Developing a plan for primary health care facilities in Soweto, South Africa. Part II: Applying locational criteria

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This article is the second of a two-part series describing the development of a ten-year plan for primary health care facility development in Soweto. The first article concentrated on the political problems and general methodological approach of the project. This second article describes how the technical problem of planning in the context of scanty information was overcome. The reasoning behind the various assumptions and criteria which were used to assist the planning of the location of facilities is explained, as well as the process by which they were applied. The merits and limitations of this planning approach are discussed, and it is suggested that the approach may be useful to other facility planners, particularly in the developing world.

Introduction

Part I of this two-part series described the context and general research approach of a project which planned the development of primary level health facilities in Soweto, Johannesburg, during 1992 and 1993 (Rispel et al. 1996). The purpose of this article, the second in the series, is to present the step-by-step process by which the size, number and location of clinics were determined. The process seeks to integrate objective planning procedures with the more subjective opinions of stakeholders.

The article is divided into three sections. The first section describes the assumptions and criteria which were employed by the research team to support decisions regarding the location and size of future facilities. The second section describes how the assumptions and criteria were systematically applied in order to construct a prioritized list of facilities required over a ten-year period. The final section discusses the limitations and merits of this planning approach.

In devising the plan, the research team was faced with the problem of transforming the existing network of over-burdened and unevenly distributed clinics into a functional system. At the outset, the team developed a conceptual framework within which to plan future facilities. This framework consisted of the following elements:

- all primary health care services in Soweto should be comprehensive;
- there should be equity in the distribution of health care facilities;
- physical access to facilities should be maximized within the constraint of limited resources;
- planning should take account of the existing resource base of facilities in Soweto, which is considerable; and
- in terms of the development of facilities over 10 years, priority should be given to communities most in need.

The process described in this paper should be understood in terms of this framework.

Section 1: Assumptions and criteria

In countries where accurate data is scanty, several assumptions about the demographic and epidemiological characteristics of communities have to be accommodated (Botha and Bradshaw 1985). Only then do criteria for the maximization of coverage, such as the optimum size and location of facilities, become useful. This section of the paper discusses the various assumptions and criteria which were
applied in planning primary care facilities for the Greater Soweto area.

The research team chose to make conservative decisions wherever possible, with the understanding that it is better to under-provide than to over-provide physical resources, particularly if it is understood that the option of expanding or otherwise adjusting a facility plan always remains open. In all cases assumptions and criteria were tested for consistency, and against the experience of health care workers for appropriateness.

The expected burden on clinic services
The first step in the development of a facility plan was to estimate the future patient load on clinic services. A major constraint was the absence of any detailed and uncontroversial information on population size and health service utilization patterns, especially at the level of the individual townships and zones which make up Soweto. As discussed below, three major assumptions had to be made in order to overcome this otherwise crippling constraint.

The size of the Soweto population
For political and practical reasons the Sowetan population, which lives in a myriad of crowded houses, backyard rooms, shacks and hostels, has never been counted accurately. Population estimates range from as few as one million to as many as three million people. The research team settled on a population size for 1992 of approximately 1.2 million, an estimate which is relatively conservative but for which the evidence is strongest (Johannesburg Metropolitan Planning Department 1992; Chris Steel Architects, Centre for Health Policy and Rosmarin and Associates 1993). With the help of township managers this population was distributed between the townships of Soweto and plotted by zone on a map. It was assumed that, provided low-income housing development continues in other areas surrounding Greater Johannesburg, it is unlikely that the Soweto population will grow by more than 3% per annum (this percentage combines the effects of natural increase and migration). After 10 years (that is, in the year 2002), the predicted population for Soweto will thus be close to 1.6 million.

Despite attempts to achieve accuracy, the possibility remains that the 1992 figure of 1.2 million is an underestimate (but not, it is thought, by more than 0.4 million). As described below, in several instances generous criteria were developed to accommodate this uncertainty.

Health service utilization patterns
Information on the pattern of use of health care services by a given population is critical in determining the need for health care facilities. Likewise, where the private sector is large, as is the case in South Africa, it would be useful to know the proportion of the population dependent on the public sector. Although information for Soweto on these variables was lacking, it was beyond the brief of the research project to measure the utilization patterns of the Sowetan population. Instead, several assumptions had to be made regarding utilization.

Utilization of clinic services
There is probably a high level of unmet need for health care in Soweto. It is certainly hoped that as additional resources are made available by the new government for disadvantaged populations, and as the emphasis in health care shifts towards the primary level, utilization of clinic services will increase considerably. Historical data on the annual number of clinic visits in Soweto are therefore not useful predictors of the future utilization of health services. In the absence of empirical information on the level of need for health care, the research team assumed a future utilization rate for Sowetans of 3.66 visits per person per year. This figure is proposed by the South African Council for Scientific and Industrial Research (Abbott 1992), takes into account child and adult utilization rates for preventive and curative care which appear achievable in the next few years, and compares favourably with the utilization rate of 4 which has been achieved by Botswana, another middle-income country in Southern Africa (Centre for Health Policy 1993; McIntyre et al. 1995). The figure is higher than the national average utilization of public health services of 2.89 visits per capita per year (McIntyre et al. 1995).

The proportion of the population using the public sector
The next step was to determine what proportion of the Soweto population would be served by the public sector over the ten-year period under consideration. It is currently estimated that 23% of South Africans (and even fewer black South Africans) have access to private sector health care on a regular basis (Valentine and McIntyre 1994). Little is known of the extent of the patronage of the private sector in Soweto. The research team decided to plan for a
public sector serving 100% of the conservatively estimated 1992 population of 1.2 million. This is equivalent to planning for 80% of a population of 1.6 million, the projected population in 2002 (and also the higher estimate for the 1992 population). This approach both affirms the responsibility of the public sector to serve the entire population (especially for promotive and preventive care) and makes allowance for a probable growth in the patient load on public services during the next 10 years due to escalating medical costs.

**Locational criteria to maximize access to primary care facilities**

The literature abounds with evidence of the impact of distance on the accessibility and subsequent utilization of health care services (Shannon et al. 1973; Stimson 1981; Stock 1983; Joseph and Philips 1984; Habib and Vaughan 1986; Kloos et al. 1987; Andy Tembon Chi 1990; Mulvihill 1991). Medical geographers in particular have been concerned with spatial aspects of medical care and various theoretical models for optimal spatial distribution of service facilities have been proposed (Shannon et al. 1973; Bennet 1981; Kemball-Cook and Vaughan 1983; Berghmans et al. 1984; Massam et al. 1986; Rushton 1991). The various models have included variables such as distance and time travelled, the size and shape of catchment areas, and the degree of dispersion of facilities. In general, these models have drawn on the principles of Central Place Theory which was originally formulated to explain the size, number and distribution of urban centres in a regional or national setting, but has since been used to solve problems in health care delivery (Gober and Gordon 1980; Mulvihill 1991).

In this research project, the main criteria used in the formulation of the health facility plan related to the distance people live from clinics, the size of catchment populations, and the size and position of clinics in the hierarchy of service functions.

**The maximum distance from a health care facility**

At present health care facilities are distributed unevenly across Soweto with a concentration in the central and eastern parts. As mentioned earlier, a key principle adopted by the research team was that any plan for primary care facilities should ensure an equitable distribution of health care facilities and that accessibility to the population should be maximized. The first criterion chosen by the research team was thus one which expressed equitable access in terms of the maximum distance a patient could be expected to travel to a health facility. A facility plan that limits this maximum distance will be more equitable (although obviously not everyone will live an equal distance from a clinic) but it is the actual value of the limit which determines whether accessibility has been optimized. If clinics are too distant, people who need care will not utilize them, especially for services that appear less urgent (such as preventive care, the treatment of mild illness or the collection of medication for chronic disease). The neglect of mild and chronic conditions, and the avoidance of preventive care, can have serious consequences (in terms of ill health and the eventual cost of treatment) for both the individual and the community. As mentioned earlier, the international literature abounds with studies which have looked at how increasing distance from a facility leads to decreased utilization of that facility, a phenomenon described as ‘distance decay’.

Using international criteria and local experience as guidelines (Rispel et al. 1995), the project team chose 2km as the maximum distance a patient should be expected to walk to reach an urban health facility that provides a basic package of comprehensive primary care (Centre for Health Policy 1993). It was assumed that this distance could be walked within half an hour. The distance of 2km was translated into a radius of 1.5km around a clinic in order to take account of the difference between actual walking distance and the straight line drawn on a map. Thus, when circles with a radius of 1.5km are drawn around existing facilities in Soweto, the areas falling outside the circles represent populations living too far from a health facility. These areas correspond with populations which staff and community members identified as being underserved through an extensive process of consultation (see Part I; Rispel et al. 1996), which suggests that the choice of a 1.5km radius was indeed appropriate.

**The size of the catchment population**

The maximum distance to a clinic that a society is prepared to accept does not depend entirely on convenience. The affordability and functionality of a facility in terms of its size are also determining factors. The size of a facility depends largely on the size of the population it is expected to serve. The literature suggests that a clinic which serves more than 100 000 people becomes too complex and impersonal to function adequately, while it is not cost-effective to build a fixed facility for fewer than 10 000 people (Department of National Health and
justifies a larger facility, a broader package of care should be delivered. This package includes generalization (that is, the population within a 1.5km radius) in situations where the size of a catchment population. Other services, such as child care, could also be rendered from the site. Health centres would be an ideal venue for other community activities, such as after hours meetings, classes and recreation.

The services provided by different sizes of primary health facility

An important next step was to define what constitutes a basic package of primary care services and what types of facility are involved in its delivery. The research team applied some of the principles of Central Place Theory in the ordering of health facility functions according to level of specialization and frequency of utilization. Facilities should be organized in a hierarchy, with health centres supporting the smaller clinics which surround them, and being supported in turn by major health centres. Finally, clinic services should be supported by a hospital. The following paragraphs describe in broad terms what services should be provided at each level of facility. This description serves only as a guideline, as the particular circumstances of each community should determine services more precisely.

Small clinics

Where a catchment population for a facility is considerably less than 50 000 people, the research team accepted that the package of care should be limited to those services for which people are unwilling to travel very far. These services include promotive and preventive care, as well as treatment for chronic conditions which have already been diagnosed, and are provided by nurses without postgraduate clinical training (see Table 1) The research team called the facility providing such services a small clinic, serving between 10 000 and 50 000 people. A small clinic is open on some (or all) weekdays during office hours but not on weekends or at night. A small clinic would be an ideal venue for other community activities, such as after hours meetings, classes and recreation. Other services, such as child care, could also be rendered from the site.

Health centres

In situations where the size of a catchment population (that is, the population within a 1.5km radius) justifies a larger facility, a broader package of care should be delivered. This package includes general acute care, diagnostic services and rehabilitation services over and above the services delivered by a small clinic. The research team called the medium to large facility delivering this range of health care a health centre, serving between 50 000 and 80 000 people (see Table 1).

The majority of staff at a health centre would be nurses, including nurse clinicians, but medical officers would be available for patients referred by the nurses. Patients would attend the clinic directly if it were their closest clinic, or be referred from small clinics. Wherever possible, communities should have access to the services rendered by a health centre, as these services represent the full range of essential services at an accessible distance for the community. Only where the catchment population is too small, and where resources are scarce, should the more limited services rendered by a small clinic be provided to a community. Applied to the very dense urban population of Soweto, this principle yields health centres and small clinics in approximately equal proportions, as will be described below. In areas where populations are more scattered, the ratio of health centres to small clinics would be much smaller.

Major health centres

If small clinics and health centres are distributed so that all people live within a 1.5km radius from at least one of these facilities, the entire population would have adequate access to 'a basic package of comprehensive primary care'. Yet there are additional primary level services to which populations also require access. These are services with a lower utilization rate, or which are more expensive or rare, and which therefore should not be provided at every health facility (for example, X-ray services would neither be fully utilized nor affordable at every health centre). Facilities providing more complex services were called major health centres by the project team, serving more than 80 000 people (see Table 1).

The scope of the project did not allow the research team to do costing studies in order to identify the number of facilities at which these more complex services could be afforded. Instead, the principle of equity was resorted to again in distributing these services across Soweto. Thus, in order to extend existing patterns of access for better-off parts of Soweto to other parts, the research team recommended that no clinics with labour wards should be further than 4km apart from one another, and no clinics with X-ray services should be further than 5km
Table 1. A summary of services to be provided by type of primary health facility

<table>
<thead>
<tr>
<th>Type of facility</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small clinic</td>
<td>Child immunization, Growth monitoring, Family planning, Antenatal care,</td>
</tr>
<tr>
<td></td>
<td>Chronic disease treatment (but not diagnosis), for example: tuberculosis,</td>
</tr>
<tr>
<td></td>
<td>sexually transmitted diseases, psychiatric illness, hypertension, asthma,</td>
</tr>
<tr>
<td></td>
<td>rheumatic heart disease, Some minor acute curative care, Outreach services,</td>
</tr>
<tr>
<td></td>
<td>Basic rehabilitative services provided by community health rehabilitation workers</td>
</tr>
<tr>
<td>Health centre</td>
<td>Services provided by small clinics plus: Acute curative care, Chronic</td>
</tr>
<tr>
<td></td>
<td>disease diagnosis, Geriatric services, Adolescent/youth services, Oral</td>
</tr>
<tr>
<td></td>
<td>health care, Mental health care, Social work</td>
</tr>
<tr>
<td>Major health centre</td>
<td>Services provided by health centres plus any of the following: Maternity services, 24-hour emergency care, Phototherapy, X-ray services, Rehabilitation services provided by professional rehabilitation therapists, Psychiatric care, Short-stay ward, Theatre services for minor operations, Depending on a district’s model, laboratory services, pharmaceutical depots, catering services and transport services could also be provided at major health centres</td>
</tr>
</tbody>
</table>

Section 2: The systematic application of criteria to determine the need for facilities

This section describes the application of criteria to a map of Soweto to ensure that maximum coverage of the population with facilities was achieved. This objective planning process was at all times informed by the more subjective information which had been gathered through staff interviews and facility checklists (see Part I; Rispel et al. 1996). The different steps are described in detail below, while the finally recommended distribution of clinics is illustrated in Map 2.

Step 1: Identification of existing viable clinics

As mentioned earlier, a key principle of the research team was that the facility plan should make optimal use of the existing infrastructure. Soweto has a complex network of 24 existing facilities (see Map 1).
Primary health care in Soweto: Part II

Map 1. Soweto health plan: existing facilities and theoretical catchments

Map 2. Soweto health plan: distribution and probable catchments of proposed clinics
which, for a number of historical reasons, distorts an ideal planning model dramatically. For example, the siting of one clinic next to Baragwanath Hospital on the outskirts of Soweto has more to do with the reality of delivering care in a strife-torn township than with the ideal of bringing care close to the people. In addition, approximately half of the clinics are run by local authorities and provide mainly preventive care, while the other half are run by the provincial authority and provide mainly curative care. Some of the preventive and curative clinics stand side by side on the same site, while others lie several kilometres apart. The clinic buildings vary in age, size and state of disrepair, and some are inappropriately situated.

The first step was thus to identify which of the existing facilities have the potential to become functional, comprehensive health centres. Considerations included the location and physical condition of the facility, and the range of services offered, especially whether both preventive and curative care are already being provided on the same site. Interviews with health service personnel and communities, as well as analyses of the physical and functional suitability of buildings were crucial in informing the decisions (see Part I; Rispel et al. 1996).

Step 2: Definition of catchment areas and populations

A circle with a 1.5km radius was then drawn around each of the identified health centres. The circles were subsequently distorted by taking into account geographical barriers (such as hills and railway lines or rivers without bridges) which impede access to the facility. Where the circles of neighbouring facilities overlapped, this area was bisected, causing a further distortion of the catchment circles.

The population inside each catchment circle was then calculated by estimating the proportion of the population of each township administrative zone that falls inside this area. The size of communities falling outside the catchment areas was estimated in a similar manner.

Step 3: Identification of new or expanded facilities to serve the catchment populations

If the population inside the catchment areas of existing facilities is smaller than 80 000 it was assumed that the existing clinic will suffice as the facility serving the area (although it might need to be upgraded). If the population is larger than 80 000 the option of building another clinic (either a health centre or a small clinic) in the catchment area was investigated. If the size of the population falling outside the catchment area of an existing facility is large enough (that is, above 10 000 people), the option of building a small clinic or sometimes a health centre in this underserved area was considered. In the few instances where the outside population is smaller than 10 000 people, it was regretfully acknowledged that these people will have to travel further than most to the nearest facility.

In this way facilities were located across Soweto so that they achieve maximum coverage and the large majority of the population live within a 1.5km radius from a small clinic (at least) or a health centre (at best).

Step 4: Modification of the catchment areas and populations

The introduction of new clinics distorted the catchment circles of existing clinics because of new areas of overlap. The researchers again chose to bisect overlapping circles in the case of health centres. However, where catchment areas of small clinics overlapped those of health centres, catchment circles were not distorted. This is because small clinics do not provide the full range of services available at health centres, and therefore cannot substitute fully for health centre care.

The final population within the catchment area of each facility (both existing and needed) was then calculated. At this stage the researchers checked whether the emerging plan was realistic and reasonable based on the information gathered through interviews with health service staff and tours through Soweto (see Part I; Rispel et al. 1996). This comparison of objective with more subjective information was an invaluable tool when choices had to be made between different options.

Step 5: Estimation of the size of facilities

The next step was to convert the catchment population of a clinic into an estimate of the size of the clinic needed. This estimate had to be more precise than that suggested by the terms ‘small clinic’ and ‘health centre’. The conversion was effected by means of a formula developed by the South African Council for Scientific and Industrial Research (CSIR) (Abbott 1992). The formula calculates the number of ‘functional units’ required to serve a population of a given size, a functional unit (FU) being a consulting room or treatment area used for the provision of core...
services. The formula does not predict spatial requirements for X-ray, physiotherapy and dental services, or obstetric beds, which would have to be calculated using different norms. The formula for the calculation of the number of FUs needed to create the core of a clinic is:

\[
\text{Size of catchment population} \times \frac{\text{No. of visits per person per year}}{\text{No. of consulting days per year} \times \text{No. of patients seen per treatment room}}
\]

The CSIR applies a number of assumptions to the formula:

- the average number of visits per person per year = 3.66
- the average number of patients seen per day per consulting/treatment room (or per clinician) = 35
- the number of consulting days per year = 250

For example, in the case of a catchment population of 60,000 people, the FUs required would be:

\[
\frac{60,000 \times 3.66}{250 \times 35} = 25
\]

It was beyond the scope of the research team to test the assumptions employed in the CSIR formula, assumptions which decide the size of the facility that is needed by a community. If anything, the assumptions probably err on the side of generosity, resulting in facility calculations which are larger rather than smaller. For example, fewer FUs would be estimated if the number of working days were increased (for example, if clinics remained open over weekends) and if more patients could pass through each functional unit (for example, if the clinic stayed open for more hours each day). Likewise, a smaller building would be required if fewer visits were made per patient per year, which is the situation at present (McIntyre et al. 1995). Although the accuracy of FU calculations is not known (not least because the population figures on which they are based may be incorrect), they are nevertheless very useful in indicating the relative need of communities for services, and the relative size of facilities to meet this need. The research team therefore felt comfortable in making use of the CSIR formula in developing a facility plan, with the understanding that, while health authorities might wish to scale down the size of facilities to conserve resources, the relative size of facilities should always remain the same.

Step 6: Prioritization of facilities

The sequence of steps described above yielded a list of small clinics, health centres and major health centres which need to be expanded or built on new sites. The general location of these facilities was known in terms of their central position within a defined catchment area, and their general size was known in terms of FUs. The final step was then to prioritize the order in which these facilities should be developed over a ten-year period. For this purpose, the project team developed a set of criteria for rating the priority of health centres and small clinics. As the weighting of different characteristics implied by the ratings had to be determined subjectively by the researchers, the prioritized list yielded by the rating process was checked for its rationality against the opinions of the health workers, researchers and community members. The criteria and ratings are presented in Tables 2 and 3.

Step 7: The final facility plan

The facility plan which emerged from the process described above recommended that 31 clinics should be developed in Soweto over the 10 years following the study (see Map 2). Wherever possible existing resources were utilized, even where this meant a less than ideal situation. For example, if the buildings for the preventive and curative services for an area were located several blocks apart but were in good condition, it was recommended that the staff be integrated but that they should continue to operate, at least in the short term, from the two different sites. Where buildings were deemed unsuitable for the provision of health care, it was suggested that they be converted for other uses, such as extra office space. In the end, 19 of the 23 existing clinics were retained for upgrading.

Sixteen of the clinics in the final plan were health centres and 15 were small clinics. It was suggested that 11 to 13 of the health centres should have maternity services and four should also provide more expensive or specialized care, such as X-ray services. The location of the new facilities was indicated roughly as the centre of a catchment area outlined on a map but it was left to the health authorities to identify the exact sites. An estimate of the final size of all the clinics was provided in terms of the number of functional units but it was again left to the health authorities to decide on the design of each facility. The health authorities were encouraged to apply the concept of flexibility in their future planning.
Table 2. Criteria and ratings for the prioritization of health centres

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical condition of existing facility</td>
<td>1 Facility in good repair and no immediate maintenance required</td>
</tr>
<tr>
<td></td>
<td>2 Facility in reasonable condition but needs minor maintenance</td>
</tr>
<tr>
<td></td>
<td>3 Facility in need of major maintenance work</td>
</tr>
<tr>
<td></td>
<td>4 Facility in poor state of repair but could be renovated</td>
</tr>
<tr>
<td></td>
<td>5 Facility dilapidated and should be condemned</td>
</tr>
<tr>
<td>Functional suitability</td>
<td>1 Design of rooms and layout of entire facility generally adequate for the service rendered</td>
</tr>
<tr>
<td></td>
<td>2 Design of rooms and layout of entire facility adequate, but with some areas which are definitely inadequate</td>
</tr>
<tr>
<td></td>
<td>3 Design of rooms and layout of entire facility largely inadequate for the service rendered</td>
</tr>
<tr>
<td>Additional functional units (FUs) required</td>
<td>1 Less than five FUs</td>
</tr>
<tr>
<td></td>
<td>2 5-10 FUs</td>
</tr>
<tr>
<td></td>
<td>3 11-20 FUs</td>
</tr>
<tr>
<td></td>
<td>4 More than 20 FUs</td>
</tr>
<tr>
<td>Presence of geographic barriers</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>1 Yes</td>
</tr>
<tr>
<td>Presence of high-density residential areas (e.g. informal settlements, hostels) or areas considered to be very poor</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>1 Somewhat</td>
</tr>
<tr>
<td>Priority accorded to clinic by the health authorities (e.g. their assessment of need for repairs)</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>1 Low priority</td>
</tr>
<tr>
<td></td>
<td>2 Medium priority</td>
</tr>
<tr>
<td></td>
<td>3 High priority</td>
</tr>
<tr>
<td>Whether money had already been set aside for development of the clinic</td>
<td>0 Yes</td>
</tr>
<tr>
<td></td>
<td>2 No</td>
</tr>
</tbody>
</table>

* Note: where different priorities were ascribed by different health authorities, the average was taken.

Table 3. Criteria and ratings for the prioritization of small clinics

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>The presence of an existing health care facility</td>
<td>0 If facility exists</td>
</tr>
<tr>
<td></td>
<td>1 If no facility exists</td>
</tr>
<tr>
<td>Functional Units required</td>
<td>1 Less than five FUs</td>
</tr>
<tr>
<td></td>
<td>2 5-10 FUs</td>
</tr>
<tr>
<td></td>
<td>3 11-20 FUs</td>
</tr>
<tr>
<td></td>
<td>4 More than 20 FUs</td>
</tr>
<tr>
<td>Presence of geographic barriers</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>1 Yes</td>
</tr>
<tr>
<td>Presence of high density residential areas (e.g. informal settlements, hostels)</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>1 Yes</td>
</tr>
<tr>
<td>Priority accorded at joint planning meeting between health authorities and the Soweto Civic Association</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>1 Low priority</td>
</tr>
<tr>
<td></td>
<td>2 Medium priority</td>
</tr>
<tr>
<td></td>
<td>3 High priority</td>
</tr>
<tr>
<td>Other (extra points were given when the communities in the area are very poor and the area is underserved)</td>
<td>0 No</td>
</tr>
<tr>
<td></td>
<td>2 Yes</td>
</tr>
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<td></td>
<td>4</td>
</tr>
</tbody>
</table>
example, it was emphasized that clinics could be scaled down relative to one another if resources were scarce, or if other community needs were to receive higher priority. Also, the design of all facilities should accommodate the later addition of extensions when necessary.

The final plan was summarized into short lists which indicated the clinics' location, size and priority at a glance. In addition, a detailed report was written on each clinic. Each report analyzed the physical and functional suitability of the clinic at length, and detailed the structural and cosmetic changes that are necessary to upgrade the clinic to a suitable standard.

Section 3: The limitations and merits of this planning approach

The difficulty faced continuously by this research project was that decisions with substantial resource implications had to be made in the context of great political uncertainty (see Part I; Rispel et al. 1996) and on the basis of incomplete information. Was it justifiable to nevertheless continue with the planning of facilities in Soweto in the absence of clear policy guidelines on the future structure of health services, the mode of delivery of primary health care, or levels of personnel and expenditure? The final plan did not comment on the number and sort of personnel that would be required to run the services provided in the new and upgraded facilities, and the cost implications were not calculated. These issues are part of the next stage of the planning process which will hopefully occur in a more conducive environment, and will inform how the plan should be scaled down, if at all. The pattern of referral from one clinic to another, and on to the hospital, was also not outlined, as this should be developed according to principles of sound management, once the various authorities operative in Soweto are integrated into a single health service.

Another question that could be posed is: can one be confident of a plan developed on the basis of so many assumptions? The final plan recommended several facilities of a relatively large size, and it is possible that the plan could have been very different in nature and extent if more accurate information were available. However, as the articles in this two-part series have argued, the logic of the planning process was continuously checked against the opinions of stakeholders, while the plan itself was designed with flexibility in mind. The planning was useful in that it attempted to overcome the stalemate in service development which had existed in Soweto for decades, and encouraged informed decisions to be made in the light of extensive, and open, debate.

Other questions for which it is impossible to provide conclusive answers are ones which perennially face facility planners. In Soweto, is it logical to provide additional facilities as opposed to other health care resources such as personnel, simply because there is money available for capital expenditure? Should Soweto benefit from its ability, in terms of skills and funding, to develop a comprehensive plan, when there are certainly more deprived areas spread throughout the country? Should health services be receiving attention whilst other services, such as water, sanitation and housing are so poorly developed? These questions highlight the need for rational decision-making at a political level concerning the national and regional allocation of resources.

Conclusion

This research project attempted to introduce an element of systematic planning and fairness into a situation which hitherto had been characterized by fragmented and politically motivated planning. The research had the added benefits of introducing participatory research and decision-making during a sensitive political period. The overall approach, and specifically the approach to the problem of incomplete data, may help planners in other areas to overcome what might otherwise seem to be paralyzing obstacles. Obviously there is need for further refinement of the approach, but the research team believe that it should prove useful to other urban areas in South Africa and other parts of the world.

Endnotes

1 This article is based on a project conducted jointly by the Centre for Health Policy, Chris Steel Architects, and Rosmarin and Associates. The team members were, in alphabetical order: Jane Doherty, Fezile Makiwane, John Maytham, Andre Oedendaal, Laetitia Rispel, Chris Steel and Nick Webb. Team members were trained in epidemiology, health systems evaluation and planning, town planning and architectural design.

2 Following the provision of free services to pregnant women and to children under five by the new government in mid-1994, Soweto clinics have reportedly already experienced a substantially increased load.

3 There are many determinants of geographical access rather than distance (such as the difficulty of the terrain and the mode of transport), and many other determinants of access rather than geographical location, including financial constraints and the appropriateness of the health service, but these were beyond the brief of the research team to address.
A small clinic is the equivalent of a satellite clinic described in the international literature. The term 'satellite' is avoided here because, at the time of the research, a controversial programme to build satellite clinics in Soweto had been proposed by the past government. These satellite clinics would not have provided integrated, comprehensive care, but would have been limited to the narrowly-defined responsibilities of the local authority health departments.

The Council for Scientific and Industrial Research has designed a series of economical functional units (FUs) for different purposes. For example, there are modular designs for consulting rooms with and without an examination couch. These modules can be arranged into a design that suits an individual community. Each FU contributes a number of square metres to the size of the clinic. The area associated with each FU includes all the ancillary accommodation required to support the FU (such as store rooms, toilets and sluice rooms). Other spaces, such as health education rooms or waiting areas are not included.

References


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Biographies

Dr Jane Doherty is a senior researcher who has worked for five years at the Centre for Health Policy in the Department of
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Ms Laetitia Rispel is a senior researcher and one of the deputy directors of the Centre for Health Policy. She obtained her BSc Nursing degree at the University of Cape Town (South Africa) in 1982, an honours in epidemiology from the University of Stellenbosch (South Africa) in 1987 and an MSc (Med) in Community Health at the University of the Witwatersrand (South Africa) in 1991. For the past 8 years she has been working at the Centre for Health Policy, focusing on the areas of policy analysis and critique of nursing in South Africa; development of strategies for primary health care in South Africa; initiatives for transformation of the South African health sector; health sector integration in the Southern African region and health systems research. She currently leads the Health Service Evaluation and Planning Programme of the Centre.

Mr Nick Webb graduated from the University of Natal in Durban (South Africa) with a BSc and MSc in Town and Regional Planning. His work relates in the main to urban development and regional planning. He presently works for the local authority in Durban, but at the time of the research was employed by a private firm, Rosmarin and Associates, in Johannesburg.

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