
CURRENT CONCERNS

SHS Paper number 2

**THE ROLE OF
THE HOSPITAL IN
THE DISTRICT**

**Delivering or
supporting primary
health care?**

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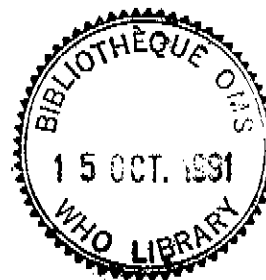
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Synopsis

A district health system comprises a variety of health services that aim at promoting, restoring and improving the health status of its population. A major component is the local hospital, and the way it interacts with other elements of the system goes a long way towards promoting or impeding, the development and functioning of such a health system.

This paper reviews the functions and characteristics of such hospitals and their relationship with other health agencies in a number of developing countries.

To attain optimal effectiveness, regular monitoring of the internal organization and functioning of hospitals and their involvement with health centres is required. Their capacity and activities should be adjusted in accordance with the changing needs of the populations served and their functions should be reviewed in the light of the capacity of local health centres to deal with health problems.

1. INTRODUCTION

Hospitals should support primary health care. The statement elicits virtually no opposition today - a remarkable contrast with the resistance to change that hospitals and their personnel show when this principle is applied in practice.

During the 1960s it was realized that merely providing curative care could not answer the health problems of developing nations, and it was recommended that hospitals should be involved in dispensing preventive care: 'at a very early stage in the planning of a hospital service, consideration needs to be given to the details of the administrative machinery required... to make the hospital truly a centre of preventive as well as curative medicine'¹, preventive as well as curative services being housed in the same building'².

At that time, however, ideas on primary health care and district health systems had not been formulated, nor had the respective roles of hospitals and health centres been developed in this light - leading to a clear separation of responsibilities and functions and a mutually supportive relationship, without confusion or overlap.

Even today, there are many who still think that a hospital's support to primary health care can be measured by the extent to which it carries out the basic tasks of this level of health care, and that anything a health centre can do a hospital can do as well, if not better.

Getting the district hospital to support primary health care does not simply mean adding 'primary care modules' to its range of activities, as has been proposed.³

On the contrary, a hospital's support to primary health care should be measured by the degree to which it is integrated in the district health care system; i.e. the degree to which it is complementary to the health centre network. It is not a question of doing 'low grade work' on its premises but one of acceptance of a partnership. In other words, the best support for primary health care that a hospital can give is to fulfil its role as a referral unit for the health centre network. However, this does not mean that a hospital should become a health centre: supporting primary health care is not the same as delivering it.

¹ R. Llewelyn-Davies and H.C.C. Macaulay. Hospital planning and administration. WHO Monograph Series No. 54, 1966.

² R.F. Bridgman. The rural hospital. Its structure and organization. WHO Monograph Series No. 21, 1955.

³ With an implicit corollary: "all health centres should eventually become little hospitals: if they are not at present, this is only because of lack of means."

2. DISTRICT HOSPITALS; THE NEED TO CLARIFY THEIR ROLE

What does a district hospital do and what should it do? In Africa nowadays a typical rural district hospital caters for about 160 000 inhabitants, with some 140 beds, 3 physicians and 10 peripheral health units in its district area. It conducts about 1 000 deliveries and hospitalizes 4 000 patients per year. (See Annex 1 for selected statistics on a sample of first referral hospitals in sub-Saharan Africa.) These data are medians from a survey of 89 first referral hospitals carried out by Medicus Mundi Internationalis.⁴ They are similar to the results of another survey based on the annual reports of 40 church-related hospitals in five sub-Saharan African countries in 1979-1984. The medians there were 110 000 inhabitants, 138 beds, 4 physicians, 922 deliveries and 4 997 hospitalizations.⁵ Elsewhere the network is much denser: in Thailand the norm is a 30-bed hospital with a 4-doctor staff, and a much smaller population to care for, ranging from between 9 000 and 45 000 inhabitants. (Ayutthaya Province, late 1980s.)

According to a model of integrated district health care these hospitals should provide the kind of care and technical support which for some reason cannot or should not be further decentralized. The reason may be economic, technical, or operational, and will at least in part be determined by tradition and demand: different optima will be reached in different situations. Fundamentally, however, a hospital has to serve as a back-up for the health centre.

The principal back-up task is inpatient care and to be effective this needs a certain concentration of resources and techniques not available at peripheral primary health care level. Another is outpatient care by physicians: in Africa - but also in non-industrialized countries such as Thailand - even general practitioners must be considered as a scarce resource that has to be saved for referrals (i.e. for patients that cannot be treated with the resources available at first contact level). The hospital has to have the technical means to deal with these referral level problems, and it should be organized accordingly.

* * *

In theory there should be no direct access to the hospital: the first contact - or health centre - level is the gate of entry into the system and the one which has the overall responsibility for the care of the community.

⁴ W. Van Lerberghe, H. Van Balen and G. Kegels. District and first referral level hospitals in sub-Saharan Africa: an empirical typology based on an MMI mail survey. MMI, Roneo, 66 pp., 1989.

⁵ L. Hamel and P.W. Janssen. On the average: the rural hospital in sub/Saharan Africa. Tropical Doctor, 18, 1988.

This is not just to lighten the burden of the hospital, nor because it is cheaper to have the first contact at the peripheral level, but because in a properly working system, and if the technical resources are available, a patient is often better cared for at the primary level.

However, such a situation, without direct access, is exceptional. Usually hospitals attract large numbers of people with problems that could have been solved at the first contact level unit. The reasons are manifold. Among the most important is the powerful attraction of the hospital's technology. Fascination with the technology and the symbolism of a hospital is not the privilege of the medical class alone but extends to large strata of the population. This is as true in many rural areas of developing countries as it is in the suburbs of Europe. A second major reason, however, is that very often there is no real alternative to the hospital: the quality of care at the health centre is so obviously below standard that people are quite willing to go to the expense and inconvenience of the travel and queuing required for a visit to the hospital, simply because they have no other choice.

Illustrations abound. In Binh Luc district, Viet Nam, statistics show that 37% of hospital consultations were self-referred; and 71% were consultations for common diseases that could have been taken care of at health station level. The health stations on the other hand were underutilized, and they referred 68% of their patients to hospital. Reasons given for this bypassing were that the consultations at the hospital were given by a doctor, that health stations were not trusted and that, anyway, there was no difference in price.⁶

In the Samaipata rural district in Bolivia, 22% of the outpatient consultations for people from areas covered by the health and medical posts were given at the hospitals, bypassing the first level.⁷ A study in the emergency unit of N'djamena Central Hospital in Tchad showed that in 1982-85 71% of the consultations were for common diseases and only 3.4% of patients had been referred. This was in spite of the availability of health centres in the city. Reasons given for bypassing the health centres were: the long queues at the health centres, the fact that the emergency unit of the hospital was free of charge, and the feeling that the hospital was more capable of providing a good service than the health centres.⁸

⁶ Nguyen Dinh Loan: The role of intercommunal polyclinic as intermediate level between health stations and district hospitals in Binh Luc District Viet Nam. Thesis written for the International Course in Health Development, Institute of Tropical Medicine, Antwerp, 33 pp., 1988.

⁷ Oscar La Fuente Zerain: Réorganisation des services de santé du district de Samaipata, département de Santa Cruz, Bolivie: analyse fonctionnelle et prépositions pour une nouvelle planification. Term paper written for the International Course in Health Development, Institute of Tropical Medicine, Antwerp. 14 pp., 1989.

⁸ Médecins Sans Frontières / Artsen Zonder Grenzen. Annual reports Tchad. 1986.

Hospitals also provide services which are typical for first contact level facilities: general outpatient curative care, follow-up of chronic patients, or certain kinds of preventive programmes such as vaccination and growth monitoring.

In Thailand, a district hospital will have six sections, including a 'Health Promotion Section' and a 'Sanitation and Disease Section', which carry out activities such as mother and child care, family planning, nutrition, health education, sanitation, environmental health, etc. In two mail surveys of district and first referral level hospitals in sub-Saharan Africa nearly all hospitals were actively involved in vaccination, antenatal care, growth monitoring and environmental sanitation work.⁹ Both surveys reached a sample of mainly non-governmental hospitals with an above-average commitment of the hospital staff to primary health care, which may explain the exceptionally high figures (above 90% of the sample). In Melchor de Mencos District in Guatemala, primary health care was offered at four health posts, as well as at a health centre inside the hospital. Statistics of pre-natal and postnatal care showed that the health posts only covered 44% of their target population, while the hospital health centre gave such care to more than twice the number (226%) of people it should have served.¹⁰

* * *

Such involvement of the hospital in primary care activities (curative and preventive) has a number of undesirable - and unintentional - consequences. It results in a lower quality of care, for there are tasks for which the health centre is better suited than the hospital; it creates a vicious circle in which the health centres work below par because they suffer from the hospital's competition for resources and prestige; and it makes the hospital work below its potential because it is overloaded with primary care work.

3. STRENGTHENING HEALTH CENTRES IMPROVES THE QUALITY OF CARE

The principal argument against carrying out health centre functions within the hospital is that the health centre is a better place than the hospital for such contacts with the population - obviously, on condition

⁹H. Folmer. Hospitals and PHC in tropical Africa. *World Hospitals*, 22, 3, 1966. W. Van Lerberghe, H. Van Balen and G. Kegels. District and first referral level hospitals in Sub-Saharan Africa: an empirical typology based on an MMI mail survey. *MMI*. Roneo, 66 pp. 1989.

¹⁰B. Maldonado Garcia. Causal factors and possible interventions to reduce health centre-hospital over utilization and health post under-utilization. An operational case study in Melchor de Mencos, Guatemala. 63 pp. *ICHD*. Antwerp, 1988.

that the health centre works as it should. When the health centre works adequately, it can carry out a number of tasks, often better, usually at a lower cost, and most often with less risk of over treatment and iatrogenic disorders than if the same work were performed in the hospital.

The health centre has specific advantages over the hospital in three domains: primary curative care, preventive care, and contacts with the community. In each of these the health centre has a better potential for communication with the community and the individual patients than the hospital.

3.1 Curative care

Quality of care depends to a large extent on technical skills but also just as much on human relations. This is obvious where the basic task of the health worker is to reassure and relieve anxiety. However, it is also true for cases which at first hand seem to present a technical problem. A classical example is that of tuberculosis case-finding and treatment, for which there are no differences in diagnostic or therapeutic capabilities between a health centre and a hospital: it is basically a question of performing a sputum examination and prescribing a standard treatment. But the health centre has two major advantages over the hospital: its geographical accessibility and its ability to ensure continuity of care.

Continuity of care presupposes a relationship of empathy between the health worker and the patient. In a hospital setting the contact is often impersonal. In a small scale health centre the conditions can be created for the establishment of such a relationship: the nurse knows (or can know) the patient and his environment, and can tailor interventions accordingly. Small-scaleness does not ensure empathy and communication, but it is a condition for it.

As an example, Figure 1 compares continuity of treatment of tuberculosis patients followed up in a hospital and in a health centre in East Zaire.¹¹ Only part of the difference in performance can be attributed to easier geographical access: the essential factor is the health centre's capability to prevent drop-out, and the relative ease with which it can reestablish contact if the patient stops treatment.

Moreover, curative care at health centre level is often cheaper than at the hospital. There are less travel and queuing expenses for the patients, and the average cost of treatment is lower, especially for the common illnesses. Over-prescription is often more common in hospitals than in first level units. For example, in Ghana a study of the drug cost per treatment in 15 hospitals and 2 health centres showed that hospital prescriptions cost three times as much (Table 1). Probable reasons

¹¹The Kasongo Project Team. The impact of primary and secondary care levels on tuberculosis control activities in Kasongo (Zaire). Bulletin of the International Union against Tuberculosis, 57, 2, 1982.

Fig. 1. Proportion of patients (with 95% confidence interval) still under treatment for tuberculosis (54 patients treated at the hospital and 99 treated at a health centre) in Kasongo, Zaire.

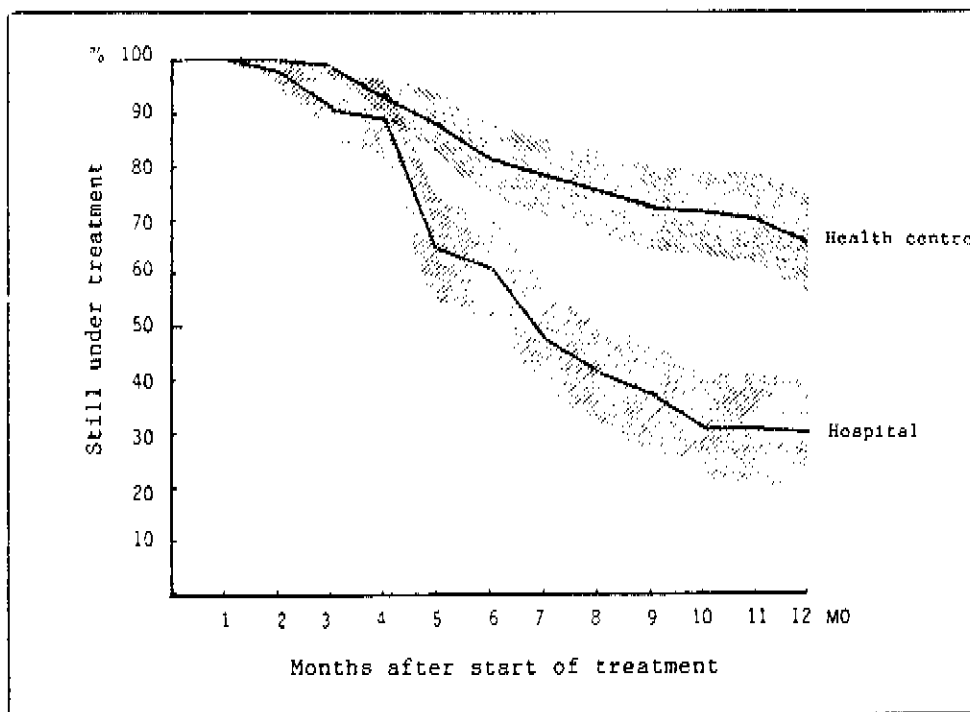


Table 1. Total cost per 10 000 treatment episodes (94 drugs) differentiated for hospitals and health centres and for Ghanaian doctor and expatriate doctor hospitals.

| | Number | US\$/10 000 TE |
|-----------------------------|--------|----------------|
| Health Centres | 2 | 720 |
| Ghanian doctor hospitals | 6 | 2 880 |
| Expatriate doctor hospitals | 9 | 1 470 |

. Prices according to IDA Price Indicator, February 1984.

Adapted from Hogerzeil, 1986.¹²

included less sophisticated prescriptions by the nurses at the health centres than by the doctors at the hospitals, and better stock management at the health centres.¹² The same happens in the Province of Ayutthaya, in Central Thailand. The median cost for the treatment of acute respiratory infections is 19 baht in the health centre, 27 baht in the district, and 40.5 baht in the provincial hospital. Differences are even more marked for total outpatient consultations, with medians of 15, 29 and 49 baht respectively.

3.2 Preventive care

The health centre has similar advantages with regard to preventive programmes such as growth monitoring and under-fives care. Weighing and measuring could be performed equally well in the hospital but it is now increasingly realized that the main usefulness of periodic growth monitoring does not lie in the actual measurement of weight or height. Growth monitoring is at best a poor screening instrument. Rather, its benefits are social: it is an entry point for participation, an occasion for dialogue with the mothers, for increasing the child-centredness of a population.¹³

These expected social benefits, which depend on the quality of the human relationship established at the growth monitoring session, by far outweigh the technical benefits of growth monitoring. There again, the health centre is in a better position to make full use of this opportunity than the hospital.

3.3 Contacts with the community and promoting participation

In this matter both levels obviously have their role to play. They are not, however, interchangeable. At district level the issue is basically one of intersectoral collaboration for district development: this means contact with other technicians or political representatives, a problem of effectiveness and representative democracy. This is a task for the district health authority, not for the hospital (see later). At health centre level the problem is one of participation of the community in what directly and immediately affects its life: this means a much closer contact with the people themselves, a problem of direct democracy. At hospital level the technical nature of the discussions precludes a balanced dialogue with the population. At health centre level the health worker is de facto in a position of strength but the greater accent on the human

¹²H.V. Hogerzeil. Use of essential drugs in rural Ghana. International Journal of Health Services, 16, 3, pp. 425-440, 1986.

¹³W. Van Lerberghe, Growth, infection and mortality: is growth monitoring an efficient screening instrument? In: Auxology 88. Proceedings of the 5th International Auxology Congress. Ed. J.M. Tanner. Smith-Gordon & Co., London, 1989.

relations aspect of health care makes an equilibrated dialogue with the people much easier. At hospital level discussions are too technical to have a potential for promoting participation.

3.4 Hospital competition makes it difficult for a health centre to work properly.

The second argument against the hospital assuming the functions of the health centre is that, to work well, a health centre needs the trust of the population for which it is responsible. The health centre's ace card is its potential for establishing human relations with the community but it can only fulfil its promises if it gains the community's confidence. To a large degree this trust depends on the health centre's capacity to respond effectively to the demands placed on it.

At first, there is usually a demand for specific items of technical curative and preventive care. If a health centre can provide that care it can gradually establish a relationship of trust with the community. This in turn enables it to propose other services which do not correspond to a direct demand but which are needed. For example, it is by successfully treating cases of diarrhoea that the nurse obtains the moral authority to persuade mothers to change their child care practices.

One needs a lot of confidence in a nurse's technical capabilities to accept anxiety relief instead of a 'magical' surgical or medical treatment or, better still, referral to a 'real' hospital. Until such a relationship of trust and confidence in the health centre's capabilities is established, people will bypass it for the hospital. One of the only ways in which to counteract this unfavourable starting position is to give the health centre the means to perform a number of visibly effective technical interventions: measles vaccination is one, as is treatment for common ailments (e.g. diarrhoea and dehydration) and certain serious illnesses such as tuberculosis.

There are serious consequences when a hospital offers these same services. The health centre is forced to overcome the handicap of this competition before it can gain the population's trust. Things become worse if the hospital offers the same services but with different (higher) technical standards. Examples are: when tuberculosis patients at the hospital receive periodic X-rays and the health centres stick to clinical and bacteriological follow-up; or when the (non-referred) patient goes to the hospital's outpatient department and is seen by a doctor or a medical assistant, instead of an auxiliary nurse, as is the case at the health centre; and when the growth monitoring clinic is conducted at the hospital, with readily available drugs, vitamins, food supplements and hightech surroundings, instead of in the simple and shabby surroundings of a small health centre. Who can blame nurse or patient for by-passing the

health centre: at the hospital all patients will be seen by a doctor, often an expatriate physician who offers free drugs, whilst the health centre nurse has to charge for treatment.¹⁴

Usually, the people who try to provide this 'little extra quality' in the hospital do so with the best of intentions: they want to provide the best possible care for the largest possible number of people. Yet, they give an implicit message to the population: 'you may go to the health centre for your primary health care but remember we can offer you the same, only better'. The health centre has very little to offer to counterbalance that; except possibly a better geographical accessibility and a promise of more individualized relationships. That is not enough to go on to build itself an identity as a focal point.

3.5 Referral care suffers from the hospital's involvement in primary care

Finally - and this is the argument to which hospital personnel are most readily responsive - the workload involved in meeting the demand for primary care may interfere with the proper referral functions of the hospital.

This is chiefly so for outpatient curative care. When access to the hospital is not limited it is clearly impossible for the physicians to see all outpatients. In the average African rural hospital there are over 700 outpatients per week: a full-time job for the available physicians without any time left for other activities. In the rural district of Namphong in Thailand, 50% of outpatients come from the subdistrict where the hospital is located and for which it is the first contact level. All the other subdistricts together account for the other half. The result is 140 outpatients a day, who have to be attended by the hospital's two doctors.¹⁵

To solve this problem of overload, most hospitals introduce a 'filter' or 'screening' consultation which is supposed to be a barrier for access to the physician, or at least for access to the specialist. Even so, outpatient work takes up a large proportion of the time of the physicians and paramedical personnel: on the average 25% of all available physician-time is devoted to outpatient work. There is clearly no time for a proper consultation: in rural African hospitals the average workload at this screening is 370 patients per 'screener' per week, with an extra 100 referral consultations per week per physician.

In many cases, this huge workload provokes a number of complaints from the medical staff which are good entry points for a discussion on the role of the hospital.

¹⁴Bocar Dem: Intégration de l'hôpital de Labe dans le système sanitaire du district. Term paper written for the International Course in Health Development, Institute of Tropical Medicine Antwerp, 17 pp., 1989.

¹⁵Pichet Leelapanmetha: Hospital development and PHC. A case study: Namphong Hospital's experience. Thesis written for the International Course in Health Development. Royal Tropical Institute, Amsterdam, 1987.

For all the good intentions at the start - access to the best possible care for the largest possible numbers - the drawbacks of the system are usually striking: frustrated patients, who have been seen in a hurry (a couple of minutes at most), after considerable expenses in travelling and waiting time; frustrated physicians who feel they waste precious time with unimportant complaints whereas they have more important things to do. This is the classical vicious circle: the physician has no time to strengthen the health centre because he is overloaded with work that the health centre should be doing; the health centre cannot do that work because it does not have the physician's support.¹⁶ The patient ends up seeing a number of hospital staff who deal with his immediate complaint but nowhere is a synthesis made of the different things that could be done to improve his health.

In summary

Supporting primary health care is not the same as delivering primary health care. When a hospital tries to be both health centre (i.e. first contact level unit) and hospital (i.e. first referral level unit), it gets in a triple jam. It provides bad primary care because it simply is not an adequate setting in which to give full attention and time to the human dimension of individual care. It provides bad referral level care because its scarce physicians are flooded with primary care work. And, by competing with the health centres - a competition which the health centre cannot win, given the control over resources and the prestige of the hospital - it robs the health centres of their chance of gaining the credit they need to provide good quality primary care and to lessen the burden of the hospital.

4. THE HOSPITAL'S ROLE IN THE DISTRICT HEALTH SYSTEM

What should a hospital then do? Clearly to try to fulfil the functions of both a health centre and a hospital simultaneously is self-defeating. (At the same time, traditional hospitalocentrism is just as objectionable.) The way out is the recognition of the specificities as well as of the complementarity of both levels of care in a district health system.

One way to approach this is by looking at typical divisions of tasks between these levels. The guiding principles in determining the specificity of each level in the system are summarized in Table 2.

Roughly there are three types of function for which a division of tasks between the hospital, the health centre and the district health authority is needed: providing curative care, preventive care for individuals, and promoting the health of groups of people.

¹⁶Boubakar Sall. Introduction d'un système intégré de soins de santé à deux échelons dans la préfecture de Kissidougou. Term paper prepared for the International Course in Health Development, Institute of Tropical Medicine, Antwerp, 1989.

Table 2. Guiding principles for determining the distribution of tasks between first contact level and first referral hospital:

1. What is not done at the health centre should be done at the hospital and vice-versa: there should be no gaps in the system.
2. Overlaps are to be avoided, when possible, to circumvent situations of competition which would be at the expense of the efficacy of the health centres and of the efficiency of the hospital.
3. The health centre is the place where the synthesis is made,¹⁷ and where the responsibility lies for providing comprehensive, integrated and continuous care. The hospital is the place where those technical activities are carried out which for some reason cannot or should not be decentralized further down. In other words, the hospital's function is one of back-stopping, whereas the first contact level unit can and should have the overall responsibility of taking charge of the patients.
4. Every aspect of health care has technical and human relations aspects. As a rule, when human relations are more important and technique less so, the health centre is a better place than the hospital. When the human relations aspects are marginal and technique more important or complicated, the hospital is the better place.

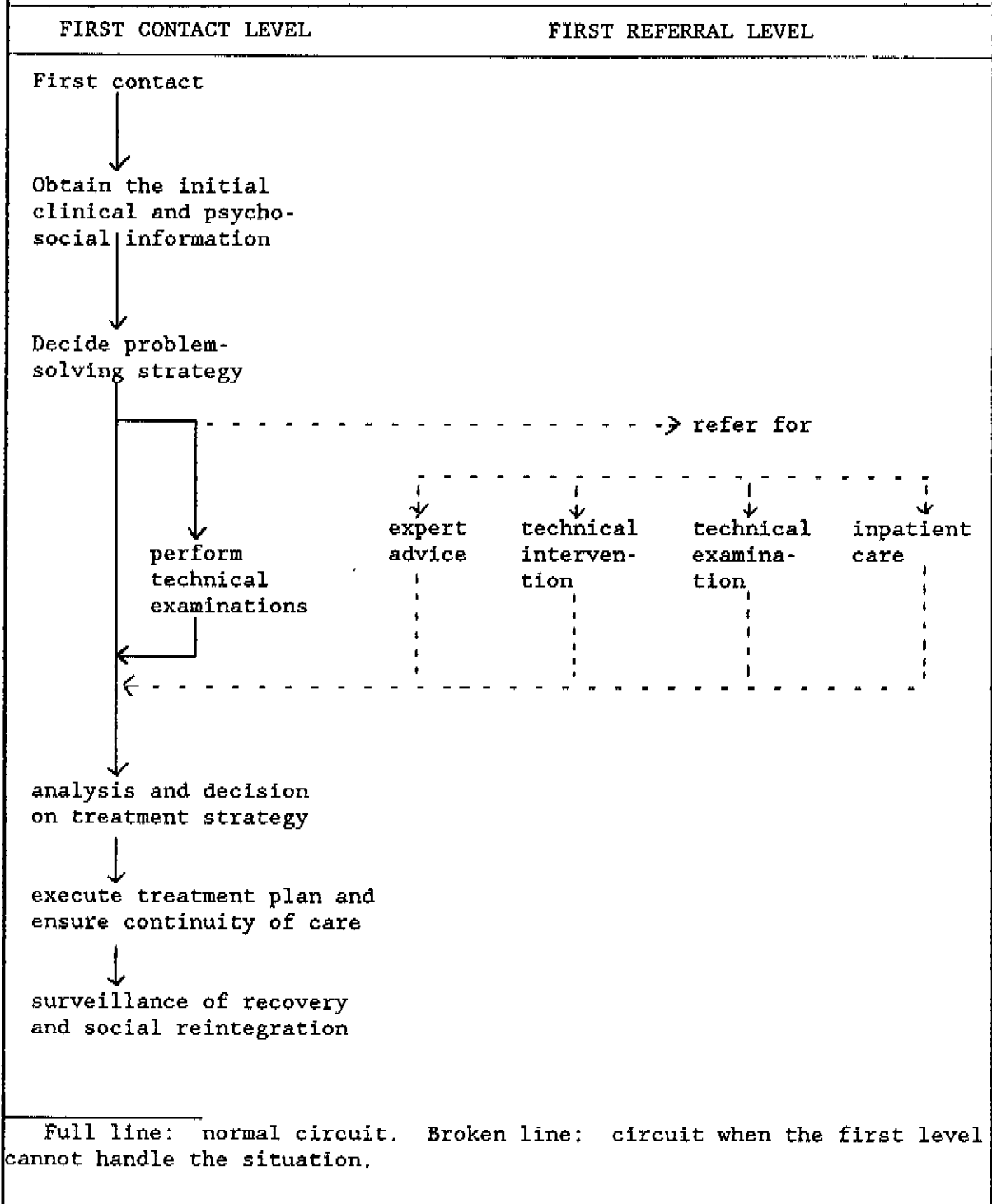
4.1 Curative care

There is more to caring for a sick person than merely making a diagnosis and prescribing a treatment. Table 3 lists the different components and phases, with an indication of the level at which they should be carried out.

In this scheme the process of taking charge of the patient is basically the domain of the health centre.

¹⁷p. Mercenier. The role of the health centre in the context of the district health system based on primary health care. WHO D-MER-K, 1986 (unpublished).

Table 3. Different components and phases of the curative care circuit, and level of care responsible.



There are thus only a few instances where the hospital is involved:

- when a patient requires laboratory or other diagnostic techniques which are not available at health centre level (X-ray, sophisticated laboratory tests...) - referral for technical examination;
- when establishing an individual treatment plan requires skills beyond the level of competence of the personnel at the first contact level - referral for expert advice;
- when a treatment plan requires techniques not available at the peripheral level (the typical example being surgery) - referral for technical intervention;
- when a patient cannot be cared for in an ambulatory setting and hospitalization is necessary - referral for inpatient care.

What the hospital should do is to take care of the patient until (and only until) he can go back to the health centre. Referral does not mean permanent transfer of responsibility.

The classical example is that of tuberculosis. In a typical case the health centre can go through all the steps on its own: diagnose the patient, establish the treatment plan, carry out the treatment and organize the follow-up of the patient. In some cases a detour to the hospital may be required. But a referral consultation at the hospital does not mean a transfer: the hospital does not become responsible for taking charge of the patient; that remains the domain of the health centre. Another example is that of a patient with gastric complaints referred to the hospital, for instance, to exclude a cancer of the stomach. After confirmation of a diagnosis of stress-related dyspepsia at the referral level, the patient should be sent back to the health centre. The mistake to avoid is that once having gone for a referral consultation a patient remain a hospital patient and not return to his health centre.

Referral should make a difference: a hospital has to have the technical means to be a referral unit. A referral is useful only if something can be done at the referral level that cannot be done at the periphery. This obvious condition is by no means always respected, especially when there are intermediate levels between the first contact level and the hospital.

Situations where there are intermediary levels are frequent, for example, in Bolivia, Madagascar, Mozambique, Niger and Togo. These intermediary levels have more resources than a primary level unit but cannot perform the whole range of hospital tasks. In Morocco, for example, the first referral unit at district level is a health unit with up to three doctors and a number of maternity and observation beds but no laboratory, X-ray, surgical facilities, or even a vacuum extractor or forceps. The only real difference between it and the peripheral unit is the presence of the medical staff, the size of the building and the number of personnel. In Benin the district hospital has one or two medical

staff and often beds for hospitalization but usually no real surgical facilities and almost never a laboratory. In Senegal there is still discussion about the introduction of surgery at the first referral level: a district 'centre de santé', which is the referral level for the 'postes de santé', has a physician, X-ray apparatus, dentistry, etc., but no surgical facilities. In other countries, for example Mozambique, intermediary peripheral units may have beds and a laboratory but no medical staff or surgical facilities.

* * *

If a health unit is to serve as a first referral level unit it has to be a hospital, not just a medicalized health centre - and such a hospital requires the following three kinds of resources:

- staff with diagnostic and therapeutic skills other than those at the primary level, and with the time to use these skills for referred patients. Such staff must include physicians and specialized technicians. There is not always such a difference in staffing between both levels. Take, for example, the health services in the city of Porto Novo, Benin. The urban health centres are staffed with nurses and general practitioners. The (referral) outpatient consultation at the city's hospital is staffed by general practitioners of the same level of experience and training. It is obviously frustrating for the health centre's general practitioners to refer to their colleagues in the hospital, although the latter gradually acquire 'specialist' skills, through the simple fact of the limited scope of their work.
- the possibility of hospitalizing patients. This means hospital beds (beds for nursing, not just a place to stay), nurses with a different profile to those at the peripheral level, and the possibility of providing intensive care and care for premature babies.
- the technical resources to make full use of the skills of the hospital staff. This equipment will usually not be available at health centre level.

In Annex 2 a list of basic equipment for a rural hospital is given in Table 1, and estimates of the possible workload of a district hospital laboratory are given in Table 2. Both are based on experience in Africa and what is presently happening at the 'better' rural hospitals in sub-Saharan Africa.

However, the optimum division of technical resources between first and second level cannot be determined in absolute terms. Much will depend on the possibility of decentralizing techniques. The technical, operational, economic and psychological criteria which will be used in a particular setting cannot just be transferred to another. For example, in

a situation with very little resources it is the hospital that will have to carry out the sputum examinations, at the request of the health centres. If, on the other hand, health centres can be equipped with microscopes, the hospital's microscopist will basically have the task of quality control of the examinations performed at the first contact level.

4.2 Preventive care and health promotion

The first step here is the identification of clients for preventive programmes (screening, vaccination). This must obviously be made on any possible occasion. The responsibility of the health centre is to ensure that it is done and to take active measures when necessary. These may include censuses, home-visits, or anything needed to improve recruitment and motivation.

The hospital's responsibility is limited to two tasks. The first is to make use of any opportunity to complete the established programme. An interesting way of assessing performance of the hospital in this respect is to use the techniques of the 'missed immunization' protocol: if mothers or children consult at the hospital and have not completed their immunization programmes, the immunizations should be performed - one should not miss the opportunity provided by the contact. The second is to serve as a referral centre, e.g. for the women identified as at risk at the antenatal consultation or for laboratory examinations that cannot be performed at the first contact level.

In summary, the typical tasks can be distributed as in Table 4.

| | |
|---|------------------------------------|
| Identification of eligible clients | Health centre |
| Performing screening examinations | Health centre or district hospital |
| Vaccinations | Health centre or district hospital |
| Synthesis of information from screening and decision about need for further follow-up | Health centre |
| File relevant information on each client | Health centre |

4.3 Organizing preventive care and health promotion activities

A common misconception is that the hospital has a task as organizer of vaccination campaigns, antenatal consultations and the like.

Surveillance of the social and physical environment is the task of the health centre or the district health authority. To discuss priorities and alternative strategies with the population and to decide on the optimum strategy for particular population groups is a task for the health centre. The provision of technical means for implementing the chosen strategy is again a task for either the health centre or the district health authority, as is the organization of implementation of the chosen strategy. All this relates to the hospital only in as much as the hospital is identified with the district health authority.

An example of how the role of a hospital can change from one of organization to one of support is shown in case studies of community-based primary health care programmes in two Kenyan districts, where the role of the district hospital as a referral unit and professional back-up for supervision and training is mentioned as one of the main reasons for the programme's success.¹⁸

4.4 Evaluating the district hospital as an element in the district system

The evaluation of a hospital is often limited to a description of the hospital's output in relation to resources used and, at best, to the population served. Rarely attempts are made to look at a district health system as a whole. A system is harder to grasp and to evaluate than a programme, an intervention aimed at a disease, or a health unit as such.

Nevertheless, it is obvious that a hospital cannot be seen in isolation. On the contrary, questions about a hospital can sometimes be put in such a way that they form hypotheses about the functioning of the district as a whole.

These questions usually centre around the division of tasks between the two levels. Most often they focus on system failures or successes. Three examples are given below of how routine district health care data can be used to throw a light upon what goes on in the district. All come from the Kasongo district in the East of Zaire, a rural district with 200 000 inhabitants and a 200-bed hospital staffed by five general practitioners.

Evaluation of effectiveness on the basis of hospitalization audit data

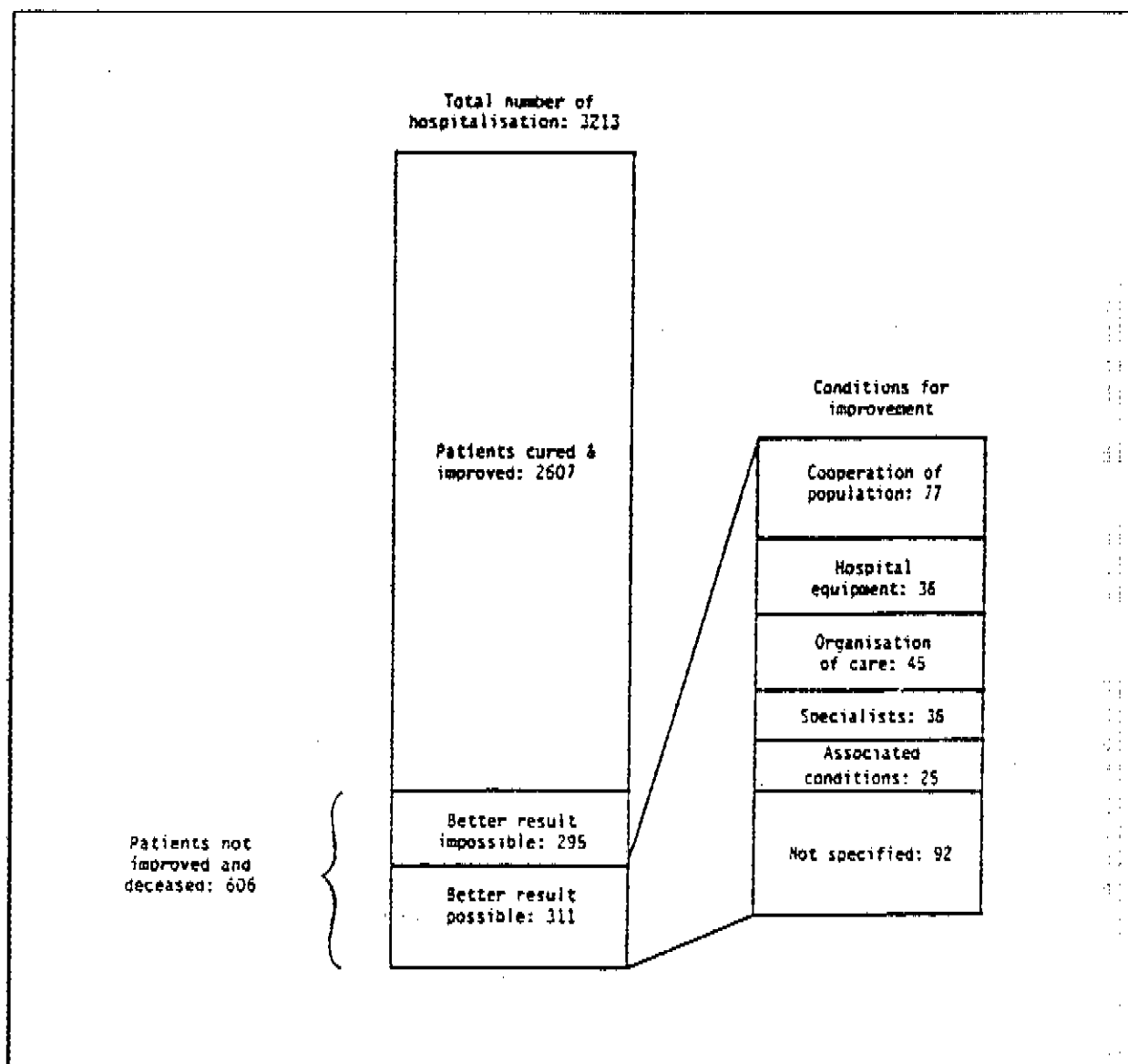
When the district dimension is included in the audit of hospitalizations, the results may be surprising, and be in favour of strengthening the first contact level rather than the technical equipment of the hospital.¹⁹

¹⁸C.N. De Boer and M. Mc. Neil. Hospital outreach community-based health care: the case of Chogoria, Kenya. *Social Science & Medicine*: 28, 10, 1989. M.L. Jacobson, M.H. Labbok, R.L. Parker, D.L. Stevens and S.A. Carter. A case-study of the Tenwek hospital community health programme in Kenya. *Social Science & Medicine*: 28, 10, 1989.

¹⁹C. Darras, W. Van Lerberghe, P. Mercenier. The Kasongo Project. Lessons from an experiment in the organization of a primary health care system. *Annales de La Société belge de Médecine tropicale*, 60, Suppl., 1-54, 1981.

During a whole year a systematic assessment of the outcome of hospitalization was performed, including a judgement about the major factors that could have contributed to a better outcome. In about 10% of cases the hospital doctors judged that a better result should have been possible. What was deemed necessary to achieve better results is shown in Figure 2.

Fig 2. Results of hospitalization and conditions required for improvement, in the Kasongo District Hospital, Zaire.



Lack of cooperation by the population - the most important factor and the largest single possibility of improving results - mainly took the form of a family's failure to give blood to an anaemic patient or liquid to a child with diarrhoea. Certain problems could not be handled adequately for lack of hospital equipment or supplies, the most serious deficiencies being in oxygen, cortisone and contrast media for radiography. Nursing care in the wards was found to be poor. Surveillance of patients was inadequate, and the condition of some patients deteriorated without the nurse realizing this and taking appropriate action.

These three conditions accounted for about half of the cases in which better results could have been obtained. It was found possible to begin dealing with them with a minimum of investment:

- by establishing a dialogue with the local population in the health centres, for example on the rehydration of children with diarrhoea;
- by stocking up with supplies which had been found to be short; and
- by reorganizing the ward duty arrangements.

It was clear, on the other hand, that to provide specialist care would have entailed an investment in specialized personnel in such varied fields as anaesthetics and resuscitation, urology, ENT, thoracic surgery and cardiology; and would have yielded only a relatively low return (12% of cases capable of improvement).

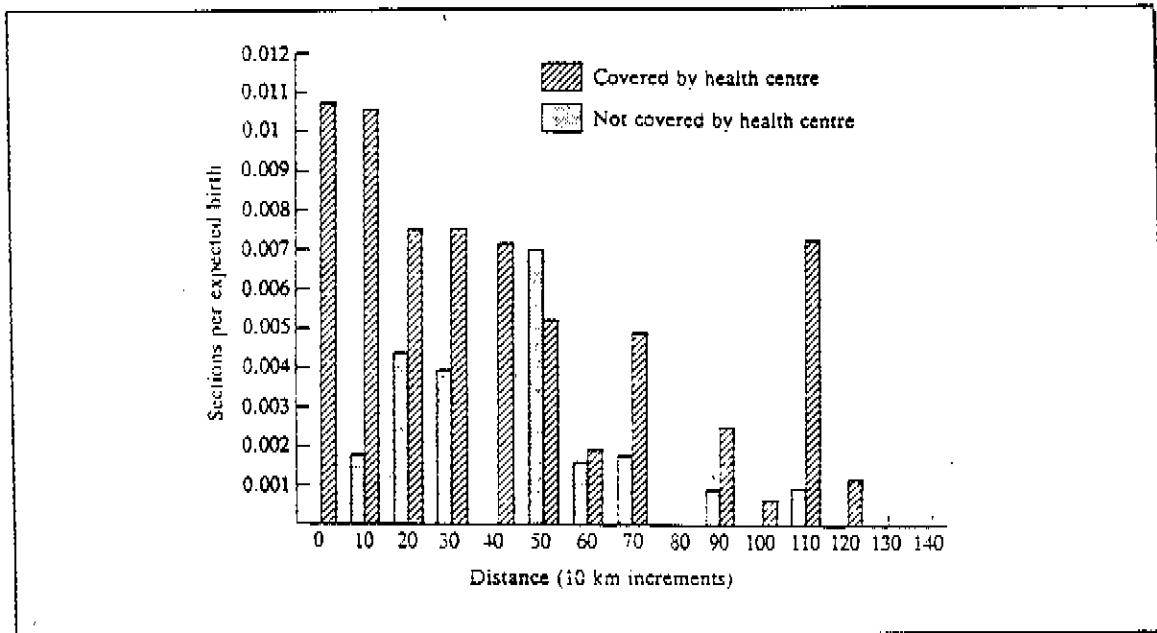
Health centre coverage improves hospital attendance

The second example shows how the presence of a health centre network can ensure that those patients who should be attending a hospital actually do so: a study based on hospital data combined with health centre coverage data.

In this study, a spatial analysis of routine utilization data was used as a cheap and sensitive contribution to the overall evaluation of the health care delivery system. Routine data on major surgical interventions for labour were analysed. Reduction of intervention rates with increasing distance was marked for the rural population, but less so for areas covered by the health centre network (Figure 3), indicating that the latter contributes to proper utilization of the hospital. Using a coefficient of localization to assess the inter-area variation in intervention rates, it has been shown that the differences between areas tend to diminish over the years, as coverage with health centres improved.²⁰

²⁰W. Van Lerberghe and K.A. Pangu & N. Van Den Broek: Obstetrical interventions and health centre coverage: a spatial analysis of routine data for evaluation. Health Policy and Planning, 3, 4, 1988.

Fig. 3. Number of caesarian sections per expected birth, disaggregated for areas with or without health centre coverage, by distance from the hospital maternity, Kasongo District Hospital, Zaire.



Health centre coverage reduces need for hospitalization

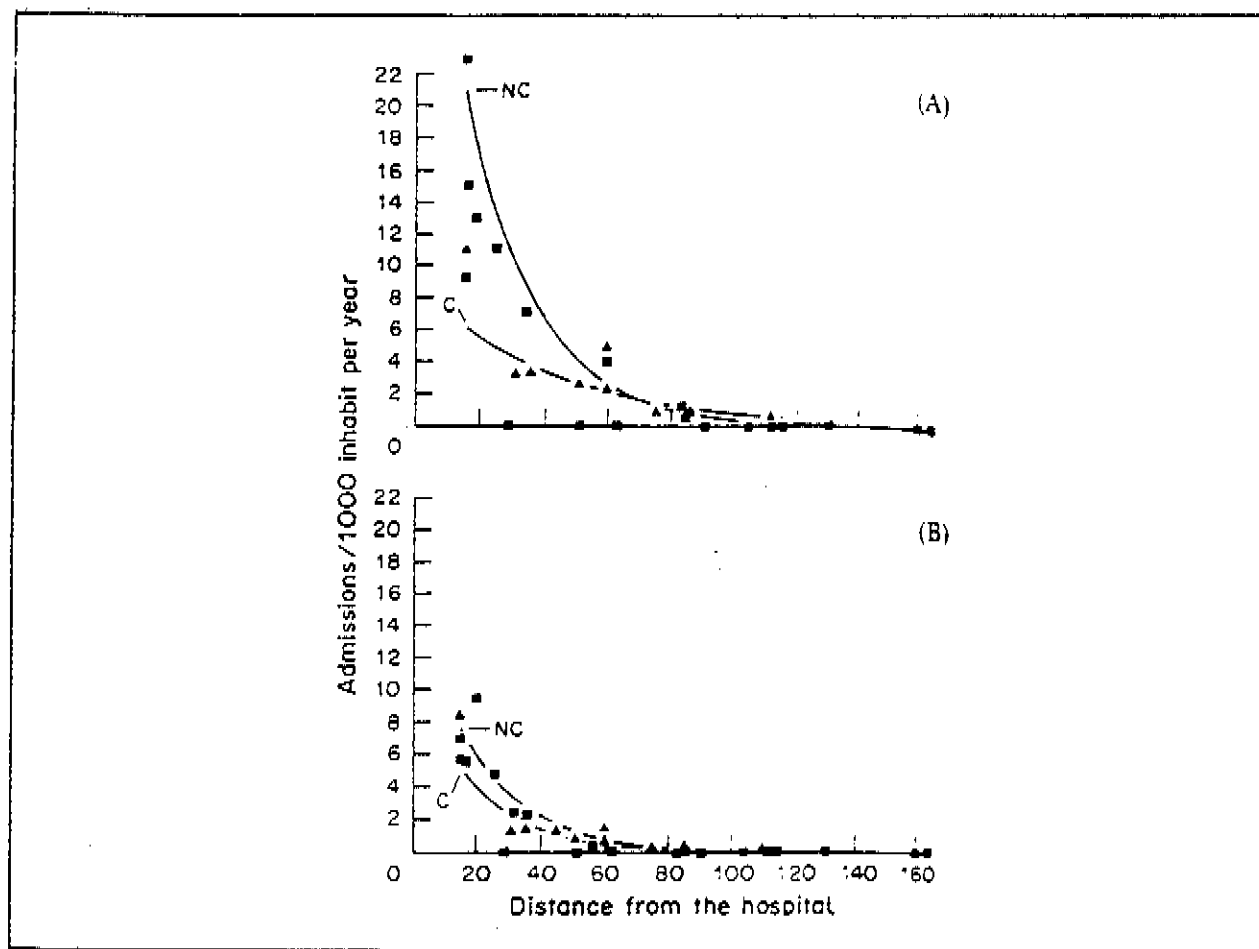
The third example shows how the hospital utilization patterns can be used to demonstrate the usefulness of the health centre network.

This study analyses routine data from the same area in Zaire in order to assess the influence of health centre coverage on hospitalization patterns. The admission patterns are consistent with the hypothesis that the health centres help in avoiding hospitalization.

Admission rates from the rural areas were 2.1 times higher for non-covered than for covered areas (95% confidence interval 1.7-2.2). For non-justified hospitalizations (Figure 4, (B)) the effect of distance was marked in both areas but at consistently lower levels in covered areas. For justified hospitalizations (Figure 4, (A)), hospitalization rates were markedly lower in covered than in non-covered areas where access (40-50 km) to the hospital was reasonable.

In more remote areas, populations from non-covered areas did not use the hospital at all, whilst some people from covered areas did reach the hospital.

Fig. 4. Hospitalization rates by distance from the hospital, for areas with and without health centre coverage. A. Justified hospitalizations; B. Non-justified hospitalizations.



C = covered by health centre network; NC = not covered.

The reduction of hospitalization rates was for diseases for which standardized technical solutions of known efficiency are available at the health centres: nearly 60% of the reduction was accounted for by infective and parasitic diseases, accidents and diseases of the respiratory system. Hospitalization rates for the diseases usually targeted by selective primary health care programmes were reduced by 86% in the covered areas as compared to the non-covered areas. Reduction in hospitalization rates for those diseases accounted for 29% of the total coverage-related reduction.²¹

²¹W. Van Lerberghe and K. Pangu. Comprehensive can be effective: the influence of coverage with a health centre network on the hospitalization patterns in the rural area of Kasongo, Zaire. *Social Science & Medicine*, 26, 9, 1988.

The prototype studies which may contribute to the evaluation of hospitals as elements in district health care systems focus on referral patterns - looking at justified and non-justified referrals and failures to refer when needed, patient and system-induced delays for referrals, and reasons and conditions of bypass of the referral patterns. Linked with studies about the possibilities of decentralizing health care techniques, these are most likely to give information, at little cost, which can lead to better articulation of the roles of both levels and better planning/ decentralization of health care.

5. AN INTEGRATED HEALTH SYSTEM

It is possible to move towards an integrated system of health centre network and district hospital. Recognition of the referral role and back-up for supervision and training is often a key factor in changing from an organizing to a supportive role. However, a number of conditions have to be met to make this possible.

5.1 Structural conditions: a two-tier district system

The condition sine qua non is obvious but has to be stated explicitly. There must be a district health care system with a defined area for which the network of health centres and hospital is accountable. Ideally, there should be clear administrative delimitations that correspond to a functional logic, or 'informal' delimitations based on a reasonable assessment of the geographical zone of influence. The important thing is that some functional form of district exists.

An example of hospitals without a well-defined area of responsibility is shown in a rural district in Rwanda with four hospitals (1 governmental and 3 different church-related), each with a peripheral network of health centres which they supervise, provide logistic support for, etc. (Figure 5). These networks, however, are based on ideological rather than geographical criteria, so that they do not correspond to the referral patterns (Figure 6).²²

It is illusory to think that a hospital will be able to support primary health care if it is not articulated with a network of primary health care units. It will become a health centre with hospitalization, and this usually means that it is either too small to be a good hospital or too large to be a good health centre and that, anyway, whatever the good intentions may be, it results in unfair competition with the peripheral units.

The second condition, less strict, is to avoid intermediate structures: a referral unit has to be properly staffed and equipped; otherwise, it is merely another factor of delay when referral is needed.

²²E. Koob, personal communication, 1989.

Fig. 5. Kibuye District Health Services Network, Ruanda, in 1986. Supervision and logistic support (dotted line: by district health administration; broken line: by district hospital; full line: by mission hospital).

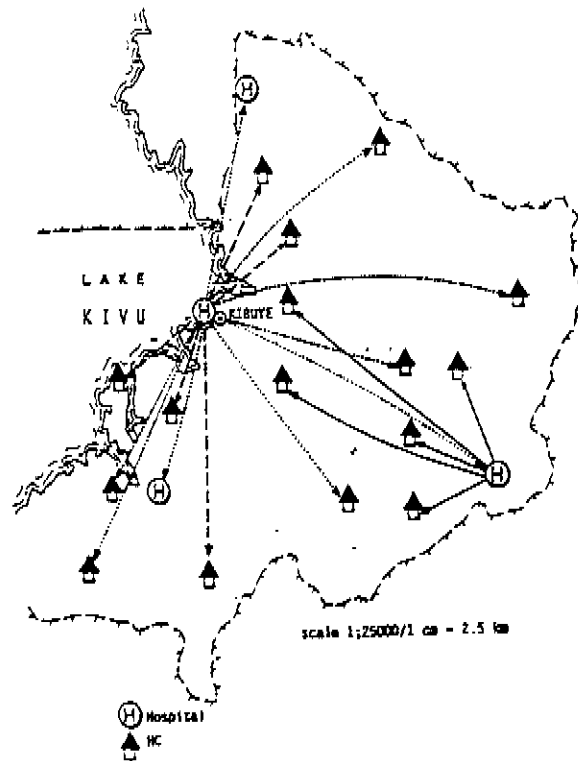
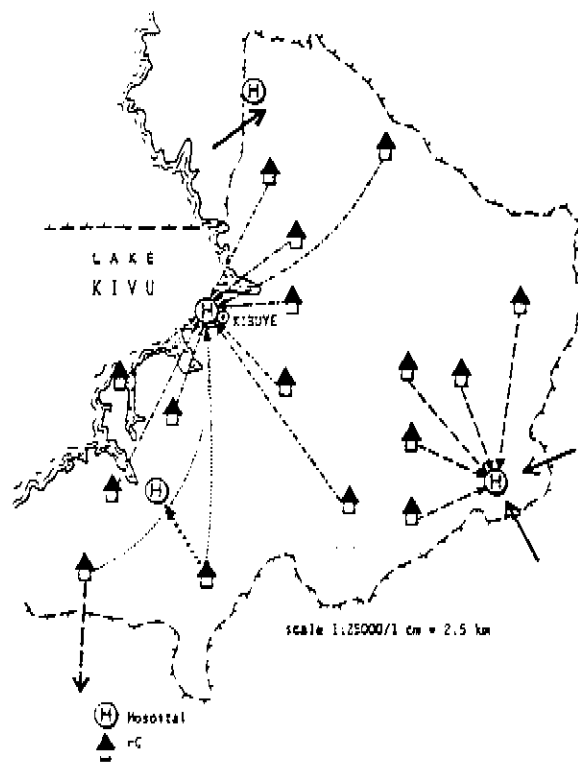


Fig. 6. Referral patterns in the same area



For example, it is a waste of time sending a woman with complicated labour from dispensary to health centre, if that health centre has no means of performing the necessary Caesarian section.

Two-tier systems can work and appear simpler to work with.²³ However, sometimes the problem of over-utilization of the hospital and of under-utilization of the peripheral units can be solved by introducing intermediate structures, as in Viet Nam where "intercommunal polyclinics" are used, with a doctor, an inpatient ward and a laboratory, but no surgery. These are responsible for a subdistrict. This kind of intermediate structure is common in former French colonies in Africa, where the term 'health centre' is often used to indicate this kind of structure. Yei district in Sudan is an example where an intermediate structure may be inevitable. The hospital was functioning as a first referral unit but only for the immediate surroundings (less than 5 km) and not for the peripheral units. This remained so even after the introduction of a primary health care project with training and supervision of those units. The main reason was geographical: large distances, poor road infrastructure, no means of transport. The solution chosen by the district health planning committee was the creation of peripheral intermediate structures.²⁴ However, such extra tiers are only justified as local answers to clearly identified problems.

5.2 Organizational conditions: referral patterns

Hospital activities must be organized in such a way as to strengthen health centres instead of becoming an obstacle to their development by competing for first contacts. A proper referral pattern must be put into effect, not merely for bureaucratic reasons, or to diminish workload, but to strengthen the first contact level. Ideally, this means that the hospital sees only referred patients and that its direct access outpatient consultation is closed down and moved out of the hospital.

This was actually done in Mozambique in the late 1970s. The operation -which was well prepared and discussed beforehand - was remarkably smooth and gave no more trouble than a temporary overload of the emergency department.

In other situations, suppressing direct access to the hospital is politically not feasible or is difficult. In Garsila, a rural district in Sudan, a hospital was built to take care of referred consultations only, while primary health care would be offered by the existing health centre in the town. The hospital's outpatient department soon became overcrowded because people managed to get through without referral and put pressure on the health centre's medical assistant to be referred (30% of health centre consultations were eventually referred).²⁵

²³K.A.Pangu. La santé pour tous en l'an 2000? C'est possible. DrPH thesis. Université Libre de Bruxelles. Ronéo. 1988.

²⁴MSF France. Annual Reports, Yei Hospital, Sudan. Various years.

²⁵MSF-AZG - Belgium - Annal Reports - Garsila - Sudan.

In practice this means that barriers will have to be placed against direct access to the hospital, together with discrimination in favour of properly referred patients. This can be done in various ways, but it is important to take measures to ensure that someone referred by a health centre nurse has direct access to the physician; so as to overcome the obstacle of a consultation with the hospital nurse which may mean new queuing, additional costs, the risk of not getting through, delays, etc.).

In some places the method of choice is financial discrimination. In a Zairean hospital, for example, the nurse charges 25-50 Z; a consultation with the doctor at the hospital costs 200 Z, but only 80 Z if the patient is referred. In the hospital in Guinée-Conakry, a consultation costs 500 FG for those referred and 1000 FG without referral.

Besides such barriers, positive measures can be taken to strengthen proper referral patterns. Much depends on the attitude of the health workers at both levels and on the 'feed-back' after referral. But, there again, very simple measures can markedly improve the relations between both levels and the functioning of the system.

In the rural district of Murewa, Zimbabwe, in the late 1980s, one of the district medical officers took the initiative to discuss a sample of referral letters at the monthly clinic nurses' (first contact level) meeting. Anonymity was maintained in order to avoid loss of face for nurses who had made inadequate referrals. The immediate effect was double: a marked improvement in the quality of referral and in the information sent with the referred patient; and, more important, a boost for the morale of the personnel at the first contact level, who noticed that they were listened to. This in turn made it possible to begin the rationalization of the first contact level with the full collaboration of the personnel.

Rationalizing the use of the hospital means rationalizing the primary health care network and this, at first, in the agglomeration in which the hospital is situated. The creation of a proper referral circuit in the urban area is very difficult and yet crucial: social pressure is towards direct access to the hospital and the specialist, and this pressure is hard to resist. The usual reaction is to create a referral system in the rural area and to allow direct access to the hospital in town. This fails to resolve the problem of overload of the hospital outpatient department since most patients come from the urban area in any case. But it is also a clear demonstration for the rural network that it is only a second best solution: direct access remains the 'urban norm'.

5.3 Financial conditions: financing district hospitals and health centres

Running a hospital is expensive. Recurrent costs for hospitals per inhabitant show a median of US \$0.99. The recurrent cost divided by the number of beds, however, yields US \$986 per hospital bed per year, in a typical African State. The notion of cost-recovery has gradually been accepted in the Africa of the 1980s. But this cost-recovery ('financial participation') can be organized in various ways.

One way is to have every unit in the system seeking some form of self-financing or external support. Hospitals nowadays often obtain an important part of their resources from self-financing. A study of the expenses of 50 non-governmental hospitals in 12 African countries shows that 12 hospitals receive more than 70% of their income from patient fees.²⁶

The Goundi Hospital in Tchad²⁷ obtains 80% of its resources from external funds and 20% from self-financing, by charging for consultations, drugs, diagnostic tests and surgical activities. The Ashanti-Akim district hospital in Ghana²⁸ obtains 42% of its resources from self-financing, 47% from government funds, and 11% from non-government funds.

In practice, self-financing of the hospital often creates financial barriers to access to the referral level which are unacceptable. An illustration of this is the situation in the People's Republic of Benin in 1986,²⁹ where any hospitalization cost the equivalent of several months of work at the minimum guaranteed salary level, money which had to be paid in advance. In this hospital it was not possible, for example, to obtain a surgical intervention without first providing the money for the anaesthetics.

In Burundi a consultation at a dispensary costs 30 Fbu, at the hospital 100 Fbu when by a doctor and 200 Fbu when by a specialist. Hospitalization is charged at 30 to 100 Fbu a day.³⁰ In Ghana a study showed that patient fees were financially unacceptable for lower income groups, especially for second level care.³¹

When not simply a reaction to a bankrupt system, the rationale for such a strategy is often that the first level has to be free of charge. The idea is that, if hospital care is charged for and the health centre is free, this will favour the utilization of the health centre. Paradoxically, the result is a first level which does not function because

²⁶F. Van Lemmen and V. Van Amelsvoort. How do African voluntary agency hospitals spend their money? *Tropical Doctor*, 18, 43-44, 1988.

²⁷C. Sani. Financement de l'hôpital: exemple de l'hôpital de Goundi au Tchad. Term paper prepared for the International Course in Health Development at the Institute of Tropical Medicine in Antwerp, 22 pp., 1989.

²⁸J. Waddington and K.A. Enyimayew. A price to pay: the impact of user charges in Ashanti-Akim district in Ghana. *International Journal of Health Planning and Management*, 4(1), 17-47, 1989.

²⁹W. Van Lerberghe, J.M. Caudron, M. Zumofen. Etude de l'hôpital de Porto Novo. Rapport d'une Mission MMB pour la CEE. 1986.

³⁰G. Fromont, M. Juma, J. Ndagije, G. Schmets and K. Van Loon. Evaluation du secteur de médecine hospitalière au Burundi. 1989.

³¹C.A. Anyinam. The social costs of the international monetary funds adjustment programs for poverty. The case of the health care development in Ghana. *International Journal of Health Services*, 19, 3, 1989.

it does not have the means, and a referral level which does not function because the financial barriers are too high. This was the case in Benin (Figure 7) where the problem was not solved; on the contrary.

An alternative is to self-finance the first level and to use the central (government or non-governmental) subsidies to run the hospital. Such a solution, not very popular among donor agencies, has a number of advantages.

First it is easier to get people to contribute to the financing of a service with a 'low' technical component, especially one that is within their immediate neighbourhood. Your own village health centre is something more immediate than the faraway town hospital. In a simulation test of user fees in Kenyan health facilities, people were asked which facility they should use in preference. This showed that if people were sure that the money would be used for the peripheral units they would use these: if not, they would prefer hospitals.³²

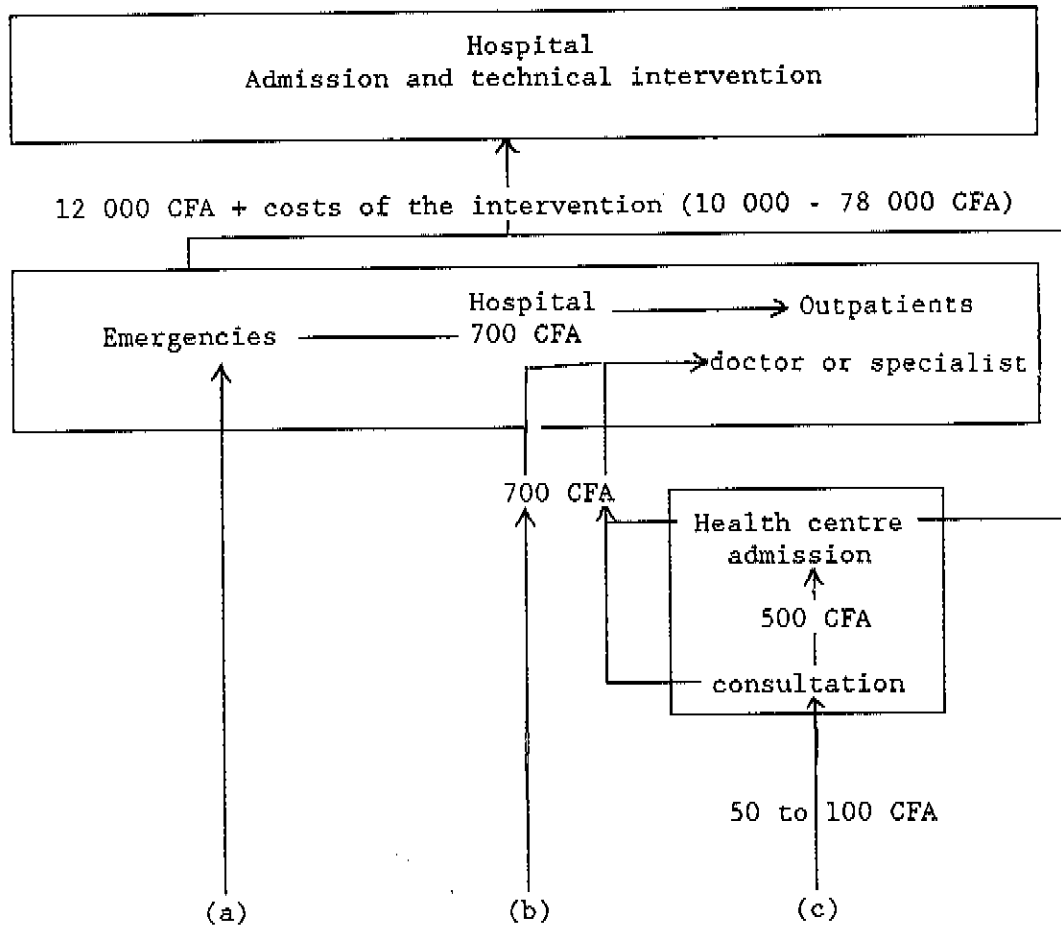
Secondly, financial contribution can then be more than mere cost recovery: at the local level financial contribution can be combined with participation of the population in the management of these finances. There is a real possibility for delegation of decisions to the population at health centre level, which does not exist at the hospital level, because in the latter the technical component in decision taking is such that the health personnel has de facto absolute authority.

In 1986 in Kasongo district, Zaire, 28.5% of total health service expenditure was for the peripheral units (this amounted to US \$0.83/inhabitant/year, supervision not included); 48.5% was for the hospital, and 23% for district management staff activities. To compete for decreasing government subsidies, the contributions by the population had been gradually raised from US \$0.25/inhabitant/year in 1983 to US \$0.42/inhabitant/year in 1986. This covered all expenditure at the peripheral level except for supervision and the nurse's base-salary. That this did not lead to a decrease in the utilization or coverage rates for the health centre activities is shown in Figure 8.³³

³²G.M. Mwabu and W.M. Mwanzi. Health care financing in Kenya: a simulation of welfare effects of user fees. *Social Science & Medicine*, 7, 1986.

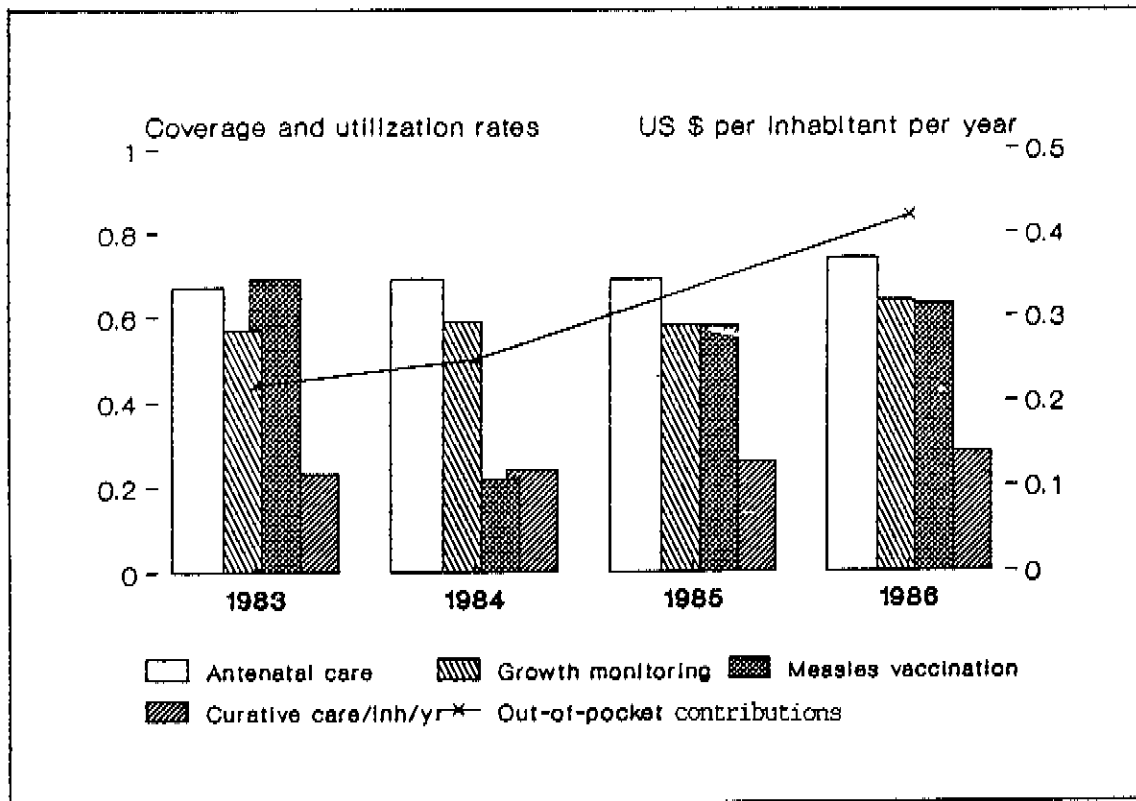
³³W. Van Lerberghe and V. De Brouwere. Assessing appropriateness of child care: reasonable and unreasonable indicators at district level. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 83, 1, 1989.

Fig. 7 Financial barriers to access to the hospital
in Porto Novo, Benin, 1986



Note: The health centre has a number of beds but no lab, X-ray or surgical facilities: it is a typical intermediary structure.

Fig. 8. Coverage for antenatal care, recruitment for growth monitoring and measles vaccination, and utilization rate for curative care (new sickness episodes per inhabitant per year) in a context of increasing out-of-pocket contributions for first contact level health care. The drop in measles vaccination coverage in 1984 was due to vaccine shortage.



6. MANAGEMENT OF THE DISTRICT HEALTH SYSTEM

A fundamental issue in the organization of a district health system is the relationship between district health authority and hospital. The responsibilities of a district health authority include: formulating the district health plan; strengthening the district structure; creating and developing the district team; integrating the different programmes and levels; and keeping under constant review the way in which the district works.

One of the main obstacles to change is the absence of a conceptual model for those who have to implement change. To get hospitals to support primary health care, all concerned must have a clear idea of what a hospital should do.

First and foremost, therefore, the district management team has to have a clear conceptual model of a district health care system. Only then does it become possible to avoid organizational set-ups which, good intentions notwithstanding, become counter-productive. For the same reason, the district management team needs constant contact with the reality of the first level by including health centre personnel in the team or through supervision activities.

District management also requires a legal and administrative basis: a district health authority without authority makes no sense. District management must have the power to manage: there is a need for a legislative enabling instrument to facilitate decentralization and a clear definition of responsibilities. District management also requires a working relationship with the non-governmental organizations. Without this the district will not function as a district. In the MMI survey, 36 out of the 89 hospitals were not the only hospitals in their districts; with all the implications in terms of definition of the area of responsibility. The situation is further complicated when a hospital serves as a first referral level for part of the district and as a second referral level for the other hospital, but has no authority in the district. In such cases (12 out of 36 in the MMI sample) there is a divorce between technical and administrative authority.

Who makes up a district health authority? In the administrative hierarchy it is the functional-operational unit of decentralization. It is often located in the district hospital and district hospital physicians usually play an essential role. For practical purposes it is useful to distinguish three distinct models of organization: the authoritarian model, the technocratic model, and the participatory model. These different models do not offer the same guarantees for the management of the district as an integrated system, with an equilibrium between the hospital and the health centre network.

6.1 The authoritarian model

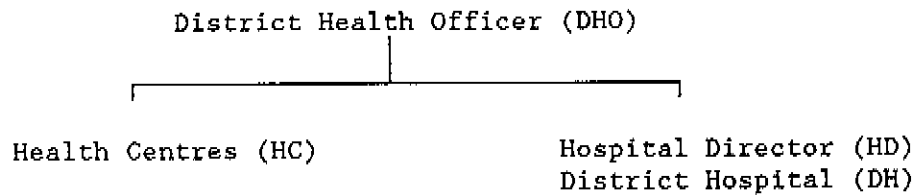
In the authoritarian model the management is in the hands of one person or a small group of individuals, who 'manage and supervise' the health network. Very often such a network has the formal structure shown in Figure 9.

Theoretically this structure offers good possibilities for management of the district as an integrated system. In reality, however, things often do not work out in this way. The formal structure usually corresponds to one of the following 'real' functional situations.

There may be a complete divorce between the line of authority district health officer - hospital director. The district health officer may have theoretical authority over the hospital director, but in practice he has none, and the two levels are run separately. The functional structure becomes as in Figure 9b1.

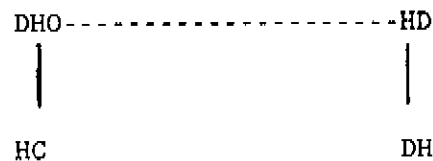
Fig 9. Formal and functional structure of management authority in the authoritarian model

a. formal structure

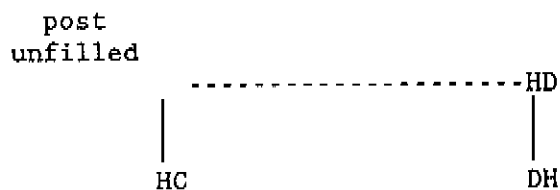


b. functional structures

b1:



or b2:



An extreme case of this model is the Thai situation, where the district health officer is not a physician, answers to the Ministry of the Interior, and has authority over the whole district and all the health units, except the hospital and the subdistrict surrounding the hospital. The latter comes under the responsibility of the hospital director, a physician who answers to the Ministry of Health. In that case, the support of the health centre network will only function if the 'two leaders, the director of the community hospital and the district health

officer develop and maintain their relationship', in a context where there is no administrative line of authority which can ensure that such coordination and cooperation exists. Similar situations are found in countries such as Benin, Malaysia, Tanzania or Vanuatu.

On the other hand, the post of district health officer may exist in theory but the only post actually filled be that of hospital director (Figure 9b2). This is the case, for example, in Ghana. According to its organigram, Ghana should have 67 district medical officers. There is no job description for this post. 'For most of the districts the situation is one in which the district medical officer exists in name only. He is usually the head of the district hospital, who may be a specialist or a general practitioner but is rarely public health trained'.³⁴ Similar situations are found in other countries, for example Bolivia or Burkina Faso. The consequences are obvious: the hospital may be managed correctly but the peripheral network is left to its fate. A practical consequence in Ghana was the breakdown of logistics for the expanded programme on immunization in the mid-1980s.

Both scenarios have the same practical result: the dominant figure for the organization of the district health care system is the hospital director, most often the surgeon. He may delegate supervision of the peripheral units to a 'specialized' doctor, who is left without the power required to integrate the two levels into a system. The likely consequences are: lack of supervision and therefore poor quality of care at the primary level; lack of programme coordination; and adequate information systems.

6.2 The technocratic model

In the technocratic model, management is entrusted to a committee representing key health personnel in the district: the physicians, possibly the district nursing officer or the 'infirmier-major' and the hospital administrator. This district management team organizes the district, including the supervision of the peripheral health centre network.

The big advantage of such collective management is that - provided they have been sensitized to these problems - the physicians provide a source of identification of 'critical incidents'. They are at the end of the referral chain and may identify patient delays, unnecessary referrals and the like. As they are also directly responsible for the first referral level and its supervision, they can translate this experience into measures for rationalization of the first contact level.

Take, for example, the following incident at the hospital of Kasongo, Zaire, in 1987. A hospital physician admits a child with meningitis. Upon investigation it appears that this child had consulted at the health centre but had not been referred. The first reaction would be to blame

³⁴J. Owusu Acheaw. The district medical office: a step towards a meaningful health care. ICHD. Amsterdam, 1987. 45 pp.

the health centre nurse. However, further analysis of this incident by the district management team, of which this physician is a member, reveals that the referral instructions for the health centre nurses do not include such cases. The result of this discussion was a modification of the referral instructions. Such modification would have been very unlikely had there not been a district management team to take up such problems.

The weakness of such collective management is that it only works if the physicians who make up this district management team are committed to the development of the district health care system.

And this is not always the case: it requires an attitude towards the delegation of tasks which is not natural for a physician. Take, for example, the opinion of a Moroccan physician, in 1985, about delegation of tasks, during a discussion about allowing nurses in the district to prescribe antibiotics: 'If the nurse diagnoses a case of gonorrhoea, I think he should be allowed to prescribe a penicillin treatment. I do not agree, however with him administering this penicillin: there might be shock, and he would not know how to react'. This sums up the predicament of the dispensary nurse - and his patient - at a distance of 45 km of potholed roads from the nearest doctor.

If the prevailing attitude in the group is hospital-centred, the district will be managed as a function of the hospital. In this respect it is crucial that the team has a model of what the district system and the relations between the two levels should be. A model is not enough, however: the team also requires direct experience of the first contact level. In-service training at this level is not a sufficient substitute for practical day-to-day experience: the contact has to be ongoing. A good solution is to implicate the hospital physicians in supervision: this is something which the health centres are desperate to obtain, and supervising is an elegant way for the hospital physician to learn about what goes on in the world without losing face.

6.3 The participatory model

A model which gives better chances that the interests of the first contact level will not be sacrificed is one where the district management team works closely together with an assembly of the people in charge of the health centres. This is what happens in certain districts in Mozambique and Zimbabwe, and with the "awraja" health teams in Ethiopia. They were created when the lack of decision making at district level was recognized as one of the main reasons for the poor functioning of the peripheral health structures. They consisted of a programme coordinator, the head of the hospital, the heads of the health centres and prominent non-governmental organization leaders.³⁵ In some cases, as in the SIMAVI project in Tanzania, these teams may include people from other sectors, such as an agricultural extension worker. This offers an entry point for intersectoral collaboration.

³⁵G.S. Okubagzhi. Ethiopia's success story. World Health, May 1989.

Provided these meetings are not purely formalities, they may provide a useful counterweight to physicians who are too wrapped up in their own problems. They are also a means of maintaining coherence in the system when human resources become more abundant, and there are medical personnel at the first contact level.

* * *

The starting point for reorienting a hospital towards a role supportive of primary health care is often the frustration of the physicians themselves with the irrational utilization of their hospital services. In such a situation carefully chosen health systems research based on readily available data but with explicit reference to a district model may be crucial. They may give enough intellectual strength to the district team to resist the pressure for an irrational response to irrational demand, and to opt for a proper articulation of the hospital with the first contact level.

Within the next decade the staffing and equipment of many district hospitals will no doubt improve. This will give them even more weight in the organization of primary health care than they have now. It is crucial that this does not happen at the expense of the first-line health services but, rather, in such a way that the peripheral network is strengthened. In this, managerial tools - but most of all a conceptual model that clearly and adequately identifies the role of the hospital in the district - will be just as important as the additional facilities provided.

SELECTED STATISTICS ON A SAMPLE OF FIRST REFERRAL LEVEL HOSPITALS
IN SUB-SAHARAN AFRICA

| | Mean | SD | LQ | UQ | Median | |
|--|------|--------|--------|--------|--------|--------|
| The District | | | | | | |
| Total population | 81 | 229136 | 224136 | 70000 | 300000 | 160000 |
| Urban population | 61 | 48052 | 61108 | 8434 | 80000 | 20000 |
| Urban/total population | 59 | 0.244 | 0.241 | 0.073 | 0.364 | 0.159 |
| N of peripheral health units | 77 | 13.13 | 11.5 | 5 | 19 | 10 |
| N of midwifery centres | 77 | 1.35 | 3.12 | 0 | 2 | 0 |
| The Hospital | | | | | | |
| N beds | 88 | 161.5 | 97.4 | 92 | 200 | 141 |
| N beds general medicine | 80 | 38.8 | 18.2 | 25 | 50 | 34 |
| N beds surgery | 80 | 30.7 | 23 | 17 | 40 | 25 |
| N beds pediatrics | 80 | 34.2 | 21.7 | 20 | 44 | 33 |
| N beds obstetrics | 80 | 28.9 | 27.3 | 11 | 36 | 24 |
| N other beds | 81 | 19 | 23 | 0 | 25 | 12 |
| Beds/1000 population | 80 | 1.3 | 1.5 | 0.5 | 1.4 | 0.9 |
| Personnel | | | | | | |
| N of physicians | 87 | 4.23 | 4.51 | 2 | 5 | 3 |
| N of GPs | 86 | 2.67 | 2.45 | 2 | 3 | 2 |
| N of specialists | 37 | 3.7 | 3.6 | 1 | 6 | 3 |
| N of nurses (midwives excluded) | 84 | 43.1 | 41.3 | 16 | 56 | 29 |
| N of nurses min 4 yrs training | 86 | 11.2 | 23.2 | 2 | 13 | 5 |
| N of nurses 2-3 yrs training | 85 | 17.8 | 22.6 | 3 | 23 | 11 |
| N of auxiliary nurses (<2yrs) | 85 | 17.9 | 29.7 | 0 | 19 | 6 |
| N of registered midwives | 82 | 9.1 | 12.1 | 0 | 13 | 4 |
| N of birth attendants | 76 | 1.6 | 6.5 | 0 | 0 | 0 |
| N of nurses and midwives | 70 | 52.1 | 48.3 | 18 | 70 | 36 |
| Population/physician | 75 | 77210 | 86991 | 26000 | 91667 | 41250 |
| Population/GP | 80 | 99762 | 109614 | 35333 | 109333 | 63010 |
| Population/specialist (if >=1) | 34 | 140704 | 252354 | 34381 | 107000 | 65833 |
| N beds/physician | 78 | 53.27 | 33.8 | 27.64 | 69.33 | 46 |
| N beds/paramedical personnel | 78 | 5.44 | 7.8 | 2.2 | 6.11 | 3.69 |
| N nurses /physician | 85 | 13.6 | 12.8 | 6 | 14.8 | 9.7 |
| N paramedical personnel/physician | 80 | 16.1 | 14.7 | 7.1 | 18.4 | 11.2 |
| N administrative personnel/physician | 80 | 1901 | 1292 | 953 | 2466 | 1693 |
| Production | | | | | | |
| N deliveries per year | 83 | 1110 | 806 | 478 | 1500 | 951 |
| N other admissions per year | 82 | 4537 | 2936 | 2385 | 6001 | 3955 |
| N admission per inhabitant per year | 76 | 0.039 | 0.031 | 0.029 | 0.053 | 0.029 |
| N deliveries per inhabitant per year | 75 | 0.0073 | 0.0051 | 0.0037 | 0.0104 | 0.0058 |
| N other admissions per inhabitant per year | 75 | 0.032 | 0.028 | 0.015 | 0.046 | 0.023 |
| N screening consult/week | 56 | 1048 | 1114 | 365 | 1286 | 700 |
| N screening consult/inhabitant/year | 51 | 0.355 | 0.355 | 0.107 | 0.435 | 0.225 |
| N referral consult/week | 53 | 344 | 500 | 70 | 367 | 200 |
| N referral consult/inhabitant/year | 50 | 0.157 | 0.267 | 0.026 | 0.183 | 0.062 |
| N referral consult/screening consult | 40 | 0.394 | 0.459 | 0.1 | 0.553 | 0.198 |
| Admissions/referral consult | 50 | 0.63 | 0.687 | 0.154 | 0.769 | 0.346 |
| Admissions/screening consult | 52 | 0.162 | 0.216 | 0.053 | 0.165 | 0.089 |
| Proportion of physician time spent on OPD | 59 | 0.23 | 0.18 | 0.063 | 0.333 | 0.25 |
| Proportion of nurses time spent on OPD | 61 | 0.14 | 0.1 | 0.058 | 0.2 | 0.125 |
| Litres blood transfused per year | 76 | 511 | 662 | 125 | 519 | 300 |
| Admissions per physician per year (no deliv) | 81 | 1506 | 1085 | 650 | 2000 | 1280 |
| Deliveries per midwife per year | 56 | 224 | 285 | 60 | 255 | 138 |
| Deliveries per maternity bed per year | 71 | 44.8 | 29.1 | 25.6 | 53.8 | 40 |
| Other admissions per bed per year | 82 | 36.1 | 19.5 | 25.4 | 44.8 | 31.5 |

NB: SD = standard deviation; LQ = lower quartile; UQ = upper quartile

BASIC EQUIPMENT AND LABORATORY WORKLOAD OF A DISTRICT HOSPITAL

It seems realistic and reasonable³⁶ for a 140-bed hospital catering for up to 150 000 inhabitants to have the equipment listed in Table 1.

Table 1. Basic Equipment for a Rural Hospital

1. Surgical equipment to perform the following interventions:³⁷
 - Traumatology, including traction and possibly osteosynthesis
 - Laparotomy: splenectomy, hysterectomy, annexectomy, tubal ligation, repair of abdominal trauma, ectopic pregnancy, appendectomy, hernia repair, bowel resection...
 - Obstetrical surgery: caesarian section, craniotomy, embryotomy, symphysiotomy, curettage, vacuum extraction...
 - Vesical puncture, urethral dilatation, treatment of hydrocoele
 - Aspiration of pneumothorax, drainage of pyothorax
2. Equipment for spinal and general anaesthesia
3. Equipment for X-rays of extremities, skull, chest, stomach, bowel and pyelography
4. Gastroscopic, echographic and ECG equipment
5. Blood transfusion equipment (including blood grouping)
6. Dentistry
7. Sterilization equipment
8. Oxygen
9. Laboratory equipment for quality control of the tests that are performed at the peripheral level (e.g. double-check of AAF and blood slides), and for at least the following tests:
 - Microscopy: direct examination of CSF, urine, faeces, vaginal smears, Gram and AFB stains, thick films, sickle cell tests, reticulocytes and white and red blood-cell counts
 - Measurement of haematocrit, haemoglobin, blood glucose, albuminuria
 - Bacteriological cultures and sensitivity tests
 - Selected serological tests

(See Table 2)

³⁶W. Van Lerberghe, H. Van Balen and G. Kegels: District and first referral level hospitals in Sub-Saharan Africa: an empirical typology based on an MMI mail survey. MMI. Roneo, 66 pp. 1989.

³⁷If resources permit and the workload is large enough to justify such interventions at the district level: possibilities to do repair of vesico-vaginal fistula, prostatectomy, ophthalmological surgery.

Table 2. The table below gives an idea of the possible laboratory workload for a district hospital. It is based on a study of 3.5 million treatment episodes in 21 non-governmental hospitals in Ghana over 1981 and 1982, and gives the average number of laboratory examinations per 30 000 outpatient consultations, excluding prenatal visits and healthy under-fives, but including the average proportion of inpatients. (Adapted from H.V. Hogerzeil and M. Hofs.³⁸)

| | performed | projected |
|----------------------|-----------|-----------|
| haemoglobin | 4300 | 10000 |
| sickle cell | 1400 | 1500 |
| ESR | 830 | 1000 |
| WBC count | 1300 | 250 |
| WBC differential | 270 | 500 |
| thick film (malaria) | 930 | 1650 |
| blood group | 630 | 1000 |
| cross match | 450 | 600 |
| blood glucose | 190 | 250 |
| bile | 190 | 250 |
| urea | 69 | 100 |
| urine | | |
| albumin | 2100 | 3000 |
| glucose | 1400 | 1500 |
| sediment | 1500 | 2000 |
| bile | 210 | 250 |
| urobilinogen | 110 | 150 |
| stool | | |
| parasites | 2500 | 3000 |
| blood in stool | 100 | 100 |
| cerebrospinal fluid | 57 | |
| albumin | | 100 |
| glucose | | 100 |
| bacteria | | 100 |
| WBC count | | 100 |
| WBC differential | | 100 |
| sputum | 240 | 400 |
| pus or exudate | 300 | 400 |

³⁸H.V. Hogerzeil and M. Hofs. Essential reagents for rural medical laboratories in Ghana. Tropical doctor, 16, 1986.