

## **Human Resource Indicators and Health Service Performance**

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### **Abstract**

Public expectations and increasing financial pressures are requiring health services to adopt new approaches to the management of their resources, particularly human resources. This paper examines the use of human resource indicators (HRI) to support management-led initiatives to improve health service efficiency and effectiveness. It does so, first, through an examination of the role of management indicators. This is followed by a development of HRI which identifies the focus for HRI measurements; the types of indicators that support this focus; the use of HRI and their interpretation; and, finally, options in their presentation. The paper continues with an identification of a process for introducing the use of indicators into health services. The paper concludes by stressing the need to link the introduction of HRI with practical efforts to enhance management activities and purpose. Failure to do so will nullify the value of introducing HRI.

**Key Words:** Health service, Performance, Human resources, Indicators, Efficiency, Effectiveness

### **Introduction**

New pressures are emerging in most countries with public expectations and demands for health care increasing worldwide. It is evident that countries around the world are re-examining their approach to the provision of health care with the introduction of more radical solutions to the problems they face, including the recognition that health services must mobilise the resources available to them as efficiently and effectively as possible. At the centre of this resource issue are health care staff, both trained and untrained, who constitute the largest recurrent cost component of any health care service.

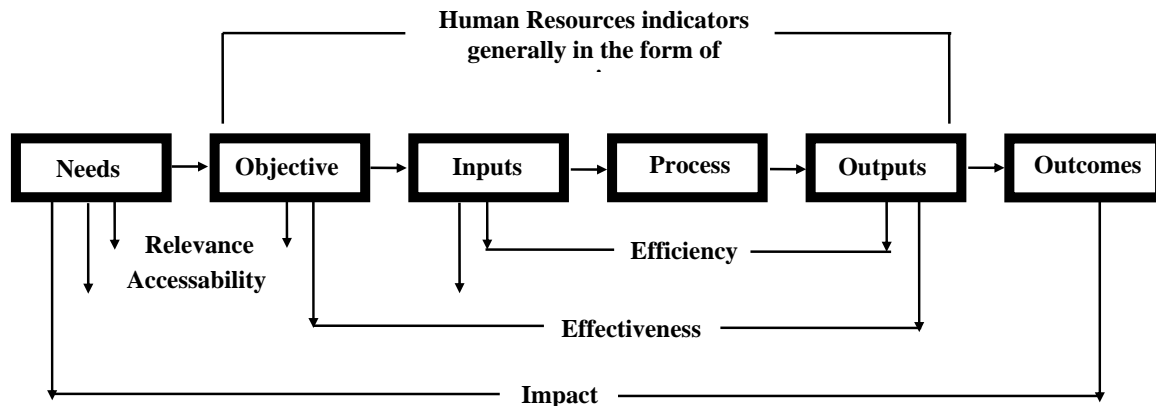
This need for greater efficiency and effectiveness in the use of health human resources has in turn highlighted a requirement for improved management practice and more skilled managers within health systems as well as a need for a practical methodology to assess management performance<sup>(1)</sup> and particularly the management of human resources. A recent WHO-sponsored initiative on the development of such a methodology for assessing management performance (based on the application of human resource [HR] indicators of performance) and the initial results of this work are reported here.

### **Implications for Management/HR Management**

If we take as a fundamental characteristic that a health service organisation, like any other organisation, comprises groups of people working towards a common purpose or set of objectives which can be measured in some way then, typically, managers will want to know whether:

- the objectives are being achieved;
- the service provided is as effective as it can be;
- the processes by which the service is being delivered are as efficient as possible;
- service delivery is improving or getting worse over time;
- how the organisation compares with others in its efficiency and effectiveness.

**Figure 1. Indicators for Measuring Organisational Performance**



An important point to make here is that these information needs imply that managers are actually managing (i.e. with responsibilities for the use of resources) rather than merely administering the organisations. However, the recognition by most governments that effective and efficient use of resources in health is critical if a satisfactory service is to be sustained has led to a significant shift towards the concept of managed health services away from bureaucratic and monolithic structures.

Decentralisation of service management is one observable measure which reflects this change in attitude and is increasingly the direction in which many health service systems are moving. However, in a decentralised system, where more rather than fewer decision-making points exist, there is the potential danger of loss of control, particularly with an inadequate information base. Improving this in the form of a set of HR indicators is becoming an increasingly important part of enabling the decentralisation of management.

It will become even more so with the increasing acceptance that health system performance in terms of efficiency, effectiveness and value for money is a legitimate focus for health services management.

### **Management Indicators**

Ideally, HR and other management indicators are constructed from generally available data and describe constituents of organisational activity, namely inputs, processes and outputs (see figure 1). It is this data that managers use in monitoring and as a basis for decision making<sup>(2)</sup>.

The indicators are usually created by linking two separate pieces of data to form a ratio. The indicators literally provide an "indication" of the relative state of key determinants of efficiency and effectiveness in comparison to "norms" of organisational activity. These norms may be derived from:

- external comparisons with other similar organisations;
- internal comparisons with the previous performance of the organisation;
- comparisons with some pre-determined standard.

**Figure 2. Hospital/staff performance comparison (between teaching hospitals A and B and all general hospitals in a country)**

Performance in relation to targets is a relative measure, not an absolute one. The "relative norm" for performance is commonly determined by comparing the mean value of the performance distribution for all similar organisations. Where there are differences from these norms, then the "exception reporting" provided by the indicators is an essential first step in pointing managers to where action needs to be taken. It is not just to show where performance appears to be "poor" compared to similar organisations elsewhere, but also to see where "good" performance is taking place, uncover the reasons why this is so and determine how it can be applied elsewhere<sup>(3,4)</sup>.

Ideally, several different indicators should be used to highlight an area of interest from different perspectives. By using several indicators in this way, managers can begin to understand what is happening; a single indicator is rarely sufficient. Early work on hospital bed usage by Yates provides some excellent examples of this use of multiple indicators<sup>(5)</sup>. Indicators by themselves tend not to reveal the reasons for success or failure directly; rather they point to issues and underlying causes and require further investigation to clarify the detailed causal factors. In themselves the indicators cannot provide absolute certainty that something is or is not happening; only a probability that something is occurring. A case in point is demonstrated in figure 2.

The compares between two teaching hospitals shown as a box plot in Figure 2 above. Box plots of the type shown here provide a way of showing the position of an institution in comparison to other institutions. Thus, in terms of beds, the two institutions compared here are among the biggest of all institutions, while Hospital B has one of the lowest beds to doctors ratios of all the institutions and substantially lower beds per doctor than Hospital A. Overall, the indicators would suggest that while neither institution is achieving a very high throughput of patients, Hospital A is achieving a more efficient use of its HR and bed resources. Clearly

more investigation would be needed to reach a definitive conclusion. The indicators have simply identified nature of the potential management issue.

### ***Human Resource Indicators***

The aim of the WHO project is to establish a small set of indicators which will assist managers, particularly in developing countries, in making the best use of the human resources available to them. The indicators to be used need to cover a range of HR measures and provide "pointers" to the likely efficiency and effectiveness with which human resources are used. HR indicators (HRIs) form only one part of management information and must also link with other information elements which report on performance in other areas of activity.

The project has explored a range of potentially suitable HR indicators which fit within a framework of opportunities for managerial action. It considers, specifically, the identification of a set of general HRIs which:

1. can point to issues and opportunities for local managers by comparison with other similar organisations and units;
2. have relevance to local as well as higher governmental or organisational levels; and
3. encourage local performance audits by local management through comparisons of changes in local indicators over time.

These indicators, and a methodology associated with using them, are intended to be generally applicable to a wide range of health institutions. They are equally appropriate for non-governmental organisations (NGO) and the private sector. Although they are primarily to be used to compare similar institutions and organisational elements within particular segments of the health sector (i.e. the public sector, NGOs or the private sector), cross-comparisons between different segments of the health sector can also be made. Careful judgement is required to do this to ensure compatibility in the circumstances of the institutions compared. It is, for instance, to be expected that HR costs in a public sector hospital or clinic with an emergency service requirement will differ markedly from a public sector hospital or clinic dealing with elective work only or a private sector hospital dealing entirely with planned admissions.

We can only generalise, therefore, on what management and manager objectives are in a particular country and the indicators they will need. In these circumstances, it is useful to define indicators which can be grouped to characterise the general relationships between HR and other elements of the health system. At the most general level, three major groupings of indicators are suggested. These are indicators which relate to:

1. the HR condition;
2. the product of the health system; and
3. the connection between HR and the product of the health system, i.e. linking 1 and 2.

This paper does not seek to provide an exhaustive or definitive list of human resource indicators. Nevertheless, a core of indicators is presented in this paper (see Table 1-3). They should be regarded as a "basket" of indicators from which those relevant to a particular

country's circumstances are chosen or added to. This may be, for example, through the addition of entirely new indicators or in using variants of an existing indicator. The final choice of indicators will be influenced by the specific issues that are regarded as most relevant in a particular health service and which are also most amenable to change within it.

**Table 1. Monitoring the HR condition**

<b>CHARACTERISTIC</b>	<b>GENERAL DESCRIPTION</b>	<b>INDICATOR OPTIONS</b>
A. Well-managed	Determined by maintained staffing levels, clear roles for staff qualified to do the work, good communication and team work	<ol style="list-style-type: none"> <li>1. Staff on duty (available): staff in post</li> <li>2. Vacancies: establishment</li> <li>3. Establishment: staff in post</li> <li>4. % budget on staff: total budget</li> <li>5. Staff reviews completed: total staff</li> <li>6. Post vacancy time: staff available time</li> </ol>
B. Properly trained	Staff are qualified to do the work required of them, know what that work is and receive regular training updates	<ol style="list-style-type: none"> <li>1. Number of staff receiving training: total staff</li> <li>2. Planned staff mix: actual staff mix</li> <li>3. Staff with job description: total staff</li> <li>4. Number of job descriptions revised: total jobs</li> <li>5. Total training time: total working time</li> </ol>
C. Motivated	Staff are committed, flexible, attend regularly and do more than they are required to do	<ol style="list-style-type: none"> <li>1. No. of staff leaving: total staff</li> <li>2. No. of outside visits: total staff</li> <li>3. No. of days of uncertified absence: total staff days</li> <li>4. No. of hours worked: official hours</li> </ol>
<b>CHARACTERISTIC</b>	<b>GENERAL DESCRIPTION</b>	<b>INDICATOR OPTIONS</b>
D. Skills matched to tasks	Staff doing the work they are competent to do	<ol style="list-style-type: none"> <li>1. See A and B above</li> <li>2. Prof. Health staff: other</li> </ol>

		staff 3. Skilled staff: unskilled staff
E. Staff matched to workload	Sufficient staff available to discharge duties assigned	1. No. of patients: staff number 2. No. of patients: professional staff numbers 3. Overtime costs: total staff costs
F. Staff well-supported	Staff operate in an acceptable working environment with satisfactory conditions of service	1. No. of times staff paid on time: total pay days 2. No. of staff with housing: total staff 3. Travel time to work: total working time

**Table 2. Monitoring the product of the health system**

<b>CHARACTERISTICS</b>	<b>GENERAL DESCRIPTION</b>	<b>INDICATOR OPTIONS</b>
G. Reduced morbidity	Activities of staff lead to reduced morbidity	1. Immunisation: Target number 2. Attended deliveries: total deliveries
H. Lowered preventable mortality	Activities of staff lead to lowered mortality	1. Live birth rate: 1000 births 2. Infant mortality: 1000 children <1 3. Mortality: 1000 population

<b>CHARACTERISTICS</b>	<b>GENERAL DESCRIPTION</b>	<b>INDICATOR OPTIONS</b>
I. Less evidence of recurrent illness	Treatment provided is appropriate and effective	1. Endemic caseload: total population 2. Repeated patient visit:

		total patients 3. Repeated treatments: total treatments
I. Increased health awareness	Public take active role in health matters and take action to promote family and community health	1. Household visits: no. of staff 2. FP clinics time: total working time 3. Staff providing HE: total staff

**Table 3. Monitoring the HR connection with system product**

CHARACTERISTICS	GENERAL DESCRIPTION	INDICATOR OPTIONS
J. Appropriate skills available	Mix of staff skills corresponds to the service requirement	1. See D above 2. Patients: skilled staff
K. Appropriate caseloads	Staff available in sufficient and appropriate numbers to meet service requirements	1. Skilled staff: non-skilled staff 2. Inpatients: number of staff 3. Clinic attendances: number of staff 4. Bed utilisation: number of staff
L. Meets population needs	Staff provide a service valued by the public	1. Patients: skilled staff 2. Total population: skilled staff 3. Expenditure per case

### *Defining HR Indicators*

Indicators can be developed to examine all the different elements of organisational performance. This is important because managers need to know what is going on across all the constituent parts of organisational activity and to understand what, if any, action is

within their power. The four main elements of performance identified in Figure 1 which require management attention are illustrated here using indicators focused on HR aspects:

- **Inputs:** this covers the resources introduced into the health system. Human resources account for the majority of health service costs and are therefore the most significant input. In making comparisons between health system units or over time it is useful to be able to look at measures such as: relative proportions of different staff types and grades; staff costs in relation to the total health service expenditure; numbers of staff relative to the local population.
- **Processes:** This looks at how the health service works as an organisation. In the HR dimension, process issues include organisational environment in which people work and the effect this might have on their performance, as well as more direct measures of HR efficiency with respect to the way the HR resources are used. Thus staff turnover rates; the "actual to planned" staff ratio; the ratio of new staff recruited to new staff trained all give an indication of the quality of the organisational environment. Bed occupancy rates to staff employed, on the other hand, provide a more direct relationship between HR and other resources inputs in the health care process.
- **Outcomes:** These are the products of the organisation. This is particularly difficult to measure in health service systems as there is little agreement on ways of measuring health outcomes (ie. the change in health status for a person having been in the health care system). Usually the best that can be managed are proxy measures such as overall population mortality rates to staff employed.
- **Outputs:** Outcomes are often expressed in so-called "intermediate" output measures such as the number of patients treated. This data can be more easily measured, but does not give an accurate picture of how health status is affected. Typical HR output measures could include: the number of nurses per thousand clinic attendances; trained nurses/midwives per 1000 live births.

Peters and Waterman (6) identify the "7Ss" - **strategy, structure, skills, style of management, systems, staff, shared values** - as key interrelated factors determining the performance of an organisation. The HR elements in this (staff, skills, shared values and structure) can be expected to play a significant role in changing organisational performance.

The most common words used to assess the impact of these related elements are "**efficiency**", "**effectiveness**" and "**quality**". But what do these words translate into in terms of a health service workforce? It is likely that the implications of these words are to question the extent to which the HR are:

- well-managed,
- properly trained,
- motivated,



- appropriately skilled,
- sufficient to undertake the required work,
- well-supported (working conditions);

and the extent to which the activities of the health service elements or institutions result in:

- reduced morbidity,
- lowered preventable mortality,
- less evidence of recurrent illness, and
- increased health awareness;

and, finally, the extent to which the activities undertaken by the institution or element of the health service are appropriate to

- skills available,
- case loads,
- type of population and their needs.

All of these factors provide some measure of quality of management of the HR and of the likely performance of the workforce. The measure of management quality clearly extends beyond that of the local manager because it necessarily must incorporate actions by those responsible for staff training, deployment and for career development within and beyond the local institution.

### *Using HR Indicators*

The principle guiding the use of HRIs is that **they must be used to record performance at a large number of institutions simultaneously and at regular intervals.** In doing this, the indicators not only record current achievement but also the range that exists between different institutions of a similar kind. Figure 3 shows such a comparison on three HRIs in current use in Britain.

**Figure 3. Set of Human Resource Indicators for a Sample of UK Districts  
(Quarter 2 - 1994/95)**

Even though the specific definitions of these measures are not given here (reference 7 provides a full specification), it is clear that there are substantial performance differences in productivity between these sample districts. It will also be apparent that HRIs such as these provide decision makers with an opportunity to:

1. determine what value is a suitable norm or standard of performance, using as a basis the existing performance range;
2. identify what institutions are exhibiting good and bad practice in terms of their efficiency and effectiveness;
3. develop new targets for the future which can be realistically achieved by managers in the service;
4. assess objectively the performance of managers within the health system.

The way in which indicators are used depends on where the manager actually functions within the health system. In general, the further away the manager is from direct patient care, the more strategic the perspective tends (and needs) to be. At the local level, however, many HR issues are tactical in nature. That is, the majority of the issues need to be addressed immediately or in the very short term as they involve staff working directly with patients and coping with day-to-day demands. Thus, for example, a manager will want to know how many staff are available on a given day or week and what effect that might have on meeting the needs or demands for service.

In the short term, HRIs will provide no new information that is any use to the local manager. It is only continued collection of HRI information that allows local comparison and comparison with other similar units that issues and opportunities for change being to emerge. The changes can be either tactical in nature or strategic within the limits of the local strategic function.

Managers operating at higher levels in the health system have both tactical and strategic functions. They need to assess how the local units under their control are performing, both compared with each other and with other units elsewhere, and over time. This information can help identify where resources might best be deployed or redeployed to improve services in the short term or serve to identify where best practices are being carried out locally and where others can be encouraged to do the same.

At a national level, longer-term strategy planning and resource monitoring across the health service as a whole will continue to be important. This requires an overview of what is going on across all local units and a need for information to be synthesised to provide a broad perspective on training, employment, career planning and standard-setting.

### ***Interpreting Indicators***

There are, potentially, a very large number-thousands-of indicators; the actual number depends on the level of detail the indicators can be expected to address. However, a lot can be done with a much smaller set of indicators. They may provide "pictures" of the situation which are less sharply defined than with the use of large numbers of indicators but they are more practically achievable.

The importance of HR indicators lies not so much in their technical construction or presentation but in their interpretation and application to management issues. The value of a single indicator is not in itself very useful. It is only through comparing values of multiple indicators between health service units, and in comparison to derived or pre-set "norms" that their worth becomes apparent.

To assist in interpretation of what these differences and ranges mean it is usual to concentrate attention on "outlier" values. In other words, those health service elements whose indicator values are at the top or the bottom of the regional or national range. This may be regarded as "good" or "poor" (depending on what the indicator is measuring) but rather than consider them as absolute positions, it is helpful to take a constructive view and focus attention on the possible underlying causes for such performance. National averages can in themselves be misleading, however; it may be that the "national average" of the majority of health service units represents an unacceptable level of performance in itself.

The primary purpose of looking at units with indicators at the margins of the range is to establish what is occurring locally which results in these "exceptional" circumstances. Investigations into the underlying causes for the indicator value will uncover practices which might be emulated (or avoided) elsewhere and thus improve the management of human resources in general. However, there are many reasons why indicators might be at extreme ends of a range and careful, more detailed analysis is always required to help establish why this might be the case:

- incorrect/ missing data/ simple clerical input errors to the indicator system
- poor local management of resources
- underlying structural causes outside the immediate control of local managers

It is important not to be categorical in interpreting indicators for these reasons and attributing 'blame' for the performance of the unit concerned. Indicators cannot measure every single aspect of what is occurring within a location; they can only provide an indication of circumstances and possible conclusion which will inevitably require more detailed investigation.

With a smaller set of indicators, complex menu structures for indicator analysis are not required. It is likely that, apart from the three major groupings proposed in this paper, all the indicators will reside at the same "menu level" in the system. These can be supported by "interpretation guides" which translate the indicators into descriptions of the possible situation. Some examples of the type of information that might be provided in the guides are shown using a limited number of indicators:

1. High numbers of staff per 1000 population; high numbers of staff in post in relation to budget; high bed occupancy rates; low staff turnover rates; low overtime rates; low population mortality rates.  
*Might imply an efficient and effective health service*
2. High population mortality rates; low ratio of doctors to nurses; low ratio of skilled to unskilled staff; low numbers of staff in post in relation to budget.  
*Might imply underfunded or underprovided service; shortage of trained (or any) staff for available posts; implications for staff training.*
3. Long time taken from qualification to taking up health service post; low actual to planned staff ratio; high overtime rates; high staff turnover rate  
*Might imply inefficient HR recruitment process; potentially low morale among existing staff.*

The implications of the indicators will clearly vary from level to level. Indicator statement 3 above provides a good example of this.

At local level, the manager will be aware that there are problems. The local HRIs will initially tell him or her nothing new. From personal contacts with other managers, the manager may conclude that this is simply a reflection of the health service condition or that his or her institution is in some way disadvantaged. It is unlikely that the manager will assume either that it is his or her fault or that there is much that can be done about the situation. It is not until information about and comparisons with other similar units begin to emerge that the manager may consider whether there is anything that could be done to improve morale and retain staff.

At local level, using HRIs from a number of similar units within the local area, the manager could make comparisons in two directions:

1. between the units within the local area to establish if this is a problem of a particular unit and then
2. with other similar areas elsewhere using median values of all similar localities.

The two-way comparison could lead to some short-term action within the local area to redeploy local resources and improve local recruitment processes and/or terms and conditions of service. At the same time, the local manager might put pressure on the region or national centre to produce more staff and/or help to make it a more appealing to work in that particular area.

At regional and central, while there may be some short-term action to divert resources to support particular regions and districts, there will be more attention on whether the problems presented are endemic and need more fundamental action. It will require significant periods of time to pass and substantive investigation before the more fundamental issues become clear.

The essential characteristic in this process is that there is a requirement for action at multiple levels of the system. If this is not understood and implemented, the use of HRIs will collapse.

### ***Preparing and Using Indicator Information***

It is important to recognise here that what is useful and relevant at the local level may only be useful when summarised across localities for higher levels in the health system hierarchy. Similarly, local managers will need to know what is happening elsewhere in summary; they will

not want to be overwhelmed with data from many individual units. The information needs to be collated, summarised where necessary and presented in an appropriately digestible form. In terms of resources and skills, this can really only be done at higher levels in the health system.

Before the actual production of indicator reporting commences, the responsibilities for collecting the data required, or collating existing data sources, need to be established. This would include how frequently data is required and how often it would be expected that the indicators themselves might be used. To help operational level staff undertake this task it is important to have the definition of the data items as tightly defined as possible to ensure that all districts are using a common reporting base.

As noted earlier, the frequency of use of indicators is likely to vary at different managerial levels. In addition, there will be constraints on the ability of the system as a whole to provide information in an indicator format over short time intervals and an annual review is probably the best that can be expected due to the logistics of data collection, its transmission to the processing centre, data checking, preparation of indicators and their distribution to districts. Typically, this is a process which itself takes several months. With a reasonably small set of indicators it might be possible to prepare them on a six-monthly or even a quarterly basis, but that will depend on the reliability of the data gathering and indicator processing.

However, because the longer-term positions of health districts and units tend to change slowly, making comparisons between organisations will normally be required only annually or at best semi-annually, rather than on a more frequent basis.

It is likely that local level managers will want to make more immediate and frequent use of the raw data forming the basis of the indicator information and they should be encouraged to do so. They will already be gathering or recording this data for other purposes on a regular and frequent basis (even daily for some items). For immediate, operational management issues this data is unlikely to be needed in an indicator format (unless local managers feel it desirable).

As a general principle, indicators should be constructed making use as much as possible of existing data sources. Data for many indicators will be based on items which are being continuously recorded already (such as staff absences, overtime payments, number of births, number of clinic contacts). Other indicators will rely on data collected less frequently (for example, number of staff reviews carried out in a particular month, or on a once-off basis each year (for example a survey of staff travel-to-work times).

Local managers will need to be responsible for deciding who should record particular data items, and who should be involved in undertaking any special data collection which may not be routinely recorded. Some simple checklists to support managers in this activity could also be of use in quality control. As noted above, managers should be encouraged to review this raw data as it becomes available to monitor any trends and take any immediate management actions as necessary and appropriate.

Transferring data to the data analysing centre would be through preparation and physical transfer of a copy of completed proformas to be sent to (or collected by) the processing centre (or region where initial processing may take place) for forwarding to the national centre. If computers are available locally, this data might be submitted electronically but should be

accompanied by hard copies of the data proforma records. The actual transportation of the information depends on what local communications systems are available. There might be some advantage in having staff from the region collecting the data and make preliminary quality checks of local data completion.

Indicators are only as good as their design and use. They are open to both criticism and abuse, particularly if they have been developed without the involvement of a wide constituency of future users. The more people who will have a stake in their application are involved in establishing the indicators in the first place, the more the indicators themselves will be perceived as useful and be properly sourced and maintained.

### ***Presentation of Indicators***

The main value of indicators lies in managers at all levels being able to make comparisons between different localities. This means that the indicators need to be presented in a format offering comparisons: locating the value of a particular health service unit in relation to others and displaying the range of values across the country and presenting numerical information to people who are often not "number oriented". In part the multiplicity of information provided can make interpretation of a "compound view" of the situation difficult.

While some of these difficulties can be alleviated by training of users, there is an underlying issue that the way in which information is interpreted can be a country-specific characteristic. Keeping presentation as simple as possible may be the only objective possible for developing a generalised presentation style in these circumstances. How simple and what form should be adopted for the presentation will depend on:

- how many indicators there are and whether they can be grouped into convenient categories;
- who will be using them and for what purpose (this includes taking account of differences in the requirements of different levels in the health service system and different types of users [managers, planners, policy makers]);
- how sophisticated users are in interpreting indicator-type information

The following presentation formats-either singly or in combination-might be suitable:

- **simple tables** (also showing previous values for the locality and/or comparisons with national/ other areas)
- **graphs** including bar charts and histograms (particularly useful for comparisons with other areas)
- **maps** provide a good picture of geographic differences but have a restricted ability to compare multiple indicators simply
- **box-plots** contain a lot of information but would require a higher degree of user training to achieve good interpretation

- **commentary** (with or without indicator values). If without, then the information would have to be more prescriptive in terms of what the local manager must do.

Examples of some of the different forms of presentation have been shown in the diagrams in this paper. A more detailed description of the presentation options is discussed by Day (8). The most common form for sets of multiple indicators are the box plots shown in figure 2 as they allow a large number of indicators to be shown in close proximity and, as a consequence, make interpretation easier. As indicators have the potential to be used by planners and policy makers as well as managers, it may be necessary to produce the same indicators in different presentation formats for different audiences.

With only a small number of indicators (e.g. less than 20) computer-based indicator presentation systems are probably unnecessary. However, for a regional /national level where the raw data is being gathered and processed, a simple PC-based facility using spreadsheet technology would probably be valuable to aid and speed up the analytic process.

The need for computerisation at higher levels is partly due to the increased volume of data at these levels-indicators from all/ several districts-and it becomes a more laborious task not only to interpret for each district, but also to detect patterns or trends across several districts in a region, or to assess trends in individual districts over time. This technology also simplifies the preparation of high quality graphs/summary tables or analyses for individual districts and simplifies the use of standard report formats. A specific computer software program for producing performance indicator information displays has been developed by the European Regional Office of the World Health Organization<sup>(9)</sup>. It allows users to incorporate their own country-specific basket of indicators.

### ***What Training and Education is Needed?***

The introduction of indicators from a higher level in an organisation could potentially be seen as threatening to the local managers so it is imperative that their introduction is handled sensitively. Part of this lies in educating people -- including those who administer it from higher levels of the organisation -- so that everyone has a role to play in interpreting and using the indicators. This approach gives a more positive image to the indicator concept and encourages people to be proactive in their response to the indicators rather than taking a reactive position. This can be seen on at least two levels :

- immediate training on the interpretation and use of the indicator set; and
- addressing wider issues of management in which the indicators play a part.

On the first of these issues, local users need to be introduced to the following concepts:

- basic management principles and how indicators support this
- definitions of the indicators and the data sources they are based on

- how they can be interpreted
- their use in comparing performance over time and across districts

A mixture of workshops and distance learning packs could help here, with each general distribution of the indicator set including some form of commentary on what they seem to be showing across the country/ region and for the specific district. However, it is important to leave scope for local management initiatives and restrict prescriptive advice on local management action.

With respect to the second issue, indicator workshops could start to address wider management concerns such as how to:

- implement management action on the basis of the indicator information;
- improve data collection/ accuracy ;
- construct additional local indicators as required;
- involve local staff in their use (cascade training where appropriate);
- promote feedback and interact with different levels of the administration.

There are advantages in managers developing local indicators where additional data exists and there is a perceived need, perhaps being recorded more frequently than the data for the national set and used specifically to address one particular issue. When that issue has been resolved, the local indicator could be discontinued. If local indicators are to be developed, they should be in conjunction with any established "national" set and not be seen to replace or downgrade them. The idea of local indicators is to aid decentralisation through empowering local managers-within clear national frameworks-to develop their local resource management skills. This is one way of enhancing their capability.

Training and education, apart from addressing basic data collection, processing and interpretation skills, should also focus on encouraging local managers to use the idea of indicators on their own initiative locally where a management issue or specific data might exist.

### ***Suggested Steps for Establishing Indicators***

Before an HRI system is established in a country there needs to be preliminary work undertaken to establish a range of indicators appropriate to national circumstances and needs. This work would aim to :

- clarify the main purposes for wanting to use indicators and identify the desired outcomes;
- specify the set of indicators to be used and define data requirements;
- set out the process for gathering data and constructing and distributing indicators across the country;
- decide how the indicators would be used in the management process to increase efficiency and effectiveness.



Based on the UK experience, the necessary conditions for the development of a successful management indicator system (i.e. one which is properly maintained, has credibility, is used regularly and developed locally) are that there is:

- support from the central authority (e.g. Ministry) as well as local management levels
- a logical framework of indicators
- a focus on relative rather than absolute performance
- an ability to make cross-organisational comparisons
- an efficient presentation and distribution system
- good training and education support for users

Clearly, there will be different objectives and different administrative/ managerial arrangements from country to country. These will require local adaptation of any basic framework for the development and introduction of indicators. However, the following might be regarded as a set of general steps applicable in setting up an indicator project in any country:

1. Establish the reasons for introducing indicators and the objectives to be achieved. This is fundamental; questions need to be asked to ascertain who wants the information and why it is required e.g. at what administrative level indicators are to be used at, how to incorporate the activity of NGOs where it is important, what the timescale is for turning data around and how it fits in relation to other planning/ budgeting cycles.
2. Initial appraisal of the existing administrative/managerial framework to confirm lines of accountability/responsibility. It is not always clear-even when the issue has been explicitly addressed as part of the process in setting up the indicators in the first place-who controls what in an organisation and especially one as diverse and complex as the health service where different professional groups co-exist and line-management structures are not always clearly defined. Nevertheless, a critical early requirement for indicator design will be to determine the role these indicators are to fulfill.
3. Establish managerial levels at which the indicators are to be used. Also closely linked to (1) and (2) this is important to establish early in the process as, to work best, indicators need to be timely and relevant to the managers making use of them. Establishing this will help to determine which indicators are appropriate for given management levels and how frequently they need to be collected or disseminated.
4. Describe required indicators. This is where actual indicators are selected and defined. Table 1-3 provide a core of possible indicators from which to select and build a core set of indicators appropriate to the opportunities for action in the health system.
5. Identify existing/ required data sources. There is inevitably going to be a compromise between having the “ideal” data for a particular indicator and making do with what is

already available or easy/ straightforward to measure. In general, the basic set has been established in the light of experience of using data systems in developing countries.

6. Establish data collection and processing procedures. If the indicators do require new data then getting this has to be considered in the light of existing mechanisms for data collection. If data processing is required, a decision also has to be made at what organisational level this is to be done. Additionally, protocols for data collection need to be set out for field staff.
7. Develop an indicator distribution network. Establish the timescale for gathering and processing data and the development of the indicator sets and how this fits into any existing schedules for disseminating information or for local planning/ budgeting/ review cycles if they exist. It is also necessary to consider the medium by which the indicators are to be distributed, who they are to be given to, and what actions are required by recipients.
8. Train and educate in the use of indicators. This is a vital component required from an early stage. The process might proceed along the following lines:
  - explanation of why indicators are being introduced - "what is in it for managers" - and what they are being asked to do;
  - how they can / should interpret the indicators;
  - how they might develop their own indicators locally;
  - development of a reward system for local initiative in their use.
9. Design monitoring arrangements for data quality/ feedback on use of indicators/ framework for adjusting/ developing indicator set. Some "indicators of the indicators" will be helpful at higher management levels to assess if the introduction of the indicators is creating a beneficial effect and whether (over time) any changes need to be made to it. This overview is important even where management decentralisation is an objective.

In addition to indicators developed as ratios, there is also a role for simple checklists. Compliance or otherwise with these simple lists also provide management information and can be used to monitor performance where more sophisticated data collection is not possible.

### ***Conclusions***

Indicators should be seen as one part of a wider approach to improving HR and health service performance which includes :

1. identifying and supporting desired improvements in the service performance and
2. creating an environment in which achieving these improvements is seen to be desirable and worthwhile to managers in the service.

The HRIs cannot lead this process alone; they simply identify needs and opportunities and help to stimulate progress towards meeting service objectives. As a consequence, the process as a

whole has to start with a clear and specific intention to improve management in the health system. The implication of this statement, then, is that the introduction of HRIs will not achieve benefits unless decision makers in the health sector have a clear set of objectives for improving HR performance and have the means to cause the changes needed to occur.

The use of indicators will only be sustained if managers in the health system see some personal and professional benefit from their use. If this is the case, the use of management indicators in general and HR indicators in particular must be accompanied or preceded by:

1. An organisational culture that encourages managers and staff to take the initiative in improving performance and accepting the attendant risks.
2. A career and reward system that rewards managers for reaching higher levels of achievement.
3. A specification of health service objectives that includes targets for managerial efficiency and effectiveness.
4. A sufficient control of resources within the health system that managers are enabled to achieve targets of performance.
5. An information system that can sustain rapid movement and processing of data between field managers and central processing.

Indicators by themselves cannot produce change. This only comes about through action taken by managers. For indicators to support managerial action requires that the design and selection of indicators must be tailored to the way managers who will be using them work and, furthermore, to the type of controls they have over the system in which they work.

The way in which indicators will be used will vary significantly among users and will reflect individual interest, existing management processes and the organisational pressures and rewards for good management. They will also reflect the power and responsibility which managers have over the resources at their disposal. The selection and use of indicators cannot be divorced from the managerial environment in which they are applied. The findings of a UK survey <sup>(10)</sup> on what local managers found to be the most valued features of the national NHS performance indicator set were :

- Ability to make comparisons
- Highlight areas of interest
- Wide range of indicators
- Ease of use
- Standardised data

On the one hand, these value rankings reflect the wide range of issues local managers of different types are expected to control; on the other hand, they importantly provide a basis for resource bargaining which is a feature of the UK health system.

It is apparent from the study that the more widely the indicator information can be disseminated, the better the chance of its being seen as a useful tool and acted upon. It is important to give all of those involved a “stakehold” in the indicator process

If they are to make a useful contribution, the introduction of indicators must be as part of a controlled process of management change in which the benefits of use are apparent to all the users and are in step with the capacity of management to act

Introduction of indicators is only meaningful if combined with other management development activities. It must be tempered by the state of management development that exists. This implies that the development of indicators will not be a single event but should be an evolving process linked to management growth

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