Tropical Medicine and International Health

VOLUME 1 NO. 5 PP 699–709 OCTOBER 1996

A coverage plan for health centres in Murewa District in Zimbabwe: an example of action research

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Summary Good access to health facilities providing good first-level health care remains problematic in many developing countries. It is a hindrance to effective and efficient functioning of the hospital, as outpatient departments become overcrowded with patients from areas without health centres. In many cases the quality of care delivered to these patients is poor because within the district health system the hospital is not the best place for the supply of comprehensive, integrated and continuous care. Eventually, high hospital involvement in first-level care can jeopardize the delivery of adequate referral care for those patients who desperately need the hospital's technology and expertise.

This paper provides an account of the way this problem was investigated and managed by the district health management team in the Murewa district in north-east Zimbabwe. The design of a comprehensive 'master plan' or 'coverage plan' is presented as well as the problems and difficulties encountered. The Murewa experience highlights the relevance of a coverage plan for rational and coherent health infrastructure planning at district level. The approach followed by the Murewa team illustrates the use of action research as an integral part of the management of district health systems.

keywords primary health care, district health systems, health planning, action research, Zimbabwe

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Introduction

The relevance of the District Health System (DHS) as a concept and a strategy in health planning has gained recognition throughout the developing world. The modalities for the operationalization of DHSs will obviously depend on the local context, even if some general guidance principles remain valid whatever the situation (Unger & Criel 1995). One of the problems often encountered in the development of DHSs is inappropriate coverage of the district area by a network of health centres. This is an important cause of ill-functioning and a problem in itself because it means that some people do not have reasonable access to health care. It may also have important implications for the functioning of the district hospital and the consistency of the DHS as a whole. The need for the design of consistent district 'coverage plans' is thus apparent (Pangu 1988).

In Murewa district in Zimbabwe a substantial proportion of the population had no or only limited access to a first-line health facility fit to provide comprehensive, integrated and continuous care. The district team thoroughly investigated the problem and eventually designed a comprehensive coverage plan. This paper gives a detailed account of the steps followed in this process, and discusses the problems and difficulties encountered.

The Murewa experience may contribute to the development and organization of DHSs in 2 ways. First, the description of *what* actually has been done may benefit district managers facing similar problems. Secondly, the process of *how* this problem was managed could also be of interest. The Murewa district team illustrates the use of research in the process of management of a DHS. There is great need for such case-studies since health managers in developing countries rarely regard research as integral to the process of priority setting, planning and management (Barker 1995).

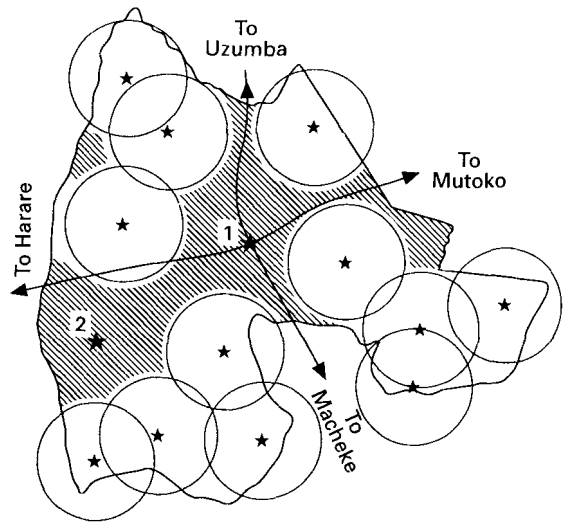

Figure 1 Murewa District. Location of hospitals and health centres. ★1, Murewa District Hospital; ★2, Musami Mission Hospital. ★Existing Health Centres. The circles represent a theoretical catchment area around the health centres (radius of 7 km).

Description of the context

Murewa District in Mashonaland East province is one of 2 research districts involved in the 'District Health Services Management' (DHSM) project. The other is Tsholotsho District in the Matebeleland North province. In 1992, Murewa district covered an area of about 1830 km^2 of communal land and had a population of about 129 000 (National census 1992). The health services in the Murewa district are organized along 2 tiers: a network of (rural) health centres and a referral district hospital (Figure 1). In 1992, there were 12 functional rural health centres and one rural mission hospital (Musami Hospital) in the district. When referring to the hospital, we mean the government district hospital unless specified otherwise. This 60-bed district hospital is located in Murewa 'growth point' with approximately 3000 inhabitants. Murewa Hospital provides the entire range of referral services needed at that level, e.g. current in-patient facilities, operating theatre, X-ray facilities, laboratory.

The DHSM research project is a joint endeavour between the Zimbabwean Ministry of Health and Medicus Mundi Belgium (a Belgian NGO). The project is funded by the European Union. Its objective is to study the conditions for improvement of the performance of the district health services along the lines of Primary Health Care (WHO 1978) and of District Health Systems (WHO 1987), and within the limits of the resources available in the country. The methodology used in this research process is based on action research. The scientific follow-up is in the hands of the Public Health Department of the Institute of Tropical Medicine in Antwerpen (Belgium) together with the Health Systems Research Unit of the Blair Research Laboratory in Harare. In the field, Medicus Mundi doctors are working in both districts.

Action research is useful when the purpose is to optimize decision-making in the management of problems with a strong social behavioural component. Three different partners participate in this research process: local health workers who are the key actors; 'external' researchers (in this case from Antwerpen and Blair) who are not merely neutral observers but researchers closely involved in the entire process; and the national health authorities, represented in this context by the Provincial Health Executive (PHE).

The research itself can be understood as a management process whereby the different elements that guide decision-making are systematically discussed and documented: these elements are situational or

contextual (*Where are we?*); conceptual (*Where do we want to go to?*); and elements coming from the body of knowledge generated by other experiences (*What do we know?*). Eventually, the outcome of the decisions taken needs to be assessed. The classic management cycle consisting of problem diagnosis, action planning, action implementation and action evaluation provides an adequate image of the entire process (Susman & Evered 1978).

Problem identification

The starting point for an in-depth discussion of the district's health centre coverage was reached when the Murewa health management team was confronted with a set of problems situated at different levels of the district health system and of an apparently independent nature. The most prominent problem was the overcrowding of the hospital outpatient department (OPD). On average, the number of daily attenders in 1992 was 440. A seemingly unrelated concurrent problem was the decision of an aid organization to stop its funding of preventive care outreach activities organized in the district by a hospital-based mobile team. The available district budget did not permit funding of all of the mobile team's activities. It was then proposed that the rural health centres would themselves take on the responsibility of some of these outreaches. Then the very practical question arose, which health centre should organize which outreach activity? This specific problem led to the broader but basic question of what facility is responsible for which population? Finally, during the same period politicians requested new health centres to be built in different areas of the district. The Murewa team became aware of the need to develop a consistent technical instrumentarium in order to identify arguments and elements of answers for such a discussion.

The hospital OPD overcrowding, as well as the other problems were in fact considered by the Murewa team mere symptoms of underlying basic problems in the organization pattern of the district health services. A more detailed examination of the OPD overcrowding revealed the main features of this multi-causal web. For the population in and around the Murewa growth point the most convenient option was to use the hospital OPD for first-line health care simply because there was no health centre within reasonable distance; it was easier for patients to organize transport directly to the hospital which is preferred due to the technology it hosts. Murewa growth point itself is attractive with its business centres, markets, and the easily accessible office of Social Welfare Services (where certificates for free health care could be obtained); the quality of care at the health centre within reach was perceived as poor, etc.

Empirical evidence from Murewa illustrates the poor performance of a hospital OPD in the delivery of good quality primary care. For instance, a thorough knowledge of the patient's social and medical background by the OPD nurse-practitioner is jeopardized by the rotation of the nursing staff at OPD (on a 6-monthly basis) and by the fact that a substantial proportion of patients using OPD are coming from all over the district. In addition, the delivery of care at the hospital is not organized in an integrated way given the inherent departmentalization of a hospital (Unger & Criel 1995). A pregnant woman with tuberculosis will be seen at the maternity unit for her antenatal care visit and at the OPD for her tuberculosis. The nurses in charge of these departments work separately without structured communication channels.

Evidence illustrates that a hospital's involvement in first-line health care may take place at the expense of referral care. OPD nurses in Murewa district are much more likely to refer a patient to a doctor than nurses in the health centres. Her or his lack of time per patient doubtlessly influences this pattern. Consequently, the OPD doctor is overloaded with patients who could have been appropriately cared for at a health centre. This situation in turn jeopardizes the allocated time and quality of care provided to patients who really need the skills of a physician.

Situation analysis: the catchment area exercise

The Murewa team decided to analyse the determinants of this complex problem in more detail through an exercise which aimed to identify where people using the district health services for primary level care actually come from. Objective data on utilization patterns within the district were needed, not only for appropriate management of the hospital OPD, but also

Table 1 Utilization status in 1992

'Utilization' status	Population	Percentage of district population
Population of the Murewa district using *a health centre* for primary care	80 268	62.3
Population of the Murewa district using *a hospital OPD* for primary care	Murewa District Hospital: 30 093 Musami Mission Hospital: 12 358	23.4 9.6
Population of the Murewa district virtually using *no formal structure within the district*[1]	6153	4.8
Total	128 872	100

[1] These people, living at the edges of the district boundaries, either use facilities located in neighbouring districts (for which the catchment area exercise was not done); and/or use informal or private health care providers operating in their area.

to solve the problems of outreach activities and of decisions concerning new health centres.

Methodology

The data collection aimed to define properly what is commonly called the 'catchment area' (Kloos 1990; Gish 1975a). Practically, the exercise consisted of monitoring the utilization of the curative services of all existing health facilities (all health centres and both Murewa and Musami hospitals) during a period long enough to control for seasonal variations in utilization. Curative care services are the services most requested by people: the assessment of their utilization pattern was thus considered a good proxy for the overall utilization pattern of the health centres.

Three conditions were to be fulfilled before starting the exercise. First, the entry of information in the health facilities outpatient register needed to be standardized. More specifically, only new episodes of sickness were to be entered by staff, with the additional noting of the patient's domicile. Secondly, the population of each village needed to be known. Finally, a detailed map was needed with the precise location of each village.

The exercise was done, in a first stage, during 6 consecutive months (January–June 1992) and later repeated during 2 months (September–October 1992) in order to validate the consistency of the first data collection. It allowed the Murewa team to map out which population was actually using which health facility. Each of the 493 villages of the district, or other concentration points such as business centres and schools, was thus assigned to a given facility. When the information was compiled and mapped, it appeared that the population of one village sometimes used—in a significant way—different facilities. This was the case in approximately 10% of the villages. In that case, the entire village was allocated to the facility it used most. The populations of the villages using one facility were then added and a 'catchment area' was thus defined for each health facility.

Results

This exercise showed that about a third of the district population does not use a health centre for primary health care services (Table 1 and Figure 2). It emerged that the Murewa District Hospital, to a large extent, plays two distinct roles: on the one hand, it serves as a referral centre for patients presenting with health problems that cannot be managed at health centre level; on the other, it serves as the primary centre for the population not using health centre services. This finding was most pronounced by far for the population of Murewa growth point and its surroundings where the first determinant was the absence of a health centre. The catchment area exercise also revealed that the features of the existing utilization pattern of the health centres in the district were very heterogeneous. Indeed, the catchment populations using health centres ranged from 3000 to 12 000, the maximum distance by road to the health centre varied between 8.5 and 16 km, and the surface area covered varied from 32 up to 200 km^2 (Table 2),

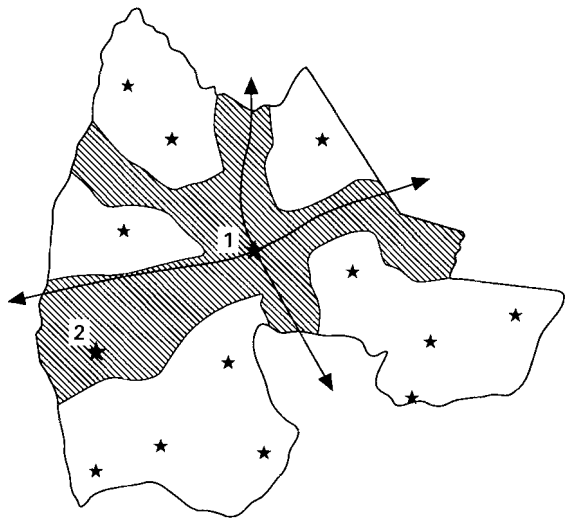

Figure 2 Murewa District. Catchment area for hospitals and health centres. ★1, Murewa District Hospital; ★2, Musami Mission Hospital. ★Existing Health Centres. The hatched area represents the population not using a health centre for primary health care services.

whereas the staffing of each of these units remains identical.

The utilization rates for the outpatient curative care services of the different health centres in the district, i.e. the average number of new episodes of illness treated at a given health centre per inhabitant per year, are presented in Table 3. Calculation of the utilization rates was possible since the catchment area exercise allowed the identification of denominators. It appears that the utilization rates vary between 0.2 and 0.9 new episodes/inhabitant/year with a median of approximately 0.6.

Discussion

The findings of the Murewa catchment exercise are certainly not exceptional for Zimbabwe. Many rural districts in the country do not have an 'urban' health centre ('urban', refering to the population in and around the location of the district hospital). Why is this so? We think it is because the implicit policy in Zimbabwe has been that the hospital OPD is to act as a first-line health service for the population living in the surroundings of the hospital. This impression tends to be validated by the fact that hospitals built in the post-independence period in the rural districts or currently under construction (i.e. within the framework of the World Bank Family Health Program) have huge outpatient departments. Their size is congruent with the implicit policy that these departments are to deliver first-line health care services for a large part of the population within the district.

For the Murewa district team, the core of the matter really was a conceptual flaw: hospital and health centres have distinct, but specific and complementary roles; and a health centre is a most valid structure whether urban or rural communities are concerned (Van Lerberghe & Lafort 1990; Unger & Criel 1995). The position of the Murewa team was that the hospital is to support the provision of primary health care services in the health centres located within the district boundaries, which is not the same as the hospital actually delivering these services itself. The hospital fulfilling both roles is thus deemed inappropriate: it is not the best structure in the health system for providing comprehensive, integrated and continuous care; the health centre is. This is not in conflict with a hospital OPD continuing to offer first-line health care services to people living within the district boundaries who do not (yet) have access to a health centre or for people from outside the district who are passing through. But in both situations, the hospital OPD remains a makeshift.

The wide range of health centre utilization rates for curative care observed was attributed to substantial differences in accessibility of existing health centres. Some health centres are located along communication axes where public transportation is available, whereas others are in more isolated areas with poor transportation facilities. It we accept the assumption that accessibility is indeed a main determinant, then these findings point to a less than optimal location of health centres and inefficient use of scarce resources. This reflects poor planning insofar as the communication and public transport infrastructure were already in place when the decision to build new facilities in their respective locations was taken. There is historical evidence that this was indeed the case. In its huge and impressive efforts to drastically reorient health care policy soon after it gained independence in the eighties, Zimbabwe has constructed many new health centres, in many cases when most of the communication and transportation network was already in place. In many Zimbabwean

Table 2 Catchment areas of existing health centres in the Murewa District

Name of health centre	Population	Surface covered (km^2)	Maximum distance to the facility (km)
Chitate	9098	122	12.0
Chitowa	2944	64	9.0
Dandara	9028	156	12.0
Dombwe	3921	52	8.5
Jekwa	4796	44	10.0
Kadenge	5583	62	10.0
Kadzere	11 250	200	12.0
Madamombe	3842	46	10.0
Munamba	4427	32	10.0
Nhowe	4202	48	16.0
Nyamatumbu	11 764	118	10.0
Shambamuto	9413	96	10.0
Total	80 268	1040	
Total district	128 872	1832	

Table 3 Utilization rates for curative care per health centre

Name of the health centre	Average monthly number of new attenders[1]	Denominator	Utilization rate (New episodes/ inhabitants/year)
Chitate	444	9098	0.59
Chitowa	184	2944	0.75
Dandara	428	9028	0.57
Dombwe	269	3921	0.82
Jekwa	499	4796	1.25[2]
Kadenge	383	5583	0.82
Kadzere	325	11 250	0.35
Madamombe	280	3842	0.87
Munamba	547	4427	1.48[2]
Nhowe	490	4202	1.40[2]
Nyamutumbu	204	11 764	0.21
Shambamuto	348	9413	0.44

[1] Period from January 1992 until June 1993.

[2] The utilization rates for the health centres of Jekwa, Munamba and Nhowe do not reflect the reality. All three centres are situated on the edges of district boundaries and part of their 'catchment' population comes from outside the district. The catchment area exercise, however, only considered villages *within* the district: the real denominators for these utilization rates are thus grossly underestimated (and utilization rates overestimated.

districts health centres are situated in places where the road and bus network is not well developed. Yet those same districts often lack health centres for the 'urban' community and have very few health centres situated along the main communication axis. It seems that these communities which can easily make use of transport facilities to reach hospital for primary care are less of a priority when it comes to building a health centre in their area.

The policy option seems to have been this: make sure that people have reasonable access to primary care services at *any* district health facility, whether health centre or hospital. An alternative option would be to attempt to establish reasonable access to primary care services to a health facility *fit* to provide such services. In practice, the priority degree, the chronology and the location of new health centres to build may differ according to the logic used.

This analysis illustrates that the problem of hospital OPD overcrowding and its detrimental consequences for the quality of primary and referral care is the result of both a relatively poor coverage of the district in terms of health centre facilities and concurrent inappropriate utilization patterns of the Murewa district health services. Obviously, an isolated intervention was not going to solve this complex situation: it needed a comprehensive systems approach.

Action planning: design of the coverage plan

The action proposed was to design an appropriate coverage plan of the Murewa district health centre network. It consists of subdividing the basic territorial unit, i.e. the district, into smaller units or areas of reasonable homogeneity within which health centres will be established to cover the entire district population (Pangu 1988). Different criteria are to be used in identifying the location of new health centres and the possible relocation of existing ones (Pangu 1988; Kasongo Project Team 1982). In addition to the willingness and the dynamism of the community, criteria of a more technical nature, such as population size, have to be considered (Chetty 1995; Kasongo Project Team 1982; Gish 1975b). The expected outcome of that exercise is a clear identification of the community for which properly located health centres will care (Ayeni 1987).

The implementation of such a plan was expected to yield the following results. In the first place, it would gradually make available to the populations not covered by a health centre, or inappropriately covered, the health structure fit for the provision of comprehensive, integrated and continuous care. In addition, it would decongest the hospital OPD and allow it to function in a more effective and efficient way. And finally, it would provide a rational basis for locating outreach points for the health centres and, as a temporary solution, for the hospital-based mobile team.

In Murewa two closely entwined problems had to be tackled at the same time: first, the identification of the location of *new* health centres; and second, the decision on which facilities to *relocate*. Obviously, good insight into the existing utilization pattern of the existing health centres in the district was a crucial element in this process. The catchment area exercise proved a most useful tool not only in that respect, but also in identifying those populations which had no reasonable access to a health centre. Eventually, clear areas of responsibility would be defined for each health centre. Some health centres were to be relocated because their present catchment population was low, thereby impeding efficient use of scarce resources.

The set of criteria used to establish a chronological order and prioritization included the community's dynamism and homogeneity, population size, presence of socioeconomic poles of attraction in the area, availability of transport facilities, impact of a health facility on the hospital's OPD workload, and short-term feasibility of establishing a health facility in that area. These criteria allowed the Murewa team to phase the coverage plan (Table 4). During the first phase (Figure 3), construction of a new facility in Murewa growth point was the top priority offering the opportunity to introduce the concept of an 'urban' health centre. But certain structural and organizational conditions must be met if the Murewa health centre is to be a better alternative than OPD. The facility should be located in the community of the growth point and be staffed by a small multi-purpose team integrated into that same community; it should offer a minimum package of activities and ensure a synthesis role for the health problems of the people it is to care for. Further projects planned for the first phase were building a new health centre in Ngwerume and moving the Chitowa health centre to Zaranyika (approximately 10 km west to Chitowa).

In the second phase (Figure 4) the building of new facilities in Shamu and Chemapango was considered with a relocation of the Dombwe clinic to Chirimudomba. The possibility of a second health centre for the population of Murewa growth point and surroundings was left open. At the time of planning the 2 phases it was difficult to anticipate whether the workload at the Murewa health centre would warrant a second centre. If so, the Murewa team was to build a second health facility rather than increasing the staff of the first. Throughout phases 1 and 2, gradual optimization of the populations to be covered by each health centre would lead to changes of denominators of other health centres as well.

Discussion

The first phase of the coverage plan has been discussed with community representatives but is only partly implemented. We think it is useful to analyse in greater detail the problems encountered in the entire process. Such an analysis may benefit other district managers in the country.

Table 4 Phases in the coverage plan

Health centre	Present population	Population in phase 1	Population in phase 2
Chitate	9098	8912	6504
Chitowa	2944	—	—
Zaranyka	—	5210	5210
Murewa growth point	—	10 426	10 426[1]
Dandara	9028	7426	7426
Ngwerume	—	6804	6804
Dombwe	3921	3921	—
Chirimudomba	—	—	6632
Jekwa	4796	4796	5720
Kadenge	5583	5583	5583
Kadzere	11 250	11 250	7897
Shamu	—	—	6836
Madamombe	3842	3842	3842
Munamba	4427	4427	4427
Nhowe	4202	4202	5349
Nyamutumbu	11 764	10 413	9389
Chemapango	—	—	5401
Shambamuto	9413	9413	9413
Total	80 268	96 625	106 859
Number of health centres	12	15	16 (or 17[1])
Average population/health centre	6689	6442	6679 (or 6286[1])
Proportion of district population covered by health centre for first level care (%)	62.3	75	83[2]

[1] A second health centre for Murewa growth point is a possibility to be considered in phase 2.

[2] The remaining 17% of the district population (approx. 22 000 people) are covered by Musami Hospital for first-line health care (about 12 000 people); live at the edges of the district and thus use facilities out of the district (about 6000 people); and live in isolated and remote areas in the district with no reasonable access to a health centre (about 4000 people). For the latter group, the utilization of OPD often is the only possibility.

In Murewa the construction of an 'urban' health centre started in June 1994. The provincial health authorities have agreed to allocate the necessary staff to this new facility. Given the originality of the concept of a health centre for an 'urban' population in Zimbabwe, it is important to have motivated and skilled staff for that purpose. Staff will be involved in the preparatory work, together with the representatives of the communities of Murewa growth point and surroundings and the district team.

'Mobilizing' the Murewa growth point community was not always the obvious thing to do. Why? First, because Murewa growth point itself is still a relatively heterogeneous community with a large proportion of civil servants and businessmen who often do not have their origins in Murewa. A growth point, after all, is a relatively artificial human concentration area in a setting where people used to live scattered far and wide. Second, because the people in Murewa growth point and surroundings have been used to coming to the hospital OPD for health care services where they have an easy access to the hospital's technology. Even if they complain about long queues and waiting times at the hospital OPD, they do want to see for themselves whether the Murewa health centre will indeed be an improvement. In that respect, the Murewa growth point health centre is a major challenge. A third reason is that in Zimbabwe, unlike many other African countries, health centre buildings are being built according to well defined and high standards, incurring high costs. The provincial health authorities eventually have to approve funding for the construction. This leaves relatively little room for 'bottom-up' planning when it comes to the design and construction of health facilities, and people are accustomed to

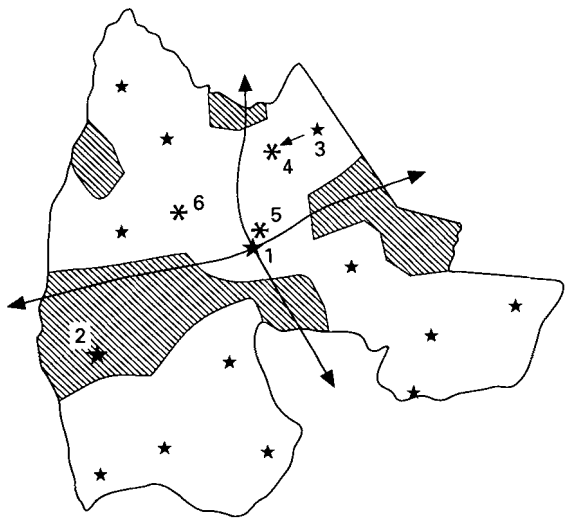

Figure 3 Murewa District. Phase 1 of coverage plan. ★1, Murewa District Hospital; ★2, Musami Mission Hospital. ★Existing Health Centres. *New Health Centres. 3, Chitowa Health Centre; 4, Zaranyika Health Centre; 5, Murewa Urban Health Centre; 6, Ngwerume Health Centre. ← Relocation of Health Centres.

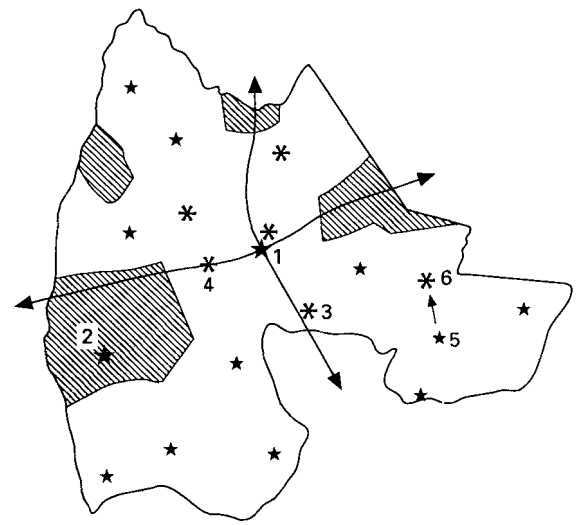

Figure 4 Murewa District. Phase 2 of coverage plan. ★1, Murewa District Hospital; ★2, Musami Mission Hospital. ★Existing Health Centres. * New Health Centres. 3, Chemapangu Health Centre; 4, Shamu Health Centre; 5, Dombwe Health Centre; 6, Chirimudomba Health Centre. ← Relocation of Health Centres.

consider that issue as a matter to be tackled by the technical people.

Two additional problems in the implementation of phase 1 of the coverage plan are worth mentioning. The first concerns the Chitowa health centre and the second the Ngwerume community. The Chitowa area is a small-scale commercial farming area, whereas the rest of the district consists of communal lands. Chitowa used to be a separate administrative structure, i.e. a 'rural council', with relatively important political weight. This is illustrated by the fact that at the time of the decision to have a health facility there, use of an existing building (the house of a school teacher) was readily accepted due to lack of funding for a new facility, although this is a rare finding in Zimbabwe.

The proposal to relocate Chitowa health centre encountered substantial resistance from its representatives. One reason may have been that the 'District Health Team' (DHT), a structure where technical, administrative and political people gather, was not used as a discussion platform. Another possible reason is that health centres receive the funding necessary for their operation from the government, whatever their location, their catchment population, their workload and thus whatever the degree of efficiency of the health centre's functioning. User fees at health centre level exist in Zimbabwe for a minority of people with an income above a certain threshold. The funds generated are neither kept nor managed at the point of collection of the fees, but channelled to the central level. In such a context, people are less concerned with the implications of poor efficiency, and the Chitowa community would have nothing to gain from a relocation of their unit in the short term.

But the proposal might be seen in a different light if the community at large were to contribute to the operating costs of the health centre via real community financing mechanisms. These would be characterized by local retention of revenue with a possibility to use it for service improvements, and by decentralized financial control and accountable decision-making. In such a context, people would have to make choices (Criel 1995): either pay more to keep open an inefficient facility located in the neighbourhood or move that facility to a location more distant for some where efficiency improves.

The Ngwerume community is very keen to participate in the construction of a health centre in their

area. There is, however, lack of funding. Currently, the possibility of using an existing building is being explored. The acceptability of such an option for the provincial and central authorities needs to be assessed since the prevailing standards of a health centre would not be met. The Ngwerume case could be an opportunity to rediscuss this policy within a new perspective.

Conclusion

The coverage plan for Murewa district provides an outline for a coherent frame for future extension of the existing network of health centres in the district. Its rationale is that administrative and political criteria are insufficient in determining where facilities are to be built and which communities they are to provide care for. If the health centres are to fulfil their role in an effective, efficient and sustainable way, then technical criteria need to be considered as well.

In the case of Murewa district, the plan was designed at a time when numerous facilities already existed and operated, many situated at appropriate locations and covering a reasonable proportion of the population; some, however, were poorly located and/or covered either too few or too many people. In this situation, it is obviously less acceptable from a social and political point of view to propose the closing down and/or relocation of existing facilities rather than locations for new ones. Hence, in the case of Murewa an increase in terms of coverage unavoidably implies an increase in terms of number of health centres. However, if Murewa district had been without any health centre at all, then 13 or 14 properly located health centres (instead of 16 or 17 as foreseen at the end of phase 2) would probably have sufficed for an appropriate coverage of the entire district population.

A coverage plan needs to be thoroughly discussed with community representatives and district administrative and political authorities. It is a basis for discussion and negotiation. When choices are made, the implications need to be clear. It is important that communities have the opportunity to make informed choices (Van Balen 1994). This becomes particularly relevant in a context where government funding for health care decreases and where, gradually, greater responsibilities are given to the communities themselves. The provincial health authorities also need to be involved in the debate at some stage of the process: for instance, in the case of the definition of health centre areas for facilities situated at the edges of the district boundaries. An inter-district consultation, under the auspices of the provincial health authorities, then becomes mandatory.

Action research is still only slowly becoming accepted in the world of management of health care (Barker 1995; Collins & Barker 1995). We hope that our experience contributes to change this situation. Three important features of the action research methodology used in the 'District Health Services Management' project are illustrated in this paper. First, the need for models to guide decision-making, i.e. the need for a conceptual reference frame outlining what a district health system, ideally, is to look like. Murewa clearly demonstrates how different models lead to different decisions. Take the example of the overcrowding of the hospital OPD: without a model clarifying the distinct roles of health centre and hospital, the district team could have decided simply to increase staff at the OPD. Second, there is the need to put decision-making in a research perspective. A decision then becomes a research hypothesis to be tested by action. Regarding the 'urban' health centre in Murewa growth point the hypothesis is that such a facility will improve the quality of health care delivery to that community. The district team cannot be entirely sure that this decision will indeed be the most appropriate one. The hypothesis therefore needs to be tested by action and must subsequently be evaluated. The outcome of that evaluation can be relevant beyond the Murewa setting, as other districts in the country face similar problems. One can learn from particular cases (Barker 1995) and the Murewa research could thus contribute to an enrichment of the conceptual and organizational model of District Health Systems in Zimbabwe in general.

Third, there is the need to plan action in the perspective of a system. A district health system is complex; the relationship between input and output is non-linear. The effect of action on a single element of the system may be reduced, annulled, or produce unexpected outputs because of its interactions with other elements in the system. Isolated

action will rarely yield substantial change. Decisions always need to be situated in a broader frame of action. The example of the hospital's OPD overcrowding is again illustrative: it will not be solved by the mere building of an 'urban' health centre. Other elements within the system need to be tackled as well, such as reorganization of the hospital OPD, improvement of quality of care at rural health centres, rationalization of the referral system and development of a more intense dialogue with the communities.

The discussions held in Murewa on the coverage plan, and on all its implications, are far from finished. Even if the appropriateness of this action still has to be assessed, we think that the design of such a coverage plan is a useful and relevant exercise for other district teams in the country. It is an opportunity to gain a more structured insight into the existing situation and to discuss conceptual issues: what are the respective roles of health centre and hospital? Finally, it is an incentive for the District Health Executives (DHEs) to establish clear criteria for the choice of location, size, and chronology of new health centres to be put in place. Eventually, it will provide the district teams with a structured and consistent frame for future action in terms of extension of the health centre network.

Acknowledgements

The authors thank the Murewa District Health Executive (DHE) and the Mashonaland East Provincial Health Executive (PHE) for their valuable contribution to this research. They also wish to thank the Zimbabwe Ministry of Health, Medicus Mundi Belgium and the European Union for their support to the DHSM project.

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