

What does primary health care cost and can we afford to find out?

Rationale and methodology for a cost analysis of the Diepkloof Community Health Centre, Soweto

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Abstract Accurate information on the costs of providing primary health care (PHC) services is now an urgent priority for health policy makers and planners, if the Government's stated commitment to an adequate PHC system is to be realised. Cost information is also a critical management tool for both public and private sector providers. In this context, the inability of public sector PHC providers to generate accurate cost accounting information is a serious shortcoming.

In an attempt to address this lack of local PHC cost data, a detailed analysis of the costs of PHC services was undertaken at the Diepkloof Community Health Centre (DK) in Soweto during 1990. The study aimed to assess the cost of each service provided at DK and where possible, to identify areas of inefficiency.

This paper is the first of two that report the findings of this study. It briefly describes the methodology employed and presents the major results. These raise several important management issues. Most importantly, the study suggests that there is excess capacity in the administrative and in several of the clinical areas of this community health centre; this implies that the average cost per service could be reduced in several areas.

Certain services, such as home visits, are particularly expensive and require careful evaluation. The policy implications of this analysis are also examined. The high cost of several services implies that extension of this type of PHC service to all urban and rural areas is likely to be unaffordable. The limitations of generalisations based on data from one health care setting are recognised, as are the effects of possible improvements in efficiency and economies of scale on these conclusions. The relatively high costs of this setting also suggest comparisons with other PHC settings. Tentative comparisons with other public and private sector settings are given. The absence of comparisons of quality of care and outcomes between settings, means that such comparisons should be made with caution. The paper also examines the cost of this kind of research and speculates on its benefits.

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Accurate information as to the cost of primary health care (PHC) services in both urban and rural areas is now an urgent priority for health policy makers and planners. If the Government's stated commitment to the development of an adequate PHC system is to be realised, it will be crucial to know what the expansion of PHC services is likely to cost, and therefore what package of services will be affordable. This requires detailed information on such economic and financial issues as the cost of specific services in different settings, the relationship between capital and recurrent

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costs of PHC services and the relationship between the scale of services and production costs (economies of scale).

Cost information is also crucial to current debates on the most appropriate setting and organisational structure for the delivery of PHC in South Africa. These debates revolve around the relative merits of community health centres (CHCs) smaller clinics or hospital outpatient departments, as well as the relative merits of public versus private sector providers of PHC.¹ While several issues, such as quality of care and patient/provider preferences, will inform the outcome of these debates, one of the major considerations must be the relative costs of providing PHC services within these different settings.

In addition to policy and planning considerations, cost information is a critical management tool for both public and private sector providers. Without such information, it is impossible to identify areas of efficiency and inefficiency in the use of various resources inputs. Cost information is also vital if appropriate user charges are to be levied.²

Efforts to generate accurate cost accounting information are obviously the primary responsibility of health planners and managers, who require this information on an ongoing basis. However, this issue also merits urgent attention from researchers working in the fields of health policy and planning. Cost data can serve not only to inform the debates but to encourage the development of cost consciousness among health care providers participating in the research. It is thus surprising that these issues have enjoyed so little attention from local researchers.

The existing literature on cost analysis of health services in South Africa is scarce and covers a limited range of issues. We have found only 7 papers that reported some detailed cost analysis of PHC during the last 13 years. Only 3 of these give a detailed and comprehensive analysis of PHC.³⁻⁵ Others give fairly crude cost estimates of a large public sector hospital⁶ and the day hospitals in the western Cape,⁷ or have a more narrow focus such as drug costs.^{8,9} The lack of a substantial body of detailed work renders comparisons between studies difficult. Even in those instances where comprehensive studies have been done, widely varying methodologies and the wide variety of services assessed limit the potential for comparability.

Although the costs of PHC services in other countries have been extensively studied, the wide range of different PHC settings and the varying health systems and economies into which they fit mean that these studies are of limited value in the local context. These studies are, however, frequently useful from a methodological point of view,^{2,10-12} or for their analysis of general phenomena, such as the relationship between capital and recurrent costs in PHC or the changing values of average costs as PHC programmes expand.^{13,14}

In an attempt to address this gap in local PHC cost data, a detailed analysis of the costs of PHC services was undertaken at the Diepkloof Community Health Centre (DK) in Soweto during 1990. This paper is the first of two that report the findings of this study. It briefly describes the methodology employed, presents the major results, examines the costs of this kind of research and speculates on its benefits.

The Soweto community health centre system

At the time of the study, DK was one of a network of thirteen community health centres (CHCs) in Soweto operated by the Transvaal Provincial Administration Hospital Services, and administered from a headquar-

ters at Baragwanath Hospital. The CHCs deliver a wide range of outpatient diagnostic and curative services during daytime hours. These services include general medical consultations by doctors and primary health care nurses (PHCNs), psychological, social work and physiotherapy consultations, minor operations, and radiological and laboratory investigations. Seven of the CHCs also deliver a full range of maternity care, including the provision of a labour ward. Where necessary, patients are referred to Baragwanath for specialist care and follow-up. The CHC system also provides domiciliary visits to bedridden and postnatal patients. During 1990, the CHC system provided over 795 000 general medical consultations, and its labour wards were responsible for 15 842 deliveries.

DK was chosen because it is regarded as generally representative of a typical CHC in the system. It is a medium-to-large CHC, and has a labour ward, but not an operating theatre or radiography unit, which would have made it atypical.

Aims of the study

The broad aims of the study were to assess accurately the costs of each service provided at DK and, where possible, to identify sources of inefficiency. This study is thus a *cost analysis* study, rather than a *cost effectiveness* or *cost benefit* analysis. The latter two approaches require comparison of different interventions, and evaluation of the respective outcomes as a part of the economic evaluation.¹⁵ With one limited exception, these steps have been omitted from this study. This exception was the assessment of the relative cost-effectiveness of PHCNs and doctors in the CHC setting. Outcomes were crudely evaluated here, so that a limited cost-effectiveness study could be performed.

It is important to note that this study did not cover issues of *quality of care*. This is relevant in terms of both objective clinical standards and patients' subjective perceptions of quality. The latter can be affected by factors like the degree of personalised care, waiting times and continuity of care. All of these factors are as important as costs in the assessment of the suitability of models for delivery of PHC, but were beyond the scope of this study.

Methodology

The methodology employed in the study is summarised briefly here. Full details are described elsewhere.¹⁶ The direct accounting method was used to determine the full range of direct and indirect costs of the delivery of all health services from DK. Direct costs were defined as those costs attributable only to DK, while indirect costs were those costs that were shared by DK and some or all of the other CHCs. Both capital and recurrent costs were included in the calculation of both indirect and direct costs of DK. All costs were obtained for the month of March 1990. Where only annual costs were available, these were divided by 12 to determine the average monthly cost. A detailed review of the utilisation of all clinical services provided at DK during March 1990 was undertaken; the statistics compiled daily by CHC staff were used. The average cost per unit of output in each clinical section was then calculated by division of total costs of the section by the total number of outputs delivered by the section during that month.

Methodological issues and problems

Several methodological issues and problems arose during the course of this study. We highlight two that we consider of relevance and interest.

Absence of costs and prices in the public sector

Perhaps the major problem encountered in this study was the extreme difficulty in obtaining prices and costs of goods in a public sector setting. Budget holding, purchasing and the actual use of goods in the Soweto CHC system are separated, both geographically and functionally. As a result, the management of individual CHCs have no information about costs and prices, while the administration section has only limited cost information. One exception to this is the pharmacy department, which operates on a fully costed basis. With the exception of staff and medicine costs, which are easy to obtain, cost information from within the system was either extremely hard or simply impossible to obtain.

Limited generalisability

It is possible that cost analysis at the other CHCs within the Soweto system would have produced results significantly different from those generated by this study. This would certainly be the case for other PHC settings. Ideally, therefore, a properly selected sample of such settings should be chosen for cost analysis.² In the absence of a more representative sample, attempts to make generalisations based on these results for the rest of the CHC system or the PHC system as a whole should be circumspect.

Results

Overall costs

The total costs of DK for March 1990 were R375 241 (approximately R4,5 million annually). Table I indicates that 88% of this total was directly attributable to the CHC itself, while the remaining 12% was attributable to the indirect costs of the administration section.

Fig. 1 shows the share of total costs at DK accounted for by the different clinical sections. Table I indicates the relative contributions of different categories of expenditure to overall costs. As shown in the table, staff costs are the major expense and account for 52% of overall costs. Further analysis indicates that nursing staff account for 79% of total staff costs, doctors for 8% and all others for the remaining 13%. Table I also shows the extent to which the relative contribution of different cost categories varies significantly between the different clinical sections. A breakdown of total costs into capital and recurrent costs shows that capital costs account for 2,4% of total costs of the CHC on an annual basis. In the case of the individual clinical sections, capital costs range between 0,9% and 2,7% of the total costs of each section.

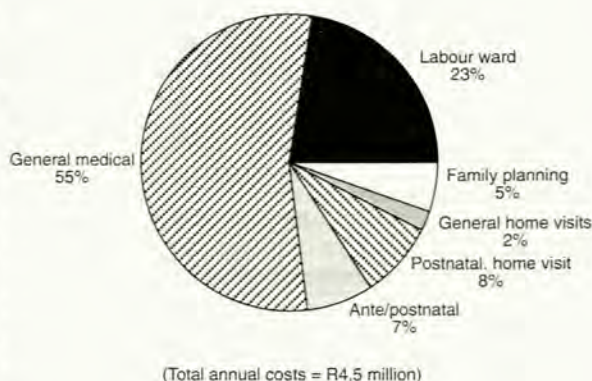


FIG. 1
Contribution of clinical sections to total clinic costs.

Utilisation and costs of clinical services

General medical section

A total of 6 916 consultations were provided to 6 093 patients in the general medical section in March 1990. Fig. 2 shows that PHCNs performed 71% of all consultations: 94% were performed by qualified PHCNs, the remainder by student PHCNs, while doctors performed 29%. The number of consultations exceeds the number of patients since 17,7% of patients who consult a PHCN are then referred to a doctor for a second consultation. As a result, 43% of doctor consultations originated in referrals from PHCNs. Of all patients seen in the general medical section 88,1% were adults (i.e. over age 14).

Fig. 3 indicates the average consultation rates for doctors and PHCNs on weekdays and on Saturdays. Of all patients seen in the general section, 2,4% were referred for radiographic assessment and 2,9% were referred to Baragwanath Hospital for further care.

Consultation costs

The cost of general consultations varies depending upon the definition of consultation that is used. Fig. 4 indicates that the average cost of a general consultation (excluding radiographs, investigations and medicines) amounts to R22,63. The figure, however, does not take into account the consultations performed by student PHCNs whose costs are not borne by the CHC. The average cost per patient visiting the general medical section is thus R25,87. The latter figure is higher because some patients receive more than one consultation per visit (i.e. from both a PHCN and a doctor), as explained above.

TABLE I.
Analysis of costs of CHC and sections by component (%)

	Whole clinic	Labour ward	General medical	Antenatal/postnatal	Postnatal/home	General/home
Direct costs						
Capital	2	2	3	2	0	0
Recurrent	86	88	86	89	89	90
Staff	52	73	46	57	33	63
Supervision	10	7	11	12	4	5
Medicines	11	3	19	4	0	0
Transport	8	3	5	0	51	21
Other	6	2	5	16	1	1
	88	90	89	91	89	90
Indirect costs	12	10	11	9	11	10
Total	100	100	100	100	100	100

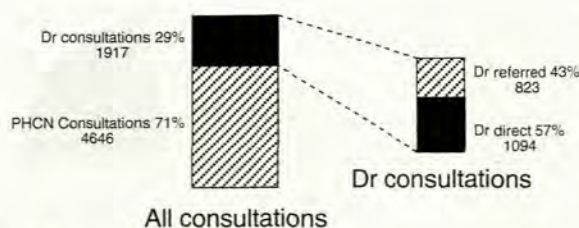


FIG. 2
General medical section consultations.

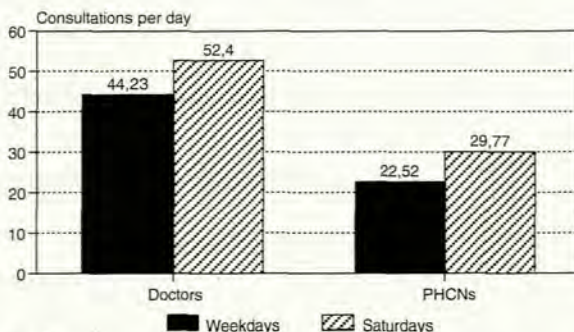


FIG. 3
General medical section — daily consultation rates.

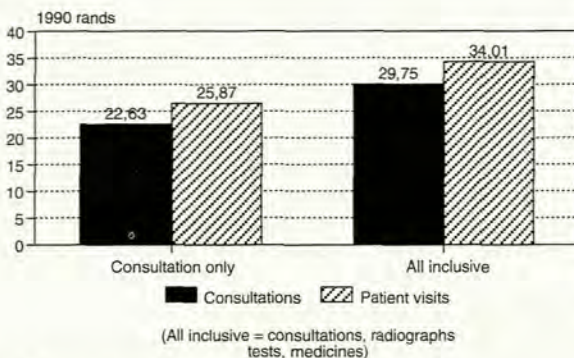


FIG. 4
Costs of general medical consultations.

When radiographs, investigations and medicines are included, the average consultation cost is R29,75, and the average cost per patient visit R34,01. The combined costs of radiographs, medicines and investigations are thus R7,12 per consultation and R8,14 per patient visiting the CHC.

Medicines and investigations

A total of 5 817 (95,4%) patients in the general section received 16 429 items of medication, the average is 2,82 items per prescription and the average prescription costs R6,31. This figure includes medicines used in the dressing room, though some of these would not strictly be considered 'prescriptions'. If we exclude the dressing room, the figures are 2,71 items per prescription at an average cost of R6,26.

A total of 422 investigations were performed in the general medical section. This is equivalent to 0,07 investigations per patient at an average cost of R9,29 per investigation.

District nursing services

A total of 193 home visits were undertaken during March 1990. This amounts to an average rate of 3,93

visits per nurse per day. A downward trend in the number of home visits per month was observed in the year under study.

The cost per visit in March 1990 was R43,08. Since March represented the low point on the trend line over the months under study, the consultation cost was also calculated on the basis of average monthly visits performed. This figure was R38,35.

Social work consultations

Fifty-seven social work consultations were performed in March 1990. The cost per visit was R44,69 for March and R51,99 according to the average monthly figure. The discrepancy results from the consultation rate in March being higher than the average monthly rate (49,4).

Discussion

Soweto is fortunate to have this widespread network of public sector CHCs. Although the system could be vastly improved by integration of preventive services with the curative care already delivered and by reductions in waiting times for patients, this system provides access to a level of PHC that relatively few urban or rural dwellers in South Africa currently have.

However, most of these services are provided at fairly high cost. A superficial analysis of these results therefore raises doubts about the extent to which the state could afford to extend this kind of care to the entire population, or even to the majority of the urban population in South Africa.

These observations thus generate questions with regard to both management issues — whether/how the efficiency of this kind of PHC delivery system can be improved, as well as broader policy and planning issues — and the possible extension of this system. If we cannot afford to do so, what alternatives are available to health planners and managers?

Management implications

This study has demonstrated significant room for cost reduction in the CHC system as it functions at present, and this could be achieved without the quality of care delivered by the system being compromised. Possible areas of cost reduction include the *administration* of the CHC system as well as the CHC itself, and the *organisation of clinical services* at DK.

Reducing administrative costs

Of all costs at DK 22,4% are accounted for by administration (this figure includes the indirect costs, which amount to 12,4%, and the costs of internal supervision and administration, which amount to 10% of total costs). The only meaningful local comparison available is that of the Alexandra Health Centre where a similar study, also conducted in 1990, demonstrated that administration costs accounted for 27,5% of total costs.³

The substantial contribution of administration costs indicates the importance of efficiency in this area. Our observations of the workings of the CHC, and of the overall administration section, suggest that significant improvements in administrative efficiency are possible, and that there is significant excess capacity within the present administrative structures. This implies that additional CHCs could be run at very low or zero marginal administration cost, or that the size of the present administration could be reduced without negative effects on the CHC system.

Reducing average consultation costs

As indicated in the results, the bulk of general medical consultation costs are accounted for by staff costs and by medicines and investigations. Staff costs, and therefore the average cost per consultation, could in theory be reduced by increasing the number of consultations performed by the present clinic staff, or by reducing the number of staff used to perform the current number of consultations.

This is illustrated in Fig. 5, which shows the effects of increases in the number of consultations performed at DK per month. As the figure shows, a 10% increase in the number of consultations per month would reduce the average cost by 9,1% if radiographs, medicines and investigations are excluded, and by 7% if they are included. Similar trends are shown for further increases in the number of consultations.

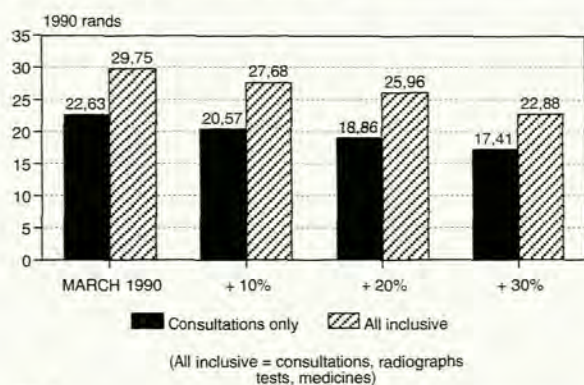


FIG. 5
Effects of increased consultation rates on average consultation costs.

Our analysis of the dynamics of the consultation process at DK suggests that here again there is excess capacity and that average consultation costs could be significantly reduced. Increased rates of consultation could be achieved primarily through increased numbers of PHCN consultations per day, as well as by improvement in the process of referral from PHCNs to doctors.

Increased numbers of PHCN consultations per day would have to be achieved largely via an increase in the number of hours spent on consulting, rather than a reduction in the length of each consultation which, at an average 13,3 minutes, is already low. At present, most patients arrive early in the morning and are all seen by 13h00; PHCNs then spend the afternoon on administrative work. An increase in the time allocated to consulting would therefore require a reduction in the administrative load of the PHCNs and an improvement in patient flow through the CHC. An effective appointment booking system, which could ensure an even spread of patients throughout the day, would be one way to achieve this.

These observations lead us to believe that the average cost of consultations could be progressively reduced over a significant range of increased daily consultation rates. While increased numbers of consultations would increase variable costs, (i.e. the cost of medicines and investigations), they would reduce average fixed costs per consultation. The capacity of PHCNs to see more patients per day than is presently the case is demonstrated by the increased rates on Saturdays compared with weekdays. On Saturdays, it appears that pressure of time (the CHC is open for a half-day only) and reduced numbers of PHCNs on duty combine to increase the daily consultation rate per PHCN.

This approach to reducing the average consultation

costs assumes that increased numbers of patients would in fact visit the CHC if these changes were implemented. This is not necessarily the case, since there have been unexplained decreases in overall attendances at the CHC system in the last 2 years (Dr G. Louw — personal communication). An alternative approach would thus be to reduce the number of PHCNs required to perform the same number of consultations.

Our observations also suggest that not all referrals from PHCNs to doctors are appropriate. It is important to note that many of these referrals are mandated by protocols to which the PHCNs adhere. Improvements to these protocols and other aspects of the referral system could achieve both more appropriate and, in many cases, fewer referrals. This would reduce the number of consultations per patient visiting the CHC, and therefore the average cost per visit. These changes might also improve the efficiency of doctors by reducing the number of consultations performed on cases that have been unnecessarily referred.

Medicines and investigations

The use of medicines and investigations at DK is in most respects highly efficient, and it is unlikely that further cost savings in these areas could be achieved.

Cost efficiency results from efficient utilisation as well as from the lower cost of specific components of the clinical service. In the case of medicines, the tender price system ensures that medicines are available to the CHC system at low cost. The code list system functions as an effective essential drugs list and the development of therapeutic protocols assists in rational prescribing by both doctors and PHCNs. Efficiency is also greatly assisted by the fact that the CHC system has its own pharmacy department, which pre-packs all medicines and is able to trace the passage of these medicines through each room in each CHC at any one time.

The relatively low cost of medicines is not explained by low utilisation. Of patients in the general section, 95,4% received medicines during the study period and the actual number of items per prescription appears reasonable.

In the case of radiographs and investigations, the relatively low costs at DK are a reflection of both low unit costs and underutilisation of these services. There is thus no room for cost reduction here. If anything, clinical review would lead to increased use of these services, and thus to higher radiograph and investigation costs per consultation.

Home visits

The average cost of a home visit is almost twice that of the cost of a visit to the CHC. This is largely the result of the very low visit rate, in the presence of high fixed costs (mainly staff and a proportion of transport costs). Costs could clearly be reduced by increasing the number of visits per day conducted by each nurse. At present, a driver and a nurse are required for each visit, with the driver waiting outside for the visit to be completed. A drop-off system would reduce transport costs and increase the visit rate.

The extent of excess capacity here is not as clear as in the case of CHC-based consultations. The logistics of these visits, including transport difficulties and staff security issues, appear to limit the flexibility of management to effect improvements. It is therefore likely that these visits will remain an expensive component of the PHC delivery system.

Social work consultations

These consultations were the most expensive of the CHC visits. The obvious reason for this is the low num-

ber of consultations performed (7,1 consultations per day during March). It is not clear that this could be increased significantly, as such consultations appear to be quite time-consuming. However, certain improvements to the booking system and to the movement of social workers between CHCs, might allow for increased efficiency in this area.

We have argued that there appears to be some room for cost savings within the CHC system as it operates at present. These involve mainly an increased efficiency in the handling of consultations, as well as in the system of home visits. The results showed that some of these improvements could impact significantly on the overall costs of the CHC system. Decisions as to the appropriate system of delivering PHC should take this into account, rather than assume that the present cost structure is inherent in this system.

Policy and planning issues

Financial implications of extending PHC services

The need for expansion and strengthening of the PHC system in South Africa at last appears to be recognised by a wide range of public authorities, including the Department of National Health and Population Development. Consensus on the need for an improved PHC system does not imply, however, any uniformity in ideas as to how this expansion is to be achieved, and it is likely that this issue will occupy centre stage in health policy debates in the near future. One worrying feature of this debate so far is that it has dealt only superficially with the financial implications of extending PHC services.¹³

Simple extrapolation of some of the results of this study emphasises the dangers of ignoring financial issues in health policy debates. The example of the greater Johannesburg area is illustrative. On the extremely conservative assumption that each person will require only one general curative medical consultation per year, the estimated cost for the region in 1990 would have been just under R65 million. This calculation is based on the consultation cost at DK, and assumes that there were 2,17 million people in the greater Johannesburg area in 1990.¹⁷

One curative consultation per person would therefore consume 57% of the estimated R115 million total public sector budget for PHC in this region in 1989/90.¹ All remaining public sector curative care, dental care, home visits, maternity care, preventive services, rehabilitation and environmental health services would have to be met from the remaining 43% of the budget.

It could be argued that the PHC budget will have to be supplemented by the transfer of resources from other parts of the health service. While this may be defensible in theory, it is likely to be strongly resisted by other levels of the health services which are themselves under increasing pressure. If we add to this the likelihood of pressure to reallocate resources away from the major metropolitan areas towards rural areas, it becomes clear that there will not be substantially greater financial resources for public sector PHC in the foreseeable future.

The budget given here excludes private expenditure on health care, while the population figures include the beneficiaries of medical schemes who rely on the private health sector for a significant part of their primary care needs. We do not believe that adjustment of these figures for these individuals would alter our general observations significantly.

Given present financial constraints, extension of the public sector PHC system, as presently organised in

Soweto, would be extremely difficult to sustain, even for the greater Johannesburg area.

It is important, however, to qualify this simple extrapolation from one PHC setting. DK may be different from other CHCs in the same system and other public sector PHC settings elsewhere. Therefore generalisation should rather be based on the results from a more representative sample of PHC settings than is the case here.²

We have also noted excess capacity in some parts of the CHC system. This implies that average costs of some services could be reduced. However, this study did not attempt marginal costing, so that these observations must remain speculative.

In addition, the extent of economies and diseconomies of scale in the whole PHC system are not immediately obvious and require further study. The Soweto CHC administration section has some excess capacity so that there might be low marginal administration costs over some range of increased numbers of CHCs. The extent of this range is also not clear. At some point, the average administration cost per CHC will stop declining and begin to rise. The phenomenon of declining followed by rising average costs has been well described in other PHC settings.¹⁴

Despite these qualifications, our data suggest that financial constraints may place severe limits on the expansion of the public sector PHC system in its present form, and that the financial implications of these kinds of policy measures require comprehensive investigation.

One particular concern relates to the role of capital and recurrent financing of PHC services. Our results have demonstrated the high ratio of recurrent to capital costs in this PHC system. This is confirmed by numerous studies of PHC systems in other parts of the world. In many developing countries, extensive capital investment in PHC has failed to develop an adequate PHC system given the inability of those countries to sustain the required level of recurrent financing once capital investment was completed.¹³

In South Africa, there is a danger that political pressure will result in widespread construction of visible PHC facilities in defiance of the observation that there may be insufficient recurrent financing to sustain them.

Alternative PHC systems

The high costs observed in this study raise the question of whether there are more efficient alternatives to the present public sector CHC system.

Public sector alternatives

Recent statements by the Minister of Health suggest that the combination of all PHC services under a single local authority will soon be a reality.¹⁷ This creates the possibility for the development of a network of CHCs, combining the provincially controlled curative PHC system with the preventive local authority clinics. A proposal for a CHC system of this kind for greater Johannesburg has recently been mooted.¹ If such a system is to succeed, however, it will have to make more efficient use of both human and capital resources than is the case in either the provincial CHC system or the local authority clinics at present.

One way to achieve increased efficiency would be to devolve as much managerial autonomy as possible to the CHC level. Several of the efficiency problems of the CHC system described here might be overcome through the emergence of a network of independently managed CHCs. These independent CHCs could function within clearly defined guidelines which assure range and quality of care. The advantages of a larger, combined system, such as bulk purchasing and efficient distribution,

could be retained through the retention of purchasing and distribution agencies serving all the CHCs in a specific area. At the same time, the system could generate powerful incentives for local managers to contain costs and improve efficiency in other ways. Research into the ability of such a system to improve efficiency is an important priority.

Private sector PHC alternatives

Several possible private sector alternatives could be available for the delivery of PHC to the population. These include private, non-profit community health centres, such as those run by non-governmental organisations (NGOs), or private general practitioners (GPs) practising independently or in groups. To make these private PHC providers accessible to the population would require a public health care financing system, such as a national health insurance system, which might finance PHC from a range of public and private providers.¹⁸ Until that is achieved, however, the private sector will remain a provider of a limited range of curative PHC services to those who can afford to purchase them.

Because some form of public financing may be a real possibility in the foreseeable future, we regard it as worthwhile briefly to explore some of these private sector PHC settings. It is clearly not possible to evaluate in detail the desirability of any of these alternatives in this paper. Both detailed costs and data on quality of care in the present private health sector would be required for such an evaluation, and neither of these areas were investigated in the present study.

Some tentative comparisons with current costs in NGO and in private sector settings may nevertheless be useful. Recently reported data for Alexandra Health Centre (AHC), which is a privately funded and managed NGO PHC centre, demonstrates a very similar overall cost structure to that of DK.³ In many cases, however, the unit costs of services are lower at AHC than at DK. For example, general medical consultations are estimated to be 22,5% cheaper at AHC than at DK, while district nursing visits are 52% cheaper. These differences may be attributable to a wide range of factors aside from greater efficiency. Examples include differences in case mix, the fact that AHC makes use of medical students who were not costed, and differences in quality of care.

However, our experience of AHC leaves us with little doubt that the complete autonomy enjoyed by the AHC generates incentives for managerial efficiency and efforts to contain costs that are absent in the Soweto CHC system. These results also stress the need for further costing studies of this kind to supplement database on which to make comparisons.

With regard to the private sector, the comparisons are equally complex, but also interesting. The cost of a consultation in the general section of DK was in fact marginally higher than the medical aid tariff of R21,50 for a standard GP consultation, which was applicable at the time this study was conducted. In the case of patient visits, the cost was significantly higher than the private sector tariff. As soon as costs of medicines, radiographs and investigations are taken into account, however, the costs of private sector PHC far exceed the costs at DK. At the time of the study, the average private sector prescription alone cost R75 (David Boyce — personal communication).

It is also important to make a comparison with the policy of dispensing GPs, who charge patients a cash amount (between R25 and R40 at the time of the study) which covers both the consultation and medicines. At the lower range of charges, such GPs may be able to

deliver a package more cheaply than the CHC. The problem here is that for many such GPs, the costs of treating chronically ill patients who require expensive medications becomes prohibitive, so that these patients are referred to the public sector anyway. Such GP care would also not cover radiographs or investigations, for which cash-paying patients would probably be referred to the local hospital.

These comparisons should be made with caution; neither quality of care differences between the public and private sectors, nor differences in rates of consultation per episode, have been assessed. Nor can private tariffs necessarily be regarded as an accurate reflection of the costs of private sector primary care.

Of course, many other factors besides cost are important in judging these issues. One of these is the comprehensiveness of the PHC services received. It is clear that private GPs offer a largely curative service. It is possible that patients in the CHC setting obtain a wider range of services than would be the case at the GP's rooms. For example, not only general medical care is available, but also antenatal services, a labour ward, physiotherapy and social work services on the same premises. Furthermore, patients can be referred by CHC transport to both the radiography unit and the hospital, all costs of which are built into the general consultation cost, but which would be excluded in a visit to a private GP.

At the same time, it is important to note that the CHC system also omits preventive services, and that the services that it does deliver are not always conveniently arranged to suit patients' needs. Patients may have to return on another day to obtain physiotherapy or have to wait hours before transport arrives to take them to the radiography unit.

The data generated by our study are clearly insufficient for a definitive judgement on the most appropriate setting for PHC. While it is our belief that a public sector CHC system has the potential to deliver a comprehensive range of PHC services more efficiently than private sector alternatives, our evidence only bears this out to a limited extent. We conclude again, therefore, that further research into such issues as costs, range of services and quality of care, in both public and private settings, is required before these debates can be settled.

Ethical restrictions preventing the emergence of group practices (or GP-based CHCs) have recently been amended to allow for these forms of PHC delivery. These models may thus also require investigation of their viability as alternative settings for delivery of PHC.

What does costing cost?

This study took approximately 700 working hours from inception to report stage. The cost of researchers' time amounted to approximately R21 000, which is just under 0,5% of the total estimated expenditure at DK for 1990. This estimate excludes a range of other costs, such as transport, administrative overheads, non-remunerated consultations, and the time of staff working in the CHC who contributed to the study. We do not believe that the inclusion of all these costs would increase total costs by more than 15%.¹⁹ At a commercial rate of R200 per hour, such a study might cost R114 000. This would amount to 3,1% of expenditure at DK. We believe that such expenditure would still be justifiable in terms of the information generated. This study has generated a wide range of vital information that has been of use to the CHC administration, in wider policy research projects, and in comparison with similar PHC settings.³ It has also stimulated awareness of the importance of detailed knowledge of costs in CHC administration. In addition, it has allowed

development of further costing skills and better understanding of important aspects of PHC among the researchers. For all these reasons, we believe that costing studies of this kind are both essential and affordable, and that they should be carried out at sentinel sites throughout the public health care system, until such time as public sector settings function on a fully costed basis.

One of the major constraints in achieving this will be the limited expertise in health sector costing and economic evaluation in South Africa at present. This requires urgent attention, and all relevant health authorities, as well as academic departments of community health, should regard the development of these skills as a priority. Although both costly and undesirable as a long-term solution, it might be necessary, in the interim, to make use of private consultants both for training of health sector personnel and the carrying out of such projects.

Conclusion

This limited study of one public sector PHC setting has generated much useful information. This is particularly true from a management perspective, where the study findings have stimulated several organisational changes within the overall CHC system (Dr G. Louw — personal communication). From a policy and planning perspective, the results have highlighted several difficult questions, which demonstrate the problems of policy making in the absence of adequate economic and financial data and underline the need for further research on these issues.

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