

A versatile approach to health system evaluation

Although problems in the relationships between different levels of health care systems in developing countries have a significant influence on efficiency, they have not been clearly defined. In the present article a simple method is described for assessing certain aspects of these problems. It is shown that data collected in a hospital can be used not only to highlight inadequate management of patients at the community level, but also to identify deficiencies at the community/hospital interface. The method is inexpensive and easy to understand, and could easily be adapted for every interface in a system and for all stages of health service development.

In the global approach to the health of populations as defined at Alma-Ata, the health care delivery system is seen as having the following components.

- Primary health care, defined as the management of everyday health problems in the community; ideally each community should decide on its priorities according to the severity and frequency of problems and to the extent to which they can be expected to respond to this type of care, which involves:
 - first contact for services such as vaccination and oral rehydration provided by community health workers;
 - the first-referral hospital, which reinforces and supports the first-contact services.

- The second-referral hospital, which deals with *specific* problems of individuals who are normally referred by the primary care services. Such problems are usually serious and infrequent, and cannot be solved by means of primary health care; cancer and multiple injuries are in this category.

In developing countries, first-referral hospitals may not be distinguishable from second-referral hospitals; this is frequently true in provincial centres and is almost always so in capitals. The different elements of a health system are, of course, interdependent. If the intake procedure in one part is inadequate there will be repercussions on the next part. The resulting domino effect is one of the commonest forms of malfunction in the health services of developing countries. The long queues often seen at the outpatient departments of hospitals are mostly composed of people who could easily have been treated at the community level. And when primary health care fails to cope with an epidemic, hospitals are immediately

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flooded with new admissions. Conversely, primary care services often try to deal with serious infections and other problems for which they are not equipped, if there is a failure or absence of hospital backup.

How can such shortcomings be highlighted, analysed and quantified? What methods should be used to ensure that the people in charge can join in the gathering of data and the discussion of results? An attempt is made below to answer these questions, with reference to a study conducted in N'Djamena, Chad, in 1983. Chad is virtually without health services, except in N'Djamena where there are dispensaries without beds. Resources are poor and facilities work very badly; general management is rough and ready. There is no vaccination and no oral rehydration. Hospitals are only slightly better equipped, although N'Djamena Central Hospital does have drugs and some diagnostic facilities.

Gathering information

We considered how to use the data of N'Djamena Central Hospital to assess the intake of patients by the system and identify shortcomings at the community/hospital interface. A method was developed for data-gathering by health workers, and the results were easily comprehensible to decision-makers in the hospital and at the level of primary health care.

In N'Djamena, first- and second-referral hospitals are not distinguished. The paediatric ward of the Central Hospital was used as a data collecting point: the medical records of 146 children aged up to 59 months who had been hospitalized over a six-week period were studied prospectively in order to obtain information on the following matters.

- Mode of access to hospital:
 - direct, without referral from primary health care;
 - through the peripheral primary health care services.

All the children were from the N'Djamena area and there was no physical obstacle to access to the hospital.

- Clinical diagnosis:
 - preventable diseases including dehydration and diseases against which immunization is possible;
 - non-preventable diseases, i.e., ones that are difficult or impossible to avoid through primary health care.
- Immediate consequences:
 - death within 24 hours of hospitalization;
 - survival for more than 24 hours.

Taken together, the data on clinical diagnosis and immediate consequences allowed an assessment to be made of the operation of the first-level/hospital interface.

Findings

Of the children admitted, 24% had direct access to the hospital. As the table shows, 69% of the children were suffering from conditions that could have been prevented by primary health care. The conditions were dehydration (17%), dehydration and meningococcal meningitis (2%), dehydration and measles (12%), measles (17%), meningococcal meningitis (13%), and tetanus, pertussis, tuberculosis or poliomyelitis (8%).

N'Djamena Central Hospital: survival of paediatric admissions

	Patients with conditions preventable (P) or not preventable (NP) by primary health care (%)	
	P	NP
Patients who died within 24 hours of admission (%)	15	5
Patients who did not die within 24 hours of admission (%)	54	26

The remaining 31% were admitted for conditions that could not have been prevented by primary health care: 15% were affected by lung diseases caused by pathogens against which immunization is not available, and 16% were suffering from meningitis other than meningococcal meningitis, from haemoglobinopathies, or from various injuries.

The table also shows that 15% of the children died within 24 hours of admission as a result of diseases that could have been dealt with at the first level; most of these children died before the hospital could take effective action to save them. The children who did not die within 24 hours and

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should have been dealt with by the first level represented 54% of the admissions; there would seem to have been no good reason for admission of these children to a specialist hospital.

Discussion

The 20% of children admitted to hospital who died within 24 hours presumably did so because of delays in the first contact with primary health care, inadequate primary health care, late referral from primary health care, and/or delay in access to hospital. Clearly, the primary health care facilities were not dealing with the health problems for which they were intended, and patients therefore tended to drift to the hospital. Worse still, the hospital was admitting many patients who had not been referred from the primary level.

In view of these findings, consultations were arranged with the hospital director and with doctors and head nurses working in primary care, in an attempt to improve the system. It was agreed that the system of referral from primary health care to hospital could be improved immediately by proper coordination, and that priority should go to the development of primary health care services, so that the hospital could operate more effectively and efficiently.

The notion of avoidable disease should obviously be seen in the general context of primary health care development: here it is taken to indicate a certain level of performance that health services should attain. In the case of N'Djamena, where the situation was exceptionally bad, it was appropriate to identify the basic minimum primary health care services needed in order to reduce the number of avoidable cases.

In this way it was possible to consider dehydration and diseases against which effective immunization exists as indicators of degrees of inadequacy. The method could be used in any country, whatever the state of advancement of its health services.

Where immunization and rehydration have reached satisfactory levels, the capacity for diagnosing anaemia, lung diseases, and other conditions at the primary level might serve as an indicator. If a hospital ascertains whether patients have been admitted in acceptably good time, depending on local conditions, the following kind of table can be produced.

	Disease diagnosable (D) or not diagnosable (ND) at community level		
	D	ND	Total
Admission:			
Delayed	—	—	—
In acceptably good time	—	—	—

This method, which can be applied at any level and at any interface of a health service, enables the primary care doctor to assess the relationships between the hospital and community levels; he can interpret the information received from the hospital concerning the cases he has referred in the light of their urgency. Consequently, he will be able to define shortcomings and present evidence to the

hospital management with a view to improving the operation of the interface.

A double-entry table might be set out as follows:

	Important cases referred		
	Yes	No	Total
Information feedback:			
Too late	—	—	—
In reasonable time	—	—	—

The method described above is simple and inexpensive, and can be used at any level of a health service, irrespective of its stage of development. It encourages communication between community teams and hospitals, something that is of particular importance for working relationships between the different levels of a health service. It allows comparisons to be made between health facilities in one country. The method also makes possible the periodic supervision of units and the statistical analysis of changes, and can thus be used to establish a supervision and assessment system for health services, leading ultimately to estimates of effectiveness and efficiency. □