases of acute tonsillitis — involve themselves only in the practical aspects of care, once it is clear that the patient has pain in the throat. A similar pattern was found with the management of patients with otitis media. However, in the management of vertigo — a condition that may have several causes and may not be as straightforward in either diagnosis or management and requires more thorough examination of the clinical details — the symptoms and signs were recorded more thoroughly and were more in keeping with the range of details deemed to be required for the computerised information system. Thus it seems that the easier a diagnosis is to make and perhaps the more commonly it is seen, the fewer the details that appear in the records. And for cases of wax in the outer ear or epistaxis few clinical details apart from the diagnosis were recorded, as would be expected from the standards set by the computerised essential dataset.

Including all diagnostic details in the case notes is considered to be an important quality measure.^{27 33 34} In the case notes of ENT problems at Mjölby documented conformity with practice guidelines²⁷ would have been considered poor. However, actual practice is likely to have been good. There are several reasons why it may be unsatisfactory and potentially risky to have insufficient documentation. Earlier studies show that an insufficient

documentation severely hampers medical audit and quality assessment.^{27 33 34} Poor documentation does not necessarily mean bad care, but good documentation shows clearly both what and how care was delivered. Failure to keep detailed records may thus place an unjustified doubt on the care providers and will also make it difficult for them to show their full capacities.

So, why is documentation so limited? Lack of time and lack of relevance to the eventual outcome may both contribute. It may be argued that time spent on documenting details of the care of straightforward problems such as sore throats is not a good use of valuable time. However, the introduction of computer systems as well as demanding more information may also provide support that allows quick and complete documentation. At peak hours, under stress, or in emergency situations, it may be difficult to complete written records of all data, particularly if those data do not have an immediate purpose but are to be used for a quality assessment at a later date. A primary care centre with heavy, fluctuating, and multifarious work load could be well served by information support systems that could for example stream line administrative tasks. Delays in typing dictated notes may also contribute to the limited documentation.

There are many ways in which electronically stored clinical data could contribute to the management of the process of clinical care. But moving from paper to electronic records is as much a matter of cultural as technological change. If essential datasets are to become part of support systems then those constructing them will need to take into account not only current practice and established guidelines but also the need for concise speedily entered notes, preferably mediated by on line computer software.²⁵ This should both register and report the diagnostic and therapeutic procedures as a "blue print" as they are performed and, not overburden busy clinicians by demanding a lot of apparently redundant details. The essential dataset should be adjusted to the local case files as they contain all the local knowledge and traditions. Properly designed, such a system could be a sound foundation for good quality assessment. As an extra benefit it could help primary health care to move towards the World Health Organisation goals and document the struggle to reach them.

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