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General practitioners' assessments of the primary care caseload in Middlemore Hospital Emergency Department

Barry Gribben

Abstract

Aim To estimate the proportion of Middlemore Hospital Emergency Department (ED) attendances that GPs thought could be handled in primary care.

Methods A retrospective review of 300 randomly selected discharge summaries of non-admitted patients by 12 GPs.

Results Data were available from 278 discharges. Agreement between GP reviewers was "fair" (kappa = 0.34, Kendall's W = 0.48). In 50 cases, the GPs were unanimous that the case was a primary care case (18%). In two cases, there was unanimity that the case was an ED case (<1%). The 12 GPs assessed that an average of 56% (range 38–81%) of the cases they reviewed could have been handled in their surgeries yesterday with no extra resources. This suggests that 34% of the total ED caseload (ie, including admitted patients) could be managed in primary care.

Conclusions A significant proportion of ED attendances at Middlemore Hospital could be handled in primary care; however, there is considerable variation in GP estimates of this proportion.

Over the past three years (1998–2000), patient attendances at Middlemore Hospital (MMH) emergency department have been increasing at 8.5% per annum. The growth in self-referrals is 12.5% per annum. Over this same period, there has been only a 2% annual increase in population of the Counties Manukau District Health Board (CMDHB) area. This disproportionate growth in emergency department (ED) attendances reflects an international phenomenon that has been observed in the UK, US and Australia,[1,2,3] although its meaning and interpretation have been debated.[4] This growth has significant resource implications for CMDHB, and for this reason, as part of a wider study into ED attendance patterns,[5] CMDHB commissioned an investigation into the proportion of the ED caseload that could potentially be handled in primary healthcare. This paper describes the results of a retrospective review of 300 random ED discharge summaries conducted by a panel of 12 GPs, designed to estimate this proportion.

Methods

Since January 2001, MMH has produced electronic discharge summaries for all ED patients who are not subsequently admitted to a hospital ward, regardless of original presentation. Discharge summaries are produced for self-referred patients, GP referrals, and ambulance cases. Patients who are kept in ED for short-stay observation also receive a discharge summary. These discharge summaries are then faxed or emailed to the patient's GP, if known. In total, 61% of all attendances at ED over the study period had such a discharge summary, the remaining 39% being admitted to a ward at MMH.

We randomly selected 300 anonymous cases from all the ED discharge summaries produced between 1 January 2001 and 30 June 2001. We chose 300 cases to provide a small enough confidence interval around the estimated proportions to justify any management decisions (worst case 50% +/- 5%, a = 0.05, ß = 0.2). Every 69th case of the 20 961 cases seen but not admitted over this period was selected. The cases selected were representative of the age, gender, ethnicity and time-of-attendance of all cases. We constructed a report of each attendance, which included age, gender, day of the week, time of attendance, and the "clinical management" data, in which the presenting complaint was described. No identifying data were supplied. In 26 cases there were no data in the "clinical management" field.
We asked 12 GPs to assess these cases. Ten of the GPs came from a range of locations within CMDHB (Papakura, Takanini, Manurewa, Papatoetoe, Otahuhu, Mangere and Howick). The other two were lecturers in General Practice from the Department of General Practice and Primary Health Care. Two of the ten CMDHB GPs worked in after-hours clinics. There were four female GPs in the group.
The assessment of the cases took place on a Saturday morning, with a meal break. GPs were paid for their time. GPs were provided with sheets that described each case. All assessments were completed by each GP independently. The sets of cases were presented in different order to each GP. The cases were assessed using a form that attempted to capture some of the uncertainty involved in performing these assessments. For each case, each GP was asked to choose from a number of options:

1. They could indicate that they could have completely managed the case in their surgery, without recourse to any external diagnostic services.
2. They could say that they definitively would have referred the case to hospital.
3. If diagnostic services were required, the GPs were asked to indicate those particular services required to which they did not have access.
4. Finally, they could indicate a "possible" or "probable" referral.

Table 1 provides an example of the coding form. It should be noted that options 3 and 4 (above) were not mutually exclusive; GPs could tick as many boxes as applied.
Given the data available to the GPs, we tried to set an accurate lower bound on the proportion of cases that they thought could have been handled in primary care by:

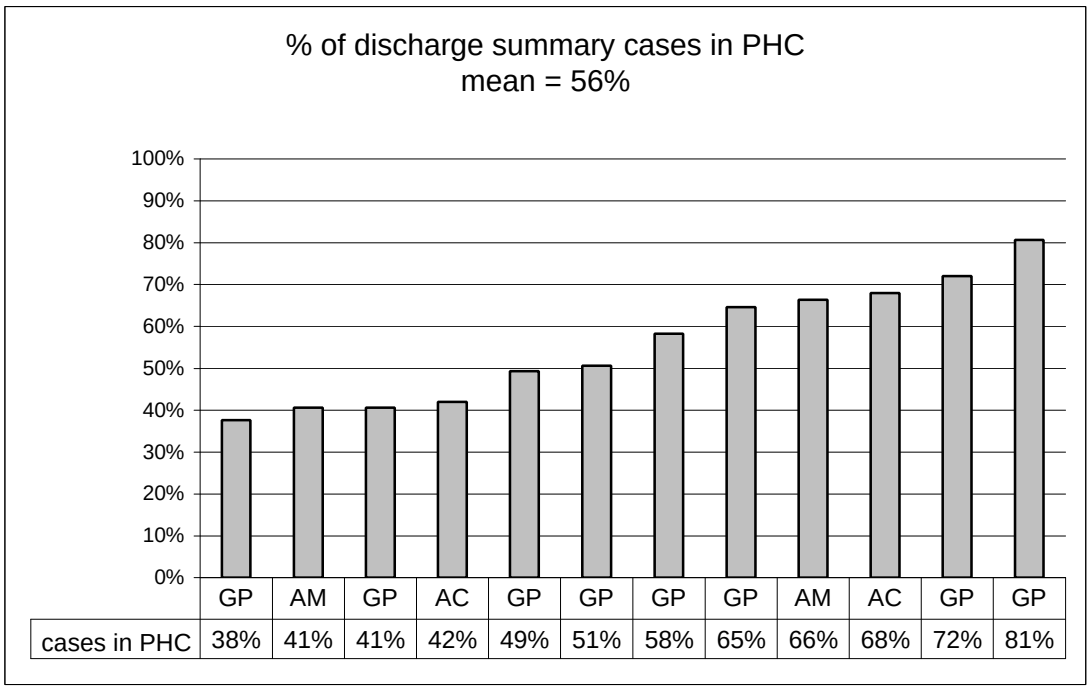
- counting only those cases in which the GPs were in no doubt that they could have handled the cases in their surgery; ie, cases that required extra diagnostics or for which a referral was considered to be "possible" have not been counted as primary care cases;
- counting cases for which there were no available data in the hospital database (26) in the denominator. This is equivalent to assuming that none of these cases could have been handled in primary care.

Results

The 12 GPs considered that an average of 56% of the cases presented could be managed in primary care. The range was large, however, as shown Figure 1.

In addition, the distribution of these percentages is not normal, suggesting real variation in the ability or willingness of GPs to handle ED cases in primary care. In 50 of the 274 cases that were assessed, all 12 doctors agreed that the specific case could be handled in primary care. The distribution of the scoring of cases by the 12 doctors across each possible classification on the scoring form is shown in Table 1. The agreement between GPs was "fair" with kappa = 0.34, when coding with three categories: 1 = surgery, 3 = referral, 2 = any other response. As these data are ordinal, a Kendall's W (coefficient of concordance) was also calculated, which showed (as expected) slightly greater agreement (W = 0.48).

Figure 1. Assessment of proportion of cases that could be handled in primary healthcare (PHC), based upon assessment of discharge summary



GP=general practitioner, AM=Accident and Medical doctor, AC=academic general practitioner

Table 1. GP scoring of ED cases (NB groups are not exclusive, so percentages do not add to 100%)

	Could I have managed this case in my surgery yesterday?						
	YES	**YES but only if I had access to:**			**I would have referred:**		**NO**
	right now	**X-ray**	**u/s**	**other Ix**	**possibly**	**probably**	**refer to MMH**
% of 274	61	12	2	5	10	4	16

u/s=ultrasound; other Ix=other investigations

To illustrate the types of cases that were considered, and the data with which the panel were provided, the management of the first eight cases assessed by the GPs is shown in Table 2. The numbers of GPs who indicated that their action would depend upon further tests, and have indicated a “possible” or “probable” admission, are not displayed in the table.

The proportion of the total ED caseload that could be handled by primary care may be estimated by assuming that no admitted cases could have been handled in primary care, a very conservative assumption. Under this assumption, we can estimate that GPs would assess that 34% of the total ED case load (56% of 61%) could be handled in primary care. An alternative analysis is to count only those cases for which all GPs agreed that primary care treatment was possible. The range of assessments given by the GPs was, as mentioned, very variable. The 12 GPs agreed unanimously that 10%

(50/300 * 61%) of ED cases could have been treated in primary care, and in only 1% (2/300 * 61%) of cases did all GPs agree that a case should definitely be referred to ED.

Table 2. Scoring of first eight cases presented to GPs for assessment

PHC*	Refer†				
12	**0**	**Case: 1**	**Male**	**22**	**Sunday, 10:16 AM**
		Clinical notes:	Throat mildly inflamed. No pus. Evidence of extracted tooth mildly infected lower R molar. Past history of rheumatic fever Therefore treated with Amoxil for throat and Flagyl for tooth.		
12	**0**	**Case: 2**	**Female**	**35**	**Sunday, 05:39 PM**
		Clinical notes:	Postero-lateral neck muscle pain with spasm since "sleeping awkwardly" 3 days ago. No neurological symptoms. Saw GP in Kaitaia who queried thyroid abnormality. Features typical for "wry" neck found on clinical examination. No other abnormality.		
10	**0**	**Case: 3**	**Female**	**18**	**Monday, 01:30 AM**
		Clinical notes:	Epigastric tenderness. CXR and ECG normal. Urine NAD. 2–3 episodes vomiting. Advised to push oral fluids and gradually re-introduce solids. Review if any concerns.		
6	**1**	**Case: 4**	**Female**	**5**	**Monday, 02:27 PM**
		Clinical notes:	Rode small motorbike into the back of a parked car at approx. 14:30. Parents came running when they heard a wail. Not seen to be KO'd. Blood over face. Took to hospital in their car. Seen in Paeds ED, cardiovascularly stable, blood around mouth, baby teeth.		
5	**5**	**Case: 6**	**Male**	**31**	**Tuesday, 11:46 AM**
		Clinical notes:	Presented ROS Left eyebrow lac – noticed R supraorbital nerve injury.		
5	**2**	**Case: 7**	**Male**	**40**	**Tuesday, 01:47 PM**
		Clinical notes:	Seen in ED. Fell from roof 4 days ago. Unable to weight-bear since. No other injuries. Swelling++, NV intact. Otherwise fit and well. X-ray undisplaced # calcaneus not involving subtalar joint. Placed in back slab.		
12	**0**	**Case: 8**	**Female**	**28**	**Tuesday, 09:41 PM**
		Clinical notes:	Intermittent sharp abdominal pains for 6 months. Recent D&V and abdominal pain this pm. Urine NAD, bloods NAD. Vaginal exam aborted due to anxiety. As the pain not that intense discharged on buscopan. I suggest VE mane to exclude ovarian path.		
12	**0**	**Case: 10**	**Female**	**1**	**Thursday, 05:20 AM**
		Clinical notes:	3 day history of coryza, cough, pulling at ears and crying overnight. On examination looks well, afebrile, happy in parents arms. Fontanelle normal, chest clear, red throat left otitis externa and media, right ear red, peripherally. Rest of examination NAD.		

*number of GPs who felt case could have been managed in primary care; †number of GPs who would have referred the case to hospital

Discussion

Other studies have found large variation in the proportion of ED cases that are assessed by doctors as being "inappropriate", from 19% to 87%.[6,7] These studies, and

others on ED attendance, have been described in a very useful literature overview prepared by New Zealand Health Technology Assessment (NZHTA).[8] The variation in the figures is influenced by the national context and the definition of "inappropriate" that is employed. In most studies, "inappropriate" is taken to mean that a patient could have been treated in primary care.[9] In the UK, a study that calibrated existing tools for measuring "inappropriateness" (based on ICD9 classification and process measurements) against opinions of a GP panel, estimated that 23% of cases in 16 English A&E departments could have been handled by a patient's GP.[10] A review of 2980 ED cases from Elche hospital (Valencia, Spain), using an explicit review instrument applied by ED staff, estimated 29.6% of cases were primary care cases.[11]

Features of ED attendance have also been investigated in NZ,[12,13,14] in particular for asthma treatment,[15] and in South Auckland specifically,[16] but these studies have not attempted to measure appropriateness of utilisation, and may now not reflect the contemporary situation. A report commissioned by South Auckland Health in 1995 describes a review in which different clinicians were asked to assess 78 ED case notes to determine if the cases could have been managed in primary care.[17] The emergency medicine specialist assessed that 12% were primary care cases; a GP, 33%; and a private Accident and Medical (A&M) doctor, 37%. The present study is remarkably consistent with these estimates, given the large increase in ED volumes that has occurred in the interim.

The present study may be criticised from a number of perspectives. Deciding what information to provide GPs from the discharge summary was not straightforward. We wanted to provide the closest possible approximation to real-life general practice, to allow GPs to make the most natural decision about patient management. For example, in real-life general practice the clinician will know what medications a patient is taking. However, the medications list from the discharge summary may also provide clues as to the discharge diagnosis, which of course is not known when the patient is triaged. In this study we decided not to provide GPs with the medication list.

We also considered providing full case notes to GPs, but decided that the logistics of deleting extra information not normally available when the patient is triaged from clinical records, copying the notes for off-site use, and maintaining confidentiality, made this approach very costly for no obvious methodological advantage.

We asked each doctor to indicate their view of the validity of the assessment process, given the retrospective nature of the study and the limited clinical data presented – for example, in no case was a temperature recorded in the clinical notes field.

The doctors felt that although there were certainly cases for which more information was required, this was a valid process, and generally were very surprised at the number of cases that, according to them, were obviously general practice cases. This does not prove content validity, but the lack of any discomfort amongst the GPs about the process lends some additional weight to the results. To a large extent, discomfort was avoided by allowing the assessment of a case as a "possible" or "probable" referral.

The doctors themselves were not a random sample – they agreed to give up a Saturday morning to code discharge summaries! They were chosen by the researcher for geographic, institutional and gender spread. It would thus be incorrect to

extrapolate from these results to CMDHB general practitioners as a whole. However, we were not trying to estimate the views of all CMDHB doctors – we were trying to estimate what proportion of cases could be managed in primary care. The group of doctors was our expert panel. Their mean rate is our best estimate of the actual proportion of these 300 cases that could be managed in primary care.

There was a surprisingly wide range of views on the proportion of cases that the GPs thought could be completely handled in primary care. We asked for personal views, and so naturally the skills and experience of individual GPs will have contributed to the range. These assessments did not appear to be related to age or gender and the scores of the A&M doctors and academic GPs were distributed across the range.

In 19% of cases, GPs would have liked access to services they do not currently have available. However, in 14% of cases they would have possibly or probably referred. The interpretation of these data is not straightforward (for example, GPs might still have referred once results were available), but a fair interpretation would be that an extra 5–10% of cases could probably be managed by GPs with additional access to diagnostics.

A further criticism of this study is that GPs would have a vested interest, both financial and in terms of professional standing, to score cases as "GP" cases. We started from the premise that GPs are the most qualified group to determine which cases a GP could handle. A randomized prospective trial, in which patients that were assessed by GPs as being primary care patients were treated in ED or at a GP's surgery, would be a more robust design, but poses major methodological and possibly ethical problems.

Finally, it should be remembered that the cases assessed by GPs as being primary care cases, did in fact attend Middlemore Hospital ED. The reasons for this need to be fully understood before a coherent approach to the primary care caseload at MMH ED can be developed. The unique population served by MMH ED means that these findings might not be applicable to other emergency departments in NZ. In a qualitative research programme commissioned by CMDHB,[5] many GPs felt that the lack of a financial barrier at the ED is the most important reason that many patients choose to attend the ED for primary care. However, patient interview data suggest that issues of accessibility, familiarity and confidence are also important factors.

Author information: Barry Gribben, Senior Research Fellow, Department of General Practice and Primary Health Care, University of Auckland, Auckland

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Correspondence: Dr Barry Gribben, Department of General Practice and Primary Health Care, University of Auckland, Private Bag 92019, Auckland. Fax: (09) 373 7006; email: barry.gribben@cbg.co.nz

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