Original Research Paper

Sore throat diagnosis and management in a general practice after-hours service

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ABSTRACT

Aim: To describe the management of sore throat by GPs.

Setting: Wellington After-hours Medical Centre (AMC).

Method: An audit of sore throat care.

Results: Among 6184 patient encounters in 1996, 2155 were for respiratory conditions. Six hundred and seventeen patients presented with a sore throat (rate of 10 per 100 encounters) and of these patients 59 per cent were women, 9 per cent had a throat swab, 84 per cent were prescribed an antibiotic, 15 per cent were referred to secondary care, and 46 per cent were both given a viral-related diagnostic label and were prescribed an antibiotic.

Conclusion: Few patients presenting at AMC with sore throat have a throat swab taken and most are prescribed an antibiotic. Many patients still receive an antibiotic prescription even when they have been given a viral diagnostic label for the cause of their sore throat.

Key points

- Sore throat is a common presentation for a patient at after-hours services (10 per 100 encounters)
- Few patients had a throat swab taken (9 per cent)
- The majority of patients were prescribed an antibiotic (84 per cent)
- Paradoxically, children in the 5-15 age group (most likely to suffer rheumatic fever) were less likely to receive an antibiotic than other age groups
- A large proportion of patients (about 40 per cent) were prescribed an antibiotic despite a viral diagnosis

INTRODUCTION

Sore throats are a common presenting symptom in New Zealand general practice,[1] but there are no published studies of the management of sore throat in New Zealand general practice. One study has reported a high use of antibiotics for viral upper respiratory tract infections,[2] despite doubt about the efficacy of such therapy.[3]

Recent systematic reviews reveal that primary care doctors from many countries

commonly prescribe antibiotics for sore throat and other upper respiratory tract infections.[4]

There have been no studies of patients with sore throat presenting to general practice after-hours medical centres, although many people use these services for their primary care and there might be serious consequences of a sore throat. In some areas of New Zealand, rheumatic fever remains an important sequelae of throat infections,[5] unlike other western countries where the complication is rare.[6] Those most at risk are children aged five to 14 years (69 per cent of cases) and Maori and Pacific Island peoples (89 per cent of cases).[5,6] These children often attend after-hours medical centres for their primary care.

This study aims to describe the diagnosis and treatment of sore throat by GPs in an after-hours medical centre.

METHOD

Location of study: The Wellington After-hours Medical Centre (AMC) is situated in Wellington city, and is open week nights (5pm to 8am), and 24 hours on Saturday, Sunday, and holidays. It is a primary care after-hours service that does not have any inpatient facilities. All but two Wellington general practices use the AMC for after-hours service provision and 90 per cent of doctors rostered for work at the service are Wellington GPs.

Clinical data: Data was collected prospectively for all patients who presented with possible respiratory tract infection, using a similar format to an audit done in 1994.[7] GPs record the patient's history, symptoms, signs, diagnoses, treatment, and referral details on a standard one-page clinical record. There are no set protocols at the AMC for the way GPs diagnose or manage respiratory tract infection.

All data was collected on a standard data form, then entered onto the computer database, *Access,* and checked. Patients and GPs were identified by code numbers. The following data elements were collected from each patient:

TABLE 1: CHARACTERISTICS AND OUTCOMES OF PATIENTS PRESENTING WITH A SORE THROAT AS A SYMPTOM TO AN AFTER-HOURS GENERAL PRACTICE SERVICE

	0-4 years	%	5-14 years	%	15+ years	%
Total	38		124		456	
Characteristics of patients						
Female	16	42%	71	57%	277	61%
Do not have a nominated general practitioner	0	0%	4	3%	51	11%
Live out of the greater Wellington region	5	13%	18	15%	59	13%
Hold a community services card	11	29%	27	22%	66	15%
Outcomes						
Rate of sore throat presentation^	3.32		15.74		10.70	
Rate of throat swab taken^	0.95		0.89		1.04	10%
Throat swab taken	4	11%	7	6%	45	10%
Rate of antibiotic prescribing^	78.95		75.81		86.37	
Prescribed antibiotic	30	79%	94	76%	393	86%
Antibiotic type:						
Penicillins#	27	90%	74	79%	289	73%
Macrolides#	2	7%	12	13%	69	17%

(i) Patient characteristics: date of birth, sex, residence by street and suburb, community card status (an income tested programme where the Government subsidises medical costs), and whether the patient had a GP

(ii) Process details: any respiratory diagnosis and all recorded symptoms and examination details

(iii) Outcomes: (a) Prescribing of antibiotics (b) The taking of a throat swab (c) Referrals: no record of referral, referral back to own GP, referral back to AMC, referral to local hospital emergency

Tetracyclines#	0	0%	0	0%	20	5%
Other antibiotics#	0	0%	2	2%	10	3%
A repeat prescription of other medication	0	0%	0	0%	1	<1%
Referred back to own general practitioner	29	76%	88	71%	259	68%
Asked to return to AMC	9	24%	20	16%	54	14%
Referred to hospital/specialist	1	3%	1	1%	4	1%
No record of follow-up	5	13%	21	17%	112	29%

* rate per 100 encounters at Wellington After-hours Medical Centre
# per cent of antibiotic prescribed

department or admission. The patient's ethnicity is not collected routinely by the AMC.

Analyses: There were two denominators for this study. The first involved all patients presenting to AMC during the study period. The second involved all patients with any respiratory diagnosis.

An "at-risk" patient was defined as any person 5-14 years of age because this group has the highest incidence of rheumatic fever in New Zealand.[5,6] Data was collected for the months of November and December 1996. Consent to do the study was obtained from the AMC directors and from the Central Regional Health Authority Wellington Ethics Committee.

Comparisons between categories were calculated using non-parametric tests where appropriate. Significance was set at the $p<0.05$ level.

RESULTS

Over the two-month study period there were 6184 patients seen at the Wellington After-hours Medical Centre, of whom 2155 had respiratory disorders (34.85 per 100 encounters) and 617 had a recorded symptom of a sore throat (9.98 per 100 encounters). There was no epidemic of streptococcal throat infection during the time of the study [personal communication from ESR]. There were 105 GPs rostered to work over the study period.

Overall, 59 per cent of sore throat patients were women. Figure 1 shows the age-standardised rates of sore throat presentation by gender. Table 1 shows the characteristics and outcomes of patients with a sore throat. Nearly all children under 15 years (97 per cent) had a nominated GP compared to 89 per cent of adults.

The clinical records had the following proportions of symptoms relevant to streptococcal infection as a possible cause of the sore throat:[8,9] 63 per cent had no record of a cough, 25 per cent had a record of fever over 38^{o}, 21 per cent had a record of swollen, tender anterior cervical nodes, and 17 per cent had a record of tonsillar exudate.

Among the 619 patients presenting with a sore throat, 9 per cent had a throat swab taken, and 84 per cent were prescribed an antibiotic. Table 1 shows that patients in the "at-risk" age group had the highest rate of sore throat presentation, were no more likely to receive a throat swab, and had the lowest rate of antibiotic prescribing compared to the other age groups.

Diagnostic labels and antibiotic prescribing: There were 14 diagnostic labels used in all the patients who presented for respiratory disorders during the study period. Table 2 shows the frequency with which the various diagnostic labels were recorded for patients presenting with sore throat. Ninety-eight patients were given one of three diagnostic labels that contained the word "viral". Significantly, more of the patients presenting with sore throat who did not have a viral-related diagnostic label recorded were prescribed an antibiotic (91 per cent) compared to those

patients who did have a viral-related label (46 per cent) (Odds ratio 11.39 (95% CI 6.96-18.68), p<0.0001).

DISCUSSION

The rate of sore throat presentation in this study (10 per 100 encounters) was double the rate of presentation to Waikato GPs.[1] This variation in presentation rates at different types of general practice services needs more social science research, particularly as there were some indications in this study that social factors are important in the utilisation of after-hours services for sore throat. For example, there were more women in most age groups and particularly among the elderly. Furthermore, there was a surprisingly large proportion of sore throat patients (15 per cent) who were treated and asked to return to the Wellington After-hours Medical Centre or sent on to hospital (there were no cases of rheumatic fever during the study).

TABLE 2: DIAGNOSTIC LABELS GIVEN TO PATIENTS PRESENTING WITH A SORE THROAT AS A SYMPTOM TO AN AFTER-HOURS GENERAL PRACTICE SERVICE AND THE PER CENT PRESCRIBED AN ANTIBIOTIC FOR EACH DIAGNOSTIC LABEL

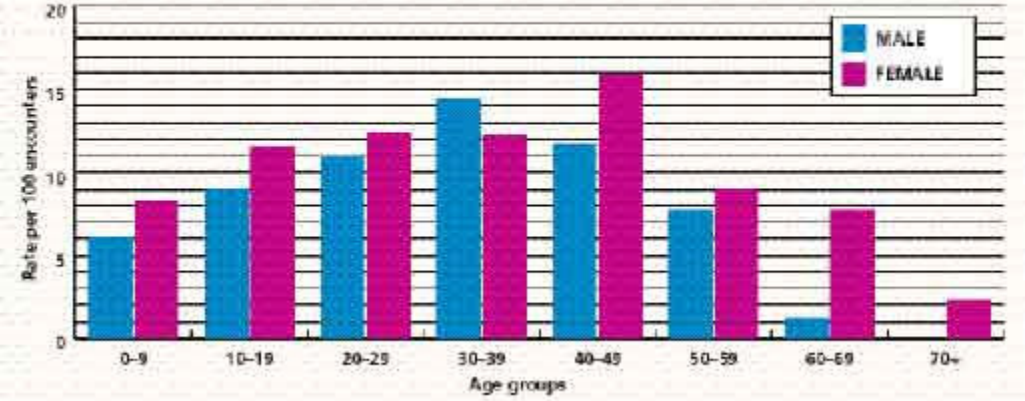
Diagnostic label	Number*	Per cent prescribed antibiotic
Allergy	8	88%
Asthma	77	87%
Bronchitis	33	94%
Infected throat	32	94%
Lower respiratory tract infection	23	87%
Otitis media	159	84%
Pharyngitis	101	96%
Rhinitis	4	100%
Sinusitis	35	91%
Tonsillitis	162	97%
Upper respiratory tract infection	113	87%
Viral infection	54	46%
Viral throat	11	36%
Viral upper respiratory tract infection	33	52%

* Each patient could have more than one diagnostic label

In this study, there was no bias towards treating sore throats in the five to 14 year group of patients with antibiotics, despite this group of patients being particularly at risk for rheumatic fever in New Zealand.[6] Indeed, this study described the paradoxical situation where, although the rate of sore throat presentation was highest in the five to 14 year age group, they had the lowest rate of antibiotic prescribing. One reason for this paradox may be that those patients particularly at risk of rheumatic fever _ low income people _ may be less likely to use Wellington After-hours Medical Centre than the local hospital.[7] Larger studies using a variety of general practice services are required to determine the relationship between at-risk people and their behaviour when ill.

In this study, GPs often prescribed antibiotics for patients who presented with a

FIGURE 1: AGE STANDARDISED RATES OF ENCOUNTERS BY GENDER WITH THE WELLINGTON AFTER-HOURS SERVICE FOR PATIENTS WITH SYMPTOMS OF SORE THROAT



sore throat (84 per cent), but rarely used a throat swab (9 per cent) when making their management decisions. Although it was encouraging to find significantly more patients who did not have a viral-related diagnostic label were prescribed an antibiotic, there were still 46 per cent of patients presenting with sore throat who were given a viral-related diagnostic label and who were prescribed an antibiotic. These findings illustrate GP management of sore throat in AMC settings is similar to their management in other general practice settings.[4] A reduction in antibiotic prescribing would realise a considerable saving in terms of costs and adverse effects.[4] Issues about patient expectations and the clinical experience of GPs need to be considered, if an effective change in GP clinical behaviour is to be achieved.

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References

1. McAvoy B, Davis P, Raymont A, Gribben B. The Waikato Medical Care (WaiMedCa) Survey 1991-1992. *New Zealand Medical Journal* 1994;107(986 Pt 2):388-433.

2. McGregor A, Dovey S, Tilyard M. Antibiotic use in upper respiratory tract infections in New Zealand. *Family Practice* 1995;12:166-70.

3. Arroll B, Kenealy T. Antibiotics versus placebo in the common cold. *The Cochrane database of Systematic Reviews* 1998;8.

4. Del Mar CB, Gliasziou PP. Antibiotics for the symtoms and complications of sore throat. *The Cochrane Database of systematic reviews* 1998;4.

5. Durham J, Kljakovic M. Primary prevention of rheumatic fever: is there a role for general practice? Wellington: Ministry of Health; 1997.

6. Durham G. Factsheet: Rheumatic Fever in New Zealand. Wellington, New Zealand: Public Health Commission, Ministry of Health; 1995 25 October 1995. Report No.: 95.07.

7. Kljakovic M, Stuart D. Out-of-hours attendance and outcomes for asthmatic patients at two primary care services. *New Zealand Medical Journal* 1996;109(1025):254-7.

8. McIsaac WJ, Goel V, Slaughter PM, Parsons GW, Woolnough KV, Weir PT, et al. Reconsidering sore throats. Part I: Problems with current clinical practice. *Canadian Family Physician* 1997;43:485-93.

9. McIsaac WJ, Goel V, Slaughter PM, Parsons GW, Woolnough KV, Weir PT, et al. Reconsidering sore throats. Part 2: Alternative approach and practical office tool. *Canadian Family Physician* 1997;43:495-500.