Emergency department use in a rural Australian setting: are the factors prompting attendance appropriate?

Joanne L Callen, Leanne Blundell and Mirela Prgomet

Abstract

Increases in attendance rates at emergency departments (EDs) have prompted concerns regarding inappropriate utilisation. Factors instigating patient ED attendance were examined using a cross sectional survey of 522 patients presenting to the ED of a rural hospital in Australia, during a 1-week period. The results highlighted the importance of the rural hospital ED as an additional and alternate service to existing primary care facilities, particularly outside of business hours. The findings indicated that although patients' perception of an emergency does not necessarily correspond with clinical interpretations, the primary factors prompting attendance, including general practitioner unavailability, referrals and special service needs, suggest that, from a patients' perspective, the majority of presentations to the ED are justified.

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ATTENDANCE RATES at emergency departments (EDs) throughout the world are steadily increasing¹⁻⁶ creating a number of concerns for hospitals, including increased pressure on resources,^{1,7} and access block.^{3,4} Within Australia, the number of patients presenting to EDs in 2001–02 was about 5.7 million. This figure rose by 4.1% over a 3-year period, with over 5.9 million patients attending EDs in 2004–05.²

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What is known about the topic?

Attendance rates at emergency departments (EDs) throughout the world are steadily increasing, creating a number of concerns for hospitals, including increased pressure on resources, and access block. A number of studies cite "inappropriate" utilisation of the ED as one of the contributors to increasing attendance rates. Studies have attempted to identify, for example, why potential primary care patients choose to attend the ED as opposed to primary care services.

What does this paper add?

There have been no published Australian studies which have examined ED use in a rural setting. This paper describes ED use from the patients' perspective and highlights the importance of the rural hospital ED as an additional and alternative service to existing primary care facilities, particularly outside normal business hours.

What are the implications?

The findings indicate that, given the primary factors prompting attendance, including general practitioner unavailability, referrals and special service needs, in most cases the ED attendance was justified and thus could be deemed appropriate. Further studies need to be undertaken to explore ED utilisation in more depth to assist in formulating policies and strategies to support ED service delivery.

A number of studies cite "inappropriate" utilisation of the ED as one of the primary contributors to increasing attendance rates.^{3,6,7} However, the lack of a standardised definition of what is "inappropriate" ED utilisation impedes the ability to assimilate and assess previous findings. The different interpretations of inappropriate ED use significantly affect study results, and the classification of inappropriate visits can range from ten to ninety per cent.³ Similarly, New Zealand Health Technology Assessment⁸ reported that ED misuse ranged from three per cent to eighty per cent depending on the definition used by individual studies. The report confirmed that a valid and reliable method of defining appropriate ED utilisation had not been established and that clinicians, administrators and consumers had different opinions on what was considered appropriate.

Health administrators and emergency clinicians believe that primary care-type attendances are not appropriate in a hospital setting.⁹ However, as Bezzina and colleagues³ demonstrated, the definition of a primary care patient can vary from source to source. Contrary to the Australasian College for Emergency Medicine's (ACEM) line of thought that ED and general practice patient profiles differ greatly,¹⁰ the results of the National Health Strategy⁹ indicated that there was not always a clear distinction between primary care and ambulatory ED cases. Of the 15950 patients surveyed during the study, 15.4% overlapped between ED-type patients and primary care patients. This overlap has also been recognised in other studies,^{3,11,12} illustrating that the categorisation of primary care-type patients as inappropriate within ambulatory care settings is not necessarily accurate.

The ACEM maintains "any individual with symptoms that lead them to believe that they have an injury or illness that could place their health in jeopardy, or lead to an impairment of their quality of life has the right to attend an emergency department".¹³ Although these guide-lines seem straightforward, ED utilisation and the reason for patient attendance remains an issue of contention. Consequently, studies have attempted to identify why potential primary care patients choose to attend the ED as opposed to primary care services.

Recent figures largely attribute increasing ED attendance rates to a steady decline in bulk billing within general practice, believing that many ED attendees are general practice cases.⁵ It has been suggested that factors such as "consumer choice, free services, one stop shopping or the ageing population" represent reasons for the increasing demands on emergency services.⁴ Other investigators have identified proximity, general practitioner referral, medical necessity, ED preference, accessibility, affordability, and GP unavailability as

factors contributing to increased ED presentations,^{6,7,9,14-16} however there has been no conclusive evidence to confirm that this equates to inappropriate ED use. A presentation which may be considered appropriate within one ED, such as in a rural service, may be considered entirely inappropriate within another ED, such as in a metropolitan service.³ Thus, research should be aimed at identifying factors prompting ED attendance to ascertain community needs and subsequently establish solutions to alleviate increasing pressures on emergency services.

Study objectives

The ED of the study hospital was experiencing increased attendances. The department had no measures in place to accurately determine whether those presenting were appropriate for the ED or could have attended alternative primary care facilities. The objective of the study was therefore to identify factors influencing patient ED attendance in a rural Australian hospital and to determine whether these factors were appropriate. The research questions were:

- Could the increase in ED attendance be due to inappropriate utilisation?
- What factors influence patients to present to the ED?

Methods

Study design and site

This case study utilised a cross sectional survey of patients presenting to the ED of an Australian rural hospital. The ED treats about 32 000 patients annually and is situated within a 672-bed multidisciplinary service incorporating medical, surgical, obstetric, rehabilitation, psychiatric, aged care, community, and emergency services. On presentation to the ED, triage nurses assess the patient's condition and subsequently assign an Australasian Triage Scale Category¹⁷ to prioritise treatment. Registration and demographic details are then obtained from the patient at the ED reception before treatment.

Population and data collection

There were 528 ED attendances during the study period. Data were collected over seven consecutive days, during September 2004. A questionnaire was distributed to all patients who attended the ED during the study period. Patients were asked to return the questionnaire to ED reception staff upon completion. The questionnaire consisted of a cover letter explaining the purpose of the study and guaranteeing confidentiality. Information that would identify the patient was not requested in order to ensure patient confidentiality. ED reception staff completed the triage category,¹⁷ mode of arrival, and demographic details, if not completed by the respondent, for each patient as they returned the completed questionnaire.

Where a patient was not able to complete the questionnaire, "unable to complete" was noted on the top of the questionnaire by ED reception staff. This occurred when:

- ED reception and triage staff considered the patient unfit to complete the form, either due to the patient's medical condition or other factors such as frailty or state of mind;
- the patient was transferred immediately to the trauma unit and did not attend ED reception;
- the patient was brought in by ambulance;
- the patient stated he/she was unable to complete the form, for example, unable to write due to a broken arm.

"Unable to complete" questionnaires were marked with the default responses of "attendance considered an emergency" and "urgent but not life threatening" at Question 2 regardless of the patient's medical condition or triage category. The default was justified, as results from completed questionnaires did not establish a connection between ED status and medical condition/triage category. For these respondents ED reception staff completed the demographic section of the questionnaire.

When the first page of the questionnaire was completed and the second page was left blank, default answers of "less than 24 hours" and "no previous treatment or medical care" were used for question three. Omissions were infrequent and would not have adversely affected results.

Questionnaire design

The questionnaire (Appendix) was designed by the second author (LB) to incorporate emergency attendance factors identified in previous studies^{9,14-16} Closed-ended questions related to respondents' perceptions of: whether their attendance at the ED was an emergency; the urgency of the case; factors influencing their ED attendance; duration of the condition prompting ED attendance; care to date of this condition; and whether the respondent was referred to the ED. Respondents could provide multiple factors influencing ED attendance. One open-ended question asked respondents to describe the condition that prompted their presentation to the ED.

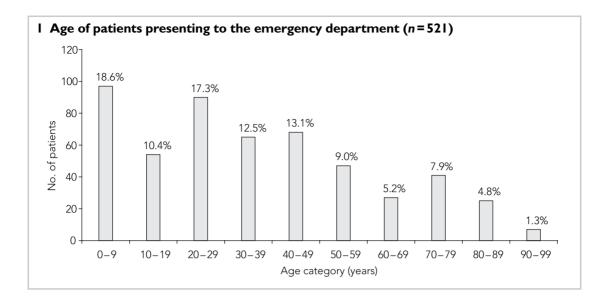
Data analysis

Data were entered into SPSS version 12.0.1 (SPSS Inc., Chicago, Ill, USA) to enable statistical analysis using descriptive statistics. Responses to the open-ended question regarding the condition that prompted attendance at the ED were classified according to the internationally recognised standard of the International Classification of Primary Care (ICPC).¹⁸ Correlations were used to explore relationships between numerous variables including ED proximity, number of presentations, reason for attendance, gender, urgency of condition, triage category, perception of emergency and presentation by ambulance. All responses recorded by a patient were collated and any re-presenting patients completed additional questionnaires. Missing data were excluded from analysis. Approval to conduct this study was granted by the hospital board.

Results

Demographics

There were 528 ED attendances during the study period, with 522 patients agreeing to complete the questionnaire, resulting in a 99% response rate. Similar numbers of male (n = 262) and female (n = 260) patients responded to the questionnaire. The majority of patients were less than 49 years of age (72%), with the largest age groups



FO (7)

2 Patients' reasons for attending the Emergency Department

		Gender (no. [%])			
Condition/ complaint*	Total (no. [%])	Male	Female		
Musculoskeletal	120 (23.3)	60 (50.0)	60 (50.0)		
Digestive	77 (14.9)	31 (40.3)	46 (59.7)		
Skin	57 (11.0)	35 (61.4)	22 (38.6)		
Neurological	51 (9.9)	26 (51.0)	25 (49.0)		
Respiratory	50 (9.7)	20 (40.0)	30 (60.0)		
Cardiovascular	41 (7.9)	20 (48.8)	21 (51.2)		
Psychological	24 (4.7)	9 (37.5)	15 (62.5)		
Eye	24 (4.7)	18 (75.0)	6 (25.0)		
General	22 (4.3)	13 (59.1)	9 (40.9)		
Urological	18 (3.5)	7 (38.9)	11 (61.1)		
Ear	9 (1.7)	5 (55.6)	4 (44.4)		
Genital	8 (1.6)	6 (75.0)	2 (25.0)		
Blood	8 (1.6)	4 (50.0)	4 (50.0)		
Endocrine/ metabolic	6 (1.2)	4 (66.7)	2 (33.3)		
Pregnancy	1 (0.2)	0 (0.0)	1(100.0)		
Total [†]	516 (100.0)	258 (100.0)	258 (100.0)		

* Reasons for ED attendance categorised according to the International Classification of Primary Care¹⁸ + n = 516 with six missing responses.

being 0–9 years (18.6%) and 20–29 years (17.3%). Presentations declined in the over 50 years age group (Box 1).

The majority (84%) of ED attendees were from within the hospital's catchment area, which for this study was considered to be all locations within a 15-kilometre radius of the hospital. Most ED presentations occurred outside business hours (67.4%). Business hours were defined as Monday to Friday 9:00 am–5:00 pm. When weekend presentations were removed from the analysis, after-hours presentations still remained dominant (52.5% after-hours cases compared with 47.5% during business hours). The highest attendance rate was recorded on Day 5, which was a Sunday (n = 90).

Medical condition

Patients were asked to describe the medical condition that prompted their ED attendance. Both male and female patients most commonly reported a musculoskeletal condition/complaint (23.3%) as the reason for their presentation (Box 2). Almost half of the respondents (49.2%) presented with musculoskeletal, digestive or skin conditions/complaints.

Almost three quarters (73.2%) of respondents considered their reason for attending the ED to be

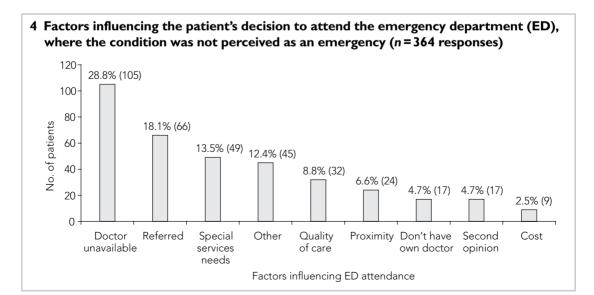
		Day of attendance						
ATS*	Total	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
Category 1	4 (0.8)	1 (1.4)	0 (0.0)	1 (1.5)	0 (0.0)	1 (1.1)	1 (1.3)	0 (0.0)
Category 2	49 (9.4)	6 (8.1)	29 (54.7)	7 (10.3)	14 (19.2)	7 (7.8)	4 (5.0)	4 (4.8)
Category 3	161 (30.9)	17 (23.0)	7 (13.2)	24 (35.3)	19 (26.0)	24 (26.7)	30 (37.5)	32 (38.6
Category 4	251 (48.2)	38 (51.4)	15 (28.3)	33 (48.5)	38 (52.1)	43 (47.8)	44 (55.0)	30 (36.1
Category 5	56 (10.7)	12 (16.2)	6 (11.3)	3 (4.4)	2 (2.7)	15 (16.7)	1 (1.3)	17 (20.5
Total [†]	521 (100.0)	74 (14.2)	53 (10.2)	68 (13.1)	73 (14.0)	90 (17.3)	80 (15.4)	83 (15.9

an "emergency". The perception of a presentation being an emergency was not isolated to patients in high triage categories. Some patients included additional comments supporting their selection such as: "It was an emergency to me".

The majority of patients (88.3%) who described their reason for attending the ED as an emergency considered their condition to be urgent but not life threatening. Ten per cent of patients believed their case to be potentially life threatening, while a small number (1.2%) considered their condition life threatening/time sensitive. There was no correlation between patient perception of urgency and triage category. There were cases where patients in high triage categories

did not consider their condition to be time sensitive or life threatening, while some patients in low triage categories believed their condition to be extremely urgent.

Almost half the patients (48.2%) were classified as triage Category 4, while 30.9% were Category 3. The number of presentations in the other triage categories were much lower (Box 3). Less than a quarter of patients (21.5%) were brought to the ED by ambulance, although presentations by ambulance occurred daily across the study period. There was no correlation between high triage categories and presentation by ambulance. Most patients (47.3%) presenting to the ED via ambulance had a triage Category 3 status.



Factors influencing ED attendance

Patients were provided with a selection of factors that could have influenced their decision to attend the ED for presentations that were not perceived as an emergency (Appendix). The most common factor patients cited for their presentation to the ED was unavailability of a general practitioner (28.8%) (Box 4). The inclusion of weekend results, when general practitioners are less available, could skew the results, however, the exclusion of weekend figures still identified unavailability of alternate health care as being a significant factor (14%). Patient comments also confirmed this finding.

A number of respondents (18.1%) were referred to the ED by a general practitioner or health professional. A need for specialised services (13.5%), such as x-rays and ultrasounds, was also identified as an important factor, particularly by patients who had sustained possible fractures. Quality of care provided by the ED (8.8%) and proximity (6.6%) were also considered relevant, while factors such as seeking a second opinion (4.7%), no regular doctor (4.7%) and cost (2.5%) did not rate highly. More than twelve per cent of respondents indicated other factors as important in influencing their ED attendance. A common response was the amount of pain or discomfort experienced prompting attendance. "Other" responses included patients being visitors to the area and patients being advised by their employer to attend the ED due to a workplace injury.

The majority of patients (83.8%) had experienced the medical condition prompting ED attendance for one week or less, with 55.2% experiencing the ailment for less than 24 hours and 28.6% experiencing the ailment for a duration of between 1 day and 1 week. Patients with conditions persisting for more than 1 week (6.4%) and exceeding 1 month (9.8%) were minimal by comparison.

Treatment and medical care

Almost half (49.1%) of the ED attendees had not received any prior treatment for the condition prompting their visit, while only one fifth (20.5%) had obtained prior medical care. A small proportion of patients had upcoming appointments arranged with a doctor or health professional (9.1%), while the number of patients that had surgical or hospital treatment booked (1.5%) or were on waiting lists (1%) was minimal.

A considerable number of patients had been referred to the ED by a general practitioner or other health professional (18.8%). Further investigation revealed that nearly three guarters (74.8%) of these referrals were from general practitioners. Some patients were advised to attend the ED by a pharmacist (4.7%). There were no referrals by physiotherapists, chiropractors or dentists during the study period. "Other" referring health professionals identified by respondents included nurses, ambulance officers, aged psychiatric services, neurologists, workplace physicians, sports coaches, the poisons information centre and ED staff organising follow-up treatment. These health professionals represented one-fifth (20.5%) of the referrals. It is not known whether referrals were formal or merely suggestions or recommendations. This could be why only half (50.5%) of all referred patients presented a referral letter from their health professional

Incapable of completing

Nearly a quarter (n = 128) of all patients participating in the study were considered incapable of completing the questionnaire. It is not known if this is a true representation of the capability of patients, as ED reception staff made the final determination. In some cases, assessment of a patient's capability was subjective and it could be that patients who were able to complete the questionnaire were deemed unable to do so by staff. ED reception staff completed aspects of the questionnaire on the patients' behalf and were instructed to note "unable to complete" on the form. No details were requested to establish the reason why the patient was considered incapable. In some instances staff provided additional notes, such as "patient in too much pain". It cannot be clarified whether this was the patient's opinion or that of a staff member.

Of the 528 ED attendees approached to participate in the study only six declined to complete the questionnaire. The patient's privacy was respected and the reason for refusal was not asked.

Discussion

The study established that the ED client base was mainly from the immediate catchment area, with the majority of patients less than 30 years of age. This result is consistent with previous findings by Cooper et al¹⁴ whose study suggested that parents largely based appropriateness of attending the ED not on the severity or length of the child's illness but on other factors such as proximity to the ED. It could also be interpreted that the catchment has a youthful population, however other studies have also identified infants, adolescents and young adults as the most common groups presenting to the ED.^{1,2,19,20} Alternatively, it is possible that the region has an ageing population that does not utilise ED services, which is contrary to suggestions that the ageing population is adding to ED service demands.⁴ A slightly higher number of males attended the ED, which corresponds with national trends.^{1,2,20} Further investigation is needed to establish whether results were truly indicative of the catchment population.

Perceptions of an emergency

The purpose of the study was to establish whether patients were using the ED inappropriately and to identify factors influencing ED attendance. Results support the argument that a patient's perception of an emergency differs dramatically from clinical opinions.^{21,22} The perception that a condition was an emergency was not isolated to patients in high triage categories. The majority of patients considered their reason for attending the ED to be an emergency, thus, seeking accessible and rapid medical attention would be justified.²¹ However a minority of these patients were assigned to the high triage categories (1 and 2), suggesting that clinically their condition was not perceived to be time sensitive. Similarly, Harris et al¹⁵ found that a large proportion of ED patients believed their health problem warranted ED attendance, while the treating professional disagreed, considering it unnecessary or inappropriate. A comparison of patients' and health professionals' perceptions indicated that only one-fifth of patients considered their visit non-urgent/non-emergency, while nurses considered almost two-thirds of the same episodes to be non-urgent/non-emergency.¹⁵ More accurate interpretations could possibly be obtained from the clinician post treatment, rather than from the patient or triage nurse before medical care.

Factors prompting attendance

In contrast to previously reported attendance patterns suggesting that the majority of rural ED presentations are triage scale Category $5,^4$ a low number of Category 5 presentations was observed, suggesting that patients do not use the ED as an alternative to primary care. The negligible number of patients presenting because they did not have their own GP also substantiates this. The majority of cases were triage scale Category 4 and 3, which is consistent with national results,² suggesting that patients attend the ED if they consider their condition to be more severe than an uncomplicated primary care case, that is, a problem "that could be completely managed by a general practitioner in a well equipped surgery".⁹ The majority of "emergency-type" patients who considered their case as urgent further supports this belief. Furthermore, a high proportion of "non-emergency-type" patients stated their ED attendance resulted from a GP referral. For this to occur, a patient would have to have been previously seen by a primary care provider. Previous findings support this suggestion, with many patients presenting to the ED within a day postreferral or on advice from a GP.9 Thus, from these findings, it can be concluded that the reasons prompting ED attendance were justified in the majority of cases.

Some patients attended the ED because alternate medical care was not available. Lack of access to a GP has previously been identified^{16,20-25} as an important factor prompting ED attendance, particularly for presentations occurring after hours.¹⁴ Other patients considered the severity of their medical condition as justification for seeking immediate care at the ED rather than seeking primary care. From the patients' perspective these encounters may be considered appropriate, however it is impossible to define these cases as clinically appropriate or inappropriate without further review after medical treatment, which was not undertaken within the scope of this study.

The majority of patients reported that they had experienced their medical condition for less than 24 hours before deciding to attend the ED. A previous study found similar results, with the significant majority of patients being unwell for 1 day or less.¹⁴ A substantial number also suffered from their condition for 1 to 7 days. It is unknown whether the majority of cases were in the higher or lower end of this range.

There were a considerable number of referrals to the ED from health professionals, particularly GPs, corresponding with previous findings.²⁰ Referral rates suggest that patients are not seeking care at the ED as a primary avenue but rather are being redirected as their needs exceed general practice capability. The receipt of referral letters established that over half were formal, as opposed to merely recommendations. This contrasts with other findings that suggest only a small minority of patients have a written referral letter from their GP.9 In referred cases, the GP, rather than the patient, determined the appropriateness of ED attendance. It has been recommended that GPreferred admissions should bypass the ED to prevent stimulating additional, unnecessary attendances.^{26,27} It is evident that GPs do consider the ED a vital extension of the medical care they provide.

Emergency service demand

Previous studies^{20,23} highlight the critical need for emergency services in health care delivery. While the intended function of EDs is to provide rapid management for emergency and potentially lifethreatening cases²⁰ they also serve as a means for supporting unmet health service needs within the community.²³ Ultimately "the ED represents the safety net that catches people in clinical need." ²³ Although this "safety net" role has led to an increase in emergency service demand, which is largely attributed to "inappropriate" use by primary care-type patients,^{12,28} the establishment of alternative initiatives, such as additional GP services, has not had a substantial impact and is unlikely to reduce the demand on emergency services.^{12,25,29-32} A potential reason for this is that the onus of determining the avenue of care that is appropriate largely remains with the patient and, as such, if the patient perceives their attendance to the ED to be justified, which was the finding for the vast majority of patients in this study, the existing basis of attendance is unlikely to change.²¹

Limitations of the study

A quarter of patients were "unable to complete" the questionnaire and default responses were allocated to many of these surveys. The default responses assume that patients brought in by ambulance are "appropriate", although some may have used the ambulance inappropriately. Attendance was considered appropriate where presentation was justified by the patient — that is, in the majority of cases patients were not using the ED for conditions which they didn't consider emergencies or instead of alternative health care when alternative care was available. Some of these cases, however, may not be seen as appropriate by clinical definitions. More accurate assessments of emergencies could be obtained after physician intervention, which this study did not investigate. Another limitation was that referrals were patient reported and distinctions between formal referrals and recommendations were not investigated.

Also, the findings of this study may not be generalisable to sites which do not share similar characteristics to those of the site used for this study.

Conclusion

The results from this study highlight the vital services the ED provides to residents from its surrounding area. The ED offers additional and

alternative services to existing primary care facilities, particularly outside of business hours when primary care services are less accessible. A good rapport appears to exist between GPs and the ED, with a high incidence of referral rates, thus indicating that patients are not inappropriately utilising the ED as an alternative to primary care. The opposing clinical interpretations and patient perceptions of what constitutes an emergency increase the probability that demand on the ED will continue to rise in the future and therefore underscore the need for consumer education. Although the results of this study have not conclusively established the reasons underlying increasing attendance rates at EDs, the primary factors influencing presentation suggest that in most cases ED attendance was justified and thus could be deemed appropriate. It is recommended that further investigations be conducted into ED utilisation at both characteristically similar and diverse study sites. The results of these investigations should be used in conjunction with this study to establish solutions to alleviate increasing pressures on emergency services and to formulate strategies for improved patient care, to provide greater departmental efficiencies and effectiveness, and in determining the future demand for the ED

Competing interests

The authors declare that they have no competing interests.

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Appendix: ED attendance questionnaire
Date / / (DD/MM/YY)
Time am/pm (please circle)
Suburb/City Postcode
Date of birth / / (DD/MM/YY) Sex male/female (please circle)
1. Briefly describe the medical condition/symptoms which prompted you to attend the Emergency Department.
2. Would you consider your reason for attending the Emergency Department an emergency? yes/no (please circle)
If yes, which best describes your case (tick appropriate box) Urgent but not life threatening Potentially life threatening/time sensitive Life threatening/time sensitive (Office use only: BIBA Y/N Triage cat.) If no, which of the following factors influenced your decision to attend the Emergency Department (tick appropriate boxes) Cost Cost Quality of care Don't have own doctor/health professional Doctor/health professional unavailable or out of consultation hours Referred to Emergency Department by doctor/health professional Seeking a second opinion A need for specialised hospital services eg x-ray Other (please specify)
 3(a) How long have you had this condition? (tick appropriate box) less than 24 hours 1–7 days more than a week more than a month
 3(b) Which best describes your care to date (tick appropriate box) No previous treatment or medical care Upcoming appointment with doctor/health professional Treated by doctor/health professional Referred to Emergency Department by doctor/health professional Surgical/hospital treatment booked — date set On waiting list for surgical/hospital treatment — date not set
4. If you were referred by a health professional,
 (a) Was it a (tick appropriate box) Doctor/general practitioner Physiotherapist/chiropractor Pharmacist/chemist Dentist Other health professional (please specify)
(b) Was a referral letter provided? yes/no (please circle) Thank you for your participation. Please return completed form to reception.