

# Indicators for Monitoring Health Sector Reform and the Sector-Wide Approach

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## Abstract

The health sectors in many developing countries are undergoing major reforms at present, and a ‘sector-wide approach’ is being adopted to increase the impact of donor funds. In implementing health sector reform (HSR) and sector-wide approaches, both donor communities and ministries of health are interested in putting in place a manageable monitoring and evaluation system, against which the success of HSR can be judged. In the recognition of the weaknesses of health indicators to monitor HSR in the short-term, other indicators to reflect major aims of HSR are recommended: access, equity, quality, efficiency, and sustainability. In choosing performance measures to reflect these aims, a number of scientific (validity, relevance, reliability, quantifiable) and pragmatic (data available or easily collectable, data timely) criteria are proposed by which to judge the most appropriate performance indicators. Using these criteria, the strengths and weaknesses of performance indicators are discussed, as well as links between indicators and where they overlap. In particular, the conclusions about the success or failure of HSR depend not only on which performance indicators are chosen, but how they are defined and measured, whether current health management information systems can be relied on, and what alternative available data sources are available or can be set up. The next important steps are to: decide how many indicators should be on the final short list for monitoring health sector reform; rank indicators using scoring systems; assess data availability and quality; and decide on the final short-list of indicators.

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## **1. Introduction**

### *The sector-wide approach*

The sector-wide approach (SWAp) essentially involves creating and sustaining partnerships in the health sector (involving government, civil society and donor agencies) and co-ordinating health care expenditure through a collaborative programme of work (Cassels 1997, Walt et al 1999). SWAps also aim to develop common management arrangements, often starting with a common annual performance review, shared performance indicators and measures to strengthen management capacity. The primary purpose of the sector-wide approach is to make health sector reform more effective by reducing duplication, increasing efficiency of health service provision, and channelling scarce resources into their most productive activities (Cassels 1997). While SWAps implemented in different countries have many common elements, they can also vary in their content (Walford 1998).

### *Rationale for performance monitoring*

The prospective monitoring and evaluation of health sector reforms are critical for identifying whether they are likely to meet or have met the primary aims of reform; also, they provide the principal means for feeding back to reformers and donors so that changes can be made if strategies do not appear to be working, or if they simply need fine-tuning<sup>1</sup>. The World Bank defines performance indicators as “measures of project impacts, outcomes, outputs and inputs that are monitored during project implementation to assess progress towards project objectives. They are also later used to evaluate a project’s success” (World Bank, 1996, page 1). Performance indicators are useful for: strategic planning, performance accounting, forecasting and early warning during project implementation, measuring programme results, programme marketing and public relations, benchmarking, and quality management (World Bank, 1996, page 3). However, if data collection systems do not actively involve those responsible for collecting the data and the wider community, including adequate support and supervision and local ownership, data are likely to be unreliable for monitoring performance.

In this respect, the overall performance scores presented in World Health Report 2000 (WHO 2000) focuses on measuring results. The report makes an important distinction between *health system attainment* – the levels of benefit with respect to health, responsiveness and financial fairness – and *health system performance* – comparing those attainments with what the system should be able to accomplish with the resources used. In performance monitoring, clearly more is required than just measuring attainment at a point in time, but on the other hand it may not be possible to state exactly what the health system should accomplish. Therefore, a middle-way of setting realistic targets and monitoring changes in indicators over time may be the best available course open to those charged with monitoring HSR. In addition to measuring results, monitoring of HSR should also consist of monitoring individual cost centres (e.g. success in budget holding and resource allocation) and monitoring achievements in policy, finance, budgetary, institutional and systems development. While important in explaining results, these input/process indicators are not discussed here.

### *Choice of indicators*

While there is little argument that the overall aim of health sector reform is to improve health and distribute it equitably, there are several reasons why monitoring health outcomes alone may not be sufficient for assessing the success of health sector reform:

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<sup>1</sup> Previous documents tackling issues in defining and measuring performance indicators in the context of SWAps include Pavignani (2000), Foster et al (1999), Knowles et al (1997).

- Health sector reform may have a delayed impact on health.
- There is a lag between the time of impact and the time it is feasible to collect data relating to the impact.
- There are factors which may confound the comparison of an indicator over time, such as shocks not related to the direct success of health sector reform (such as war or famine), or changes in economic success.
- Process indicators, such as whether managerial objectives are met, are easier to measure and monitor than epidemiological indicators (Lorenz et al 1995).
- Other objectives of health sector reform, such as sustainability and decentralisation, are not captured by short-term changes in health indicators.

Therefore, a variety of performance indicators should be chosen for monitoring health sector reform, reflecting the following objectives: **access, equity, quality, effectiveness, efficiency, and sustainability**. These encompass the most important attributes of health services. The relationships between these objectives are summarised in Diagram 1. However, contending performance indicators should be compared in terms of scientific and pragmatic criteria (see Box 1) to judge which should be used.

**Box 1: Criteria found in the literature for judging usefulness of performance indicators**

<b>Valid:</b>	Does it measure what it is supposed to measure? Does it not measure what it is not supposed to measure? ('specificity')
<b>Relevant:</b>	Is it relevant to the overall objectives of the project? Does the indicator have direct implications for decision makers? Are the indicators meaningful and interesting to a broad audience?
<b>Precise:</b>	Is the indicator clearly and unambiguously defined?
<b>Reliable:</b>	Will two measurements of the indicator for the same health system produce the same results?
<b>Statistical power:</b>	Do events such as mortality occur frequently enough to permit comparisons from year to year?
<b>Quantifiable:</b>	Can it be quantified using accepted definitions and reference standards?
<b>Sensitive:</b>	Does it reflect changes in state of the phenomenon under study? Do measurement at time intervals pick up movements in the indicator?
<b>Interpretable:</b>	Can performance be judged based on the value alone and direction of movement, or is some context-specific interpretation required? Is baseline data required?
<b>Timely:</b>	Is the indicator available on a regular basis and without undue delay?
<b>Cost:</b>	Is the cost of data collection manageable? Can the performance indicator be put together from easily available data?
<b>Reactive to new and unforeseen demands:</b>	Are impacts not predicted by reform planners picked up?

Sources: Knowles et al 1997, Pavignani 2000, PAHO 1998, WHO 1994, Braveman 1998.

*The approach of the World Health Report*

The World Health Report (WHO 2000) compares 191 countries in terms of overall health system performance – an index made up of judgements about overall health indicators, distribution of health indicators, health system responsiveness, distribution of health system responsiveness, and fairness in financing. The report argues that, whilst improving health may be the overall aim of the health system, the last four are also valuable process variables in themselves, as well as their impact on health status. WHO (2000) also argues for assessment of how well health systems perform in terms of four main functions:

1. *Service delivery*: are services patient centred, cost-effective, and good quality? are health service organisation and health care provider and health financing incentives appropriate?
2. *Resource mix*: are resources mixed appropriately to provide the appropriate health services efficiently? are resources purchased rationally?
3. *Financing*: is there appropriate risk pooling (where high risk subsidised by low risk) and subsidies (where the rich pay for services of the poor)? are health sector revenues raised efficiently?
4. *Stewardship*: are activities implemented through a comprehensive national health policy framework that involves the private sector? is there an effective regulation mechanism to promote the more beneficial activities and restrict the less beneficial activities? are there criteria for technology purchase?

Therefore, the implications of the approach taken by the report for health sector reform monitoring are discussed.

## 2. Indicators of access

“Access” usually refers to the presence or absence of physical or economic barriers that people might face in using health services (Knowles et al 1997), and is relevant to monitor as an explanation of how other indicators perform (WHO 2000). One of the most important priorities of health sector reform is to improve access to health services, combined with a strategy of ensuring these services are cost-effective, and of at least minimum quality. Factors influencing access in health sector reform include the upgrading or downgrading of health facilities, decisions to build new facilities, the introduction of an essential health package (EHP), and the widespread use of user fees or expanding insurance coverage. One of the main interests in measuring access to health services is in identifying how they affect vulnerable groups. The following types of indicator are suggested (see Table 1): distance and time to nearest health facility (by level)<sup>2</sup>, transport for emergency medical cases, staff:population ratios, clinic hours, economic access<sup>3</sup>, health care utilisation and immunisation coverage of infants, and waiting lists.

## 3. Indicators of equity

“The concept of equity as it relates to health systems may refer variously to differences in health *status*, *utilisation*, or *access* among different income, socio-economic, demographic, ethnic, and/or gender groups” (Knowles et al 1997). A recent WHO report (Braveman 1998) recommends placing equity higher on the policy agendas of national and international agencies, to not only monitor average statistics, but also differences between more and less advantaged social groups in key measures of health and its determinants, including health care. Braveman (1998) operationally defines equity in health as “minimising avoidable disparities in health and its determinants – including but not limited to health care – between groups of people who have different levels of underlying social advantage”. Such groups may be distinguished by socio-economic

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<sup>2</sup> There are two main problems with using *geographical* distance to measure physical access: (1) distance does not necessarily reflect ease and time of getting to a health facility, and (2) greater access does not assure greater utilisation, due to constraints imposed by family members, time constraints due to employment, and cultural barriers. As well as distance to health facilities, physical access will also depend on the availability and reliability of transport, quality of roads and weather patterns. There are also uncertainties when defining what distance or time is considered ‘accessible’, and therefore by implication what is ‘inaccessible’, as there must be a cut-off point.

<sup>3</sup> Economic access is potentially a more important determinant of health care utilisation than geographical access, due to the low disposable income in many developing country households (and competing needs), as well as the time required to take off work to attend health facilities (by the working population).

status (income/expenditures, occupation, wealth/assets, education), geographical location (e.g. rural and urban), marital status, gender, ethnicity, age, and health insurance coverage. The focus of monitoring efforts will depend on the distribution of health and health care consumption between these groups, which will vary by country. However, the lack of standard definitions, measurement strategies, and indicators have limited and will continue to limit comparisons – between and within countries, and over time – of health inequalities (Murray et al 1999). Also, the ability to monitor the impact on equity of health sector reform will depend on whether routine data systems exist to provide the necessary information by group, and, if not available, how easy it is to set up new data collection and monitoring systems.

Indicators of equity include (see Table 1): degree to which financing is by ability to pay and not by risk of illness<sup>4</sup>, household burden of payment for health care, economic incentives to vulnerable groups<sup>5</sup>, access to other risk pooling arrangements, access to free services provided by voluntary organisations, gender sensitive provision of services, language barriers and discrimination against certain groups, and health care spending patterns<sup>6</sup>. Also, health care utilisation and coverage, particularly for services to infants and pregnant women/mothers and provision of essential and referral services/availability of essential drugs, is important (discussed under “access”).

Also, it is possible to monitor major determinants of health apart from health care that have equity implications, including safe water and sanitation, food supply, housing, poverty, education and income equality. The importance of monitoring these variables was underlined by Murray et al (1999), who argue that the concern about health differences between social groups stems not from the health differences themselves, but from their covariance with other socio-economic variables. However, they also point out the major analytical challenge in defining causal pathways operating from distal socio-economic factors to proximal individual behaviours, and ultimately physiological factors.

#### **4. Indicators of quality**

Quality of care is a multi-dimensional concept on which there is little current consensus. Three aspects of quality of care are commonly distinguished in the literature, between ‘structural’, ‘process’ and ‘outcome’ dimensions (Knowles et al 1997). ‘Structural’ quality refers to whether appropriate resources are in place to provide health care of a minimum standard (personnel trained for their tasks, well maintained equipment and buildings, a regular drug supply). ‘Process’ quality generally refers to activities occurring during the interaction between the health system and the client (i.e. whether good quality care is actually delivered). Also, both the presence of accreditation and the quality of professional training and continuing education may affect quality. ‘Outcome’ quality, in addition to health status, can include patient satisfaction and perceived quality.

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<sup>4</sup> The World Health Report suggests that equity in financing is achieved when a household’s financial contribution to the health system is disconnected from its health risks, and define fairness as all households spending the same proportion of non-food expenditure on health care.

<sup>5</sup> Economic incentives involves changing the cost of access to health services in order to encourage utilisation. This can be done either by reducing fees (for consultation, pharmacy) or giving money or benefits in kind to patients (such as contributing to transport costs or providing transport, giving a gift for patients using services). However, indicators such as the fee waiver or reduction in fee only suggest but do not necessarily identify whether equity is being achieved in terms of coverage, access, health care usage, and health status. Also, there are difficulties in collecting these data, and in defining income cut-off points.

<sup>6</sup> At a global level, whether health care spending is directed towards the main disease burdens of vulnerable groups is a good measure of equity (equity of health), and the distribution of qualified health care personnel and health care facilities by area. Allocation formulae can also be examined, to see whether they are based on directing resources to vulnerable groups (and how these groups are defined in practice for allocation purposes).

The problem with quality indicators is that of reaching consensus in definitions and measurement approaches. For example, a problem faced in building measures of structural quality is that of agreeing which aspects of structure should be included, and what weight they should have in building a score (Gilson 1992). Another question concerns the validity of a structural quality score: a high score does not guarantee the maximum possible impact on health outcome, nor does a low score mean health outcome is not impacted. For these reasons, assessment of process quality may be more related to health outcomes, such as the use of quality assurance checks to ensure that guidelines are being followed. However, measurement of quality using quality assurance checks will be reliable if aspects are clearly defined and can be measured (yes/no) or quantified (e.g. score of 1-10), and if there are objective means of doing so. Quality assurance can either involve measuring actual performance and comparing with expected or normative performance standards, or the implementation of changes to improve delivery of services (Schopper 2000). The World Health Report places considerable weight on different aspects of quality, to contribute to the overall health system performance assessment, including respect for persons (respect for dignity, confidentiality, and autonomy) and client orientation (prompt attention, basic amenities, access to social support networks, and choice of provider). However, these variables need to be incorporated into a comprehensive but realistic quality assessment framework.

### **5. Indicators of effectiveness**

Despite the emphasis of W.H.O.'s "Health For All 2000" on **positive** health, health status is still largely focussed on the classification and identification of negative health: that is, mortality, and disease prevalence and incidence rates. Other indicators of effectiveness may be used that either suggest how effective health services are (e.g. treatment rates such as in the case of tuberculosis) or that suggest future disease (e.g. low birth weight, vaccination rates). Also, demographic indicators may be monitored, although these may not necessarily be targets of the health sector reform (see Table 1).

Murray et al (2000) suggest that summary measures of population health depend on the intended use, whether comparing populations, monitoring changes in the health of a given population, quantifying health inequalities, or informing debates on health sector priorities, etc. Therefore, for monitoring health sector reform, it may not be essential to measure a composite index of health as discussed in Murray et al (2000), but instead identify key areas of morbidity and mortality that are (a) important, and (b) can be improved under health sector reform. Braveman (1998) suggests several indicators of health status for assessing equity: children's growth and nutritional status, child mortality (neonatal, post-neonatal, infants, children 1-4 years), life expectancy at birth, maternal mortality ratio, and rates of tobacco use (as a major risk factor for important chronic non-communicable diseases). However, the World Health Report definition of overall health attainment (a composite of the probability of dying under five years and between 15-49 years, and life expectancy at birth) may be too crude for monitoring the health impact of health sector reform.

While improving health is the overall aim of HSR, the success of HSR should also be interpreted in the light of the many factors influencing health status, including: changes in practice patterns to reflect evidence-based medicine and incentives to adopt clinical guidelines; priority setting based on population health needs; changes in quality of care; changes in utilisation rates; and most difficult of all to evaluate: changes in underlying determinants of disease including external shocks. Another problem that is faced in using morbidity and mortality indicators in identifying the success of HSR is that it will have a delayed impact on some diseases, especially education and other prevention activities.

## 6. Indicators of efficiency

The important distinction between effectiveness and efficiency is that the latter takes into account costs. However, efficiency is defined by health economists in several different ways, and can be applied to health services as well as health outcomes. Efficiency essentially concerns how and which health services are produced, and has three dimensions: technical<sup>7</sup>, economic<sup>8</sup> and allocative<sup>9</sup> (see Table 1). Although efficiency in the use of health services is at the very core of the World Health Report, such as in choosing cost-effective interventions, finding an appropriate balance between capital and recurrent spending, and obtaining value for money in the purchase of inputs, no efficiency indicators per se are included in the overall performance score<sup>10</sup>.

## 7. Indicators of sustainability

Like the other indicators, sustainability can be defined in various ways. At the level of the health system, “sustainability” refers to the capacity of the system to continue its normal activities successfully in the future, should foreign assistance be withdrawn (Knowles et al 1997). Two dimensions to sustainability - financial and institutional sustainability – are important where health sector reform and sector-wide approaches are concerned, and both aspects should be monitored (see Table 1). One way of assessing financial sustainability is to follow spending levels on services which are particularly sensitive to changes in government revenue, such as primary care, and how these services are financed. Government spending on maternity care and PHC generally needs to be protected from fluctuations in revenue raised, and whether reductions can be replaced both temporarily (emergency sources of funding) and in the longer term by other sources. An important, but more difficult, area to monitor is whether communities are becoming involved so that the changes being made will be sustained, and whether it will generate further funding sources, or whether central government will need to pour resources into different projects for the foreseeable future.

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<sup>7</sup> A technically efficient producer is one that produces given outputs with the least input, or alternatively produces the most outputs from a given input. Outputs are health services, such as outpatient visits, vaccination provision, inpatient days or inpatient admissions, laboratory tests, surgical procedures, etc.

<sup>8</sup> An economically efficient producer is one that produces these same health services at least cost, which requires not only that technical efficiency is achieved, but also that inputs are mixed to produce outputs at least cost (unit cost).

<sup>9</sup> Allocative efficiency requires that health services are provided that have the greatest impact on health. Allocative efficiency can be defined at different levels, from the individual patient level (is a given patient treated in the right way, and at least cost?) to the national or global level (are resources allocated to the optimal mix of procedures that give the greatest health gain at the aggregate level?). Equity implications must also be assessed. In order to make informed judgements about which health services should be provided to attain allocative efficiency, comprehensive cost-effectiveness data sets are required which rank interventions by cost-effectiveness. However, few countries have such data sets of good quality, and they must by necessity adapt to changes in disease burden, prices, and other aspects of health sector reform. Many developing countries recently have defined and implemented (or are currently piloting) an essential health care package, containing primary health care interventions as well as health services that have positive externalities and may not be consumed under market conditions (e.g IEC). Therefore, the share of PHC and other cost-effective interventions should be monitored, including resource allocation to districts compared to other allocations, with attention to equity implications (see section 4).

<sup>10</sup> The way resources are combined in the health sector (‘resource mix’) has important implications for many other health service indicators. However, there are difficulties in defining optimal rates for efficiency indicators as what is optimal will vary between location depending on case-mix, hospital level, resource availability etc. While generally a higher number of visits or days per health care worker is interpreted as a good thing, as it leads to lower unit costs and higher technical/economic efficiency, it should be checked that the health care is of a minimum quality, and there is evidence that it is effective. In addition, a factor affecting technical efficiency of staff is whether they are paid on time, and the salary rates (and thus their likely motivation levels, and requirements to work part-time in other jobs or private practice). Technical efficiency can also be improved through minimising administrative overheads, reducing duplicate structures, and minimising transaction costs.

## **8. Next steps**

The next important step is to decide which indicators should be chosen. The following steps are recommended:

1. Decide how many indicators should be chosen from each objective in Table 1 (to reflect the importance of the objective, as well as overlap between objectives), and roughly how many indicators should be in the final list.
2. Choose which criteria are most important. Are there any other criteria not mentioned in this document? If possible, weight or rank these criteria according to importance.
3. Decide which consensus building approach is most appropriate (e.g. delphi panel, round table discussion, rational exclusion) and which players from which levels (international, national, local) should be included in the choice of performance indicators. Ask the different players whether they would be prepared to participate, and build a final list of players.
4. Get the players to score each performance indicators according to the criteria, and give them a final score based on weights allocated.
5. Assess the availability of routine data, to collect information on indicators (census, civil and vital registration, government budgets and spending reviews, health sector routine information systems, geographic information systems), and assess the research requirements to fill gaps (rapid epidemiological assessment, verbal inquiry by health workers, rapid evaluation methodology, household surveys, hospital surveys, sentinel surveillance systems), and plan the statistical methods available for presenting data.
6. Put together all the results in 4. and 5. and hold final consensus building meetings to develop a short-list of indicators, which in addition to criteria in Box 1 should take into account considerations such as any links and duplication between the contending indicators, and choosing a mix of indicators to give a holistic perspective.
7. Prepare to collect information and data on the short-list of indicators.

While studies in defining short-lists of indicators have been conducted previously and implemented in the context of HSR, it is recommended to adopt steps 1 to 7 above separately for each country wishing to monitor health system indicators. This is due to (a) the different nature and sometimes differing goals or emphases of each health system, (b) the different amounts of data available or collectable from different health systems, and (c) the debate has moved on and further developments have forced consideration or greater emphasis on other issues, such as those raised in the World Health Report 2000.

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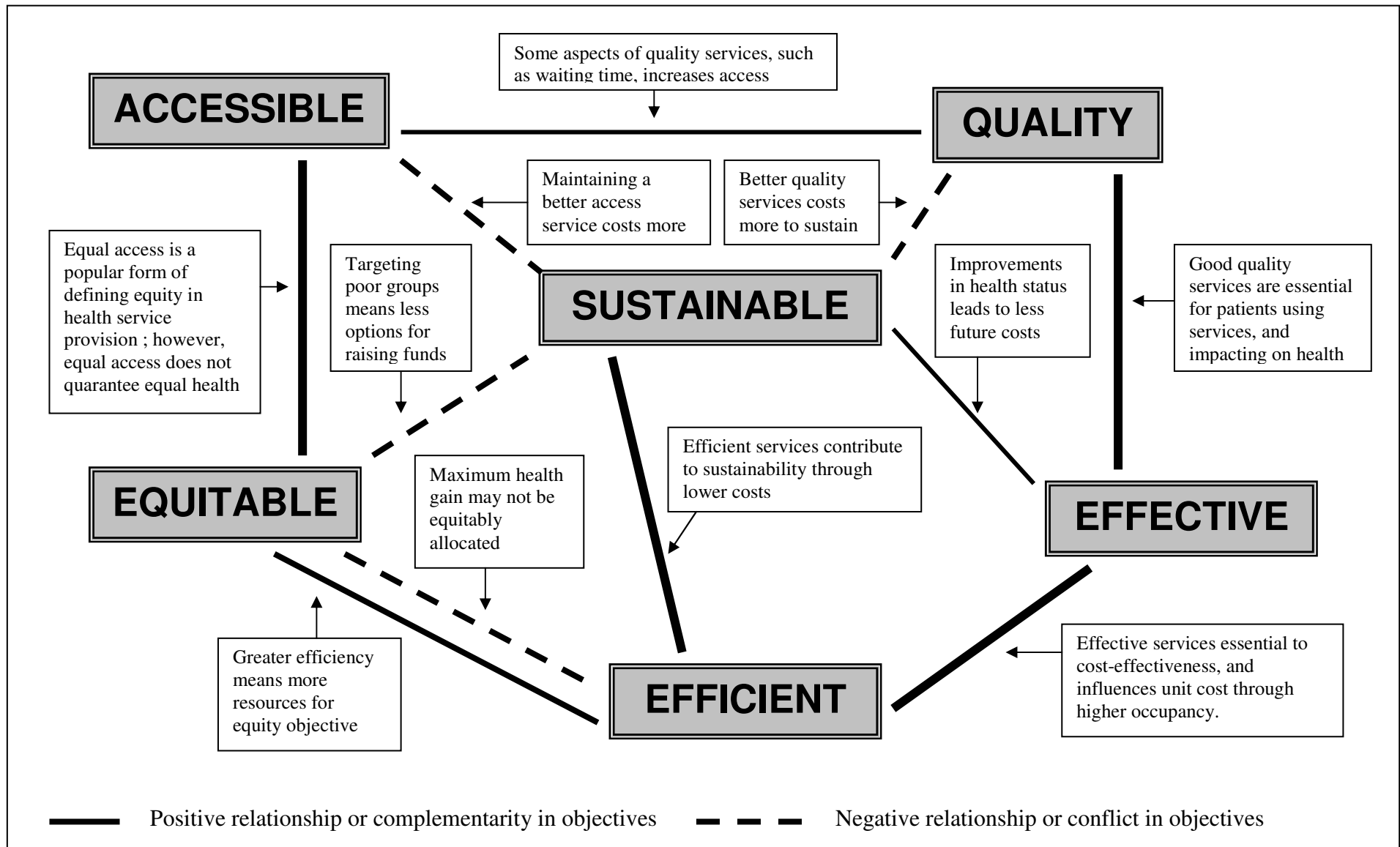
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**Diagram 1: Relationships between six major health sector objectives**



**Table 1. A selection of indicators for monitoring health sector reform and the sector-wide approach**

<b>1. ACCESS</b>	<b>2. EQUITY</b>	<b>3. QUALITY</b>	<b>4. EFFECTIVENESS</b>	<b>5. EFFICIENCY</b>	<b>6. SUSTAINABILITY</b>
<b>Proximity to services</b>	<b>Economic incentives</b>	<b>Health facility structure</b>	<b>Mortality</b>	<b>Technical efficiency</b>	<b>Financing source</b>
Time and distance to:	Government subsidies	Changes in qualified staff	Maternal mortality ratio	Outpatient visits per staff	% spending from tax
• essential package	Gini coefficient	Minimum standards met	Infant mortality rate	Inpatient days per staff	% spending from user fees
• outreach services	Means testing availability	• personnel	Under five mortality rate	Hospital bed occupancy	% spending from donors
• facility with doctor	Fee exemptions granted	• equipment	AIDS mortality rate	Salaries payments on time	Financing schemes set up
• pharmacy	<b>Risk pooling availability</b>	• recommended drugs	Malaria mortality rate	Performance incentives	<b>Size of health sector</b>
• secondary hospital	Population with access	Treatment guidelines used	Inpatient case-fatality rate	Levels of wastage, theft etc	Health vs. total spending
• 24-hr ambulance	<b>Voluntary services</b>	Maintenance work	Death due to vaccine-preventable diseases	<b>Economic efficiency</b>	Health spending vs. GDP
<b>Staff population ratios</b>	Availability of NGO services	<b>Quality assurance</b>		Nurses per doctor	<b>Spending</b>
<b>Cost of:</b>	Use of NGO services	Quality ass. mechanisms	<b>Prevalence</b>	Nurses per hospital bed	% gov. spending to PHC
Outpatient illness episode	Health spending	Supervisory visits	AIDS seroprevalence	Doctors per hospital bed	% gov. spending to preventive activities
Inpatient hospital stay	Consumption per head	<b>Quality of interaction</b>	Malaria prevalence	Cost per outpatient visit	% gov. spending to MCH
<b>Health care utilisation</b>	Investment per head	Minimum standards	TB notification rate	Cost per hospital bed-day	
Outpatient consultations	Spending on PHC services	• normal consultations	Diarrhoea prevalence (<5)	Global output and cost	<b>Institutional</b>
Inpatient admissions	Investment in PHC services	• emergency referrals	Pneumonia (<5)	% personnel expenditure	Foreign doctors
Hospital delivery	Use of resource allocation formulae	• non-emergency referr.	Postpartum haemorrhage	% expenditure on drugs	Annual staff training
Immunisation coverage	Access (see 1)	Client understanding	<b>Treatment completion</b>	% generic / patented drug	Donor technical assistance
Bed net coverage	Health care utilisation (see 1)	Adverse outcomes due to poor quality care	Tuberculosis	<b>Allocative efficiency</b>	Donor research & training
<b>Waiting lists</b>	Health status (see 4)		Malaria	% spent on public services	Community participation
Surgical waiting lists	Other health determinants	<b>Patient satisfaction</b>	<b>Future disease indicators</b>	% PHC expenditure	Transparent relationships
<b>Emergency transport service available</b>		<b>Respect for persons</b>	Malnutrition, stunting	% spent at district level	
<b>Clinic hours</b>		<b>Client orientation</b>	Low birth weight	Referral system functions	
			Tobacco use	Average length of stay	
			<b>Demographic indicators</b>	<b>Co-ordination activities</b>	
			Life expectancy	Outpatient care at NGOs	
			Total fertility rate	NGO hospital beds	
			Crude birth rate	Salary of private workers	
			Crude death rate	Private pharmacies	