

Most patients attending a 'walk-in' clinic at Red Cross War Memorial Children's Hospital could safely be managed at primary care level

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Objectives. (i) To ascertain what proportion of patients attending the general medical outpatient service at Red Cross War Memorial Children's Hospital (RXH) could safely be managed at peripheral primary care facilities; and (ii) to measure the effect of the introduction of free health care for children under 6 years of age on requirements for levels of care ranging from home to super-specialist referral centres.

Design. Prospective survey of patients attending on a stratified, randomised sample of 7 days in March 1994 ($N = 1\ 962$) and again in November 1994 ($N = 1\ 404$) — before and after the introduction on 6 June 1994 of free care for children under 6 years of age.

Setting. The general outpatient department of an academic/referral children's hospital.

Patient selection. All patients attending the outpatient department on the study days (7h00 to 6h59 the following day), excluding those who were referred, returning for follow-up, attending a specialist clinic or attending the surgical outpatient department.

Questionnaire. The questionnaire completed by medical officers recorded the following: patient's name, folder number, date and time of arrival, whether referred, clinic, treating doctor, disposal, diagnoses, home suburb and the level of care required: (i) home; (ii) clinic without a doctor; (iii) clinic with a doctor; (iv) hospital with non-specialists; (v) hospital with general paediatricians; or (vi) super-specialist hospital.

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Main results. In March 1994 the percentages of unreferrred patients requiring the 6 levels of care defined for the study were 0.3, 25, 62, 8, 3 and 1, respectively. In November 1994 the percentages were 4, 41, 43, 8, 4 and 1. The graph of the number of patients seen at the outpatient department each month shows a large month-to-month variation but the trend is clearly towards an increase.

Conclusions. The general medical outpatient department at RXH provides care to a large number of children, 48% of whom are unreferrred. Of the unreferrred patients 95% could be treated (more appropriately for the health services and more conveniently for their families) at a local primary health care facility. The situation has been aggravated by the introduction of free care for children under 6 years of age, who constitute 83% of the unreferrred workload.

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'Something must be done to stop the rapidly increasing procession of children to hospitals where, because of the deluge of patients, each can be given the maximum of temporary care in the minimum of time and be sent home to be exposed to the same conditions which produced his illness originally. The community has, in fact, registered another sick child, treated him at relatively vast expense, and left the situation unchanged.' Since Findlay Ford, first professor of paediatrics at the University of Cape Town, wrote this in 1965 the perception of the challenges facing those responsible for providing ambulatory care has changed very little. For Red Cross War Memorial Children's Hospital (RXH) and the greater Cape Town metropolitan area, the problems remain despite the development of more than 30 day hospitals in greater Cape Town as a result of Ford's urging.

There are a number of possible causes of the unceasing demand on outpatient services at RXH. These include:

1. Slow development of primary health care facilities.

Although primary care facilities for patients dependent on the public sector are constantly being built in new areas, including informal settlements, development lags behind settlement in time and in coverage.^{2,4}

2. Inadequate capacity of primary health care facilities.

Most public sector primary care curative facilities have daily quotas of patients and these are often exceeded. After screening by a lay person, non-urgent cases in excess of the daily quota are turned away.^{2,5}

3. Public's perception of poorer quality of service at other health care facilities. There is evidence that some parents believe that their children receive a better quality of service (effective care, courteous treatment by staff) at RXH.^{4,5}

4. Public's perception that only doctors can render health care effectively. There is also evidence of a belief in some communities that primary health care rendered by nurses is inferior.⁵

5. Inappropriate referrals. A study conducted by Lachman and Stander⁶ concluded that the process of referral to the hospital is poorly defined, that most referrals could (and were) dealt with by medical officers working at a primary care level, that about 25% of referrals resulted in specialist consultations and that most referrals concluded with a missed opportunity for communication back to the primary health care provider.

6. Inappropriate use. Health care providers around the world recognise 'abuse' of their services by patients.⁷ However, this 'abuse' is not perceived to be a major problem in South Africa since it has not provoked study and, anecdotally, medical practitioners who treat children are more tolerant of patients with 'trivial' problems.

For some or all of the above reasons, health service managers (from hospital to national level) believe that RXH is continuing to see large numbers of patients who could be more appropriately treated in their communities by primary health care facilities and who could be referred when necessary for specialist services.⁸ This belief is substantiated by the present study, which is part of a collaborative research programme between the Department of Paediatrics and Child Health of the University of Cape Town and RXH, and the Health Systems Division of the Centre for Epidemiological Research in Southern Africa of the Medical Research Council. The goal of the programme is to undertake research that provide managers and planners of the health care of Cape Town's children with information to improve the efficiency, quality and effectiveness of the care provided. The programme's focus is on the referral system and this study is the initial step. Future studies will need to identify which primary health care needs are not met in the community, why peripheral facilities are bypassed and, most importantly, what patients and their families expect of the health services.

Objectives

The primary aim of this study was to ascertain what proportion of unreferrred patients attending RXH medical outpatient service could safely be managed at peripheral primary care facilities. A second objective was to measure the effects at RXH of the introduction of free health care for children under 6 years of age in terms of: (i) the proportions of unreferrred patients requiring primary health care; and (ii) the increase in service load of the medical outpatient department.

Methods

Design

A prospective survey was conducted on a stratified randomised sample of 7 days in March 1994 and repeated in November 1994 after the introduction of free care for children under the age of 6 years. For both surveys a convenient 3-week period was chosen. A study day lasted 24 hours and began at 07h00. The 1 in 3 sample of days was intended to minimise the effect of short-term fluctuations in patient numbers that could be caused by factors such as weather and transport disruptions. The same pattern of days was followed in March and in November.

Patient selection

The setting was the general medical outpatient department of RXH. All patients attending the outpatient service on a study date were eligible. Patients were excluded if they had come for a follow-up visit, had been referred to a specialist clinic (such as cardiology), had a referral letter or were seen at the surgical outpatient service.

Questionnaire

For each patient, clinicians at the outpatient department fill in a form that records basic information about the service provided: patient's name, folder number, date and time of arrival, whether referred, clinic, treating doctor, disposal (home, admitted, . . .), diagnoses and major procedures. Two questions were added to this form to record the place of residence and the level of care required for the child. The study form was printed on blue paper to make it easily distinguishable from the standard yellow form. The additional questions were (exact wording):

1. Where does this child live (suburb only)?
2. What is the lowest level of care at which this consultation could have been safely managed? (tick one box): (i) home; (ii) a clinic run by general nurses (no doctor, no lab, no X-ray, e.g. a municipal clinic); (iii) a community health centre (with MOs, simple lab tests, casualty, X-rays, e.g. a day hospital); (iv) an MO hospital (as for (3) above but with beds); (v) a specialist hospital (with full-time paediatrician); and (vi) a super-specialist hospital (with paediatric cardiology, oncology etc.).

The questionnaire was drawn up in consultation with the staff of the outpatient department and modified to its final form after a small pilot study.

Data processing

The study forms were collected from the data capture service at RXH after the standard information had been entered onto the hospital computer system. The Medical Research Council then completed the data entry for the additional two questions. Using the folder number, date and time, we matched records from the hospital and MRC files. A number of problems were found and dealt with as follows:

1. The 'referred from' part of the form was often coded as 'emergency' (code 71) (39% in March and 40% in November). Since this option is never used by clinicians and the code for 'unreferred' is 11, we attributed 71 to a misreading of 11 by the data typists. Because the patterns for level of care and areas were essentially the same for codes 11 and 71 the two groups were combined. Records with any other 'referred from' codes were excluded from analysis.
2. A few children seemed to have multiple entries (9 in March, 0 in November). We retrieved these folders and found that all were patients who returned the same day for a second or third visit. These data were therefore included in the analyses.
3. Ten folders were retrieved to evaluate the accuracy of the captured data; no errors were found.
4. Sometimes the area was not coded or had been coded as missing (120 in March, 127 in November). We traced these records and obtained appropriate area codes for the majority.
5. Some study forms were blank, or the folder numbers had been entered incorrectly, or had the level of care missing or had both area and level of care missing (57 in March, 62 in November). These were excluded on the assumption that the distributions of home suburb and level of care requirements would be similar to those for included forms.
6. After data capture had been completed we found (and left excluded) a few study forms in patients' folders that had been retrieved for evaluation of the quality of data. We do not know how many forms went astray in other ways, but the proportion would have been negligible.

7. In November, the final scheduled study day was a Saturday but, due to an administrative error, the study forms were issued on the following day. We compared the levels of care requirements for patients seen on the Saturday and Sunday in the March period and found no practical difference. We also compared level of care requirements for each day of the week in March and November and found essentially similar patterns. It is unlikely therefore that a significant bias was introduced into the summary analyses.

8. When the time of arrival is not recorded, the convention is to enter it as 08h00.

With one exception we do not expect that data lost for any of the above reasons would manifest a systematic bias that would distort the conclusions drawn from the study. The exception is for patients grouped by time of arrival. After normal working hours there may be a higher proportion of more severely ill patients. For this reason, when the data were analysed by time of arrival, the 08h00 group was considered separately.

Statistical analyses

Chi-square analyses were performed with Microsoft Excel and 95% confidence intervals were calculated according to the method described by Altman.⁹

Results

Data are given only for the main results. Details of subgroup analyses are available from the authors on request.

Levels of care required

In both March and November 1994, only 4% of patients studied needed to be seen at specialist or super-specialist level; 96% of cases could have been managed without specialist care. Fig. 1 shows the percentages of patients falling into each of the six levels of care defined.

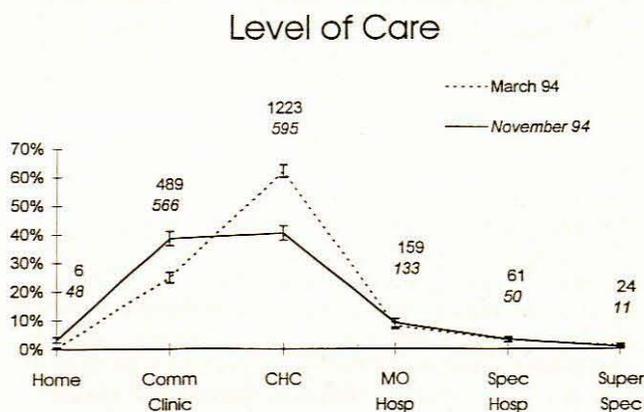


Fig. 1. The proportion of children requiring defined levels of care who attended the general medical outpatient service at RXH in March and November 1994. The numbers above each category are the numbers of children seen — March above and November below. See text for definitions of the various levels.

Effect of free care for children under 6 years of age

Fig. 1 shows that in November, after the introduction of free care for children under 6 years of age, the proportions of

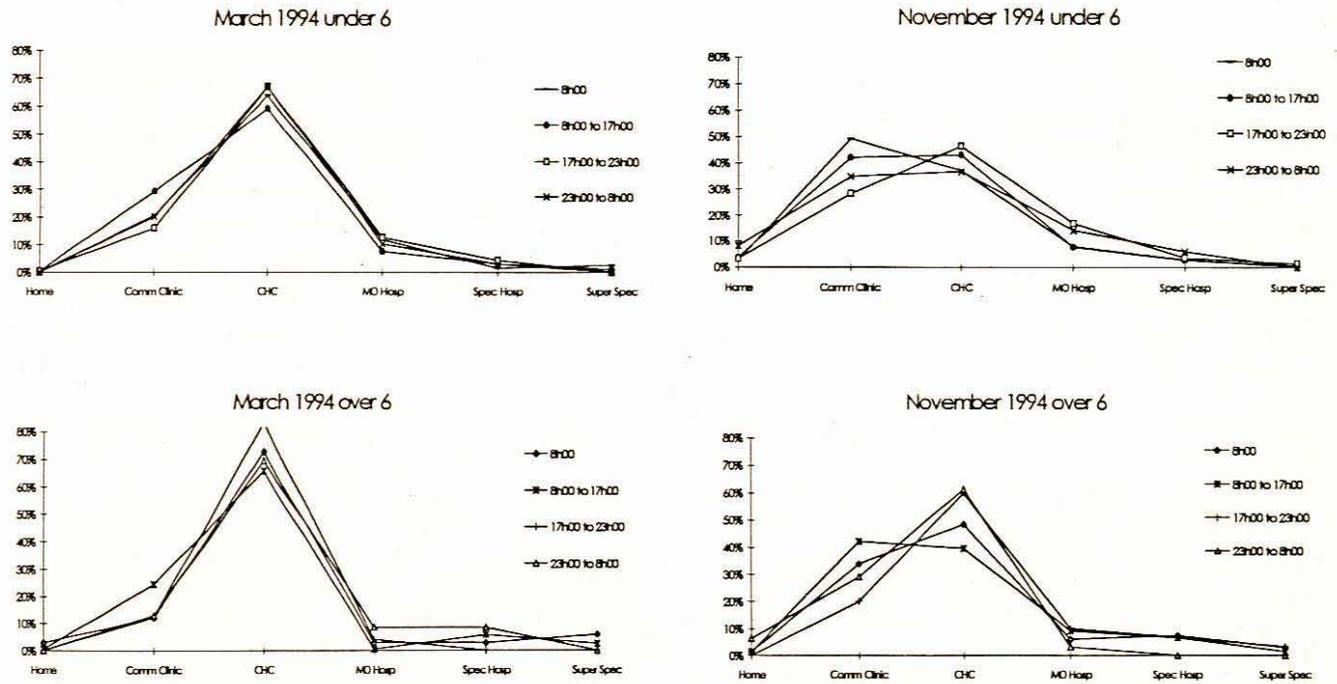


Fig. 2. The numbers of children requiring defined levels of care who attended the general medical outpatient service at RXH in March and November 1994 analysed by age group and time of attendance. See text for definitions of the various levels.

children who could have been safely treated at home (level 1) or at a clinic without medical doctors (level 2) rose significantly — both in the statistical ($\chi^2=175, P < 0.0001$) and in the practical sense from 26% to 45%. To see if there was a specific group of patients responsible for this change we analysed the data by age (under 6 years/at least 6 years of age) and by time of arrival (08h00 and time not recorded/ between 08h00 and 17h00/ between 17h00 and 23h00/ between 23h00 and 08h00).

In March there were no important variations in the level of care requirements for the different age and time of day categories (data not shown). The change from March to November detailed in Fig. 1 is primarily due to differences in the level of care requirements for children under 6 who presented during office hours. In this group, the proportion that could safely have been managed at home or at a primary health care facility without medical doctors rose from 29% to 46%. For children aged 6 or more years, the proportion rose from 25% to 43%. This is illustrated in Fig. 2. Although fewer patients were included in the November study than in March, in fact there was a slight increase in the monthly total from 11 335 in March to 11 349 in November. There is a large variation from day to day in the numbers of patients seen, and the study days happened to be quiet. (Daily statistics are available from authors on request.)

The introduction of free care for children under 6 years is likely to have affected not only the level of care requirements but also the total demand for services. Fig. 3 shows the numbers of patients (total, under 6 years of age, and at least 6 years old) seen in the general medical outpatient department since 1988. The dip in numbers in 1993 was due to the introduction in May that year of a policy by which patients with minor or non-acute illness who arrived after 15h00 were assessed by a doctor and given a letter to take to a convenient primary health care service for any medication needed. The rise in numbers can be attributed to

the removal of this policy and the introduction on 6 June 1994 of free care for children under 6.

Red Cross Children's Hospital
Medical Outpatients, monthly attendances

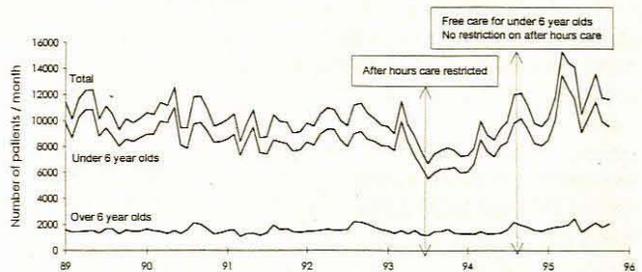


Fig. 3. Monthly attendances at the general medical outpatient service at RXH.

Effect of place of residence

The pattern of level of care requirements was analysed by place of residence. Since the patterns of care requirements were similar in different areas there is no evidence to suggest that local primary health care services are better in some areas than in others (data not shown).

Discussion

The role of primary health care in providing cost-effective health care

The provision of effective and efficient public sector outpatient care requires a well-developed network of primary care facilities that are adequately staffed, supported and resourced. They also need to be easily accessible and accepted at a community level. The development of

paediatric outpatient care in Cape Town has been hampered by a number of issues as outlined in the introduction. With the relative absence of secondary level paediatric facilities in the metropolitan area, care is often sought at RXH — a referral specialist care centre.

Because Khayelitsha is particularly poorly served* we were surprised that RXH patients from there showed a pattern of level of care requirements similar to those from other areas. Perhaps the lack of facilities (which would have tended to shift the curve to the left) was balanced by the difficulty and expense of transport to the hospital (which would have shifted the curve to the right).

There is concern internationally about the way planners have neglected to provide primary health care facilities. Recent World Health Organisation reports^{10,11} identified as a major problem the congestion of secondary and tertiary outpatient units with patients suffering from minor illnesses. They noted that it would be less costly and more resource-efficient to provide these services at a local level. Primary level services were assessed in the reports as deficient due to poor quality of care, inadequately trained and supervised staff, shortages of drugs and equipment and inconvenient hours of opening. The report proposed that an expanded secondary level of care be established to 'act as a source of reference for other health centres in a defined geographical area, to support and strengthen local primary health care, and to improve access and quality . . . leaving hospitals to deal with referrals and more complicated cases.'¹⁰ These recommendations are controversial¹²⁻¹⁵ and studies are currently underway to assess experience with urban ambulatory care.¹¹

Few southern African studies have looked at the appropriateness of the level of care received by outpatients, although several studies on the appropriateness of inpatient care have been undertaken.¹⁶⁻¹⁸ Studies at the outpatient department (adult and paediatric) of Queen Elizabeth Hospital, Maseru, Lesotho, the national referral hospital for the country, showed that only 4.5% of attenders had been referred for specialist services and 67% of patients reported using the hospital as a first point of call when ill.^{19,20} Their reasons for attending included being able to see a doctor (24%); it was a 'good hospital' (27%); easy access (26%) and cost (10%). An examination of the characteristics of hospital users versus health centre attenders, however, showed that the hospital was serving a different population segment, mainly uneducated adult men. Quality of care was also found to be better at health centres than at the hospital.

A study at Hillbrow Hospital, Johannesburg, which allocated all outpatient visits for a year to one of three levels of care, showed that of 400 000 visits in 1991, 37% of patients were judged to require level 1 care (our level 4, which is provided by a generalist with access to basic diagnostic and theatre facilities); 34% were allocated to level 2 (our level 5, at which specialists provide care) and 29% were assigned to level 3 (our level 6, at which super-specialist care is provided).²¹ A study of patterns of care at a tertiary hospital outpatient department in Durban found that 76% of paediatric outpatients were unreferred and 42% of patients could have been medically managed at a primary care facility, according to a set of locally developed criteria.²² The study concluded that the proportion of unjustified visits could be greatly reduced by an improved primary health care service with an

effective referral system. An extensive but largely subjective study of outpatient facilities in the Cape Town metropolitan area was conducted by Taylor in 1988.²³ He reported that most doctors in any outpatient setting in the Cape Peninsula were of the opinion that a large proportion of patients treated were inappropriate to their clinics, but the reasons given differed between facilities. Therefore, although objective evidence for the appropriateness of levels of outpatient care in Cape Town is lacking, there is much subjective evidence to suggest that substantial numbers of paediatric patients seen at tertiary hospitals could be adequately and safely treated at lower levels of care.

Service needs and cost implications

Cost implications of inappropriate care. This study has shown that approximately 95% of RXH medical outpatients could be treated at a lower level of care. This fact has substantial resource implications as outpatient care usually absorbs at least 20% of hospital expenditure.^{24,25} Although the cost of outpatient visits at different levels of care in Cape Town is not available, provisional figures from Gauteng for 1994 suggest that the ratios of the mean cost of an outpatient visit at community, regional and specialist/academic hospitals are 1:1.3:1.6.²⁵ While these figures do not take into account case-mix, quality of care or outcome and reflect average rather than marginal costs, they do indicate that savings of up to 50% could be made when outpatient visits take place at a community, rather than a specialist, hospital. International studies substantiate these assumptions.²⁶

Cost implications of treating children under 6 without charge. For RXH, the lost revenue that could (under the previous system) have been collected in 1994, extrapolated to 1 year is approximately R1.5 million or 1.7% of the total hospital budget (R. Marshall, medical superintendent, RXH — personal communication).

Implications for restructuring of health care services. The results of this study come at a time when South African public sector hospitals are experiencing severe funding restrictions and when divisions of care between primary, secondary and tertiary levels are being restructured.²⁷ While substantial resources could potentially be saved if tertiary institutions saw only patients appropriate to their level, community health infrastructure at other levels needs to be in place before patients are turned away. Attention also needs to be directed towards the use of the resources of tertiary facilities in the most efficient and cost-effective manner, while standards of patient care are maintained.

Caveats and comments on methodology

Caveats. Planners need to bear in mind three caveats when they use our data. The first is that our study excluded patients who attended specialist clinics, were referred, had follow-up appointments or had surgical conditions. The data therefore do not represent the entire spectrum of patients seen at the outpatient department at RXH. The second caveat is that our analyses have emphasised *proportions*. Planning also has to take into account absolute *numbers* and the large *variations*²⁸ in demand typical of health care services. Fig. 3 shows how attendance at the medical

outpatient department varies from month to month and season to season. The final caveat is that health care needs often differ from health care wants. We need to find out what patients and the public really want and how and why this differs from what is planned for them on the basis of presumed need.²⁹

The effect of transport problems. During the November phase of the study many patients and their families would have experienced difficulties in transport to the hospital because of violence and disruptions in the taxi industry. It is reasonable to assume that patients with minor problems would have been less likely to attend hospital during this period, but there is little evidence to suggest that this happened. Our conclusions are conservative in the sense that any bias introduced this way would have made it more difficult to detect the differences we found. Removal of such a bias would have made our conclusions more dramatic than they are.

Subjective versus objective criteria for assigning levels of care. The basis used to assign patients to levels of care was the subjective judgement of outpatient clinicians. In the pilot stage of the study it was found impractical to develop a set of objective criteria for assigning patients, because of the range and complexity of decisions involved. Such a measurement tool will have to wait for the development of detailed practice guidelines for the range of conditions seen in a paediatric outpatient service.

Rapid assessment tools. While many rapid assessment tools for health infrastructure and services have been developed,^{30,31} few assess appropriateness of levels of care and patterns of referral between them. This study has shown that relatively simple methods can be useful in assigning patients to levels of care. More research is needed in South Africa, however, to develop and validate evaluation tools for ambulatory and primary level services. These tools could be used by district managers and planners to assess patient flows between levels and to adapt service provision to local needs.

Conclusion

The general medical outpatient department at RXH provides care to a large number of children, 43% of whom are new, unreferred cases (RXH Annual Report, 1993/94); 83% of these are under 6 years of age. Of unreferred children 95% could be treated at a local primary health care facility. This service is inappropriate for the hospital and inconvenient for the patients and their families. The situation has been aggravated by the recent introduction of free care for children under 6 years of age, which has resulted in increased numbers of children of all ages seen at the outpatient department and an increased proportion of children who could quite safely be managed at home or at a clinic staffed by nurses. Improving accessibility and quality of community health services would seem to be a solution with potential cost-savings. Patients would, however, have to use these services in preference to those attached to tertiary care institutions. Interventions to change health care utilisation are notoriously easier to plan than to achieve but current moves to restructure health services in the Western Cape are an important first step.

Having begun with a quotation from Findlay Ford it is difficult not to conclude with another from the same article. 'We are about as progressive as a hen with its beak on a chalk line.' Let us prove him wrong at last.

The study would not have been possible without the co-operation of many people in many departments at RXH: the nursing and medical staff of MOPD, 'back' reception, data capture, printing, medical administration. Some of the data capture was done by the Medical Research Council. Inspiration and advice on study design, implementation and writing were given by Lesley Henley, George Swingler and David Power. Funding came in part from a donation by the Suiderland Corporation.

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