Book
11

PUBLIC HEALTH RESOURCE NETWORK

PHRN

District Health Management

NATIONAL RURAL HEALTH MISSION
राष्ट्रीय ग्रामीण स्वास्थ्य मिशन
(2005-2012)

Book 11

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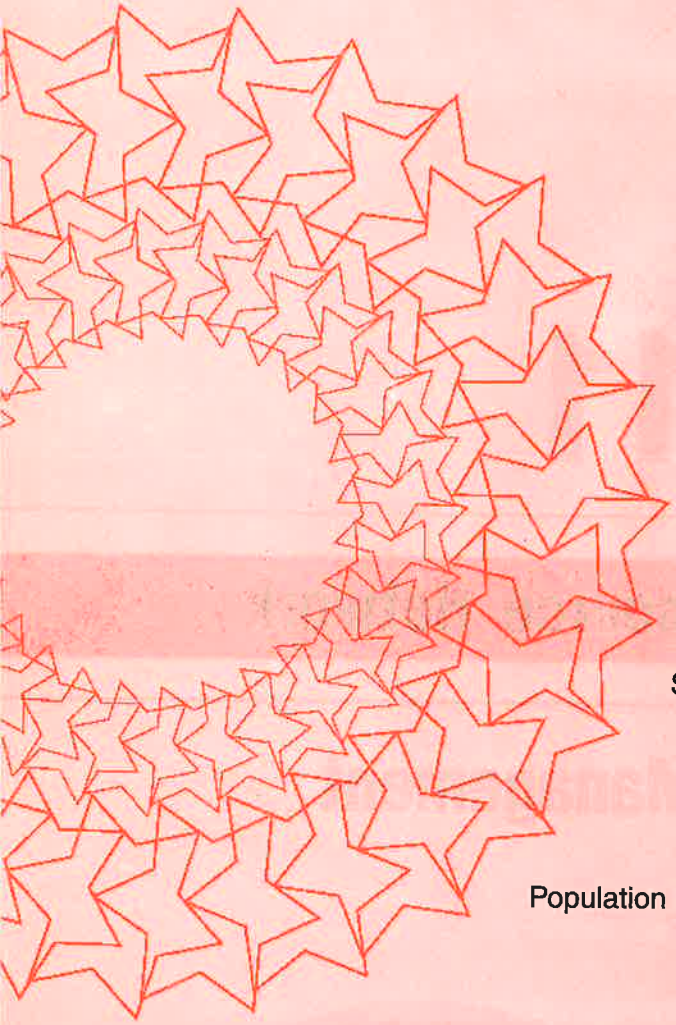

Coordinating Agency

Public Health Resource Centre, New Delhi

Partners

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National Health Systems Resource Centre
State Health Resource Centre, Chhattisgarh
ICICI Centre for Child Health and Nutrition
National Institute of Health and Family Welfare
Department of Health and Family Welfare, Chhattisgarh
State Institute of Health and Family Welfare, Chhattisgarh
Jharkhand Health Society
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Preface

Public Health Resource Network

The Public Health Resource Network (PHRN) aims to provide support to public health practitioners working in the districts in all aspects of district health planning and public health management. One central element of this initiative is a capacity building effort structured as a distance learning programme or as an 18 day training programme with an active post training follow up and mentoring support. These capacity building programmes are not substitutes to formal professional public health training and they do not carry with it any guarantee of increased employment or career options. They are meant to support individuals and organizations both within and outside the health department who are committed to work for a more equitable and effective public health system. This programme complements official training and education programmes through an open-ended, more informal and immediate reaching out with information, tools and a diversity of programme options and perspectives.

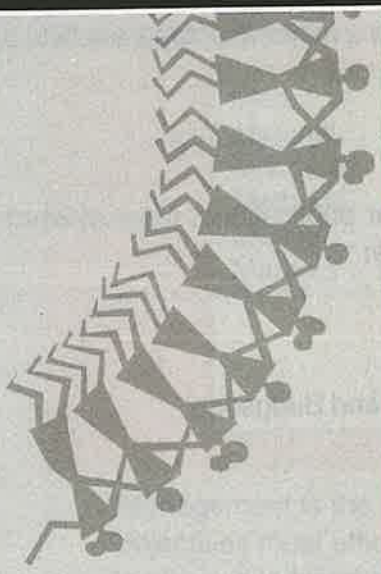
The Health Mission needs a combination of dedication and professionalism, where being a professional is not one more form of privilege- but a competence that anyone willing to put in the time and effort — and a little expense— can acquire. Thus the contact programmes and networking efforts are intended to evolve into mechanisms of sharing of resources, and building mutual solidarity amongst those who work for change. The immediate context is the National Rural Health Mission. But hopefully the voluntary network that emerges will contribute over the years to the evolution of a network of district and block level resource groups who provide technical support to all efforts at decentralized planning and decentralized governance and to all societal efforts towards an equitable and just society.

In this book, the eleventh volume of the PHRN series, we go beyond the district planning effort to come to grips with programme implementation at the district level. Of course since even this has to be planned for, it could continue to be seen as part of the district planning exercise. But the focus now clearly shifts to public health management. Most public health management courses are really a full two year elaboration of the competencies covered by this one book. Such public health management courses assume that the teaching about health programmes is either

unnecessary as the trainees already know it, or that it is covered elsewhere, or that it is best left to technical experts. Within this understanding, public health management courses should focus mainly on management skills and some degree of epidemiology. But as you can see from the structure of these books, management skills are only one set of skills amongst the many that are needed. The PHRN believes that over decades of vertical programmes, knowledge in this public health domain has got so fragmented and compartmentalized that though there would be many technical experts who would know more than what we cover in this book in one specific area (e.g. on tuberculosis or immunization) there would be none who would have adequate knowledge and skills in all the areas that the first nine books cover. Most existing technical experts would therefore need strengthening on the technical aspects of public health as a prelude to acquiring management skills. The PHRN also believes that the ability to look analytically , even critically, at the technical packages of the national programmes is a key skill requirement for decentralized planning. In the discourse on public health management capacities, there is a risk of isolating and mystifying management skills and downplaying its close relationship toother forms of public health knowledge. But there is also the other risk of trivializing it and assuming that management is nothing but common sense and experience. This book we hope will help practitioners of public health understand some of the key areas where management skills are required and set them on the path to acquiring these.

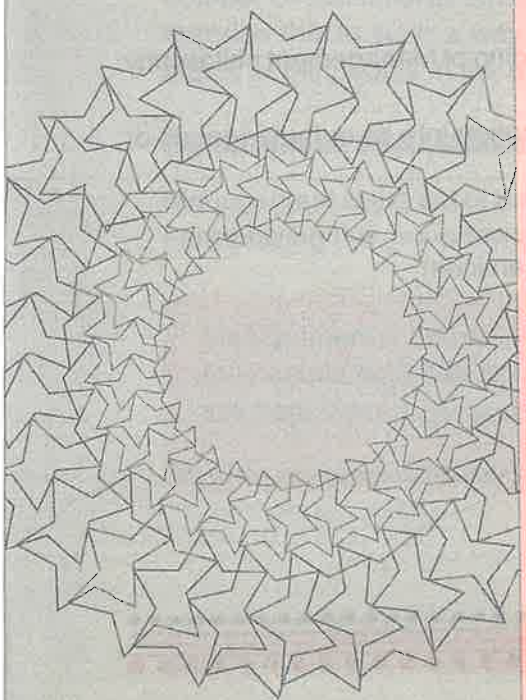
Lesson ONE

Basic Principles of Management



In this lesson we shall discuss:

- What management means
- The various basic models of management
- A system and its components
- Functions of management



1.1 INTRODUCTION

Thinking of management from a very broad angle, we can say that it refers to a common set of activities that are designed to promote and direct purposeful work. It is when people get together in a formal relationship – such as that of an organisation, that management becomes a major and separate field of activity.

WHAT IS "MANAGEMENT"?

We come across a number of definitions in the various books and other publications, most of which describe management as a process. Some of the common definitions are:

- Getting work done from others.
- Planning, Organising, Staffing, Directing, Co-coordinating, Reporting and Budgeting.
- Evaluating and choosing between alternatives.
- Making logical decisions and achieving consensus.
- Resolving conflict [includes, choosing between alternatives].

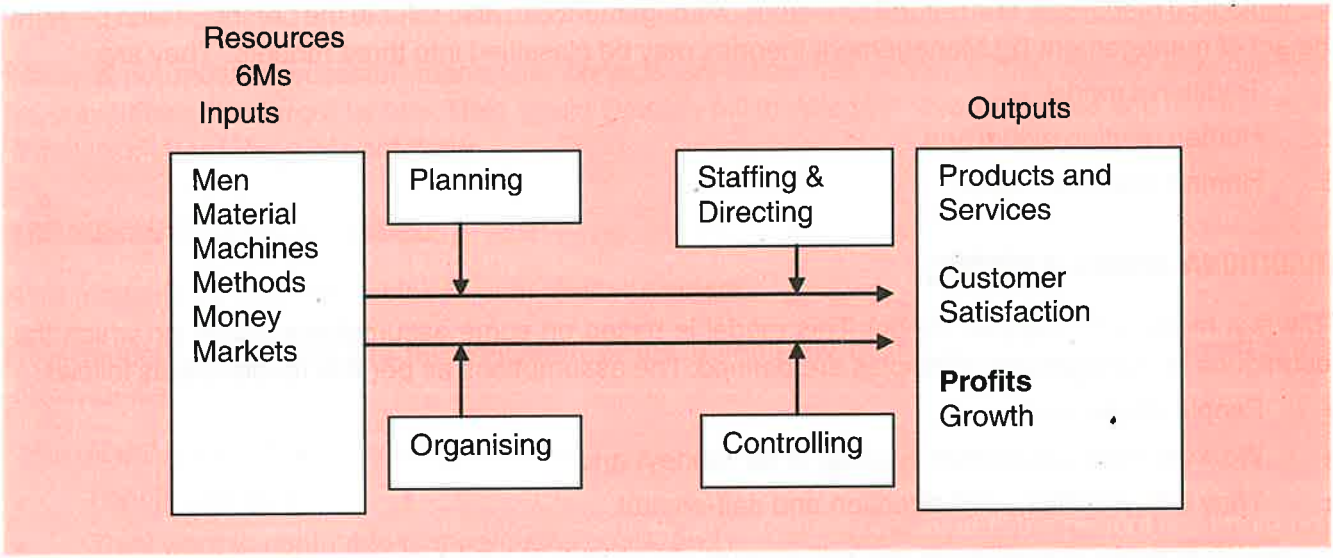
All the above definitions look at management as a process. However Management can be looked upon as a 'discipline' or a 'faculty'. Management is also used to refer to a "style of management". Management can also be looked upon as a 'philosophy'. Management can also be in reference to 'an amorphous group of individuals'; responsible for the functioning of an organisation.

The following definitions of management may help in getting an understanding of Management philosophy.

1. Management is a process applied to convert inputs of the organisation into its outputs (goods or services).

INPUTS —Management→ OUTPUTS (goods or services)

Process of Management



2. Management is the process of optimising a mix of resources in order to achieve Organisational objectives most efficiently (3). Effectiveness is getting something done in time while efficiency is measured in terms of reduced cost per unit of output which could be goods or services.

In the Health care scenario, management would be essential to maximise the outputs primarily related to the health of people and in case of public health issues improving the indicators of health, with rational use of resources like manpower, money, machinery and materials.

In managing a district health system we have available with us a mix of resources – we have a budget, we have a number of people with various skills, we have different types of knowledge, we have a number of institutional structures and we have different types of equipment and supplies. We need to manage this in such a way as to get to the outputs we want – all of which go to improve the health status of the people in the district.

DEFINITION OF MANAGEMENT

Management is the act of directing and controlling a group of people for the purpose of coordinating and harmonizing the group towards accomplishing a goal beyond the scope of individual effort.

> Management is that function of an enterprise which concerns itself with the direction and control of the various activities to attend the business objectives. Management is essentially an executive function: it deals particularly with the active direction of the human effort
>
> By: William Spreigel

Management encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources. Management can also refer to the person(s) who perform the act of management (2).Management theories may be classified into three models. They are:-

1. Traditional model
2. Human relation model and
3. Human resource model

TRADITIONAL MODEL (X THEORY)

This is a highly work-centred model. This model is based on some assumptions based on which the techniques of management principles are defined. The assumptions as per this model are as follows:

- People dislike work.
- Workers work just to earn a living(or for money) and
- They lack creativity, self-direction and self-control.

According to these assumptions, the functions of a manager involved close supervision and control of his subordinates.

The manager needs to break the job into simple, repetitive and easily learned operations.

He should also establish detailed work routines and procedures, and enforce them firmly but fairly.

However the traditional model has faced severe criticism as it looks at human beings as parts of machines and considers workers as emotionless creatures without any individual needs and wants. Even in theory if such a model is obviously discredited, in practice these are the implicit assumptions on which many managers function, even without being conscious of it.

THE HUMAN RELATIONS MODEL(Y THEORY):

The human relations model insists that the worker should be treated as a whole person instead of taking his skills and aptitude for the work alone.

The human relations model assumes that:

- The workers want to feel useful and important.
- They have desire to belong and to be recognized as individuals and
- The need to belong is more important than the need for money to motivate people to work.

Based on these assumptions the basic task of the manager is *to make each worker feel useful and important.* He/She should keep her *subordinates informed and listen to their objections to her plans.* Sharing information with subordinates and involving them in the routine decision-making process will satisfy their needs to belong and to feel important.

Workers should be *allowed to exercise some self-direction and self-control* on routine matters. This will increase their morale, reduce resistance to formal authority and invite co-operation.

Many, if not most "successful" managers, consciously follow this model. If they are not effective they would attribute it to larger factors. They would typically fail to delegate responsibilities and find that even if they work hard the job is not done.

THE HUMAN RESOURCES MODEL:

This model is an extension of the human relations model.

This model emphasizes the full utilisation of the potentiality of the subordinates by giving them opportunities.

This model is based on the assumption that:

- People like work.
- They want to contribute to meaningful goals, and
- People can have progressively more responsibilities, self-direction and self-control.

Based on these assumptions, the major task of the manager is to *make use of the untapped human resources in the organisation.*

He should create an environment in which all members may contribute to the maximum. He or she would delegate as much powers as possible to functionaries and structures below that level of organisation, only keeping a guidance and leadership function with himself or herself.

USING APPROPRIATE MODELS

Each begins with a set of assumptions about human attitudes and behaviours. Based on these assumptions it then describes appropriate managerial actions.

All the three models discussed are useful for any organisation and may be functional at the same time.

The function of a particular model of management depends on the type of subordinates and the type of situation.

For "incompetent" subordinates, - where the levels of skills and experience is not upto the needs of the job, the traditional model will be useful. Incompetence may be due to lack of qualification, lack of experience, or not having had the motivation or need to make the effort to learn. For such subordinates the manager has to decide everything and supervise them closely.

Competent subordinates need encouragement and guidance for which human relation or human resource model will be useful.

An emergency situation calls for quick decision-making and action. Here the traditional model approach will be of use.

The human relations model may be applied for routine work situations.

Long term planning or organising new services may need the human resources model. One may have to begin work with the human relations model and work towards achieving a human resources model.

Some other models of Management:

Autocratic Model	**Democratic Model**	**Laissez Faire (let us alone) Model(autonomy model)**
Leader/ Manager determines the goals, objectives and duties of the staff, himself	Leader/Manager involves the staff in determining the goals, objectives and duties of the organisation	Leader/ Manager allows the staff to determine their own goals and objectives without any interference
Strict supervision and monitoring by the Manager	Supervision and monitoring done in consensus with the staff	No supervision or monitoring done
Manager is the final authority	Staff are involved in the Decision Making process and decisions are taken based on consensus	Manager not involved in decision making, only facilitates the process among the staff
Suitable in case of emergency and where the staff is incompetent	Suitable in routine conditions and where the staff is competent	Suitable in case the staff is highly talented and needs freedom to work.
Focus is exclusively on performance and activity	Focus is exclusively on interpersonal relationships with the staff	Focus is non interference in the activity and work and allowing the staff to utilize their talents without constraints

SYSTEM

A system is composed of regularly interacting or interrelating groups of activities/parts which, when taken together, form a new whole. An organisation can be considered as a system. A number of organisations functioning together towards a goal as happens in the health sector is also a system. When we talk of health systems management we refer to the interacting nature of all the health care facilities and supporting institutions and the processes and resources that go into making it work. A systems approach refers to learn to deal with each element in the context of its relationship with all other elements and therefore to address many elements of the system in an inter-related and co-ordinated way.

The components of a health system are:

- Inputs: The raw materials required for the production of goods/services are referred to as inputs. These inputs would include resources like materials (drugs, essential equipments like X-rays or ambulances, buildings etc), human power (Doctors, Nurses, paramedical staff, etc), and money.
- Process: Management is a good example of a process, which works towards transforming inputs into the outputs. A process is composed of various procedures. Thus the inpatient management process is made up of Admission, Treatment, Operative and Discharge procedures. Hospital management is made up of a number of such processes- outpatient management, management of support services – laundry, kitchen, pharmacy, diagnostics, medical audit and review, workforce management, stock management etc... And health sector management is made up of a number of processes like district level planning, hospital management, disease control programmes implementation, outreach services for women and children etc.
- Outputs: the goods/ services provided by an organisation would be the output. In hospital setup improvement in the health of the patient who comes to the hospital is the final output, whereas public health sector outputs are evaluated based on the improvement of the Health Indicators.

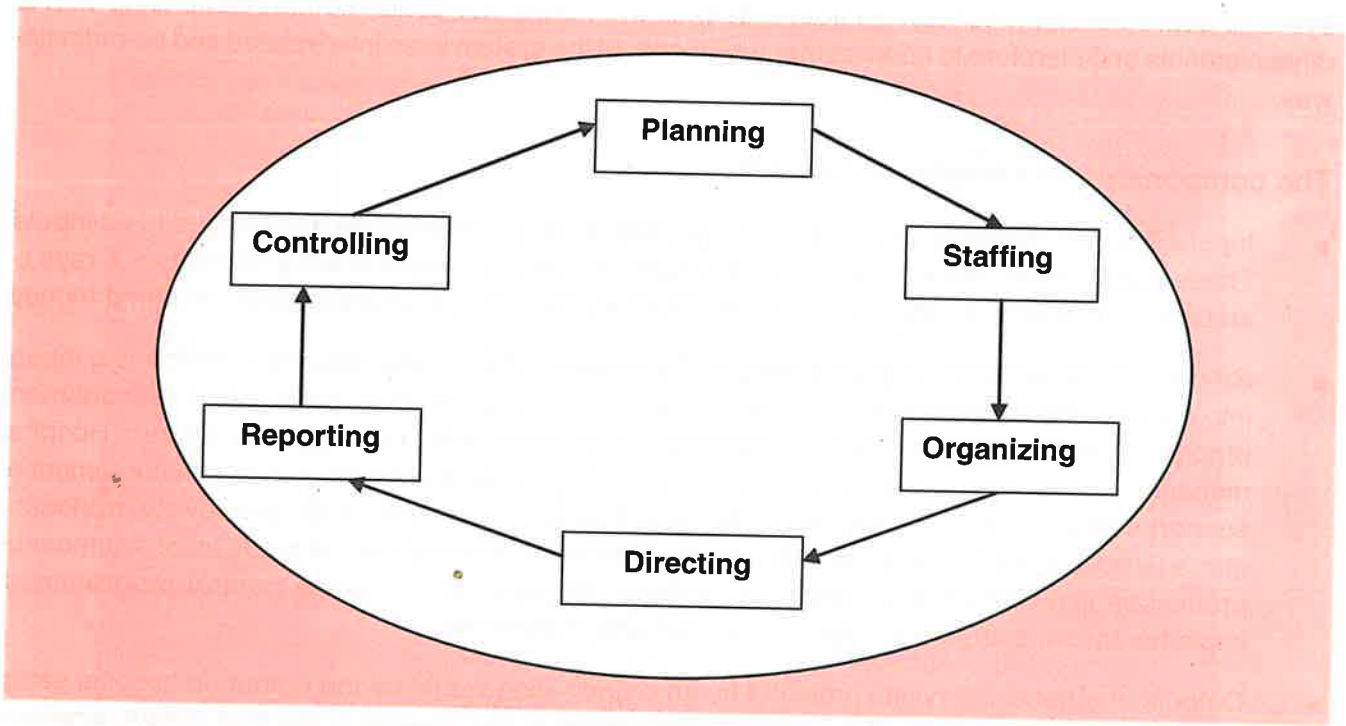
Systems can be classified as closed and open. A system which has no interaction with the external environment is considered as a closed system, whereby the outputs are utilized as the inputs for the subsequent cycle. An open system, on the other hand, would have an interaction with the external environment.

1.2 FUNCTIONS OF MANAGEMENT

Any textbook of management defines the following as functions of Management:

- Planning
- Organising

- Staffing and Supervising
- Directing or providing leadership
- Improving performance standards.
- Reporting
- Budgeting and Financial management



The last two functions have been presented in modified forms in some lists.

Apart from the above, there are at least two other important management functions, viz.

INNOVATION AND REPRESENTATION

Every manager of an organisation performs the function of "Representation" of the organisation in his dealings with people outside the organisation. In practice, this function is not limited to official dealings but also includes personal dealings to a great extent.

Innovation is essential for the Manager to be able to customise the process and functioning of the institution as per the needs and culture of the organisation. This function provides the manager with the alternative of being able to introduce changes in the institution and organisation.

1.2.1 PLANNING

Planning is the process of thinking about the activities required to create a desired future on some scale. This thought process is essential to the creation and refinement of a plan, or integration of it with other plans.

A plan is a proposed or intended method of getting from one set of circumstances to another. They are often used to move from the present situation, towards the achievement of one or more objectives.

Planning literally just means the creation of a plan; it can be as simple as making a list of things to do. It needs to be understood that future is uncertain and planning aims at minimising the uncertainties of the future, through an in-depth analysis of the internal and external environments in which the organisation operates.

Planning is an essential function in district health systems. Since the system is made of many diverse types of activities and processes and institutions, the act of planning is also an act of coordination.

1.2.2 ORGANISING

Organising is the management function that usually follows after planning. It involves the process of assignment of tasks, the grouping of tasks into departments and the assignment of authority and allocation of resources across the organisation.

Organising is the act of rearranging elements following one or more rules. It can also be seen as the opposite of messing up. Organised activities would increase the efficiencies within the organisation.

Structure of Organisation:

1. The framework in which the organisation defines how tasks are divided, resources are deployed, and departments are coordinated.
2. A set of formal tasks assigned to individuals and departments.
3. Formal reporting relationships, including lines of authority, decision responsibility, number of hierarchical levels and span of managers control. This also includes defining the chain of command
4. The design of systems to ensure effective coordination of employees across departments
5. The formal definition of authority, responsibility and accountability within the system.

- Authority - formal and legitimate right of a manager to make decisions, issue orders, and allocate resources to achieve organisationally desired outcomes e.g. an on duty medical officer has the authority to take decisions about a critical patient in the ICU, admitted under a consultant.
- Responsibility - duty to perform the task or activity an employee has been assigned e.g. it is the responsibility of the medical officer in charge of the ward to counter check the correctness of the medicine and its dosage which is being given to the patient.

- Accountability - the fact that the people with authority and responsibility are subject to reporting and justifying task outcomes to those above them in the chain of command e.g. in case of the death of the patient in the hospital, the consultant is accountable to the relatives and not the medical officer in charge.
- Delegation: the process managers use to transfer authority and responsibility to positions below them in the hierarchy. Delegation has important advantages like it helps in reducing the work load of the top managers; it improves performance as a result of delegation of power and authority, it promotes increase in capacity and increases the flexibility to meet customer's needs and adaptation to competitive environments e.g. a medical superintendent, can delegate the authority to the senior medical officer to take care of the day to day functioning of the hospital, while the superintendent is on leave.

CENTRALISATION AND DECENTRALISATION

- Centralization - The location of decision making authority near top organisational levels.
- Decentralization - The location of decision making authority near lower organisational levels. The difference between decentralization and delegation is that in delegation only authority and accountability are transferred from top to bottom, however in decentralization even the decision making/ authority is transferred to the lower levels to improve function e.g. under the National Rural Health Mission, the primary area of focus is decentralization of all the activities of health activities at the village levels.

Departmentalization: The basis on which individuals are grouped into departments and departments into total organisations. One may decide to group the individuals into teams, or committees or divisions or departments. This division may be functional - by common skills and work tasks, it may be based on a common output – like a task force or for a programme or for a geographical location. Often we have to combine such groupings.

1.2.3 STAFFING AND WORKFORCE MANAGEMENT

Staffing is the practice of finding, evaluating, and establishing a working relationship with future colleagues of a team such that the needs of the project are served. Results are best when the project needs are well matched with their personal goals. This is discussed further in the section on workforce management.

1.2.4 DIRECTING/ PROVIDING LEADERSHIP

Directing is influencing people's behaviour through motivation, communication, group dynamics, leadership and discipline. The purpose of directing is to channel the behaviour of all personnel to accomplish the organisation's mission and objectives while simultaneously helping them accomplish

their own career objectives. Directing is used synonymously with providing leadership - the main components of which are being able to show by example, to be able to mentor juniors, to provide motivation and inspiration, to be able to forge the individuals into a team, facilitating appropriate communication within the organisation.

This chapter would deal in-depth with the process of communication and problems in the same. Motivation and related aspects would be covered in the subsequent chapter on motivation.

Leading is an important function as it to a large extent determines how a staff member identifies with the organisation. One of the important functions of a manager is to act as a role model for most of the staff and colleagues working within the organisation. It is an essential function as the manager is the most watched and looked upon by the lower level staff and a good image and behaviour of the manager radiates energy and motivates the staff.

1.2.5 ESTABLISHING PERFORMANCE STANDARDS

We can describe a four-step process of establishing performance standards based on the firm's objectives, measuring and reporting actual performance, comparing the two, and taking corrective or preventive action as necessary.

Performance standards come from the planning function. Corrective action is necessary when performance is below standards. If performance is anticipated to be below standards, preventive action must be taken to ensure that the problem does not recur. If performance is greater than or equal to standards, it is useful to reinforce behaviors that led to the acceptable performance.

Performance review is a measure to evaluate the functioning of the employee and improve standards. Various techniques of performance evaluation are being used currently in the arena of management. Some of these techniques are as follows:

- Traditional Method of reviewing against set standards by the organisation
- Self Assessment
- Management by Objectives

  Management by objectives covers a wide spectrum of thought. One person may be discussing a system to manage the federal government while other may think of MBO as the process by which an individual sets personal development goals. They would both be right. MBO can encompass any goal-setting procedure, from a high structure corporate profit target system to an individuals unstructured carrier plans.

  We can also define a system of management whereby the supervisor and subordinate jointly identify objectives, define individual major responsibility in term of result expected, and use these objectives and expected guides for operating the unit and assigning the contribution of its members.

- 360 degree feedback and appraisal.

  The basic concept in 360 performance appraisal makes performance feedback not only from our supervisor but also from our employees and all whom we interrelate with in the course of our job.

  Principally performance review is between the employee and whomever the employee is responsible and accountable to. In most organisations it is the boss at the review it would be insightful, and for some essential, to review what is the employee expectation.

  Most of these evaluation techniques would be covered in detail in chapters dealing with Human Resource Management and Evaluation.

Unfortunately performance evaluation in the health sector is not taken very seriously. Due to the lack of incentives for better performance and disincentives for poor performance, there is very little monitoring and evaluation used in the health sector.

1.2.6 REPORTING

A written report or document characterized by information or other content reflective of inquiry or investigation, tailored to the context of a given situation and audience. The purpose of reports is usually to inform, this would include annual reports, progress reports, appraisal reports, summary report, consolidated and budget reports etc. The process of making these reports is called reporting.

While understanding the function of reporting from a manager's perspective it is essential to understand the process of flow of information. The process of transfer of information from one level to another is referred to as flow of information. Information flow can be classified into-

- ***Vertical*** : this would further include,
  - Bottom to Top flow: This information flow occurs from lower to higher level officers. This information would include performance reports, etc. e.g. in public health system, the reporting done by the ANM at the sub-centre for various national health programmes is bottom to top flow of information
  - Top to Bottom flow: This information flow occurs from a higher level officer to a lower level officer. This information would include guidelines for functioning, protocols, targets to be achieved, performance expectations and review reports e.g. the targets provided for achieving NHPs, are top to bottom flow of information.
- ***Horizontal*** : this would further include
  - Lateral flow: Flow of information among officials at the same level is referred to as lateral flow of information e.g. patient being transferred from the ICU to general ward, the information details being transferred from the ICU Medical Officer to Ward Medical Officer.

- Diagonal flow: Information being transferred among the staff to two different verticals at two different positions is referred to as the diagonal flow of information e.g. flow of information from the ward nurse to the OT in charge and the medical officer is example of diagonal flow of information

It is essential to understand the patterns of flow of information in order to formulate an entire reporting system. Invariably reporting is referred to as the flow of information from lower level staff to the higher level staff; however it should be considered that the reporting should also be the other way, to further strengthen the system.

Reporting could be monthly, quarterly or annual, and the objective of reporting is for evaluation and review of the performance along with management an information system. This is discussed further with HMIS in lesson 7.

1.2.7 BUDGETING AND FINANCIAL MANAGEMENT

One of the most essential managerial functions is budgeting which is to list all planned expenses and revenues and financial management which is to spend the money according to the budget and account for it. Governmental financial reports can include not only the budget or "general fund" as often referred to but also several other types of government financial reports, financial statements, performance reports and audits.

Budgeting is essential in order to make sure that the control or tab is maintained over the expenditure of financial resources. Budgeting is done along with planning, to so that effectiveness of the particular programme is ensured.

Once implementation starts, fund flows have to be released so as to ensure that the activities envisaged can be carried out. Mechanisms for fund flows, specific functions in the fund flow, the delegation of responsibility of each function to specific persons, ensuring that every expenditure is accounted for as per rules and that these accounts are compiled and audited and presented are all essential parts of district management.

Review questions

1. Enumerate the various models of management and mention the comparative difference
2. Planning is followed by organising. What does one mean by organising in this context?
3. What are the functions of management? How does one exercise the function of providing leadership or directing?
4. Compare the following: Delegation Vs Decentralization
5. What is a health systems approach? What is its relevance to district health management?

Application questions

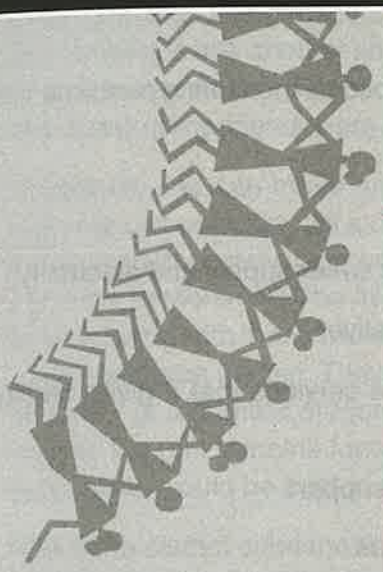
1. Consider a state government has launched a new health programme for Mental diseases/ or commissioned a hospital for the mentally ill in your state. You have been appointed as the programme manager for this project and are expected to conduct all the activities from planning to budget. Discuss the plan, staffing and budgeting along with the reporting flow and information for the programme.
2. Based on your evaluation, list the characteristics of your senior supervisor in terms of the model of management used by him. Justify the management model used by your senior supervisor, depending on your experience and suggest the changes he needs to adopt with the point of view of increasing productivity.

Project assignment

1. Taking the example of Janani Suraksha Yojana and of the ASHA programme: state the entire process of planning, organizing, staffing, budgeting and monitoring of the said proposed institution. The project should have a detailed report of each step involved while carrying out each of the functions of management.

Lesson TWO

District Health Management



In this lesson we shall discuss:

- Management functions in the district and the capacities that are needed
- The institutional structures existing in the district health system
- The strengths and cautions of the district health society system
- The role of the district training center
- The role of the district health resource/center or team

THE FUNCTIONS OF DISTRICT HEALTH MANAGEMENT

The Health management team at the district level has the following functions at the least:

a) Making the district health plan.

b) Managing the district health work force- recruitment, payment, promotions, monitoring performance.

c) Procurement of supplies – drugs and other consumables.

d) Procurement and maintenance of equipment.

e) Building and maintaining the buildings of the facilities along with its water supply and electricity.

f) Ensuring that every facility delivers the services it is intended to deliver.

g) Ensuring that every employee has the skills needed to deliver the services that a given facility needs to deliver.

h) Organising the work of the workforce – allotment of work, review, support.

i) Monitoring the health status and the state of delivery of health status.

j) Being able to spot epidemics early and act upon them.

k) Ensuring that the laws that relate to public health and health services are maintained.

l) Ensuring that activities related to informing and mobilizing community and providing them the space to participate fully is created.

CAPACITIES FOR MANAGEMENT: INDIVIDUAL AND INSTITUTIONAL:

To do this the district health team must have the necessary capacity. By capacity we mean skills, but we also mean institutional structures – what we can call the institutional capacity to 'manage'. It is one thing to have a district malaria officer, another to have a district malaria control cell. It is one thing to have an officer in charge of procurement of drugs and supplies another to have a district procurement cell. The institutional capacity depends a lot on the capacities (skills and knowledge) of the individuals who constitute it. But institutional capacity is more than the sum of the capacities of the individuals who run it.

Institutions occupy a physical space. They have established procedures of working. Even if one or two individuals change, the new individual finds it convenient to start working within established procedures. An institution has documents that record what work has happened and what procedures it follows. In documentary form, and in the form of knowledge and skills of the collective of persons working there, an institution has memory.

Consider for example the task of district planning. If one, or even a group of individuals are tasked with doing this- they meet and work and complete the task and then go their own ways. When the plan is being reviewed one month later or one year later, they are not there to explain it. If meantime the district leadership has changed there is no one left to own the plan and seek to implement it. When next year the plan is being made another set of persons are brought together and they start learning from the beginning. Even if the same key person is brought again, he has little knowledge of what happened with the plan, why some components were not implemented etc.

In contrast one can make an institutional arrangement for district planning. One can create a district planning unit or better still a district health resource center. This would need to be by the resolution of a district health society. One or two persons may be placed in charge and one or two persons (perhaps the same persons) may be allotted to work full time for it. A team of five or six persons would be assigned to work along with these two and the order would specify all of them as the district planning unit or district health resource center. They would be given a space to occupy – maybe a room if only a unit is being created – or a number of rooms if a resource center is being created. The team would meet regularly as long as the unit remains functional. Its meetings, its decisions and its work would be documented and documents would be kept in a specified place.

Now if the district chief medical officer changes, the members of the district planning unit especially its full time members would meet and appraise him or her of what tasks they have been given , what they have done and what they are planning to do. Every year, they would do a better job, because they would have learnt from the previous year's work and therefore are in a position to improve upon it. Most important they are available for support to implement the plan and indeed could be actively involved in advocacy to ensure that the plan is remembered and implemented. Further for a number of functions, rules may make it mandatory that the unit is consulted and that too will help to give it stolidity as an institution which otherwise it would lack.

Thus almost all district health management functions would need to be institutionalized. We list in the accompanying box, a number of such institutional structures that the district would therefore have.

Institutional Structures – Present or needed at the district level

1. The District Health Mission.
2. The District Health Society.
3. The District Chief Medical and Health Office (CMHO).
   a. Establishment division.(HR management and infrastructure management).
   b. District procurement and stores unit.
   c. Nursing management division.
   d. Programme divisions.
   e. Financial division.

4. The District (health) Programme Management Support Unit.(DPMU)
5. The District Programme Monitoring Cell.
6. The District Disease Surveillance Unit.
7. The District Procurement Cell.
8. The District Infrastructure Building Cell.
9. The District Financial Management Cell.
10. The District Civil Surgeon's Office.
11. The National Programme Implementation Bodies – Malaria control office, AIDS control office, leprosy control , blindness control, TB control and the RCH programme office and sometimes a separate Immunisation officer.
12. The District Training Unit.
13. The District Health Resource Center.

UNDERSTANDING THE DISTRICT'S INSTITUTIONAL STRUCTURES

The accompanying box has listed the institutional structures related to health management available in the district.

Let us see what the function of each is and therefore what capacity it needs in terms of skills and in terms of institutional structures. Also let us briefly describe the common constraints they face such as are seen in many districts.

THE DISTRICT HEALTH MISSION

Description

This is a newly created body under the national rural health mission. It is the apex institution of governance. It is often chaired by the cabinet minister in charge of the district. It involves the members of parliament, the legislative members and the district panchayat office bearers elected from that district. The district health society, especially the district society's programme management unit is its secretariat. Note that the exact details of how this body is constituted vary from state to state, but all districts do now have such a body.

Function and powers

Its main function would be to endorse the annual work plan and review the progress on this plan. It has no executive powers by itself but since its members have their respective powers they could use it to assist or intervene in the programmes.

Capacity

The key capacity needed is the ability to interact with and explain the programme to various stakeholders and take their inputs. The skill of writing up the agenda papers and minutes and excellent communication skills to explain the complexity of health programmes in a simple manner is vital. This structure is relatively less institutionalised and would change with changes in governance.

Constraint

The main constraint it faces is that it does not meet. It is expected to meet once or twice a year only, but even this does not happen. Creating such a high level body without any executive powers is also difficult for officers to manage. The perception is that there are many contending political persons and their egos to be managed and such a meeting is more likely to have disturbing outcomes rather than positive ones. On the other hand, this may be just bureaucratic resistance to political accountability. If well managed it could bring political support and acceptance for key programmes and would help tune the programme to positive currents in political thinking.

DISTRICT HEALTH SOCIETY

Description

Most states have merged their various disease control societies into a single district health society. A district health society has a governing body and an executive committee. The governing body is usually chaired by the District Collector or the district Zilla Parishad chief or the minister in charge with the other two being co chairpersons. The chief medical officer is the member secretary.

In most states the district collector is the chairperson of the executive committee of the district health society though it could be the second IAS officer of the district too. The chief medical officer is its member secretary.

The members of the governing body include representatives of all key departments. It also includes representatives from civil society and from professional bodies usually by nomination. The executive members on the other hand are usually members of the different programmes including the HIV control programme, the RCH programme officer, the immunization officer, the malaria control officer, the tuberculosis control programme and the blindness control programme. There is no uniformity about this – but this is obviously desirable. Desirable too is the participation of the district programme officer that is contractually appointed under the RCH and NRHM programme.

Functions and powers

The district health society is the authority that approves and adopts the district health plan and that allocates work to the different individuals and institutional structures and reviews their performance. It is the main body empowered to implement all national health programmes.

Most of the budget for the health programmes comes through the district health society. From here it is released to the blocks and to the different programmes. Hence it is one of the most important structures created.

The district health society acts through the office of the chief medical and health officer, the office of the civil surgeon, the district programme management unit, the district national programme management units, the district training center and the district planning/resource unit. In effect therefore it is the chief coordinator of these units. By virtue of the fact that the chief medical officer is the head of most of these units (except the civil surgeon's office) coordination is achieved.

The district health society also, by its committee based functioning, allows for better distribution of work and more transparent and accountable distribution of resources for specific tasks.

Capacity Requirements

The central requirement is to understand what the health goals are and to be able to use the human and material and knowledge resources at ones commands to move towards achieving these goals. The individual capacities of the District Collector and of the Zilla Parishad chairperson and of the Chief Medical Officer are crucial to achieve this. Since the Chief Medical Officer is charged only with this responsibility in contrast to the other two who have to attend to many other tasks- it is his or her capacity that is critical. However one reason for creating the district health society is that the district health programmes do not depend solely on the CHMO's individual capacity. By bringing in and coordinating all institutional structures under such an umbrella institution, the district leadership – administrative and elected- is able to allocate work to different institutional structures available depending on their strengths and weaknesses and get the work done effectively. Thus it is of central importance for the district health society to function as a collective decision making body.

Constraints

The central constraint of the district health society is that far too often the offices of the district collector and of the district CHMO substitute for the functioning of the society. Thus decisions are taken on file between these two and seldom are meetings called except for a perfunctory reporting of activities and at best some formalities. Sometimes signatures on file are taken of other junior officers (and by definition all officers would be junior to the collector and all health officers to the chief medical officer) or not even that. Thus the institutional arrangement begins to exist only on paper.

***Indices of good governance*:**

- One of the key indices of good governance is periodic meetings– at least a monthly executive committee meeting and a half yearly governing body meeting —for which detailed agenda papers are prepared and minutes are made and signed.
- Another key index of good governance would be ratification and approval of budgets and releases beyond certain fixed ceiling amounts by circulation and by full quorum meetings of the executive committee or governing body. This is essential for the transparency – accountability function.

- A third crucial index of good governance is the quality of public participation. Not just limited to a few persons close to those in power, but of citizen participation where one draws in representatives of under-privileged sections be it elected representatives or NGOs or community based organisations.
- A fourth index of good governance would be recognition of the need to access and practice of accessing good quality technical assistance and incorporating such inputs into planning and management process.
- A fifth index of good governance would be for the district health society to submit itself to public scrutiny – by having its reports available in the public domain and easily accessible to all.

Monitoring of these institutions by the state and central authority and by community monitoring processes may relate to these indices of good governance.

THE CHIEF MEDICAL AND HEALTH OFFICE

This office is the central office that manages the district health programme.

This office often has a number of divisions under it. Many of them are clerical level work allocations – but some of them are placed in charge of an officer- usually a senior medical officer or sometime even a junior medical officer who is available for administrative functions. It is usual to have four to six officers who function as deputy chief medical officers- who are usually known as programme officers – for each of them manages one or more national programmes. The usual posts are programme officer, immunization, tuberculosis control, malaria control, leprosy control, and RCH or family welfare. The situation differs from state to state and the exact number and designation of the posts varies. But in practice every chief medical officer would have three to five officers who assist him – not only in the programmes but in all planning, management and administrative functions. This structure along with its support staff at the clerical level is what would be the structure of the chief medical officers office which is the main institution of district health management.

Functions:

1. The most important of these is the section that manages workforce issues – appointments, transfers, service papers, promotions, disciplinary action, retirements, and pensions. Much of the time of the CHMO office is consumed in these functions. We would examine some of these functions in the next lesson.
2. The other most important function relates to financial arrangements – payment of salaries and payment for routine recurrent expenses and the expenditure of the amount budgeted and transferred to it – from the state treasury and from the district health society.
3. The third most important function usually relates to the creation and maintenance of infrastructure

and the procurement of goods and supplies, their stocks in the stores and their distribution through the system. We discuss these in some detail in lessons 4 to 6.

4. After these, the fourth in priority is the implementation of programmes- which translates to carry out the activities that are of a recurrent pre-determined nature and which relate to the various health programmes. (we have discussed most of these programmes in the books 1 to 8 of this series).
5. Monitoring the implementation and the health status and planning for the next year is the next in order of priority. This is also known as the health management information system and we would examine this in greater detail in lesson 7 of this book.
6. And perhaps last and least in priorities is efforts- structured in the form of research – or unstructured in the form of field visits and meetings with the community —to understand health problems and their determinants. (We would be discussing this in some detail in book 14).

Please note that the above order of priority is not the desirable one nor what the authors recommend but what in practice is seen in most districts.

We can see the rationale then of the district programme management support unit which would have the same functions as listed above but in reverse order of priority. The first two functions listed above are however almost exclusively with the CMHO office.

Capacities Required

Each of the above function requires a different type of skill and a different type of institutional capacity.

The first relating to workforce issues is both knowledge of general principles of workforce management and what is equally important; a good grasp of public administration.

The second function requires both a general knowledge of financial management as well as a good grasp of the government's general financial rules.

The third function requires an understanding of rules of procurement of goods and services both of the government and of donor agencies. It also needs an understanding of logistics.

The fourth function needs a good technical understanding of the programmes as well as skills in management – of both human resources and materials. Since there are a diverse range of programmes a very wide range of technical skills is required.

The fifth function requires an understanding of both programme content and of monitoring and evaluation. In today's world it needs a working knowledge of information technology also. One can argue that the skills needed for the fifth are the same as those for the fourth function, though the institutional structure may be different.

The sixth requires skills in academic work, research, appraisals, planning and advocacy.

Obviously very few CMHOs would have all these skills, however, if formally qualified in public health they should have these skills. Unfortunately few public health management courses provide these skills. Public health management courses should be evaluated by whether it is able to provide these essential skills and when these courses are improved upon, completing such a course would become a mandatory criterion of appointment to the post of CMHO.

The CMHO office could build up divisions for each of these functions and then institutionalize the capacity into these divisions. In practice this has not happened. Most district health management arrangements aim therefore to leave the first two functions with the CMHO office and move the other four functions to the district programme management support unit – which has these skills in place. However since health programmes are technically demanding, most of the fourth function remains shared between the programme officer in the CMHO office and a team set up under a district health society or sub-committee of the same. Usually the CMHO office also retains the task of the procurement and distribution function and sometimes it shifts to the DPMSU.

Constraints

The central problem is the lack of capacity and organizational structures to do the functions 3 to 6 described above. Each of these functions needs a good and distinct institutional arrangement- and very often the system is trying to manage each of these functions by delegation to an individual – which is not enough.

Individual level lack of capacity – the lack of skills for each of these functions is also another problem.

The third and perhaps the most important constraint is the lack of an adequate system for selecting, supporting the chief medical and health officer. Since this post has wide ranging powers and functions and since much of the money and goods move through this office it could be a coveted post.

One of the most important indices of good governance is whether chief medical officers are appointed by a fair and well laid down process or whether it is arbitrary decision or worse an ad hoc appointment that is continued indefinitely. Much of the thrust to decentralization fails – and indeed leads to a dangerous sort of "centralization without central accountability" if the chief medical officer is not appointed by due process which recognizes and rewards merit as well as seniority and which penalizes non performance.

THE DISTRICT PROGRAMME MANAGEMENT SUPPORT UNIT

This is usually made of contractual staff as different from the CHMO which has regular staff. The key persons under the NRHM are the

- District programme manager,
- The district accounts manager,
- The district data analyst.

Other contractual staff members are also possible- for example, a district IEC officer is being considered. Using part of the money provided for administrative expenses, other clerical support staff and programme –specific consultants can also be placed. One could also get persons on deputation from other wings of the government. For example one may hire an engineer or reach an understanding with an architect or get a government civil engineer on deputation to help with a major programme of construction of health infrastructure in a given district.

Functions

The functions of each of the above three staff have been standardized at the national level and circulated. This is part of the RCH-II manual. The function given to this team in practice varies – depending on what they are charged with and depending on the CHMO office's priorities. Usually they play a role in monitoring the programme and in ensuring financial disbursements and accounting. They may also help in the organisation of many activities like training programmes or public events- and this work is usually assigned to them on an event to event basis.

Capacities required

In the way this structure is defined it is usually the three capacities denoted above – general management, financial management and data analysis that is most required. But where other programme functions are strengthened – programme officers could also be included.

Constraints

This office is a new innovation and in many areas it is poorly integrated with the main CHMO office. Part of the problem is that the staff are not medical persons and therefore have a problem of acceptability. But the system has to recognize that such skills are also needed for district health management and as such recognition grows, this office becomes more useful. However, often this set of persons is seen not as bringing in new skills but as an extra set of hands to share in the work. Secondly the assumption made is that the public health skills needed are in place and only the management skills are needed.It is also the case that very often the public health skills are deficient and the institutional arrangements to enable the programme officers who are guiding public health and health facilities are not in place. Without this "main part" of district health management part being present, putting in place only the support part does not help too far. Further in some states these additional programme officers are used by the district administration to monitor the health staff and this breeds resentment and poor coordination. The key issue is to enlarge the district programme management support unit beyond these three additional skills and find space in it for all programme management skills.

PROGRAMME DIVISIONS/OFFICES

Description

Many programmes like immunization, RCH, malaria, tuberculosis, blindness control have specific offices

working under their district programme officer. A district malaria office may have an epidemiologist, an employee in charge of spraying operations and of stores, a number of supervisors for field visits and follow up etc. This may have a separate office, separate stores and separate office staff. The effort has been to integrate them into the functioning of the district health society but it is not unusual to find officers who report only to their state programme officer and of whose activity the chief medical officer knows little about. One of the efforts of the NRHM is to bring about such intra-sectoral coordination.

Functions

Plan and implement the programmes in that specific area.

Capacities

Technical knowledge and skills as pertains to that area and management skills.

Constraints

Most of the technical persons in these roles have poor management skills. Moreover because there is much need for constant upgradation of technical skills and for integration of the technical with the managerial – they have insufficient technical skills as well.

The institutional arrangements are weak. Typically when a new person is placed as programme officer, the programme receives a setback as there is seldom any system of induction to train and deploy such a person. And such changing of programme officers is quite frequent.

THE CIVIL SURGEON'S OFFICE

(this could be known by different names in different states)

Description

Typically the district hospital comes under an officer who does not report to the CHMO, but directly to the state director. If there are any civil hospitals in the district this would also come under him. The civil surgeon may be assisted by a separate medical superintendent and resident medical officers and other hospital administration staff.

Functions

Hospital Administration. Also ensure referral care for the public health system and provides specialists for specific public health programmes.

Capacity needed

Hospital administration.

Constraints

The lack of coordination between the civil surgeon's office and the CHMOs office can lead to poor referral support for national programmes and poor availability of specialists for public health programmes. On the other hand management of a large hospital requires special knowledge and skills and is best placed with a qualified hospital administrator.

The second problem is that the appointed civil surgeon has learnt on the job which has its strengths – but is not formally qualified or trained for this task and that is a weakness.

THE DISTRICT TRAINING UNIT

Description

Many states have or aim to have district training centers. Especially where the district is large the training load is high. Even if medical officers are trained at the state level or district level the number of paramedicals that needs to be trained is far too high to be trained at the state level. Further, if we look at the need to train ASHA, elected panchayat members, NGOs etc there is a need for such a unit for most districts. Of course one could have a larger training center shared between a few districts. In many states district training centers are either not there or are not functional.

District training centers usually have two to three full time staff plus a team of five or six trainers they can draw upon.

Function

Provide skill upgradation trainings as well as other training inputs needed for the national health programmes.

Often the district training center is a logical place to locate the BCC /IEC district unit also. (If this is not located here it still would need to be created and located somewhere.)

Capacity needed

Training skills, skills in planning and implementing BCC programmes. Some academic skills in finding training needs, conducting training evaluation, doing formative studies for BCC programmes and evaluating their outcomes.

Constraints

In most states this has either not been created, or it has gone into disuse. There is no systematic plan to build and retain these skills and hence the lack of institutional capacity. Unfortunately even the recognition of training and BCC as having specific skill requirements could be absent in most districts. In some districts NGOs have been co-opted to provide these skills and this institutional capacity – and the results are encouraging.

THE DISTRICT PLANNING/ RESOURCE UNIT:

Description

This is still only an idea in most states— but slowly its necessity is being felt. NGOs could play this role but there is almost no instance of where such a role is being played by an NGO.

Functions

- Making the district plan and supporting its implementation.
- Being a repository and channel of technical assistance to the district health system.
- Programme appraisal and evaluation.
- Epidemiological studies.
- Strategy development and projectisation.
- Acting as a think tank and change agent to support the district health planning and administration efforts.

Capacities

Skills in conducting studies and appraisals, in working with the community, in planning and advocacy with reference to the health sector and public health.

Constraints

Such skills are not going to be available for working at the district level. The problems of creating them are immense. In many places district programme management units would see themselves as playing these roles when in contrast to their management role, this is very much a technical resource role.

REPORTING ARRANGEMENTS AND RELATIONSHIPS

One of the central issues of district health management that gets discussed again and again relates to the reporting arrangements – which also define the hierarchical relationships. The usual consequence of this discussion is to define and redefine organograms that express this relationship. A lot of importance is given in management consultancies to draw this organogram and recommending changes in this.

We note that there is no single ideal relationship. It would depend on the context. In most places, a simple flat structural relationship where every programme division, the district training center, the district resource unit and the district programme management support unit all report directly to the district health society and the chief medical officer, is the structure most begin with. Only, the civil surgeon would not fall in line with this, would see his office as being equivalent to the CMHO and would like to be

reporting directly to the state director of health services. In response, the expert advice would be to also integrate this under the CHMO instead of it being parallel to the CHMO office.

The problem with this flat structure is that it concentrates a lot of powers in one person- the CHMO- and as we saw before the selection and support system for that person is subject to a lot of pressure. Further the performance appraisal and rewards and disciplinary mechanisms for the CHMO is simply non existent.

Even if the CHMO was a well selected and trained cadre, a second level may be needed to take care of all the functions. This should ideally be formed by some of the programme officers and the district programme manager who act as a team of deputy chief medical officer equivalents. The block medical officers could also be part of this team. A good CHMO would need such a team and could do wonders with such a team under him. And if the CHMO is less than effective, such a team would ameliorate the problems and give persons in governance roles more options to work with.

Building up the capacities of such a second level district health management team and putting them in charge of different district level institutional structures and as block medical officers is the key to strengthen public health management at the district level. The PHRN Distance Education Programme's focus is on this team building. The three contractual additional skills inducted in – the general management, financial management and the data analyst skills – form part of this team and supplement its core competence. They certainly do not substitute it.

RELATIONSHIPS TO CREATE CHANGE AND THE RIGIDITY OF INSTITUTIONAL STRUCTURES

Though institutionalization is essential for carrying out many management tasks there are problems with such institutionalization also. One problem with institutionalization is that over time it becomes rigid and resistant to change. Thus, though the demands of the present day need much more professionalisation in areas like logistics, BCC programmes, hospital administration, and programme implementation or in district planning, the current structure would not have such capacities. Yet they would resist bringing in such capacities from outside –seeing in them a threat to their own authority. There are also limits to what capacity can be built up within existing staff. Also over time, vested interests develop within institutional structures that work to maintain the status quo and resist all changes. Moreover a group dynamics develops wherein the institution becomes more and more focused on its own institutional goals which may not remain subservient to the larger needs of the health sector.

Managing change needs leadership skills both within the health sector and from outside, notably from the district administration and the district panchayat system. It also needs partnership with non governmental partners and technical assistance agencies.

District health management is thus not a function of the CHMO office and its subordinate institutions alone. The district health society may need to call upon other reserves for effecting change and these would also need to be seen as part of an effective district health management strategy.

DISTRICT HEALTH MANAGEMENT IN THE DISTRICT HEALTH PLAN

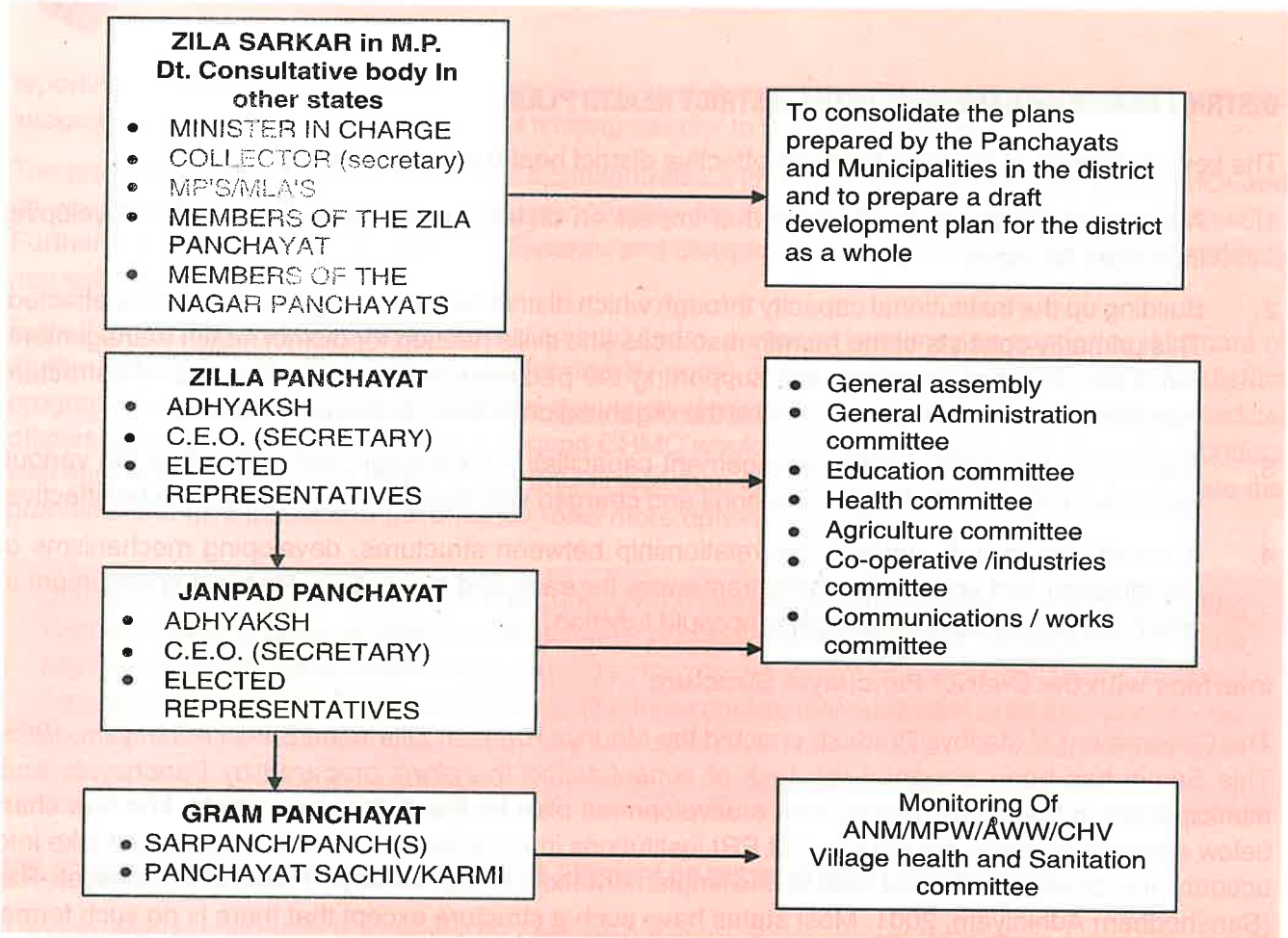
The key challenges of planning for more effective district health management are:

1. Addressing issues of governance that impact on district health management and developing indicators for these.
2. Building up the institutional capacity through which district health management would be effected. This primarily consists of the human resources and skills needed for district health management. But it also includes recruiting and supporting the personnel needed, creating the infrastructure that these institutions would need and the organization of work in these institutions.
3. Building up the public health management capacities – knowledge and skills - that the various personnel employed in these institutions and charged with these functions require to be effective.
4. It would also include defining the relationship between structures, developing mechanisms of coordination and an accountability framework for each and building an enabling environment in which the district health management could function.

Interface with the District Panchayat Structure

The Government of Madhya Pradesh enacted the Madhya Pradesh Zilla Yojna Samiti Adhiniyam, 1995. This Samiti has been assigned the task of consolidating the plans prepared by Panchayats and municipalities in the district and to draft a development plan for the district as a whole. The flow chart below attempts to depict the structure of PRI institutions in the state. This flow chart does not take into account the changes affected due to the implementation of the Madhya Pradesh Panchayati Raj (Sanshodhan) Adhiniyam, 2001. Most states have such a structure except that there is no such formal institution called the zilla sarkar. Yet almost all states have a minister in charge for each district and a consultative process as is indicated in the chart below. The district health mission as different from the district health society plays such a governance role in the National Rural Health Mission.

The linkage of the health system with the above system varies across states. In its most advanced form in Kerala -all the Sub-Centers are placed under the GPs, all PHCs and CHCs under Janpad Panchayat and all District Hospitals under the district panchayat. Most staff cadre thus become panchayat employees of that level though some are maintained as state cadre. In full decentralization all appointments and all service conditions would be defined by the corresponding panchayat, the directorate only providing budgetary assistance, technical assistance and assistance in maintaining quality norms and some other support functions like training or surveillance. In most states however the facilities are under the Department of Health and Family Welfare and decentralization is limited to a committee under the effective leadership of the health department and the district collector with the panchayat members' roles limited to representation on these committees. The relationship between each of the structures defined earlier and the panchayati raj structures outlined above vary widely and need to be understood separately for each state. The relationships are even more complex and overlapping in urban areas.



Review Questions:

1. What do we understand by the term institutional capacity?
2. What are the institutional capacities needed for district health management?
3. The district health mission and the governing body of the district health society are mechanisms of governance. The executive committee of the district health society and all other institutions mentioned are management institutions. What does this mean?
4. What are the key issues of governance that affect district health management?
5. What are the functions of the chief medical and health officer – and how do these functions relate to the functions of the district programme management support unit?

Application Questions:

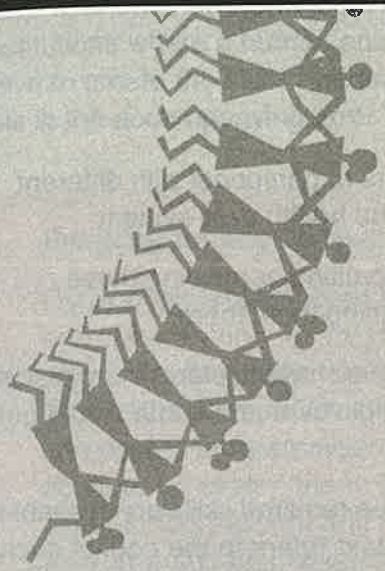
1. The lesson mentions some issues of governance. What other issues of governance could we think of? If community monitoring must focus on the issues of governance at the district level – what are the indices that one would suggest?

Project work:

1. What are the institutions of governance and what are the institutions of management available in the district. To what extent are these functional? What is the institutional capacity of each of these institutions?
2. What is the situation regarding the indices of good governance discussed above with respect to your district?

Lesson THREE

Public Health Workforce Management Issues



In this lesson we shall discuss:

- The different components of workforce management.
- The main elements of workforce planning.
- The central processes of workforce management : recruitments, postings and transfers, promotions and building of career plans; skills upgradation.
- Issues regarding supervision, support and motivation of the workforce.
- Rationalisation of the workforce and multi-skilling.
- Innovative ways of health human resource generation for remote areas.
- Housekeeping: The routine tasks of the district office.

INTRODUCTION

Workforce management is perhaps the single most important and challenging dimension of district health management (or, for that matter, management of most programmes!) .

There are many aspects of workforce management. These include:

A) WORKFORCE PLANNING: This involves

a. **Assessing Requirement**: making a decision of what numbers of personnel with different skills we need in each of the different facilities and levels of the health care system.

b. **Health Human Resource Planning:** Having a strategy of recruiting or building these skills into each of these different facilities and levels and retaining them there.

When we are deciding how many skilled persons are needed currently, we also have to plan for expansion of facilities and for the fact that over time, some employees would leave or retire and some would get promoted.

For this the plan should have an understanding of how many people with the required skills are available within the system and in the market, (available in the market in this context refers to the pool of such skilled persons available in the state outside the employment of the government) and at what terms those available in the market can be recruited.

There are broadly three ways the system finds these skills.

- From the outputs of professional and technical education: It hires people who are qualified and certified to have these skills by professional and technical courses. Thus the number of operational educational institutions, the total number of graduates produced per year from these institutions and percentage of these who would opt for a government job if given a choice, determines the potential number of persons available for recruitment. We know for example that a state that has many medical colleges in the public sector is likely to have more doctors available for hire by the public health system than another which has many medical colleges in the private sector (which cost the student over Rs 30 lakhs to complete their studies) or a state which has inadequate number of medical colleges.
- Through pre-service education: It creates institutions dedicated to generating persons qualified and skilled to work mainly, if not exclusively, for the public health system e.g. ANM and MPW training schools or LHV training schools.
- Through in-service training programmes: These programmes take persons already recruited and working within the health system and train them so as to build the skills needed in them.

Knowing the requirements of the organisation, currently and into the future, and knowing the current

level of skills available, health human resource planning must decide on how many new posts will be created, where it would find the skilled persons to fill these posts and whether it would find the skilled persons to fill these posts. Where it will not find the human resource needed in the open market, it would have to choose between expanding professional and technical education, and opening up pre-service institutions where a human power exclusively for use in the public health system is created or it would have to create the skills needed as part of in service training programmes. We discuss an example of this in the accompanying box.

Planning for anesthetists for operationalising 100 additional FRUs

For example a state needs to create 100 anesthetists to make an additional 100 FRUs operational and currently only 10 are produced per year in the state's medical colleges and of which only 5 are joining the public health system. A human resource plan would first begin with planning to expand the seats for anesthetists diploma courses maximally. The possible expansion of diploma and degree programmes in anesthesia, is (let us assume) only an increase from the current 10 seats to 15 seats- due to MCI regulations. In addition the state could earmark about half the seats in the diploma and degree courses for in-service candidates, so that there is a better ratio of graduates who join the public health system. Thus per year we would be certain of getting about 10 specialists for the public health system- up from the current 5.(seven in-service candidates plus three of the general quota) This still not being enough, the state would also decide on training 15 medical officers every year in the 18-week short term course. This could get a total of 25 new FRU centers per year which would have anesthetist skills in place. At this rate, in four years it would be able to meet the requirements.

Such a plan has to be there for every single skill required by the system. The human resource planning team needs to estimate the number of those coming out of technical and professional programmes for each skill, the percentage of these available and possible to recruit into the system and the remaining gap that would need to be skilled in- house through training programmes.

B) ORGANISATION OF THE WORK

Specific work allocation is an important and obvious part of workforce management. Yet we would find number of workers like the male multipurpose worker or the former leprosy staff whose work profile is still far from clear. Each employee must have a clear charter of roles and responsibilities, and clear instructions of whom they report to and for what function. There is also a clear definition of where decisions regarding work allocation would be taken and the powers delegated to different persons and committees. There is also an implicit or explicit time schedule within which each of these tasks are carried out.

C) RECRUITMENTS AND THE COMPENSATION PACKAGE

Regular selections are done by the state public service commission. The limitation is that selection is infrequent and those selected can be posted anywhere in the state. They enter the process in the hope that they can get posted in a place of their choice and then when they find they cannot, they may not join at all, thus wasting everyone's time and effort. Contractual appointments are much easier to decentralise to district level and one can exercise far more flexibility and innovation in recruitment and appointments and in deciding the compensation package.

Recruitment is closely related to the compensation package offered. The higher the pay packages the more the candidates available. However if the same pay package is available for persons with tasks which require much higher skills or effort or in places where most do not want to go, then this acts as a barrier to building a motivated workforce. There is a need for being much more flexible with the structure of the compensation package. Even if one cannot alter the basic pay package one could creatively build in incentives that provide a good compensation package to those who work hard and whose work is more appreciated. Such flexibility in the compensation package is necessary to attract staff to work in more difficult areas.

The challenge of recruitment is to keep it fair and transparent and be able to get the type of persons one needs for the system. The mode of recruitments depends on the level of competition for a specific job. If there are few takers, a walk in interview where a candidate merely has to be present and, once the basic certificates of skill are verified, selection is automatic. On the other hand if there are a large number of applicants for a specific post then one may have a screening examination or a short listing process based on defined criteria and then an interview process to finally select the candidate. Such transparent processes also provide protection from pressures and the selected candidate who has come in by fair means is more responsive and accountable to the health system and to the community. There is much to learn in the technique of interviewing and one may ask for the help of an HR firm or recruitment agency in organising this. One may also use the help of a recruitment agency or use the services of a search committee to hire the required doctors for the system for posts which have few capable candidates.

Another challenge of recruitment is to find persons to work in difficult areas which are currently under-served. To the extent that recruitment is done at the district level for medical officers and specialists and at the block level for paramedical staff, there is a much greater chance of the selected persons being posted and working in these areas. One may also use the assistance of a recruitment agency or use the services of a search committee to hire the staff specifically for difficult areas. Such a selection process can help negotiate remuneration packages in accordance with the availability of persons for such areas and the skill and dedication they bring to the system. The common reply is to say that such flexibility is not possible within the public health system. This is an old problem – failing to do what is needed to make the public health system work and then using this failure as a reason to privatise services – without in any way increasing access to the poor. On the contrary such flexibility is possible within the government managed systems. One could for example make such contractual recruitments through the Rogi Kalyan

Samiti or district health society- which are autonomous bodies. Or the personnel could be hired by the panchayat as its employees- in which case each panchayat could have its compensation package. If there are objections to some doctors or nurses posted in difficult areas being paid more – one option is for the basic salary to be paid by the government system and then offer an attractive incentive or bonus from the untied funds placed with the panchayat or some other statutory local body. Worker compensation or payment may be divided into two parts: the salary package and the benefits (or perks) package. Cash compensation would include the money paid to the individual for the work they do, while the fringe benefits are to maintain motivation and commitment to the work. Examples of such benefits are paid vacation, sick leave, overtime pay, and life and health insurance.

One of the most important indices of a government seriousness about providing health care is the effort it has taken to find flexible solutions to fill up vacancies.

D) POSTINGS AND TRANSFERS

Postings are not a problem if persons are hired for specific posts by local bodies. However a suitable place of posting at the first instance or pressures for transfers to "easy" postings becomes a major problem and indeed more time goes on this role than on most public health functions.

Ideally there should be a fair postings and transfer policy in place. Though it is quite difficult to create one, it can be done. Though posting between districts is a problem for it involves orders from the state directorate, but posting within a district can usually be ordered by the chief medical and health officer and the district administration. In some states the posts within a district have been categorised into easy, difficult and very difficult and everyone is required to do a very difficult posting – after having done so the person would be transferred out. A pay increment on completing this term and a financial incentive during the term makes such a policy easier to implement.

One of the most important indices of good governance is a fair, non discriminatory transfer policy. If the district has some doctors and nurses posted to remote areas for over 7 to 10 years who despite all efforts cannot get a transfer while there are others who serve continuously in easy postings- there is certainly a serious problem of governance with probably a high level of corruption. Doctors in remote areas working under such circumstances are likely to be demoralised and demotivated. Posting fresh doctors just out of medical colleges into such areas is also no solution for they cannot cope with the clinical challenge and the cultural shock of such a posting. It is much better that fresh doctors work at the block or district headquarters level for six months to a year before they are posted this far into the periphery.

One of the worst forms of such arbitrary postings is when specialists are posted to facilities where they cannot practice their specialty and lose their skills while FRUs with operation theatres and facilities built up for specialist services go unused due to lack of specialists.

E) SKILL UPGRADATIONS

One of the key elements of workforce management policy is to ensure that there is an output in terms of very good quality services – for which constant skill upgradation of the health care providers and support to them for better clinical service provision becomes important. Thus along with the service record of every health care provider there should also be a record of what training was given and when – and there should be efforts to see that every health care provider received not only periodic skill upgradation training – but also follow up and support so that a higher level of service delivery was realised.

F) PROMOTIONS AND CAREER PLANS

The other major issue of workforce management – closely related to motivation and quality of service provision is the presence of regular avenues of promotion. Also, both as an extension of the promotion plan and independent of it, every health care provider should have a potential career plan that they can look forward to.

The Indian Administrative Service has, for example, a system of periodic reviews and timely promotions with adequate opportunities for skill upgradation and development of professional expertise. With merit there are greater chances of career advancement, but even with modest achievements there would be some continual career advancement. Moreover at least some part of the skill upgradation/ training programmes that precede (or immediately follow) promotions are mandatory. This should have been a requirement for any cadre- and it is surprising that the benefits from such a policy have not been extended to the other sections that they govern.

For a professional, professional advancement is one of the most important forms of advancement to look forward to, other than financial advancement and we need to build on both. Thus medical doctors should be able to learn and perform a larger range of clinical procedures. Or they should have the option of learning new skills in the area of public health and administration. Along with this skill upgradation should come financial increments and promotions. If the system is adequate for such opportunities then even if private practice is not allowed, health care providers can be retained with high levels of motivation in the system. If such opportunities are not there, improved service delivery is difficult to garner. : Good managers need to be creative. They are regularly challenged to find new ways to keep employees motivated and interested in their work. Creating new opportunities for growth and progress within the organization once the employee "overgrows" his current position is one of these. It is essential to create a desirable work environment and working conditions to maintain the employee within the organization.

Following careful recruitment, selection, hiring, and training, an employee is expected to become an important part of the business. Much has been invested in the employee and much is expected. Taking specific steps to keep the person employed is likely to be cost effective. Of course, some employees will "outgrow" their current positions and can advance their careers by changing employers.

One very good index of good governance is to find out by how many years promotions are overdue and how many staff members have spent the last ten years in the same seniority and same scale of pay.

Again much of this, especially promotions, needs improved governance at the state level, but professional opportunities for advancement and incentives can be created at the district level. Nowadays when more and more contractual staff are being appointed, keeping them in the contractual status for long years without any prospect of advancement financially or professionally is a certain way of destroying the public health system. For contractual staff at least the district health plan can become an opportunity to make for innovative provisions for incentives and professional advancement.

G) DISCIPLINARY ACTION, INCENTIVES AND REWARDS

To most officers, the heart of workforce management is disciplinary action. Hence much value is also placed on the power to take disciplinary action. Repeatedly it is said that unless the government takes firm and prompt action against erring officials, the situation will not change.

However such stern disciplinary action is talked of much more than actually taken. And indeed there is very little evidence that it makes a lot of difference. Very often disciplinary action is taken only when something dramatic and related to a VIP occurs. Either a minister or a senior VIP makes a visit and finds something amiss or there is an epidemic or a complaint of negligence and some publicly visible action is called for. In most such situations one person is often made a scapegoat for a system failure and this only de-motivates further.

- A general guideline to the use of disciplinary action in relation to health sector reforms is that if most officers or employees are working properly and there is only a minority of errant persons, these could be treated as a disciplinary issue (after proper enquiry) and prompt and appropriate action on such a persons is a must. Otherwise the others also learn to get away with indiscipline.
- If on the other hand there is a situation where most persons are erring- then it is best to use systemic changes or positive incentives to solve the problem or reduce it to manageable proportion and then only supplement with disciplinary measures. If one begins by disciplinary action even in such a situation that usually leads to no change – and indeed it may even lead to an extortion of both innocent persons and errants.

Example: Most medical officers are found to be not staying at the PHC where they are posted. The district administration does some surprise visits and makes an example of the one or two doctors it catches. This does not reduce the practice, but now all doctors feel vulnerable and have started paying an amount to the authorities or not raising questions about obvious mis-governance because of this. Indeed the one or two doctors who are staying and therefore raising a number of inconvenient questions about department functioning and also not paying any bribe tend to get harassed. On the other hand in district Y, the postings were categorised into A, B and C based on difficulty levels. For C level PHCs the doctors were asked to stay in the CHC and visit the PHC from 9 in the morning to 5 in the evening. Family accommodation

was provided at the CHC level. For B level postings doctors were to stay at the PHC, and had an option of shifting the family there or keeping the family in accommodation provided at the CHC level. In addition a difficulty incentive was paid. For A level postings which were largely within ten kilometers of the town- no incentive was paid and the doctor was expected to stay there. However they could get frequent night out permission – upto three days per week - provided they were available on call in their mobile and came within an hour for an emergency at night. With these measures compliance increased to over 70%. Now monitoring was strengthened and any one violating these revised rules was punished. Compliance increased further to over 90%.

While taking disciplinary action for poor performance or failures in service delivery, the single most important rule is to know the procedures and to follow the procedures faithfully. Also any time with a compromise solution would lead to an improvement in service delivery, explicitly negotiate and settle for it.

In contrast to disciplinary action incentives, rewards and recognition for good performance are almost completely absent from the system. Where present, they might often be given arbitrarily, in which case this too would de-motivate a hard working person.

Incentives need not only be financial. They could be a relaxation on leave rules, support and encouragement to attend a conference or skill upgradation programme or social recognition and special responsibilities. Financial incentives could also be introduced. Madhya Pradesh for example has a system that after the first 200 institutional deliveries in a year in a PHC, for every subsequent delivery there would be a sum of Rs 230 divided amongst the health care providers. The point is in devising the incentive so that it rewards those who perform well even on routine functions.

H) SUPERVISION, SUPPORT AND MOTIVATION

The other major part of workforce management is to provide supervision and support to the employees. Too often supervision and rigorous monitoring come to mean inspections to catch employees who are not working and take disciplinary action on them. The main purpose of supervision needs to change to mean providing on the job support – which includes training, and helping the employee in troubleshooting and assisting him or her in handling work which they are not able to do by themselves.

This is one important reason why doctors are needed to supervise doctors at supervision level in health systems – for they can provide active support to the clinical issues that doctors face better. Similarly nursing supervisors and officers make for better nursing supervision and ANMs and MPWs have their own supervisory cadre. When it comes to the management level it is important for the manager to have public health training including clinical experience so that actual support can be provided.

Another major influence of management is to act as a role model themselves. This is one of the important sources of motivation – the feeling that they are part of a team, the peer pressure to perform well, the recognition of the team leader and the example set by the leader themselves. Where this sort of trust

has broken down and the team lies in disarray – special efforts at team building and motivation are called for.

There are many techniques of doing so. One often used technique is appreciative inquiry. (see box).

Appreciative Inquiry (AI) for Supportive Supervision and Motivation

As is well recognised, improving and sustaining motivation in public health systems is a particular challenge given the multiple pressures, demands on time as well as poor supervisory processes and structures under which staff in these systems work. Learnings from the implementation of an innovative approach in supportive supervision and motivation – Appreciative Inquiry - which is being implemented and researched as a part of the City Initiative for Newborn Health (CINH) in Mumbai can be mentioned here. CINH is an action-research initiative, undertaken as collaboration between the Society for Nutrition, Education and Health Action (SNEHA), Municipal Corporation of Greater Mumbai (MCGM), Centre for International Health and Development at the University College, London, and Social Initiatives Group (SIG), ICICI Bank. It integrates and researches a set of interventions (both systemic and community based) that aim to improve maternal and newborn health of the urban poor in Mumbai and is seeking to create a model for improvement in urban health care delivery.

Changes in quality of care cannot be brought about by just providing technical training and equipment, and that the larger issue of people management needs to be addressed. Issues like performance appraisals, incentives and disincentives, supportive supervision, avoiding shortages of resources are all vital.

To address these issues, Appreciative Inquiry was used, which involves the whole system and creates a shared vision for the system. The process of Appreciative Inquiry (AI) typically involves 4 stages: (a) Discovering periods of excellence and achievement, b) Dreaming an ideal organisation or community, c) Designing new structures and processes to make this a reality, and (d) Delivering the dream.

The hypothesis is that health care workers lose touch with the very reason they entered the profession, the idealism and meta goals that are inspiring and motivating. They are often not motivated to perform well, and may not feel accountable for the delivery of quality care. There is not enough pride in their work. AI aims to create certain energy about the work, which would then lead to improvement in self-motivation. The fundamental belief is that "in every system, something works", and that these life-giving and inspiring forces need to be tapped for change to happen.

The process of AI needs a capable and trained facilitator and this is usually best got from outside- at least in the beginning. The facilitator guides the participants that include action groups of health service providers and administrative personnel from the public health system - cadres of health care providers (doctors, administrators, nurses, and paramedical staff) in a

non-hierarchical setting. Senior colleagues and opinion formers are included in the groups so that their outputs are respected. The groups adopt an appreciative position. A number of key processes are identified and the groups are tasked with improving knowledge, defining needs and implementing strategies for change of these processes. For example the groups may assess and develop common clinical and administrative protocols to cover maternal and neonatal health care, recognition of risk, referral, transfer, procurement, and human resources, as well as work on cost analysis for strategies and the development of standards against which progress can be judged. The groups meet repeatedly over time and drive continuous quality improvement cycles both within and across institutions, with an emphasis on participation. Specific action groups are constituted and involved in the assessment of facilities, development of clinical protocols for antenatal, postnatal and neonatal services, the process of facility upgradation, and the training of personnel.

The expected outcomes from AI can be diagrammatically represented below:

CINH has used this in nine Maternity Homes in Mumbai, which provide basic antenatal care and delivery services and are run by the public health system. The idea was to involve the "whole system" in the AI workshop, i.e. all the staff regardless of their hierarchy and category: doctors, nurses, ayahs, ward boys, clerical staff, lab technicians and field staff. The process begins with everyone sitting in a single room, on the floor (at the same 'level') and listening to one another's stories. The process, without precedence in its design and content, is a powerful

experience for many of the staff. This was organised over four half-days, where each day covered one "D" of the four AI stages. An average of about 60% of the staff was covered over a single session.

The immediate results have been encouraging. When "learning" from the workshops were sought, the following themes have emerged:

'A change in one's own attitude would definitely change the way we see things'; Participants stated that they learnt a lot about 'work-related behaviour', how to enjoy work, work with unity among the staff, and behave well with patients.

'If there is a will there is a way"; A positive approach towards work and inspiring the staff with little outside help, learning newer ways of working, accepting problems as challenges and solving them, and that it is possible to work together by forgetting differences of opinion, with unity, honesty, love and affection within the available staff and resources.

AI offers a new way to promote change in the work culture of large organizations and institutions. Its strength lies in the fact that it involves a wide range of stakeholders in assessing the past and planning the future, negotiates gently past hierarchical structures, encourages transparency and organizational self-reflection. The AI process is inclusive, and creates a wider dissemination of power and reveals in a more acceptable manner to the powerful advantages of a more democratic style of functioning in institutions that have never thought beyond hierarchy as the one and only organising principle. Not surprisingly therefore, in most situations, it requires external facilitation to execute and external authority to initiate.

Motivation is also a function of how work is organised and how the organisation of work provides adequate space for personal advancement and fulfilment. If employees are isolated and do only a single, tiny, boring job, then over time they do lose interest in the job. Hence in order to maintain motivation among the staff it is essential to enlarge jobs to provide greater challenges or assign tasks that are rotated e.g. improving the skills of a ward boy to print an E.C.G. instead of having to wait for a nurse.

Very often in discussions about government run health systems the question of motivation is raised as a rhetorical question as something that is either present or absent and about which nothing can be done. Within any group the levels of individual motivation would vary and one cannot quite predict who would be most motivated. But as a group the level of motivation can be influenced. The level of motivation of a group is always influenced by some key determinants which relate to workforce management or HR policy. The true test of the district health manager's ability lies in being able to identify these determinants and put in pace the processes and provide the leadership by which motivation is built up. In the accompanying table we look at one way in which the determinants of health care provider behavior can be categorised and how each of these can be addressed.

Table:The multiple environments that influence health care provider behavior (adapted from issues in health services delivery, strategies for assisting health workers to modify or improve skills: developing quality health care- a process of change Discussion Paper,WHO, 2000).

Determinants	Description	Possible district level actions
Immediate environment	Interaction with patients and staff members	Is the patient consulting room adequate? Is there investment of time and effort in improving staff relationships?
Personal Environment	People with meaningful relationships with the practitioner, personal preferences and values	Are positive role models available? Especially in the leadership.
Educational Environment	The structure of basic and professional education systems and the opportunities that exist for continuing education	Does every health care provider have regular opportunity to upgrade skills? Is there value attached to such improved skills? Does it lead to a career path?
Professional environment	Colleagues, professional associations, certifying and accrediting bodies, regulations	Are we engaging with professional bodies and bringing up ethical and social issues in their forums also? Is regulatory framework in place and implemented? Are quality circles or interactive bodies formed that can shape output. In what other way is professional recognition enhanced? Or professional opportunities provided.
Community environment	Perception of provider by community	Are we providing opportunities for positive and negative feedback from communities to reach providers
Administrative Environment	Service Rules, regulations and laws and conventions that influence provider behaviour, working conditions,	Are achievements rewarded and poor performances subject to corrective action? Is the administration perceived as fair and non discriminatory
Socio-cultural, Economic and Political environment.	Traditions and cultures and economic and political conditions of larger society.	Is there awareness of which conditions are affecting adversely on quality of care? Can some ameliorating measures be initiated?

I) RATIONALISATION OF THE WORK-FORCE

Another major dimension of work force management is rationalisation of the existing force to maximise their outputs. The aim of such rationalisation is to see that every employee is productively utilized for a full eight hours per working day. In many situations rationalisation also means a cut back in the number of employees. But in the public health system the general vacancy position is so high and the work to be done so much that usually the question is of how to skill and deploy the existing workforce rather than reduce it.

Let us take an example discussed earlier – rationalisation of workforce in the PHC (sector PHC- one per 30,000 population). Typically a PHC has one medical officer and one staff nurse, one laboratory technician , one pharmacist or compounder posted there, one dressor and three or four class IV staff of different designations – sweeper, chowkidar, ward boy, peon, waterman, etc. In addition, since the supervisory staff of the sub-centers in the sector is located there, we may have a LHV and a male health supervisor. In addition, since there is a sub-center embedded in the PHC, there may be an ANM and one MPW also posted there. We can assume that as many as five of these 12 persons who are to be posted there have in fact not been posted. Now when the doctor does not come to a PHC, the entire work force of 7 to 12 persons really have no functions to perform except of course the ANM and her supervisor. If he does come at best he would see about 50 cases in the day – so about 5 cases for the dressor and about 15 cases for the laboratory technician and about one hours work for the pharmacist and so on. Further many of the functions that need to be done could be refused as there would always be some critical vacancies. On the other hand if all of the 12 are taught a basic set of paramedical skills then at any given time two of them could be posted. The point is that even the dressor, the compounder and the sector supervisor should be able to manage laboratory work and the lab technician can help out with the rest and so on. In which case we do not need 12 persons there – any three male staff and three nurses – other than the ANMs would suffice to make it functional provided they are multi-skilled. This is precisely how the single practitioner private clinic remains economic. The cost per patient seen should be kept as low as possible without compromising on either patient quality or a fair return to the health care providers. The most important tool of doing this is rationalizing the use of the workforce. A careful examination of most public health systems is likely to find considerable redundant human capacity which either has to be re-skilled and re-organised. The design of workforce in an institution should take into account the case load as well as the service package that such an institution is to deliver.

Getting Qualified Personnel versus Getting Necessary Skill sets in place

A health facility is designed to provide a set of services. This implies that it has a number of persons with the skills necessary to deliver those services are available in the facility. The most obvious way to get these skills is by recruiting or posting persons who have the required qualifications. But where such persons cannot be recruited the next best option is to get the person with the nearest basic qualification and upgrade them through appropriate training to get the necessary skills in place.

This is made possible also by the fact that to impart a qualification lot more skills are imparted than is essential for the services a specific facility needs. Thus care of a sick neonate is ideally done by a pediatrician and most MBBS doctors would not have these skills. But then it takes at least three years to train and certify as a pediatrician. But in pediatrics course the doctor learns about a vast number of pediatric diseases – most of which are possible to practice only in an advanced tertiary child care institution. The pediatric skills needed in a PHC or in a CHC may be taught in a few months – to an MBBS doctor. However if the number of sick children that need to be seen are such that it takes a full time doctor then it would make sense to hire a pediatrician and give care to a greater range of childhood illness.

Sometimes an Ayush medical doctor is posted in the place of an allopathic medical officer due to the lack of availability of the latter. Here also the question to ask is – is the desired skill set in place? Sometime we find a diploma in obstetrics posted in a CHC, but not having the confidence or skills to conduct a C-section surgery. In such cases though a qualified person is in place, the needed skill sets are not in place. We thus have male or female paramedical workers who do not know case management of a sick child, or insertion of an IUD etc- then skill sets are not in place, despite there being no vacancy.

Human-power planning must shift to defining the available and required skills sets in a given facility to make it fully functional and how best to get the skills needed in place- and the answers are different in each state and even in each district. District Training Centers and State Institutes of Health and Family Welfare must be entrusted with such skill mapping and with designing a strategy to supplement recruitment of qualified persons with multi-skilling as a general route to get all needed skills in place.

J) ALTERNATIVE STRATEGIES OF HEALTH HUMAN RESOURCE CREATION

Much of the discussion above assumes that we need incentives or disincentives and special tactics to get skilled health care providers to underserved areas. Another way of looking at it is that there are people who are happy to be resident in such a place- and one can over a much longer time create skills in such persons rather than import reluctant skilled persons from elsewhere.

One possibility is that the 8th class passed women who are working as ASHAs can be helped to transact a course – both distance education and local contact programmes – with the national open school system wherein they can be certified as CHWs. Those passing this stage get a 10th class pass certificate as well as a community health worker certificate.

Another possibility is to make the higher secondary stream in tribal and in underserved community blocks offer a vocational stream for training girls to become ANMs. This could be linked to the nearby district hospital for practical training. Those graduating from this get the 12th class certificate and the ANM certificate.

A third possibility is to open up nursing schools – one in each district ensuring that all the remote districts are preferentially covered. This would also provide considerable employment potential for these areas as well as address the health human resource shortfall.

A fourth possibility is to plan for training a number of nurses who are working in PHCs and happy to be resident there to become qualified with the medical curative skills expected of an MBBS doctor working in a PHC. These nurses are to be called nurse practitioners and are accredited by the nursing council. In many areas of the world, it is such nurses that provide medical services in rural areas.

A fifth possibility is to plan for medical officers working in PHCs or CHCs to be trained to gain specialist skills – so that the entire range of specialist services that one intends to provide at a CHC is made available. A number of short term in service training courses have already been prepared for this (in obstetrics, in anesthesia, in pediatrics) and more would need to be prepared (especially in areas like trauma care, mental health, ophthalmology etc.).

One notes that the above five possibilities are not mutually exclusive. In fact, they would probably work best if they are tried out together. Each of these ideas is being tried out in one or other district on the nation today. But there is no place where all five of these options are being used to close the gap between need and availability of skilled human resource.

HOUSEKEEPING

The number of functions related to workforce management is so large that it requires considerable time and effort to get it done. Since, as the saying goes "a government moves on paper" all this work has to be captured on files and registers and documents with proper authentication. It needs a substantial body of clerical staff to keep the paper work associated with workforce management in order. And the district health manager – usually the chief medical office has to supervise this at least once monthly – taking considerable time to see that the records are well maintained and updated, the work is all done in a timely manner and that who is doing each of these functions and the supervisory arrangements for the same are defined. This process of periodically ensuring that the routine paper work is being done properly, which in such systems signifies that the action needed is being taken, is often called "house-keeping" or keeping the house in order. Inspections by officers of the district offices need to include or even begin with the state of house-keeping. Below is a list of specific tasks that would need to be included in house-keeping or in an inspection of the district office.

Service Records

Is there a copy of service records kept for every employee? Is it updated? Does the employee take a signed copy of the service record once a year or once in two years as a back –up? The last is to be insisted upon. It is desirable that such a record also be maintained for contractual staff.

Confidential Report (CR)

For all employees, is the confidential record updated and maintained with the comments of both the reporting officer and the next higher officer.

Promotions

If the above two are in place- the list of the next set of officers due for promotion should be ready. Is this list always in place for placing in the next DPC (departmental promotion committee).

Enquiry

There are always a number of enquiries ordered as part of disciplinary proceedings. These drag on for years and are largely infructuous. There is a need to monthly review and expedite the position.

Court Cases

There are usually a number of cases related to workforce management pending in the courts. There is a need for regular and timely follow up and supervision of the same.

Leave and Attendance

Regular maintenance of this is another important chore. The importance is in seeing that the permission given by the reporting officer is recorded and that each person's credit and debit on leave is well updated.

Pensions

One of the most distressing failures of workforce management is the way pensioners have to run around to start drawing their pension. One test of good management is that on the day of retirement from service, the pension papers authorising the pension are handed over and from the very next month the retiring employee is able to draw pension.

Cash Book and Ledgers

The maintenance of cash books and ledgers as per rules, its regular updating, the tallying of cash balances and bank balances with what is seen on physical verification is another major part of housekeeping.

Stores Inspection

This is a separate part of housekeeping – and there are many processes that needs to be verified in a stores inspection visit. This would include procurement, entry into the stores, distribution from the stores etc.

Review Questions

1. What are the main elements of workforce planning?
2. What are the uses and limitations of disciplinary methods and incentives in improving service delivery outcomes?
3. What are the determinants of motivation in the workforce? How can it be improved upon?
4. What is multi-skilling? How does it contribute to workforce management?
5. What are the various indicators of good governance as related to work force management?

Application question

1. What are the possible strategies of getting skilled workforce to work in remote and under-served areas? Discuss costs and benefits. What resistance would be offered to multi skilling and by whom / which groups of people? How could you allay their fears?

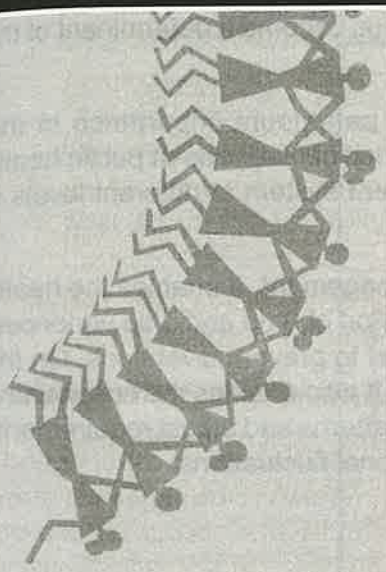
Project work

1. Describe the selection process used in your institution/ organization for the selection of the class IV employee and make suggestion to improve the same, in light of the extensive competition for the jobs.
2. Participate in one session of appreciative inquiry. Or organise a brief session of AI at your workplace. What potential did you see in this technique for increasing motivation?

NOTES

Lesson FOUR

Logistics of Drugs and Medical Supplies



In this lesson we shall discuss:

- Logistics and supply chain management
- The present situation in logistics and supplies
- Objectives in logistics
- Benefits of better logistics
- Components of drug supplies and management
- Evaluating the existing system:
- Computers in drug management:
- What a district plan can do

INTRODUCTION

Drugs and medical supplies are recognised and are dispensed at the cutting edge interface between the public health system and the people. Availability brings credit or discredit to the public health system. The availability and accessibility of medicines at public health facilities thus become a determinant of the quality of health care.

In the above context, proper management of drug supply assumes paramount importance in the dispensation of health care. To ensure proper availability of drugs and medical supplies at public health facilities, it is of utmost importance that the logistics supply management system at different levels is organised efficiently.

Effective inventory management is a pre requisite for optimal stock management. It enables the health facilities to know the current pattern of consumption of drugs over a period of time and also variances. Thus on one hand it enables one to keep a control over the custody and to prevent diversions. On the other, it helps in planning future demands based on past consumptions. It also enables the hospital and district health management team to match consumption with morbidity patterns and adjust requirements of medicines consistent with demands of the public health and its seasonal fluctuations.

WHAT IS LOGISTICS AND SUPPLY CHAIN MANAGEMENT?

The term "logistics" refers to activities concerned with selecting, financing, delivering, and distributing materials and other supplies. The term "supply chain" describes the many organizations that are linked in the delivery of supplies from manufacturers to clients and in the flow of information about end users needs. Similarly, the term "pipeline" refers to the flow of supplies through storage and transportation facilities- including port facilities, central and regional warehouses, district and sub-district stores-to service delivery points and ultimately to family planning clients. In practice, the terms "supply chain management" and "logistics" are often used interchangeably.

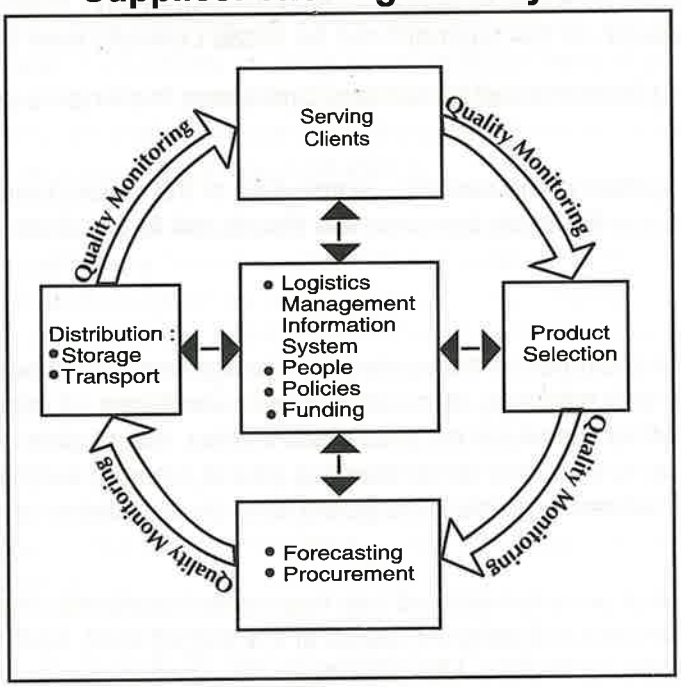
Logistics systems may be complex. Many local and national/international manufacturers provide drugs, equipment and material to programs, and a variety of donors, policy-makers, and program managers procure, finance, and deliver them. Central and regional warehouses and regional and local facilities store them, and transportation systems distribute them. At each stage of the supply chain, organizations and managers share information and coordinate their activities.

To do the job right, logistics systems require political commitment, leadership and professional management, and training and support for the people who make the supply chain work. Effective logistics management information systems (LMIS), skilful product selection, accurate forecasting and procurement, and reliable distribution, including storage and transportation, are crucial. Of course, programs need adequate funds to buy the supplies and support the logistics system.

Within the logistics system, each activity depends on all the other activities (see Figure). For instance, in context to family planning program the mix of contraceptives that the system delivers should reflect clients' preferences and the capabilities of the service delivery system. The quantities of each contraceptive

method procured should reflect accurate forecasts of consumption. Also, each stage of the logistics system should include monitoring and evaluation—of the quality of the products themselves and of the supply chain's performance.

Supplies: The Logistics Cycle



Source: Family Planning Logistics Management, 2000 (48)
Population Reports

THE PRESENT SITUATION IN DISTRICT LOGISTICS:

At the district and sub-district levels, the Chief Medical and Health Officer (CMHO) and the civil surgeon have overall responsibility for planning, procurement, distribution and store keeping /dispensing of drugs and supplies for district/Civil hospitals and rural health facilities respectively.

PROCUREMENT

There are three main sources of drugs for the health system:

(i) Drugs and supplies procured centrally for the national, vertical programmes (Leprosy, TB, Blindness, HIV/AIDS, RCH, vaccines etc).

(ii) State procurement.

(iii) Local procurement from state enterprises or local shopping.

The procurement of drugs varies from state to state. In many states drugs are purchased by the state directorate or a dedicated state level organisation and distributed to the districts. This however excludes

many drugs and vaccines which are part of centrally sponsored schemes where the drugs reach the state warehouses and from there the district warehouses "in-kind." Example of Madhya Pradesh is typical of this arrangement. Madhya Pradesh Laghu Udyog Nigam (MPLUN) manages procurement through competitive tendering, maintains list of approved suppliers and prices and places purchase orders with the manufacturer directed to supply directly to district Civil Surgeon or CMHO. The latter directly pays the manufacturer- or the payment can be made centrally from the state.

In other states, the district places the call for tenders, processes the tenders and places the orders itself and received the supplies.

In many states there is a system of distribution – some 40% of the orders being placed by the state and 60% by the district. The drugs the state procures are distributed to the districts subsequently.

DISTRIBUTION SYSTEMS

There have been a number of studies on the systems of storage and distribution showing that distribution continues to be irrational with wastage, confusion, erratic shortages of essential drugs and medical supplies at all levels. Most of these are not published studies, but studies commissioned by bilateral agencies providing funds or by the state department as part of a health sector reform programme. Most such studies show some recurrent problems across many states. Below we describe some of these common problems.

Because of multiple sources of procurement and their fragmented distribution there is often a fragmentation of supplies and stores, often with 5-6 different stores at the district level, each with their own go-downs, storekeepers, registers and watchmen. Not only does this lead to duplication of infrastructure and resources, it also often leads to sub-critical resources for each store. Staff collecting drugs for their facilities have to make separate indents for each drug store and negotiate approvals for each of these and collect their drugs at each store – a tiresome and time consuming activity.

Drugs and medical supplies distribution follow an unusual system of "push" distribution. Drugs and supplies from the vertical programmes are often pushed down through the system, irrespective of their real requirements- because there are targets to be met. This could also happen with some of the drugs procured inappropriately at the state level.

Often there is an informal word passed around as to how much each facility can ask for maximally in drugs which are not being pushed down. This is because availability of such drugs are limited and all facilities have to take this as given and cooperate so that there is no pressure on the procurement and logistics management of the higher levels.

When drugs are indented for according to needs at the health care facility, this is often done after they have run out of stocks leading to considerable gaps in service provision. Indenting and estimates of drugs requirements are based on past consumption with a percentage added (10%). This system is quite irrational, since it does not consider the medical needs of the population. Indeed, irregularities and past shortages may eventually tailor the patients to seek treatment for diseases where they expect drugs to be available. Thus common diseases like diabetes, hypertension epilepsy etc. move away from

the public system because of this. Even if these patients come, the chances are that they would get an "outside prescription" to buy drugs on the market.

The drug stores (district, block, Community Health Centres (CHCs), and PHC and national programme drugs and medical equipment) are almost uniformly poorly organised and managed, with a few good exceptions. Most stores lack even the simplest racks, shelves and cupboard. Although there are old and also updated orders and instructions on drug store management, these are either unknown or unused. Storekeepers seem to invent their individual store arrangements. Most stores are unsuitable for their purpose or in poorly maintained buildings and rooms. In most studies, vaccine stores were generally better organised and managed than other stores.

Although even when there are drugs and supplies in all stores, there are frequent stock-outs of essential drugs and the quantities supplied are limited in view of the population to be covered. In most states the pattern is that after the procured drugs arrive at the state or district workshop a fixed quota of drugs is sent to all the facilities. This is periodically repeated till the drugs are exhausted in the stores. Thus some facilities could use more drugs, or be catering to more patients and others may be unable to use that many drugs. Still they would get the same drug kit. This implies that the well functioning facilities would get frequent stock outs and this would lower their performance and the poorly functioning ones would get excess drugs that would cross expiry date, get wasted and disposed of. The mechanism of each facility indenting for a drug well in time and then getting the drug is present on paper, and where there is enough pressure it even works- but for the most part , once the drugs are exhausted, one waits till the next stock of supplies comes in.

Comparing it with cola distribution: To understand how irrational current drug distribution can be – consider the example of distribution of cola drinks by a manufacturer from a whole sale store to his retailers in a town. What if he decided to release 50 bottles per day to every store-irrespective of their consumption? In one store the storekeeper had gone for a holiday and a 350 stock would pile up in a week. In another store in a movie theatre over 150 come per day and two thirds of them cannot be supplied and they shift their demand to the rival cola. Obviously no manufacturer who is still in business can allow this to happen. But when we provide fixed drug kits – a fixed number of drugs of a fixed mix of drugs – to every facility irrespective of usage, is this not what we are doing?

However, reviews team are usually surprised to hear from nearly all senior officers and service staff as well as from store keepers that there were no problems with drugs supplies and that they had sufficient quantities. It appears that the health staff has become used to the present system. However, for the patients it presents both inconvenience and cost. The most common form in which patients perceive this problem is that though most patients expect to get a drug at the health facility, as many as 75% end up with a prescription – often to be filled by the private pharmacy just outside the health facility – at a cost often 2 – 3 times that of the drug in the public health sector.

Improving Logistics therefore includes the following:

- Building new stores, and rehabilitating existing stores.
- Improving the management of all existing drug stores from the PHC level to the district store level.
- Development of drug store management manuals.
- Training of those involved in logistics.
- Writing off and removal of expired drugs and other dead inventory.

Later, there would be a need to examine and improve on the procedures for estimating drugs requirements, perhaps through operational research, in districts where drug store improvement has been successfully undertaken.

QUALITY ASSURANCE

The pharmaceutical system continues to have problems with Quality Assurance (Q.A). The key institution for ensuring this is the State Drug Control/Testing Laboratory- but more than just one institution, it needs a system of quality assurance. The current drug inspection systems are often understaffed, and inspectors are frustrated by the delays in receiving results. Test results may be delayed by more than one year, by which time the drugs in question have nearly always been used. Many states like Tamil Nadu invite expressions of interest from drug testing laboratories and then invite quotations and finally accredit seven or eight commercial laboratories with established quality. It is to these laboratories that the samples drawn from every single batch of supplies have to be sent. If a sample is sub-standard, the drugs are not paid for and the supplier has to replace it. If it recurs the supplier gets debarred. With some cross-checking between laboratories one can have a system with an almost 100% assurance of drug quality. The state drug control laboratory is still needed for filing cases on spurious and sub-standard drugs- but the bulk of the testing moves to carefully chosen and contracted private firms.

OBJECTIVES IN LOGISTICS

The objective of logistics management is simple:

1. to deliver the right product,
2. in the right quantity,
3. in the right condition,
4. to the right place,
5. at the right time,
6. for the right cost.

BENEFITS OF BETTER LOGISTICS

1. Better access to quality care: Health services are more available and with better quality, it improves performance of all disease control and RCH programmes. It ensures improved quality of health care and this results in better patient outcomes and more patient satisfaction. Logistics is especially important where there are seasonal peaking of diseases like malaria or where there are epidemics. A good logistics system is responsive to such changes in use patterns. A poor logistics system retards or even reverses positive changes in the health system.

2. Better quality of supplies: A good logistics system ensures that at each step of the supply chain supplies are protected-that they have been stored and handled properly, have not expired, and are not damaged-and that defective or out-of-date supplies do not reach clients.

3. Better staff morale: Reliable supply also helps build staff morale, since staff does not have to disappoint patients seeking medicines that are out of stock.

4. Getting more for less: Improving logistics systems can cut program costs without sacrificing services. A strong supply chain helps reduce program losses by minimizing waste and damage and preventing products from expiring on the shelves

COMPONENTS OF DRUGS AND SUPPLIES LOGISTICS MANAGEMENT

The Drugs and Consumables logistics has five key elements

a. Selection of drugs,
b. Quantifying drug requirements,
c. Procurement of drugs,
d. Distribution of drugs- Inventory management, and
e. Rational drug use/Use of essential drugs.

SELECTION OF DRUGS

The single most important step is establishing an essential drug list. Establishing and using a limited list of carefully selected drugs is perhaps the most cost effective action that any health care system can take to promote regular supply and rational use of drugs. Studies on economic impact of essential medicine lists in several countries and in Indian states have clearly demonstrated that there is substantial saving -up to 30 percent - in drug budget resulting in an increase in availability of essential drugs in public health sector.

The single most important objective of selecting a limited list of drugs is to ensure that all drugs required for treating priority diseases in a population are available at all health care facilities and dispensed to patients in desired quantity, dosage form and strength at all times. However, this can only be achieved if the drugs needed are clearly identified. Procurement must be limited to drugs on the essential drug list

by government order and those drugs not on the list should not be purchased. If purchased within government rules and the essential drug list, the extra expenditure should be reimbursable.

Quantifying drug requirement

Drug demand or any other logistics needs to be quantified. Quantification involves estimating the quantity of specific drugs needed for procurement.

Three major methods are used for quantification:

1. Consumption method.
2. Morbidity method.
3. Adjusted consumption method.

The consumption method uses records of past consumption of individual drugs (adjusted for stock outs and projected changes in drug utilisation) to future needs. Tamil Nadu for example calculates minimum stock position for any given month based on the consumption of drugs in the corresponding next three months of the previous year.

The morbidity method estimates the need for specific drugs based on the expected number of attendance, the incidence of common diseases, and standard treatment pattern for the diseases considered.

The adjusted consumption method uses data on disease incidence, drug consumption or utilisation and/ or drug expenditure from a "standard" supply system and extrapolates the consumption or utilisation rates to the target supply system, based on population coverage or service level to be provided. One principle of procurement and logistics is that

- At any given time there should be at least three months stock of drugs available in each health facility and in the warehouses and stores. Since disease patterns are seasonal, one would have to take the corresponding consumption in a three month period of the previous year with extrapolation for current outpatient attendance.
- Another principle is that most drugs and supplies should be consumed within one year of its purchase.

A good storekeeper would write down for each drug what is the lower threshold level and the upper threshold level. If the stock falls below that level he should send off an indent. Similarly should not accept stocks if drug stock position goes above the upper limit.

Procurement of drugs

The pharmaceutical procurement system is a major determinant of drug availability and total health costs. In most developing countries, drug purchases represent the single largest health expenditure after personnel costs. Procurement policies and their compliance are one of the best indices of good governance.

An effective procurement process shall:

- Procure the right drugs in the right quantities.
- Obtain the lowest possible purchase price.
- Ensure that all drugs procured meet recognised standards of quality.
- Arrange timely delivery to avoid shortages and stock outs.
- Ensure supplier reliability with respect to service and quality.
- Set the purchasing schedule, formulas for order quantities and safety stock levels to achieve the lowest total cost at each level of the system.
- Achieve these objectives in the most efficient manner possible.

Given the impact of procurement activities on the operation and effectiveness of the health services, it is essential that these activities be performed by trained staff using sound procedures, working in adequate offices with good communications, and with access to reliable inventory and consumption information. Good procurement management demands medical, pharmaceutical, managerial, economics and often political expertise.

The Tamil Nadu system is recognised as one of the best systems for this purpose anywhere in the world. There are four key steps in efficient procurement:

a) Pre-qualification: first inviting letter of interest and making a list of companies/manufacturers who are qualified to apply for the tender. Usually this means that they have a WHO GMP certificate (good manufacturing practice).

b) Then issuing the tender document and finding the lowest quote for each drug and awarding that manufacturer a rate contract for that drug. Meaning that for the year that drug would be purchased only from that manufacturer at the agreed upon rate- but quantities would be ordered separately.

c) Sending orders for delivery to the manufacturer for each district. Thus procurement is not done in a fixed time – but happens right through the year. Whenever in any district the stock position of any of the list of essential drugs falls below the three month level for that district, within that same week an order would reach the manufacturer. As one can see purchase is, in a sense, decentralised and district specific but without losing the advantages of cheaper rate for the larger scale of a state level purchase and without losing the technical expertise that a state level operation can ensure.

d) Ensuring delivery of supplies within a month and quality certification. Once the order is received within a month the manufacturer must supply the drug to the district warehouse. Samples are taken from each batch and sent to two quality control laboratories. And only after receiving a good quality certification the payment is made.

e) Blacklisting any firm which breaks these rules- either delayed supply, or failure to maintain quality, or failure to supply at the rates quoted, or trying to influence the selection process etc.

DRUGS DISTRIBUTION

The primary management goal is to maintain a steady supply of drugs and supplies to facilities where they are needed while ensuring that resources are being used in the most effective way. A well run system should:

- Maintain a constant supply of drugs.
- Keep drugs in good condition.
- Minimise drug losses due to spoilage and expiry.
- Rationalise drug storage points.
- Use available transport as efficiently as possible.
- Reduce theft and fraud.
- Provide information for forecasting drug needs.

In many public health systems, storage and transport of supplies rank low as budgetary and planning priorities, and the staff allocated to these activities generally have poor status. *This tendency to neglect distribution is unfortunate because storage and delivery are areas where fast, tangible improvements can often be made at low cost.*

The core of a good drug distribution system is *Inventory management*. In fact, the non specialist might say that inventory management is drug distribution management. That would be simplistic, but it is true that without a healthy inventory management system, the drug supply system as a whole will not be viable. Sick inventory management systems generally feature subjective, ad hoc decisions about order frequency and quantity, inaccurate stock records, and lack of systematic performance monitoring.

THE DISTRIBUTION PROCESS

The distribution cycle begins when drugs are dispatched by the supplier/manufacturer. It ends when drug consumption information is reported back to the procurement unit.

A. Receiving the supplies:

The major activities at the beginning of the distribution cycle are:

- Quarantine incoming goods.
- Check documents by inspection teams.

- Check sample for quality assurance.
- Inspection by inspection team.
- Reporting.
- Release into stock.

Once the goods are released into the stock the main operation is a stock control operation.

B. Stock management system:

The key issues of stock management are:

- Are there personnel deployed and are they trained? If the volume of drugs is large – we would need one or two full time storekeepers.
- Is the process of receiving drugs and supplies, receiving indents, making a decision on request for drugs and releasing of the drugs in place? These should be available in written form.
- Are there registers that capture these essential operations?
- Is it clear who exercises supervision and at what frequency. Also a clear instruction of what is to be seen during each inspection helps.

In addition, we want to know whether the stores are adequate in terms of protection of the drugs from spoilage, and whether the drugs are kept in an orderly manner in shelves so that the drugs nearest expiry are at front and released first and that the location of each drug can be immediately traced.

C. In Inventory control

In inventory control the key issues are that at the district level and state level is the system able to see the stock positions on a weekly or monthly basis.

- Is there a clear grasp of what threshold levels for each drug are - lower limit and upper limit at the level of each store?
- Are there clear protocols of when (at what threshold level) the store of a facility will send an indent to the store the block level or to the warehouse at the district or state level?
- Do the protocols also specify who would transport the drugs and how the drugs would be transported to the store from the warehouse?
- Is there a system of supervision to see whether the above protocols are being followed? Who does the supervision and what frequency? What is checked during each supervision and to whom is report sent /action taken?

Some supply systems indicators are also provided in the box below in the context of micronutrient supplies. However they can be applied to systems pertaining to any / all drugs.

Key indicators for supply systems

Stores management:

- % of drugs and consumables for which there is a written stock and recording method.
- % of listed drugs and other consumable in stock.
- % of accurate stock records.
- Number (%) of service facilities achieving minimum storage (15 from 20 items) below standards.
- % of facilities achieving an annual stock turnover above the minimum level expected for the drugs and supplies given a level of patient load.
- % product where expired stock is mixed with usable stock.

Quantification and re-supply decisions:

- % of drug related re-supply decision made quantitatively at district level.
- % of drug related re-supply decisions made by appropriately trained staff at district level.
- Average frequency of ordering each drug by category.
- Average % time stock out for each drug/supply item.

Distribution:

- Frequency of delivery/collection by product category in the last six months.
- Average number of transportation methods for drug/ supplies.
- % of drugs/supplies distributed to non-governmental health care providers.(with relevance to ASHA programme etc)

Adapted from Assessment of Micronutrient Supplement Supply and Demand Systems Developed and tested in India by OMNI and the Nutrition Foundation of India

Trouble shooting the system:

Even after such a system is put in place, a large number of problems would exist that would need local solutions. The first step to take improving the logistics of drugs supplies is to analyse the existing system and understand the problems:

Visit a sample of Sub-Centers, PHCs and CHCs and district hospitals:

Find out

a. If they have an essential drug list

b. If the drugs on the list are available

c. Are drugs other than on the list available?

d. Is there a store keeper or someone effectively is playing this role?

e. Are stock procedures being followed?

f. What drugs on the list are not currently available? Or are available below three months stock level?

g. Has an indent been sent for these?

h. Was there stock –out of any drugs in the last year? Was a key drug available during its peak season – eg availability of quinine during a malaria outbreak, or primaquine during a fever survey, or ORS packets and antibiotics during a gastroenteritis outbreak – or did the facility run out of drugs then?

i. What is the condition of the store? – maintenance, physical lay out, administrative arrangements, etc.

j. How are the transport arrangements functioning? Are there any bottlenecks?

If there have been problems one has to understand why and help to solve it. One would need to go into details of where warehouses and stores are located, the means of transport used, the travel times and mileages between warehouses and clinical facilities, whether seasonal factors affect drug movement, the adequacy of warehouse and staff and their training, the familiarity with laid down procedures etc.

Drugs Supply to ASHA and to outreach facilities (Health Sub-Centers and Anganwadis)

Drugs supply is most problematic for Sub-Centers and ASHAs where the drug kit approach to supply of drugs is institutionalised. These centrally sanctioned and sponsored kits never arrive on time or in the quantities they are needed and inherently the kit approach can never do justice to varying patterns of consumption across Sub-Centers or ASHAs. The problems with this kit approach to drug supply can be remedied by improved districts logistics where the drugs and supplies distribution to Sub-Centers and the ASHA and the anganwadi is fully integrated with the district logistics.

Peripheral drug distribution in Tamil Nadu:

Another major achievement of the Tamil Nadu Medical Services Corporation is the way it has organised peripheral drug distribution to be responsive to varying needs and yet be amenable to supervision and audit. Each primary health care center is given a pass-book. The pass-book is for

the sum of money allotted to the primary health center for drugs for that year. Whenever drugs are indented and released from the warehouse, the storekeeper makes an entry into the pass book of how much stores were released, their cash value and the amount of money that remains in the pass book. The PHC doctor can thus rationalise his drug usage within the various drugs his center needs so as to make it last longest. If even then the budget is exhausted – perhaps due to a high turnover or due to the increased need for some higher value drugs- then more budget is released – but the approval of the CHMO or BMO would be required. They would ensure that the pattern of use is appropriate and the higher budget is merited before they release it. Till such time as the budget is not exhausted, the release order need not even go the CHMO, it can take place immediately at the store keeper level.

Sometime specialists get posted in the periphery. Then specialist drugs earmarked for higher facility levels would be certified for release in that pass book and the center would get all the specialist drugs that the concerned doctor requires to function at a higher quality level.

The doctor ensures that three months requirements are always in stock. Release into his centers stock can be made at any time of the year and at times of epidemics or festivals when patient load is more, flow of drugs into his stock would accordingly increase.

COMPUTERS IN DRUG MANAGEMENT

Computers can be used in all aspects of drug management cycle, from selection to use. Using communication devices, users can exchange or share this information with other computers at the same time via local area network (LAN) or with computers anywhere in the world. When used effectively, computer systems save money promote efficiency, and improve the quality of services. However, poorly conceived or implemented computer systems waste money, decrease efficiency, and distract attention from other management improvements.

The benefit of computers in managing drugs and supplies depend on choice of tools, the commitment to using the tools and the ability to overcome the hurdles involved in incorporating computers into the organisations. There is no standard formula for successful computerisation in drug management but rather a mix of elements: the right mix can yield great benefits.

Computerising the district warehouse operations and the state should be immediately done if not already in place. Computerising below that could wait till the basic stock and inventory management processes described earlier are in place.

One of the key indicators and we can say perhaps one of the most sensitive and specific indicators of efficient district health management team is logistics. Often procurement policies are beyond the powers of a district- but there is no district health management that cannot reorganise its logistics on its own if it wants to. If despite sensitisation to the issue a district fails to improve logistics, it is either an issue of lack of capacities or of governance. Since the drugs and supplies delivered may be far short of what it says on paper, there is an active disincentive not to reform logistics. It is then to a more informed and capable community monitoring that one would have to turn.

Review questions

i) What is logistics and supply management?
ii) What should be the objectives of logistics and supply management?
iii) How will you quantify drug requirements? What methods are used?
iv) What are the critical aspects of good stock management? Before "releasing a received supply into the stocks" what must be checked?
v) What are the indicators of a well functioning logistics system?

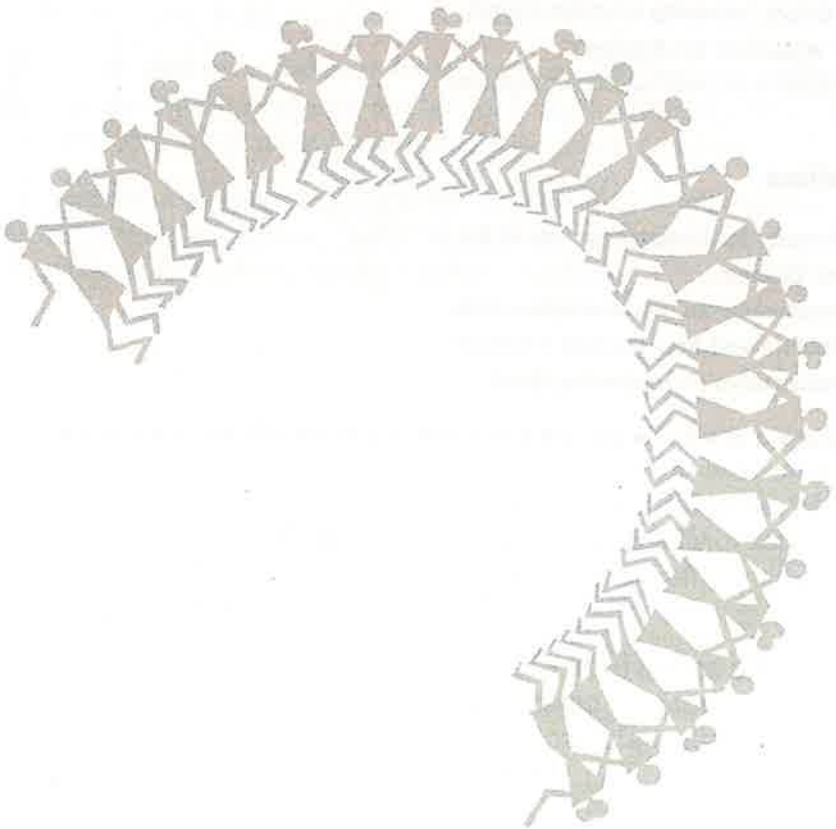
Application questions

1. Is your district ready for computerisation of the logistics system- Discuss?
2. What are the pressures from pharmaceutical firms and their distributors and how do they influence the system. Discuss ways of overcoming these.

Assignment

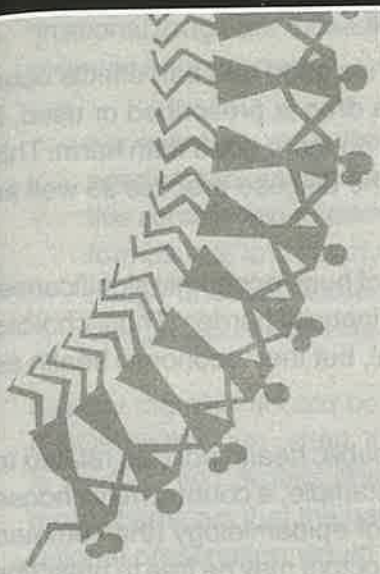
a. Write an appraisal of the Existing Drugs supply and distribution system in your district. What are the critical bottlenecks? Write this with respect to refilling the drug kit of ASHA and of providing the essential drugs for PHC in your district
b. What would be a plan for improvement of this system?

NOTES



Lesson FIVE

Promoting Rational Drug Use and Standard Treatment Protocols



In this lesson we shall discuss:

- The problem with current patterns of drug use and its causes.
- What rational drug use means.
- Essential drugs and essential drug lists.
- National commitments to rational drug use; drugs policy in India.
- Bottlenecks to rational drug use.
- Strategies to promote rational drug use.
- The meaning and usage of standard treatment protocols.

INTRODUCTION

A drug may be defined as 'a substance used in the diagnosis, treatment, or prevention of a disease or as a component of a medication' or, in common usage, simply as a 'medicine'.

However, when we understand that a drug is a chemical substance that has good and bad effects upon the body, we might choose to call it a 'useful poison'. Thus, every time a drug is prescribed or used, it should be with the full awareness and information of how it is expected to do more good than harm. This requires, first and foremost, an understanding and correct diagnosis of the disease process as well as an understanding of the way the drug functions.

It should also be recognized that in today's world, medicines are products of huge economic significance; they are produced by companies for profit and consumed by people at a financial burden. Thus, choices made about medicines affect not just the body and health of the individual, but their economic health as well as the economy of the country.

As with all health related issues, there may also be differences between public health policies related to drugs and the way drugs are individually prescribed and consumed. For example, a country may choose a list of drugs that are considered essential based on its understanding of epidemiology (the common disease patterns in the country), cost, availability etc. However, individual doctors may be free to prescribe drugs outside of that list as they see fit within certain rules or protocols. Such 'rules' are spelt out through essential drugs lists, formularies and standard treatment protocols and these are discussed in detail later in this lesson.

All this sounds entirely logical and simple; we 'should' prescribe and take medicines carefully, on the basis of scientific evidence and on the principle of doing more good than harm, we should be aware of costs involved and try to keep our drug treatment as cost effective as possible, we should use the helpful protocols that have been created by experts to help us to do this, we should make the drugs required by us freely available to all on the principles of the Alma Ata declaration of providing services to all irrespective of ability to pay.

However, many factors related to the 'political economy' of drugs have created a situation that is far from simple or satisfactory. Let us examine this situation in detail.

WHAT IS THE PROBLEM WITH CURRENT PATTERNS OF DRUG USE?

There are about 60,000 – 80,000 brands of medicines available in India today. Most are freely available 'over the counter' (OTC) even without prescriptions. However, when we look at how many medicines are actually required to fulfil most (over 95%) of the health needs of the majority of people (including drugs for HIV/AIDS), they would number less than 350! Even if we include all drugs that have a distinct use, including two or three drugs for the same indication and having similar chemical action, the number of useful formulations would not be over 2000. Compare this with the figure of 60,000 formulations on the

market and we can recognize the degree of wasteful production and use of drugs. The vast majority of the medicines available are therefore unnecessary, wasteful, and could even be harmful. We may call them irrational, as per the following definition:

"Irrational drugs are those the expected benefit of which is negligible or the use of which is not worth the potential harm or cost."

For example, more than four out of every five vitamin preparations cannot be recommended; nearly three out of every five are indicated for unproven indications; more than two out of every five contain non-essential or ineffective ingredients; more than one out of every two is irrationally formulated; and nearly one out of every two contains excessive dosage. Over 80 per cent of cough and cold remedies on the market are irrational, most with ineffective and some with dangerous ingredients.

Special mention should be made of the irrationality of combination drugs or 'fixed drug combinations (FDCs) as they are called. It must be understood that FDCs are almost invariably irrational. If a formulation is made of two distinct chemical entities than for any given patient the proportion between the two or more chemicals that the patient needs would change over time. If they are combined into a single tablet rational prescription would not be possible – except in very few instances like co-trimoxazole or some anti-tuberculosis drugs where the proportion is relatively constant. The WHO model list of essential drugs carries only 7 combination drugs whereas many thousands exist in the market. FDCs are largely created to add unnecessary costs and to inflate the number of brands on the market.

Some harmful consequences of irrational drug use

- Deprives patients the full benefit of available drugs leading to poor patient outcome.
- Ineffective treatment and sometimes, harmful effects / adverse reactions.
- Additional burden on the household especially affecting the poor.
- Additional burden on government drug / health expenditures. Existing drug budgets can be used to treat many more patients if only rational drugs are used.
- Increased morbidity and mortality.
- Increased antimicrobial resistance, leads to expensive newer generation antimicrobial treatment.
- Non - sterile injection use may transmit blood borne infections like Hepatitis B & HIV/AIDS.

Thus, it has been seen that worldwide more than 50% of all medicines are prescribed, dispensed or sold inappropriately, while 50% of patients fail to take them correctly. At the same time, paradoxically, about 1/3 of the world' population lacks access to essential medicines and this population is steadily rising due to rising costs of medicines and lack of public provisioning of health care! To complicate things further, people actually spend large amounts out of their own

pockets to buy medicines, usually inappropriately, and often at the cost of incurring large debts. Sometimes because of limited budgets patients choose between drugs on a prescription and have no way of knowing which the essential drug is. It is this very drug that may get excluded because it would have lesser retail price margins.

Costs of medicines per dose range from a few paise to a few thousand rupees! While spending on pharmaceuticals represents less than one-fifth of total public and private health spending in most developed countries, it represents 15 to 30% of health spending in transitional economies and 25 to 66% in developing countries. In most low income countries pharmaceuticals are the largest public expenditure on health after personnel costs and the largest household health expenditure. Thus, the expense of serious family illness, including drugs, is a major cause of household impoverishment and indebtedness. Again, despite the potential positive health impact of essential drugs and despite substantial spending on drugs, lack of access to essential drugs, irrational use of drugs, and poor drug quality remain serious global public health problems.

The 10th Plan document tells us that essential drugs for the treatment of common ailments were not available in a majority of the PHCs. Only around one-thirds of the PHCs had stock of iron and folic acid (IFA) tablets, 56 per cent had stocks of contraceptives and 61 per cent had vaccines.

While there has been some attention to irrational drug use not enough attention has been focused on irrational use of diagnostics which also suffers from the same phenomena as described above. The only difference is that the irrational use is more doctor-driven than by the demands of the patient as compared to drugs.

Clearly, profit is being made from irrational drug use at the cost of people's health and finances. However, it is equally clear that a demand has been created and now exists for people to demand drugs in an irrational way also. As any one who has ever tried to practice rational health care will know, there is a huge demand for unnecessary injections and drips, for prescriptions of newer and more expensive medicines and for multiple prescriptions. In fact, a doctor who tries to explain that a disease (like the common cold) is self limiting and does not require any medication-only time and care- is likely to be considered 'useless'.

Types of Irrational Drug Use

- Poly pharmacy (the use of too many medicines per patient).
- In appropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infections.
- Over use of injections when oral formulations would be more appropriate.
- Failure to prescribe in accordance with accepted clinical guidelines.
- Inappropriate self medication, often of prescription only medicines.
- Failures to adhere the treatment, often take less than prescribed.

What are the causes of 'irrational drug use'?

These can be listed as

- *Irrational prescribing practices of doctors*: These can be because of ignorance and failure to keep up with new information. Most doctors do not have any idea of the costs and remember only a few, most actively promoted brand names which may be the costliest and more irrational. However, to a large extent, this happens because the drug industry not only becomes the sole provider of information on drugs; it also provides open and hidden inducements to doctors to prescribe irrationally. Though ethical guidelines exist as to what can or cannot be accepted by doctors from drug companies, they are found to support foreign trips to conferences, sponsor seminars and meetings and give kick backs for prescriptions of their drugs. A large proportion (upto 40%), for example on the MRP of a vaccine may go into the pockets of the dispensing pediatrician. In fact, major differences in practice are seen between dispensing doctors (those who stock and give drugs themselves) and non dispensing doctors who merely write prescriptions. (see figure below)

- *Irrational dispensing by Pharmacists and Drug Sellers*: The same reasons apply as discussed above. Many pharmacists prescribe directly to people who come to them and relate a health problem. This cannot be proved to be illegal if over-the counter (OTC) drugs are freely permitted.

- *Promotional activities of the pharmaceutical industry*: This includes advertising sponsoring doctors and continuing medical education. One example of this is the highly effective advertising campaign for infant formula that had to be curtailed by the Infant Milk Substitutes (IMS) Act. But what was done for milk substitutes is needed for almost all areas of pharmaceuticals.

- *Drug pricing policies:* Further 'liberal' drug pricing policies under the WTO requirements forces countries to remove drug price controls as described above. Even earlier to this, measures to control the prices of drugs were steadily withdrawn. There is a belief that price controls are not necessary because the market forces the prices down to the optimum level. However when it comes to drugs, the user- the buyer- does not decide what they buy. That decision is made for them by the prescriber who is the health care provider. And as we discussed earlier the prescriber has little idea of costs and is subject to a number of promotional activities of the company and also provided inducements to influence prescription. Thus markets fail to regulate drug prices and governments remain reluctant to do so.

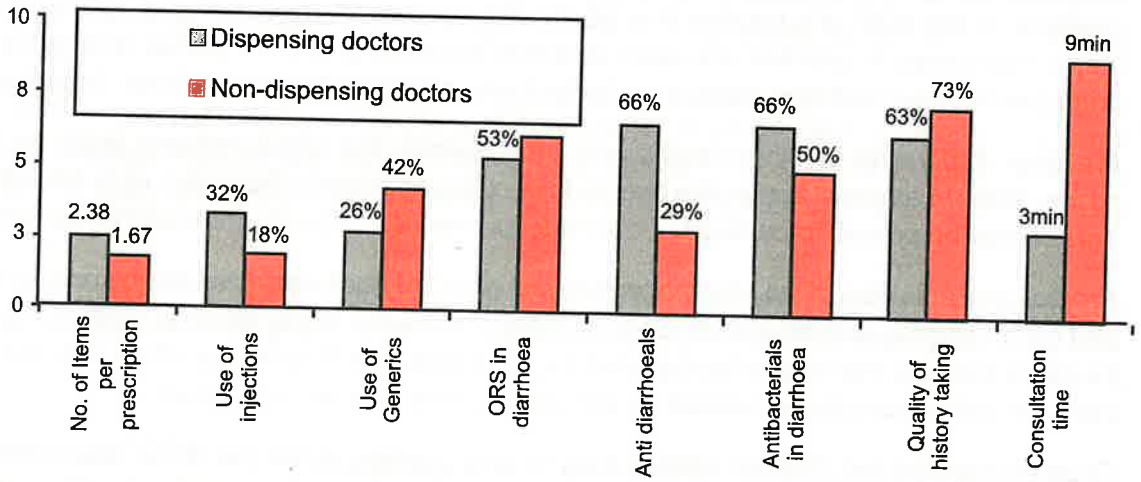
- *Lack of independent research*: Most research on new drugs is done by drug manufacturers with vested interests. They are known to withhold vital information from the public and many million dollars have been spent by these in out of court settlements and litigations for withholding information on life threatening side effects and complications etc.

- *Lack of information, education and communication on rational drug use to health care providers and consumers*: There are no independent (industry influence free) authentic publications of drug information that reaches health care providers regularly. The product inserts and information on

drugs available to the consumer are minimal. This leaves both health care provider and patient vulnerable to systematic misinformation by the drug industry and medical community both.

- *Lack of effective control and regulatory mechanisms on drug use*: Failure to regulate over- the – counter drugs is one example. The failure to ban hazardous and irrational drugs is another instance. The continued availability of a number of banned drugs is yet another instance of weak or failed regulatory mechanisms

- *Lack of political will and leadership to promote rational use*: The drug industry is known to be a powerful lobby that funds political parties and whole governments. This part contributes to this lack of political will.



Practices of dispensing doctors - drug use and health economics, Zimbabwe Essential Drugs Action Programme, Ministry of Health & Child Welfare, Zimbabwe 1997

WHAT, THEN, IS RATIONAL DRUG USE?

Rational drug use may be defined as:

When patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community. This means that doctors prescribe the right drug, in the correct dose at affordable price with clear information and instructions about the drug to the patient or guardian.

WHAT ARE ESSENTIAL DRUGS AND ESSENTIAL DRUG LISTS?

WHO defines essential drugs as those that fulfill the priority health needs of the people. These are selected with due regard to disease prevalence, evidence on efficacy and safety, and comparative

cost-effectiveness. Each country should ideally create its own 'essential drugs list' which should be revised periodically depending on changing health needs, changing disease patterns and availability of new and better drugs. It would be even more ideal to work on state level lists or even district level lists! However, the WHO provides a standard 'model list' which is helpful in this process. The first such list developed in 1977 contained 208 drugs. The 14th is the current Model List of Essential Medicines, prepared by the WHO Expert committee in March 2005. It contains 312 individual medicines, including antiretroviral medicines for the prevention and treatment of HIV-AIDS. India has a national essential medicine list (NEML- 2003) that comprises of 354 medicines. Most states have adapted an essential drug lists (EDLs) for the public health system. In these states only the drugs on this list can be procured by the public health system.

Essential medicines on this list are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality. Usually these lists are graded. They specify separately what the minimum list of drugs is for sub-centers, PHCs, CHCs, district hospitals and for tertiary care hospitals independently.

As Essential Drugs Lists guide the procurement and supply of medicines in the public sector, they can also be extended to facilitate schemes that reimburse medicine costs, medicine donations, and local medicine production.

Rational drug selection, good procurement practices, reliable quality assurance and efficient distribution systems comprise the central elements of the essential drug concept.

THE POLICY FRAMEWORK FOR PHARMACEUTICALS

The first comprehensive pharmaceutical policy in India was formulated in 1978. In the last 27 years the national pharmaceutical policy has seen a number of changes through new policy guidelines issued in 1986, 1994 and recently in 2002.

The Drug Policy of 1986, which was titled "Measures for Rationalisation, Quality Control and Growth of Drugs & Pharmaceuticals industry in India" states its main objectives as:

a. ensuring abundant availability, at reasonable prices of essential and life saving and prophylactic medicines of good quality;

b. strengthening the system of quality control over drug production and promoting the rational use of drugs in the country;

c. creating an environment conducive to channelise new investment into the pharmaceutical industry to encourage cost-effective production with economic sizes and to introduce new technologies and new drugs; and,

d. strengthening the indigenous capability for production of drugs.

Since the nineties the trend changed from emphasis on self reliance in drugs to creating "open markets." As part of this the controls on drug prices also reduced – where there were 347 essential drugs under price control in 1977, in 2002 only 30 remained. In fact, today, the same medicine can legally cost 500% more just due to a difference of brand! Further with the enactment of Patents (Amendment) Act 2005 (the amending process of Indian Patents Act 1970 to bring it in line with the TRIPS Agreement), there has been a strengthening of intellectual property protection and this would make it difficult to ensure cheap and ready availability of new drugs.

The draft 'National Pharmaceutical Policy – 2006' tried to reverse this trend. According to this, the 47 medicines required for national programmes and all drugs under the national essential drug list (354 drugs) would be under price control. However, the policy is not yet approved due to powerful opposing views of industry. The 10th Plan promised to cover all states with expanded and strengthened essential drug programmes; adopt an online computer inventory control programme for the procurement and supply of drugs; and establish a system to monitor cost, quality, availability and use of drugs.

The NRHM also commits to ensure that generic essential drugs are available at every level of the health service.

INDICES FOR RATIONAL DRUG PRESCRIPTION

What are the tools for examining whether prescriptions are generally rational or not in a health care setting? The WHO has created a set of the following parameters:

WHO Core Drug Use Indicators to Investigate Drug Use in Health Care Facilities

Prescribing Indicators

1. Average no. of drugs per encounter (less than two recommended).
2. percentage of drugs prescribed by generic name.
3. percentage of encounters with an antibiotic prescribed.
4. percentage of encounters with an injection prescribed.
5. percentage of drugs prescribed from an essential drugs list or formulary.

Patient care indicators

1. Average consultation time.
2. Average dispensing time.
3. percentage of drugs actually dispensed.
4. percentage of drugs adequately labeled.
5. patients knowledge of correct dosage.

Facility Indicators

1. availability of copy of essential drugs list or formulary.
2. availability of key drugs.

STANDARD TREATMENT GUIDELINES

One of the serious bottlenecks is the lack of standard treatment guidelines to enable standardized use of drugs at all levels of care as far as possible.

Standard treatment protocols or guidelines are structured tools or algorithms to enable health workers and physicians to take the most appropriate medical action in a given set of circumstances, based on the patient's history, symptoms and signs and assisted by diagnostic procedures wherever possible. We have come across their use in earlier lessons – in the practice of home based neonatal care (HBNC) by village health workers in the SEARCH model, as well as in the syndromic approach of the IMNCI (both described in book 4). These standard guidelines can be, and have been developed for a large range of disease situations. Not only do they help in correct medical practice, they also give the practitioner confidence to practice rational drug and diagnostic use despite various pressures. They determine the kind of essential drugs list or formulary that would be required in any facility and are written for a certain level of diagnostic availability. They also offer legal protection in case there is an adverse outcome and the treatment plan used is challenged. Often unnecessary diagnostics are ordered merely for the health care provider to keep themselves safe from charges of negligence – a practice known as defensive medicine. Use of standard treatment guidelines makes such defensive medicine which is costly to the patient and to the system unnecessary.

Such protocols are currently quite accepted for some diseases like TB and for giving chemotherapy to cancer patients. Many of the serious public health problems like pneumonia and diarrhea in children also have standard treatment protocols but these are not as well known or followed. Some medical situations, like auto-immune diseases or cancers are not easily amenable to standard treatment protocols. However, the point is that many clinical situations can currently have standard treatment protocols but do not.

However, standard treatment protocols/guidelines are poorly accepted if merely handed down from experts to health personnel. As far as possible, they should be developed for each level of care, based on the disease pattern of the area, the abilities of available prescribers (physician, nurse, ANM, ASHA) and with the involvement of the prescribers and technical experts both. A great deal of training and motivation is also required to sustain their use.

It should be realised that standard treatment protocols are not water - tight instructions to be followed mathematically or blindly. Thus, they do rely on a basic and underlying understanding of disease and medicine. For example, mostly (unlike the protocols of IMNCI and RTIs which use a syndromic approach), STGs do require the making of a 'diagnosis' and are disease specific rather than symptom specific, and these tend to require more clinical skill.

An example of a standard treatment protocol for a simple common condition is given below. For complex situations like an attack of asthma or emergency situations like a heart attack, the STGs would be correspondingly more complex.

Recurrent Aphthous Ulcers

(A kind of painful mouth ulcer that occurs again and again)

Salient features

1. Single or multiple painful ulcers occurring anywhere inside the mouth surrounded by redness 1-15mm in size. Usually heal in 1-2 weeks
2. Rule out secondary causes like malabsorption syndrome, inflammatory bowel disease and recurrent irritation from tooth / denture

Treatment

1. Non pharmacological – repeated mouth wash, specially after eating
2. Pharmacological –
   a. symptomatic treatment with any gel containing local anaesthetic before eating.
   b. only in severe cases with large multiple ulcers – pellets hydrocortisone 5mg to be kept on the ulcer and sucked every 4 hours for 3-5 days

   or

   tab prednisolone 0.5mg / kg / day in a single dose for 3-5 days

Patient education

Maintain good oral hygiene

Avoid precipitating factors if any known

The essential drugs list and standard treatment protocols thus form the 'essential' tools for rational drug use. One can in addition also introduce a drug formulary which gives details about all the drugs on the essential drug list – its indications, its dosages and formulations, its side effects, its antidotes, its cautions etc. If this is provided as a pocket book for health care providers then it not only makes for better use of drugs, it also promotes adherence to the essential drug list.

What are the strategies to promote rational drug use?

The WHO advocates 12 key interventions to promote more rational use of drugs:

- Establishment of a multidisciplinary national/state body to coordinate policies on medicine use.
- Use of clinical guidelines / standard treatment protocols.
- Development and use of national/state essential medicines list.

- Establishment of drug and therapeutics committees in districts and hospitals (see below).
- Inclusion of problem-based pharmacotherapy training in undergraduate curricula.
- Continuing in-service medical education as a licensure requirement.
- Supervision, audit and feedback- especially the use of prescription audits.
- Promotion of use of independent information on medicines by health care providers.
- Public education about medicines.
- Statutes banning conflict of interests situations e.g. financial incentives or gifts for drug prescriptions.
- Use of appropriate and enforced regulation.
- Sufficient government expenditure to ensure availability of medicines and staff.

Some of these recommendations are quite self explanatory – for example, only a widespread public education campaign can ensure that the 'demand' factor for irrational drugs like cough syrups, tonics and IV fluids is reduced and that people know enough to demand rational drug therapy from their doctors. Inducements made by drug companies to doctors to prescribe their medicines have to be disallowed stringently before doctors can be made to change their prescribing patterns. Of course, doctors also prescribe wrongly out of misinformation or ignorance and processes of continuing medical education need to be put in place to counter this.

The recommendations for promotion of rational drug use can also be classified differently thus:

A. *Regulation*: This includes approval for introducing in the market, periodic Re-evaluation per therapeutic category and re-licensing and regulation of promotion

B. *Training*: This includes training on the basic concept of rational drug use and essential drugs, training on standard treatment protocols, mandatory continuing medical education, and District drug and therapeutic committees, regular medical audit including prescription audit and better public education including appropriate patient information leaflets.

C. *Financial Regulation:* This includes price controls on generic/brand drugs and prevention of financial incentives. Transparent procurement processes for drugs.

D. *Insurance*: Reimbursement limited to essential medicines and reference pricing of drugs.

Some other recommendations are detailed further below:

Responsibilities of a drugs and therapeutics committee

- Developing, adapting or adopting clinical guidelines for the health institution or district.
- Selecting cost-effective safe medicines (hospital / district drug formulary).
- Implementing and evaluating strategies to improve medicine use (including drug use evaluation, and liaison with antibiotic and infection control committees).

- Providing on-going staff education (training and printed materials).
- Controlling access to staff by the pharmaceutical industry with its promotional activities.
- Monitoring and taking action to prevent adverse drug reactions and medication errors.
- Providing advice about other drug management issues, such as quality and expenditure.

Regulatory measures to support rational use

- Registration of medicines to ensure that only safe efficacious medicines of good quality are available in the market and that unsafe non-efficacious medicines are banned.
- Limiting prescription of medicines by level of prescriber; this includes limiting certain medicines to be only available with a prescription and not available over the counter.
- Setting educational standards for health professionals and developing and enforcing codes of conduct; this requires the cooperation of the professional societies and universities.
- Licensing of health professionals – doctors, nurses, paramedics – to ensure that all practitioners have the necessary competence with regards to diagnosis, prescribing and dispensing.
- Licensing of medicine outlets – retail shops, wholesalers- to ensure that all supply outlets maintain the necessary stocking and dispensing standards.
- Monitoring and regulating medicine promotion to ensure that it is ethical and unbiased. All promotional claims should be reliable, accurate, truthful, informative, balanced, up-to-date, capable of substantiation and in good taste.

Review Questions

1. What do you understand by the essential drugs concept?
2. How do standard treatment protocols help this?
3. What are the reasons for irrational drug use and how can this be prevented?

Application Questions

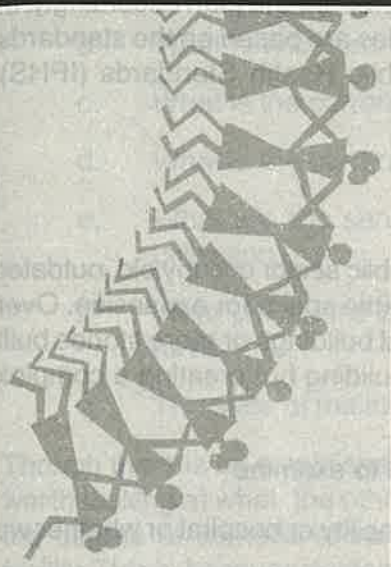
1. What can be done for rational drug use at district level?
2. Doctors often say 'no drug company can make me practice wrongly'. How can we make sure this is so? How can we show that it is not so?

Project Assignment

1. Does your state have an essential drugs list? Look at the NEML and see if it fulfills all the health needs of your area.
2. Go to a PHC and find out what drugs are meant to be available (does anyone know? How easily is that information available?) then see which of these are actually available.
3. Look at the prescriptions of some patients leaving the PHC. How rational are the prescriptions? How many drugs need to be bought from outside at what average cost to the patient? Should these have been available at the PHC?

Lesson SIX

Public Health Infrastructure Planning



In this lesson we shall discuss:

- The need for planning public health infrastructure.
- The steps of planning public health infrastructure including needs assessment.
- How to select and manage an appropriate construction team.
- The various constituents of the team and their roles.
- Role of the district health administration.
- Improving quality: recent and future trends and innovations in public health infrastructure.

1. INTRODUCTION

While planning for health infrastructure it becomes necessary that we identify various strategic imperatives, which will affect the functioning of health facilities and hospitals and then prepare the plan accordingly. In this section, recommendations on infrastructure of new health care facilities are based on the standards developed by Indian Hospital Association and also on the Indian Public Health Standards (IPHS) announced by the National Rural Health Mission.

2. NEED FOR PLANNING

A large numbers of hospitals and other health facilities, especially in the public sector occupy old, outdated buildings in poor condition. Often they are located on crowded sites with little space for expansion. Over the years the courtyards have been filled in, wings have been joined to old buildings or more stories built on top of the hospital building, not only destroying the appearance of building but creating a complex building with criss-cross flow of patients, visitors, staff and supplies.

Hence when we plan to develop health infrastructure we will be required to examine

- Whether we are designing a building for an existing and functional facility or hospital or whether we are going to sanction a new facility in that area.
- In either case whether to construct a new building – which will require large capital budget or whether to undertake modernisation programme of existing hospital buildings.

NEED ANALYSIS FOR CREATION/EXPANSION OF HEALTH FACILITY AND ITS INFRASTRUCTURE

Before embarking upon expansion plans of existing facilities or planning of a new hospital, it is important to assess the health needs of the population that the hospital is going to serve. For a public health facility the options are whether we are planning for a sub-centre building, a primary health centre, a community health centre or is it a district or sub-district hospital. If it is the last of these then we need to decide whether we plan a 50 bed hospital or 100 bed hospital or indeed decide on what size of hospital we plan. In deciding this we need to also understand what other facilities exist –even in the private sector.

A brief situational analysis should be prepared: There are three situations:

a) There is no facility functional in the place. A new facility is being created. Has the land been located? Is this the best location for the facility? Could it be located near the market or road? Do people feel safe coming there? Is it a sub-centre being planned, a PHC, or a CHC? Is the level of services that will be made available clear?

b) If there is no building but the facility is functional from rented quarters: Same questions as with earlier situation – though changing the location to another village or habitation is politically very difficult to achieve.

c) There is a building and the facility is functional there- but the building is damaged or incomplete or needs to be expanded. Then the study should assess:

a. What is the existing level of beds?

b. What services can be provided with the current infrastructure?

c. What is the current level of utilisation of out patient services?

d. What is the current level of utilisation of in patient services?

e. What are the services that we aim to provide there? And what is the expected level of utilisation.

f. What part of the building needs repair work now and how much life does the building still have.

g. The state of maintenance and repair of the building- room by room.

Though there is an established norm of what facility would be created for each population unit, it is still worth looking at what the other health facilities in the area are, the unmet health needs in the area, and the degree of demand of various services and expected utilization rate of the proposed healthcare facility. This is because seldom do we have the funds to create the entire infrastructure that we need all at once. And when it comes to prioritisation, rational decision making would be helped by such analysis.

What makes patients choose a particular hospital?

- Availability of specialists.
- Range of services offered under one roof.
- Availability of latest technology and sophisticated equipment.
- Personalised care and courtesy of the hospital staff.
- Overall hospital reputation.
- Travel time (not necessarily the distance) to reach there.
- Status of roads and transportation facilities.

Defining the Project for Expansion / New Construction

Questioning project	Finding answers
Why?	Are the services we propose to deliver, not being optimally met by the existing facilities? What are the needs of the population?
What?	What should be built? Type (the basic structure of the facility envisioned - new hospital, nursing home, speciality centre) Size of the facility (depend on the functions and their number being proposed- should we have all 30 beds or will 10 beds do for a start) Style (of new structure describes the new structure, brick block or wood, depends upon location in the country)
How?	Operation (a new separate structure or add-on to an existing structure) Finance (initial capital in order to build- if the money has come as an untied fund there is every incentive to use it prudently. In the private sector, the minimum needed capital would be deployed because one would have to pay it back and health care delivery is very competitive today)
Where?	Determining the geographic location of structure

3. STEPS IN PLANNING PROCESS

Once a decision to create a facility is made or the decision to construct a building is made the various stages that the planning process of a hospital (or any health facility) goes through can be briefly summarised as follows:-

a) ***Definition*** of the scope of various clinical, support and logistic services of the hospital.

b) Approximate ***estimation of the volume of various hospital buildings*** and the demand the future hospital will make on public service such as water, electricity, gas and sewage disposal.

c) ***Estimation of rough cost of the project.***

d) ***Economic feasibility study*** – here carry out the Cost Benefit Analysis and Cost Effective Analysis (CBA and CEA) – though currently only in use in the private sector, the public sector too needs to make use of this.

e) ***Selection of location and site*** for the future hospital, for which following factors need to be taken into consideration

(i) *Size of the area for construction* with availability of enough vacant space for future expansion.

(ii) *Convenience of access* for the patients who will be attending the hospital.

(iii) *Topo*graphy and drainage of the site.

(iv) *Soil bearing capacity.*

(v) Presence of any *natural features* like water reservoir etc.

(vi) Availability of *public utilities* like electricity and gas.

(vii) Availability of *transportation and communication* facilities.

(viii) Freedom from any source of air, water, noise or water pollution.

f) ***Preparation of master plan***, which should include disposal of various buildings that will make up the hospital, if the plot is not vacant.

g) ***Preparation of architect's brief*** that will lay down the functional content and general description of scope of the functioning each service with schedules of accommodation and special users requirement.

h) ***Preparation of preliminary drawings.***

i) ***Preparation of detailed development drawings.***

j) ***Actual construction of hospital.***

k) ***Plan for commissioning of hospital.***

4. MACRO PLANNING

- **Selection of site**

It must have following characteristics.

- *Easy approach* by people.
- *Enough land* availability.
- Sub-soil *water* must be deep.
- Sufficient *supply of water* and *electricity.*

Size of land required

The site must be large enough for all planned functional requirements to be met and for any future expansion envisioned for the next ten years. The minimum size of the land should be 1.25 to 4 hectare per 100 beds.

- ***Plot ratio*** – The area of the site to be covered by building can be expressed in terms of plot ratio using the following formula.
- ***Water supply*** – Approximately *300 – 500 litres of water per bed per day* is required (excluding gardening and fire fighting). Preferably water supply should be from two sources. Reserve water supply lasting for two days needs to be included in the planning process of a new hospital. If, a single source of supply, then reserve supply for seven days should be catered for.
- ***Electricity*** – Electricity supply should always be from two sources. In addition supportive power supply in the form of generators will have to be provided for all essential areas of the hospital. The present requirement of electricity for hospitals is *one KV per bed per day.*
- ***Drainage*** – The hospital drainage should be connected to the main drain of the town or the hospital should have a dedicated sewage treatment plant.
- ***Hospital waste disposal system*** – A hospital waste management system to comply with Biomedical Waste (Management and Handling) Rules 1998 (including amendments) needs to be included in the planning stage of hospital. *For planning of waste management facility in a new hospital, 2.0 kg per bed per day waste generation should be calculated.*
- ***Sanitary requirements*** – Toilet for an individual room (single or two beds) in a ward unit shall be 3.5 sq metres comprising of a bath, a wash and commode. For a multiple bedded ward units, requirement of fitments is given in table 1.2.

Table 1.2: Sanitary Arrangements in New Hospital Building

Items	Quantity
Water Closets	1 for every 8 beds (male) 1 for every 6 beds (females)
Urinals	1 for every 12 beds
Bath	1 bath with shower for every 12 beds
Bed pan washing sinks	1 for each ward in dirty utility and sluice room
Sinks	2 for each ward pantry (1 sink if dish washer is installed)

- ***Cost of construction*** – the cost of construction will be approximately Rs 12 – 13 lakhs per bed, excluding the cost of land and cost of medical equipments and any special user's requirement. This is assuming that full utilisation of beds is likely.

5. SELECTION OF CONSTRUCTION AGENCY:

5.1. Most government construction is limited to two agencies – the PWD (Public Works Department) and the RES (Rural Engineering Services). Sometimes there are other corporations created by the government, to whom the work is allotted, who then contracts out the task. In states like Tamil Nadu and Andhra Pradesh there is an autonomous corporation – created under the government dedicated to undertaking all the health department's major civil works. The current gold standard in the organisation of health department civil works is the Gujarat government's Health Infrastructure Development Unit. In other instances the district health societies or state health societies call for tenders and give the contracts. Yet another approach is to transfer funds to panchayats and then ask the panchayat to undertake the contracting process. Many Sub-Centers have been built this way. Another emergent possibility is to transfer the funds to the hospital management committees and allow them to finalise the contract.

5.2. There are problems with each of these approaches. With the PWD and RES the main concerns have been varied and often poor quality of construction, failure to adhere to schedules and often (but not necessarily) a high cost of construction as compared to market rates. On the positive side, there are less efforts to influence who gets the contract and this decision gets removed from the department, reducing pressures to mis-governance. There are no questions asked when a decision is made to entrust work to another government department and to most decision makers, this is enough reason for using this route. These problems persist when the work is executed by other existing government owned autonomous corporations. Separate corporations – that also look after equipment and drugs purchase and supplies distribution have done well in Tamil Nadu and Andhra Pradesh- but it takes a lot of effort and will to organise. The limiting factor is that it still tends to go for a standard model and design and the users – hospital management or users - get to know of it only when it is handed over. Potentially therefore the option of giving the funds over to the hospital management committee and then this committee drawing up locally appropriate designs while adhering to the core specifications decided centrally would be the best option. Of course this option implies that the hospital management committee has ready access to suitable technical advice. One has to organise the provision of technical assistance to hospital management committees for finalising designs and for following with flexibility procurement procedures. But the funds are transferred to the hospital development committee and paid for through them.

5.3. In all the situations above the district health management needs to put in place a construction technical advisory team to monitor and guide all civil works happening in the district.

6. CONSTITUTION OF TEAMS

Construction of a new facility or expansion of existing facilities demands multidisciplinary skills, like hospital planner, architect, engineer, etc. Therefore, it is important that a Design and Construction Guidance Team be constituted for this purpose. If the work has been contracted out to a construction agency or hospital management agency, then most of the team is hired in by the agency. But even in such cases it would be useful for the district health society to separately hire a hospital planning consultant (and possibly even the architect) outside the construction agency and guide the construction through their inputs. In the event that the district is undertaking repairs and new constructions simultaneously at a large number of sites it would be good to have a full construction guidance team in place to guide every aspect of the construction process.

The funds to hire and sustain such a team are available as currently under NRHM guidelines. Upto 6% of the construction costs can be used for administration purposes, and this is adequate to hire the team.

6.1 DESIGN TEAM

Followings are functions of a hospital design team. They can do this by themselves / or working with the construction agency:

- Defining physical facilities to be created/added in the hospital
- Development of preliminary design
- Development of final design
- Development of documents comprising of material specifications and construction drawings

The design team should ideally have following members

- Architect
- Consultant (Hospital Planning)
- Structural Engineer
- Electrical Engineer
- Plumbing Engineer

Roles of Design Team Members

Of the Architect

The architect is the leader of the design team and a key figure in the hospital project. The early employment of the architect is one of the first requirements of a successful planning. She/he should therefore be employed as soon as the decision to go ahead with the project is made. While selecting an architect it must be borne in mind that hospital is different from any other type of building. Following are the main functions:

- Site evaluation.
- Preparation of schematic drawings.
- Cost estimate of construction.
- Design development.
- Perspective drawings.
- Preparation of scaled model of the hospital building.
- Preparation of construction documents.
- List of fixed equipments.

Of Consultant (Hospital Planning)

As soon as the funds to start the construction are in place the district/construction agency should employ a hospital consultant who should continue to be in its employment until the project is completed. The consultant should have experience of hospital administration and must be familiar with the process of planning and construction. Followings are some of the responsibilities that may be assigned to him/her.

- Develop a *long-range plan for the hospital*
- Determination of *need for expansion, renovation and new construction with relation to the services planned.*
- Preparation of *operational and functional programmes* as basis for architectural planning.
- Prepare a *master-plan* for the facility.
- Prepare *financial feasibility* report including cash-flow statement for various stages of the project.
- Programming of space allotments and departmental groupings.
- Function as *owner's representative* at the construction site and on work committees.
- Preparation of *inventories of construction material and equipments.*
- *Equipment selection* Screening of conflicting suggestions and recommendations.

Of Structural Engineer

The role of structural engineer is to provide optimum support for the building.

- *Studies the report pertaining to the soil condition*, the bearing capacity of soil, the rock outcrop, the subsoil water level, etc and advises the architect on the type of structure and foundation needed to support the building.

- *Prepares preliminary and later detailed estimates of cost* for the hospital building based on the requirements furnished by the hospital consultant and confirmed by the architect.
- *Prepares* detailed specification of the entire civil works in coordination with the hospital consultant and the architect.
- *Prepares tender documents* for the construction of the building. The structural engineer's design, judgement and analysis are of little value if they are not clearly communicated through neat and complete drawings and specifications.
- *Verifies shop drawings* submitted by the contractors and certifies them for construction after coordinating with the architect.
- *Undertakes inspection and testing*; and reviews construction to ensure that the requirement of the contract are being met and all instructions are carried out.
- *Provides direction and interpretation of the plans* and specifications when required.
- *Scrutinises contractors bills* and certifies for payment as per the tender document.

Of Electrical Engineer

- *Studies the report pertaining to the site and to the availability of electrical load* in the vicinity of the hospital.
- *Calculates the load needed for the project* and advises the architect and the owners as to the ideal place for locating the transformer and generator as well as routing of cable from the supply source.
- *Prepares schematic electrical layout* for the architect and proceeds with *detailed electrical system planning*.
- Prepares *preliminary estimates* of cost and later *detailed estimates* for the electrical system of the project based on the requirements furnished by the hospital consultant and confirmed by the architect.
- Prepares *detailed specifications* for the entire electrical works in coordination with the architect.
- *Prepares tender documents* and call for bids from reputed contractors and prepares *comparative statements* after evaluation of quotations.
- Prepares *detailed drawings* of the electrical system and issue these drawings from time to time ensuring progress of construction.
- *Verify shop drawings* submitted by the contractor and certify them for construction after coordinating with the architect.
- Undertakes *inspection* and review at site to ensure that all instructions in the drawings and specifications are carried out.
- *Scrutinises contractors bills* and certify for payment according to agreed tender conditions.

Of Plumbing Engineer

The purpose of providing a plumbing system in the hospital is to furnish potable water to all parts of the hospital building, and for removing liquid waste products and discharging them into the sewer. The responsibilities of the plumbing engineer are following.

- Study the report pertaining to the availability of water at or near the site and *calculate the quantity of water* required for the hospital.
- *Study the* method of disposal of liquid waste, calculate the total discharge of waste, and check if the existing sewage in the vicinity of the site is adequate to receive the total discharge.
- *Make provision* for *alternate means of discharge*, if necessary and provide for *treatment plant for effluent* before discharge.
- Advise for an *ideal location and capacity for the treatment plant, septic tanks, soak pits, sumps, overhead tanks*, etc and also the general direction in the waste is to be disposed depending upon topography of the land, road and public sewer location.
- Prepare *schematic plumbing layout* to enable the architect to proceed with detailed planning.
- Prepare *preliminary estimates of cost* for plumbing works based in the requirements of the hospital furnished by the hospital consultant and confirmed by the architect.
- Prepare *detailed specifications for the entire plumbing work* in coordination with the consultant and the architect.
- *Prepare tender documents* and call for bids from reputed contractors and prepare comparative statements after evaluation of the bids.
- *Verify shop drawings* submitted by the contractor and certify them for payment as per tender conditions.
- *Undertake inspection and testing*, and review work at the site to check whether the instructions in the drawings and specifications are being carried out correctly.
- *Scrutinise the contractor's bills* and certify for payment as per tender conditions.

7. THE ROLE OF THE DISTRICT HEALTH/ HOSPITAL ADMINISTRATION

There are a number of roles that health administration should play in the construction process – even if the work is being undertaken by a construction agency. Broadly there are four roles – in preparation of the design brief, in selection of agency and agreement on work plan, monitoring the work plan and operationalisation of the facility. These roles are listed and explained below:

7.1 PREPARATION OF DESIGN BRIEF

Design brief is a key document, prepared in the beginning. It is a written expression of the hospitals expansion / new construction needs, as expressed in consultation with various professionals, including the architect and engineers. *It is important because a good design is based on a good brief and good brief is rich soil in which to grow a good design.* The brief should provide the following information about the hospital and its functions.

a) **Service Mix**

Size and contents of departments, such as type of facilities, number of operating theatres, number of beds in wards, types of wards, types and number of ICUs, details of diagnostic facilities, type of blood bank, type of dietary facilities, recreational facilities for patients, type of biomedical facility planned, whether on-site or off-site.

b) **Workload**

What hours the hospital departments will work, the shifts, maintenance time, overtime policy?

c) **Planning principles**

Policies and procedures of the hospital with regards to

- Movement of hospital waste from point of generation to storage area.
- Patient movement.
- Staff movement.
- Supply delivery.
- Disposal of used goods.
- Laundry service.
- Food service.
- House-keeping services.

d) **Staff**

number and types of staff, peak periods of work.

e) **Functional relationship**

between departments, between rooms within a department.

f) **Environmental factors and engineering**

Hospital policies with regards to

- Fire Protection.
- Electrical supply (mains and stand-by).
- Sterilising and sterile supply.

- *Security.*
- *Hot and cold water supplies.*
- *Heating and ventilation.*
- *Lighting.*
- *Medical gases and vacuum.*
- *Management of Biomedical waste.*
- *Emergency alarm system.*
- *Other engineering services.*
- *Landscaping and gardens and compound wall – the surrounding environment.*
- *Pollution control.*

g) **Schedule of accommodation**

List of all rooms and spaces in each department, type and number of occupants, size and activities performed in them.

h) **Financial aspects**

The brief should contain details of various costs and cash flow required for uninterrupted construction activity and commissioning of the hospital.

- *Site investigation and development including purchase of land.*
- *Construction (a major budget item).*
- *Professional services (architects, engineers).*
- *Construction/project management services.*
- *Cost of fixed equipments.*
- *Furniture and movable equipments.*
- *Extra-utilities, if necessary.*
- *Procurement and installation of equipments.*
- *Insurance for the fire and other liabilities required during construction.*
- *Legal counsel.*
- *Taxes, customs duty and other statutory charges.*
- *Contingencies for unforeseen Expenses.*
- *Landscaping.*
- *Cost of commissioning of hospital.*

i) **Possible sources of funding**

(a) State government- from its budgetary allocation, or from the central government or from bilateral or multilateral development partners (international donor agencies).

(b) Gifts, donations or grants- to cover gaps- or for additionalities that the official sanction will not cover.

(c) Money generated by hospital activities prior to construction- like existing hospital management committee funds.

(d) Loans - Money to be repaid from future hospital activities.

A cost-benefit analysis should be undertaken as regards the polyvalence of the design and construction and the length of the building life. It should be mentioned in the design brief of the hospital. *It would be false economy to reduce construction costs, if it would result in increased operating costs.* Hospital should be used until their usefulness has been truly exhausted. Conventional life of hospital buildings and other infrastructure is given in table 1.3

Table 1.3: Conventional Life of Hospital and Other Infrastructure

Infrastructure	Useful Life
Physical Structure	50 – 70 years
Wiring and plumbing	20 - 30 years
Elevators	15 - 25 years
Oxygen and compressed air plants	20 - 30 years
General domestic equipment	5 – 20 years
Technical equipment	7 – 12 years

7.2 CONTRACTING ARRANGEMENTS

If the work is given out to a government department or to a consultancy firm the terms of reference and the agreement document must be prepared carefully. Such a document must state the work expected, the manner in which key issues of design, materials and monitoring will be done, and the time schedules. If the construction has to be done directly by the district health management, professional assistance is required for drawing up the tender documents, for advertising it, for opening the tenders and finalising the party. The processes of this are laid down in government rules which are flexible enough to cover most circumstances.

7.3 MONITORING CONSTRUCTION

A work schedule needs to be drawn up with penalties for failure to adhere to schedule. Where construction is by the government agency and penalties are not possible- then there should be a system of notifying any delays or deviation from quality norms and prompt administrative action to bring pressure for corrective action. If the department has an architect on hire- then the quality of each stage- foundations, construction upto plinth level, construction upto sill level, complete construction, electricity work, plumbing work, furnishing and finishing – each element in every single ongoing construction can be checked by the architect and certified for quality separately. Currently the hospital management team gets to know of the problem only when the building is handed over, and often it is even later, when the building develops cracks or the plumbing starts leaking etc.

Payments are made only after each step is certified for quality and for adherence to the approved plans. Taking over of the completed building from the construction agency and final settlement of bills requires all the flaws pointed out to have been corrected.

7.3.1 Preparing for Inauguration:

When the construction work is going on, concomitantly, the hospital administrator and his team must develop a written programme covering numerous documents, activities, policies, procedures, rules and regulations aimed at keeping the hospital in readiness to operate when it opens its doors to the general public. This ensures smooth start and effective utilisation of the hospital facilities. One can broadly predict the pace of construction and when the facility will be ready. Thus in accordance with this, purchase of equipment and manpower placement can also be planned. Often we find that more than a year elapses after the building is ready – before it is handed over and before it starts functioning. This is wasteful of government and people's investment.

8. HOSPITAL MODERNISATION

The procedures for planning new construction can all be applied equally well to plan for modernisation and expansion, which is frequently the case with district hospitals. The methodology for modernising and expanding a hospital includes following steps:

I. Step I: Make a thorough survey (drawing, pictures) of the full hospital premises and the relevant nearby surroundings. An accurate site-plan (to scale) should be drawn. It should include drawings of main building of hospital, ancillary buildings like laundry, and mortuary, circulation path of hospital and special networks and access roads.

II. Step II: Discover and understand the circulation pattern linking and crossing all the buildings. Special attention should be paid to circulation outside the hospital building like movement of cars, heavy vehicles, people, etc; horizontal circulation within the buildings, vertical circulation to buildings, actual segregation of traffic like in-patients, out-patients, visitors, staff, goods and waste.

III. Step III: Improve and strengthen this pattern by opening up bottlenecks, adding staircases and by-passes.

IV. Step IV: Make a thorough survey of all existing buildings. This should include structural survey (with the help of a structural engineer), technical survey, and equipment survey.

V. Step V: Develop a long-range master plan beyond your immediate expansion needs. Even if there is no apparent need now, consider a growth in bed capacity at a later stage and addition of facilities in future like CT and MRI.

VI. Step VI: Compare alternatives circulation pattern too even beyond measures proposed in step III. Develop proposals for efficient segregation of traffic, the degree of segregation depending on the size and nature of the hospital.

VII. Step VII: Decide on your best master plan, based on time, including phasing possibilities; costs, both building and running costs, and continuity of functions during building works in consecutive plans.

VIII. Step VIII: Decide on a Phase –one project, checking in detail the functional continuity of the hospital during execution of that first phase.

IX. Step IX and onwards: as for new construction but with continuous feedback to step V phase after phase.

9. RECENT TRENDS IN HOSPITAL ARCHITECTURE

A hospital is a human invention and as such can be reinvented at any time. The hospital's design can only be as good as the experience and research and the spirit of caring and service upon which it has been based. There is need for innovations and creativity in the planning and design of healthcare facilities. The main thrust of work in hospital architecture is to

a) make it more culturally appropriate: use of local materials, use of symbols and pictures, use of building designs which are familiar and friendly in that social group.

b) make it more professionally efficient- so that the essential processes of hospital functioning are facilitated – for example observation of the patients, easier to maintain cleanliness, easy to take patients from the ward to the operation theatre.

c) make it more patient friendly- adequate waiting halls with seating arrangement, spaces to cook food so that accompanying relatives can manage, spaces for infant and child care, child friendliness in spaces to be used by children etc.

c) make it more user friendly for handicapped persons: for example ensure there are ramps wherever there are steps.

d) make it more energy efficient – most spaces should not need lighting in the day time making use of the natural daylight and most spaces, especially the in-patient wards and day care rooms should not need much cooling in summers or warming in winters. Thus building design can reduce not only capital costs but also operational costs. In addition use of simple, solar heating devices can

ensure a reliable supply of hot water in a cost-effective manner. It is also possible to extract and use heat that is available from boilers used in CSSD, laundry, hospital incinerator etc. Knowing that there is a problem with regularity of electricity supply there should be alternatives to power guzzling features lifts – like ramps – and back up generator based supplies for less power consuming but life saving equipment like ventilators, so that the hospital is largely functional even during a power breakdown.

e) make the design and surroundings such that the building itself gives a sense of peace and the building itself can be said to have a healing effect. This includes landscaping around the building, the creation of gardens, the design of the compound wall, the design of waiting spaces and indeed the intangible feel of the building itself.

10. FUTURE TRENDS

Role of hospitals has changed dramatically over last two decades. It is important to identify future issues in health care delivery system. Few of these issues are given below.

(a) INDIVIDUAL DEPARTMENTS

- Changing pattern of demand – more emphasis on preventive care like health check-up schemes, and counselling centres and more space for diagnostics.
- Changing pattern of care – emphasis on day care procedures with decreasing duration of hospital stay.
- Changing volume of care that each department provides.

(b) HOSPITAL AS PART OF HEALTH SYSTEM:

- Decentralisation of some services into the community – shifting of routine laboratory investigation to sub centres, etc.
- Shift from inpatient to day-patient care.
- Effect of information technology on hospital layout – increasing use of telemedicine, use of computers in medical records, etc.
- Shift from acute hospital to acute care in the community / primary care / self care – monitoring of diabetes mellitus, control of hypertension, DOTS for tuberculosis.
- New model for acute care in the community – more role for families in treatment process and well-being of patients.
- Enhanced role for general medical practitioner and PHCs with better referral linkages.

- Development in biotechnology and information technology will result in more tests being carried out and interpreted at the bedside. Test results and other monitoring information may be recorded at the bedside using hand-held terminals for transfer of information into electronically held patients' record.
- Present day emphasis is on the ward designs that groups both single rooms and multi-bed bays around the nurse base for ease of observation. In future, the emphasis shifts from direct nurse observation to individual rooms and monitoring from the nurse bays through observation by machines.

11. SUMMARY OF WHAT WE HAVE LEARNT

(a) Before embarking upon the planning of a new hospital, definitions of the health needs of the community, population at risk and degree of attractiveness for various services of the proposed hospital are extremely important.

(b) The choice of agency through which construction would be done is critical and there are many options available. Ideally the hospital management committee should undertake it and be provided with funds and the technical assistance needed to do this.

(c) As soon as the funds to start the construction are assured the district should employ a hospital consultant or architect having experience of hospital designing should be hired and should continue to be in its employment until the project is completed. This should be done even before the construction agency is decided upon. In addition, if there are a number of buildings under construction a team of a structural engineer, an electrical engineer and plumbing engineer along with hospital consultant and architect, under the leadership of the architect should be constructed.

(d) At every stage the district health administration has a role and it should be equipped to play it.

(e) Hospital care is undergoing many changes and the future trend is on decentralised community based day care.

Review questions

1. What are the main steps in planning the construction of a health facility?
2. Write a checklist of things to plan for.
3. What are the main roles that have to be played in the team?
4. What role should the district administration play?
5. What are the trends and innovations that can be used to improve the quality of health infrastructure?

Application questions

1. How is a hospital / health centre different from another facility where people come, stay and go for services such as a hotel and how should architecture reflect this difference?
2. Have you seen a health centre facility that impressed you by its design? What did you find good about it?

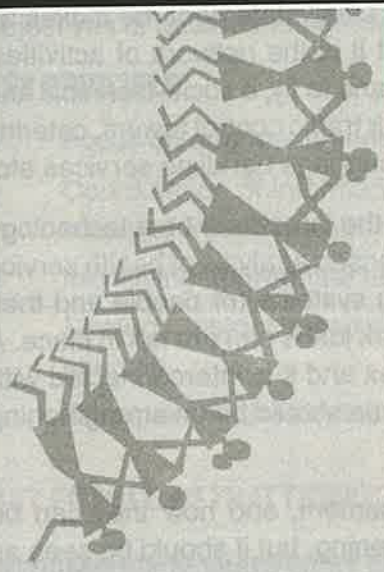
Project Assignments

1. The government has sanctioned the construction of two CHCs, four PHCs, ten Sub-Center in the district and also to build a new wing in the district hospital. The funds are to be transferred to the Rogi Kalyan Samitis for the CHCs and district hospital and to the PWD for the PHCs and to the gram panchayats for the Sub-Center. You are required to constitute a Design and construction guidance team for guiding the construction of these new facilities. How will you constitute the team? Describe an ideal TOR (Term of Reference) of this team? What functions you will assign to each member of the team?
2. Undertake critical analysis of the existing building of a district hospital or of a CHC with at least an average outpatient attendance of about 100 patients. What steps will you undertake to improve the functional utilisation of the building without changing the physical structure in a major way?

NOTES

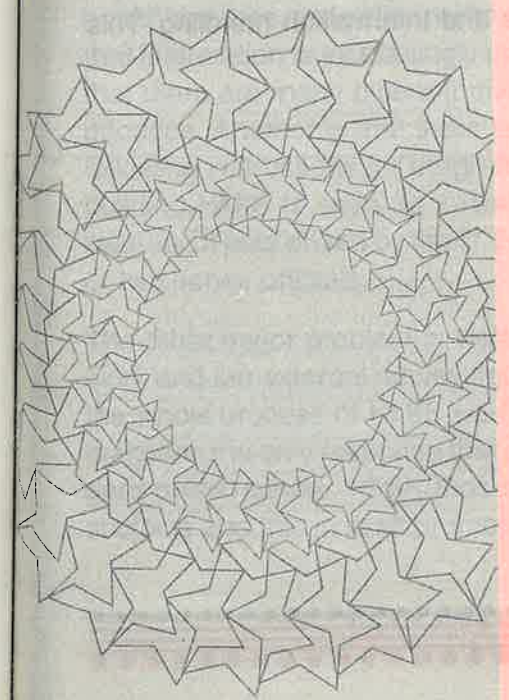
Lesson SEVEN

Health Management Information System



In this lesson we shall discuss:

- A perspective on HMIS.
- Understanding information management processes.
- Key problems in HMIS systems.
- The three layers of HMIS and the hierarchy of standards.
- Issues in data collection and flows.
- Issues in data analysis and interpretation.
- Issues in use of information.
- A tool to plan an HMIS for the district – with compatibility with state and national systems.



A PERSPECTIVE ON HEALTH MANAGEMENT INFORMATION SYSTEMS (HMIS) AND INFORMATION MANAGEMENT

A popular sociologist has written "airplanes don't fly, airlines do." In this small statement, he makes an important point that technology by itself does not solve a problem, but it is the network of activities, institutions, procedures, etc around it, that make it happen. For an aeroplane to fly, a socio-technical and heterogeneous network needs to be in place, consisting of for example, air traffic control towers, catering equipment providers, the transportation connections to the airport, the baggage handling services etc.

Similarly, in the context of HMIS, there is the impression that putting in the latest and best technology (whether it is software that helps record and track patient care or computerised analysis of health service data or telemedicine) will solve all the problems, when the surrounding systems (of people and their motivation, manual systems of registering data, data quality systems, work loads etc) are not in place. A key argument which will be made in this chapter is that HMIS is complex and it is interconnected with various technical, social, institutional and people elements. Thus, our focus should be on strengthening overall health systems and not just on finding technical solutions.

A key to this is to focus on the processes around information management, and how they can be strengthened. Technology can play a role in these processes of strengthening, but it should be seen as a means rather than an end for HMIS reform. In book 10 in the chapter on Monitoring and Evaluation we have already dealt with the use of indicators for the construction of a monitoring plan. This chapter builds upon the earlier book moving on from the construction of indicators and a monitoring plan to evolving an Information Management Process.

INFORMATION MANAGEMENT PROCESSES

Information management is a wide term covering all aspects of data and information handling. This includes

- the collection of data ,
- the management and flow of data to its processing,
- the analysis of data,
- the presentation of data and dissemination for use,
- the utilisation of data for guiding action.

Furthermore also falling within the term information management is:

- the identification of information needs,

- the design, implementation and management of tools – computer and paper based – for these processes.

Given this wide scope of issues, only key principles for information management as related to the objectives of health management will be outlined in this section:

KEY PRINCIPLE

- Focus on information needs - and use.
- Coordination of information from multiple sources; a framework for handling data standards and standard interfaces between tools and interrelated sub-systems.
- Identifying appropriate data collection strategies for each information sub-area.
- Strategy: district based national data repository for coordinating and integrating data from multiple sources.
- Principles for data collation, processing, analysis, presentation and dissemination.

KEY PROBLEMS THAT THWART AN EFFECTIVE HMIS FROM DEVELOPING.

INFORMATION MANAGEMENT SHOULD BE DRIVEN BY INFORMATION NEEDS AND USE

Information management and information use are closely interrelated. Information management addresses the needs of the various levels and sectors of users. If needs are not expressed and information is not clearly demanded by decision makers in the health sector it reduces information management to a mere technicality without direction or real purpose. The key principle for information management in the health sector is therefore that it needs to be driven and directed by the public health professionals, and not by IT professionals, database designers, software vendors, etc. This principle, however, demands from the health services and policy makers that information needs are clearly identified and expressed, and also that information is increasingly used. There are many reasons why this does not happen. One reason is that there are many different divisions within the department with a different perception of needs and priorities. Another is that there is no culture of using data for planning because anyway one is always following instructions for programmes coming down from above. But above all the main reason is that building HMIS is seen as awarding a contract for software and hardware; and once the contract is awarded it gets driven by the IT firm's perception of needs and priorities- at best in coordination with one or two senior officials.

The other major problem in HMIS is the large gap between internal figures that are used to organise work and the external survey figures. The very poor quality of data and the large over reporting makes the whole process of HMIS worthless. However there are many reasons for this. One major reason is that often the only response that occurs in a system is to "Discipline and Punish" those who are reporting poor performance. HMIS thus becomes a tool of surveillance by the state of its employees and its subjects and this in itself promotes avoidance of its gaze.

Other problems identified with information processing or information management are; fragmentation of the information , poor coordination between different users in the department, multiple partly overlapping tools for data collection and no data standards for areas where information needs and tools are overlapping between users

In this lesson we mainly discuss the problems of HMIS with relation to the way it is structured and the direction in which this structure needs to be reformed.

THREE LAYERS OF INFORMATION PROCESSING

The following three "steps" represent an overall critical pathway for information management:

1. Coordinate information needs, interests and approaches between various stakeholders, organisations and users of information.
2. Establish agreed upon data standards for data collection; i.e. which data to collect (and which not to collect) and the indicators to be used .
3. Establish and harmonise appropriate tools for data collection and establish a data repository for information management at each level of active health management.

These three steps corresponds to the three overall "layers" (or dimensions) involved in all information management. The three layers are :

1) Use/needs dimension: Provides users with needed information in appropriate formats
2) Data Dimension: establishing and maintaining essential data/ indicator sets using standard data procedures.
3) Tools (i.e. technical layer). Establish and maintain appropriate tools and infrastructure for data collection, flows and use.

Organisational Practises – Information Needs & use	**1. Use (organisational) *dimension*:**
	Use of information in organisational context
	Interacting with the information system: Accessing /producing information
Data & indicators for use	**2. Data layer:**
	Definitions of data and indicators. Data about data: meta data, e.g. data dictionary
	Standard **indicator** & **data** sets Data elements

Three layers / dimensions of information management:

1. **Use:** provide users with needed information in appropriate formats
2. **Data:** establish and maintain essential data/indicator sets & standard data procedures
3. **Tools:** establish & maintain appropriate tools & infrastructure for data collection, flows & use

Tools & Infrastructure for *Data* *- collection,* *- flows* *- management* *- analysis* *- presentation* *- reporting*	**3. Technical/tool layer** (NOTE: uneven/mixed infrastructure in Developing Countries):	
	Layered model for software /systems development ***(developed infrastructure!)***	Applied to the "mixed/informal" reality of ***developing countries*** (paper/computer):
	Application layer: databases etc.	**Paper based** registers, archives, tools **AND computer** spreadsheets, databases
	E-mail / web – layer: "systems" for carrying /presenting data (e.g. http, ftp)	**Communication & data flows:** -Paper forms, files, CDs, flash discs, web -Ad hoc transport, courier, postal services, Internet, sms
	Communication layer: protocols and network standards (e.g. TCP/IP)	
	Physical layer: telephone lines, fiber etc.	**General infrastructure** for data flows: From roads to Internet & mobile network

Figure 2:Three layers framework for information management

The layers in the model represent the vertical organisation and modularisation of information systems. The technical layers are strictly formal and standardised; as is the interface to the data layer (a database only accepts standardised data elements). The higher layers become less formal and the use / organisational "dimension" represents human interaction and organisational behaviour. The right hand side of the technical /tool layer represents the mixed and unevenly developed reality of developing countries.

It is crucial to distinguish between the three overall layers/dimensions (use, data and tools) and their priority or role as client/server: An *indicator driven approach* means that the information use and need dimension has *absolute* priority. In practical terms of information management this translates into a *metadata driven approach*: it is the meaning of the data, its definition and ultimately its use, that is important, not *the way the data is coded or technically carried.*

Partly driven and supported by IT development, and partly by the interests of individual organisations, information systems management tends to become a "vertical" organisation with "modularisation" of separate use-areas. For example one health program say tuberculosis control or family planning services identifies its information needs, establishes their data set, and construct their tools accordingly. Management of information in one use-area /organisation is then achieved, but usually with poor coordination *between use-areas.*

Harmonising information needs, data standards and tools horizontally within each layer, and making this information available as a shared resource, are more complicated to achieve, as different use/ organisational areas need to agree on data standards. The general principle is that while each service and program should be "free" to define their own separate data standards, common standards need to be defined on the principle of "must know" wherever there are overlaps in the data layer. The practical

way to identify overlaps in the data layer is to develop essential data and indicator sets. The technical way data is carried, however, doesn't need to be consistent. Individual services, programs and geographical regions may identify different technical standards. Data can be transmitted by post or Internet, as a file or on paper, as long as appropriate gateways are in play. The uneven development of the technical infrastructure between e.g. urban and rural areas in developing countries, i.e. the mix of paper and computers, makes it important to distinguish between the technical layers and the data layers; the data layers, meaning the data to be collected and indicators to be produced, need to be in focus.

MANAGING THE DATA LAYER – ESSENTIAL DATA AND INDICATOR SETS

There are six points worth remembering when organising this:

1. **Establishing Data standards and definitions**: Where there is overlap in data needs and data collection, data standards need to be established. Data coming from different departments relating to the same indicator also need to be correlated – but unless the same indicator and data standard is used this cannot happen. For example what is skilled assistance at birth, or what is fully immunised or what is called a 24 hour functional PHC require sharp definition.

2. **Establishing shared data collection routes**: When multiple actors need the same data to be collected by the same health facilities, shared data collection routines should also be established.

   For example HIV control programmes and RCH programmes have overlapping data collection on ANC visits, deliveries and post-natal follow-up. These are points of correlation and both data elements and data collection procedures need to be the same, i.e. standardised.

3. **Level Specific Information needs**:

   Information needs differ between use areas, levels, and programs.

   What is useful for an ANM in order to organise her work is different from what is needed for a block medical officer to assess whether the sub-centers are fully functional. Similarly, this is different from what a district immunisation officer needs to know to find out where the immunisation programme has gaps that require, for example, alternative delivery systems for immunisation or what a district family planning officer needs to know in order to plan the distribution of family planning services. And this is very different from what the state officer needs to know in order to assess the district performance and approve the next year's budget and plans.

4. **Establishing Hierarchy of Standards between levels**:. From an information management point of view such diverging interests and needs should not be problematic. Following the hierarchy of standards (figure 3) each level and each health program must collect what they need to plan their programme taking care that part of it is exactly the data needed at the level above and that it adheres to the standards and definitions of the level above, or the national data set. For example, the TB and ART programs will both have their particular information needs and data sets. District

and higher level "general" health management need a particular subset of both TB and ART data (i.e. overlap in information needs), such as defaulter rate, cure rate for TB, number of patients seen etc. These data then need to be included in the essential data set for that level, while at the same time both TB and ART will continue to maintain their own specific data sets and reporting structures.

5. **Not one system – but flexible over lapping use areas**: There will always be multiple data sets and specific information needs within and between use-areas, and they will change over time. Data-standardisation and information management does not mean we collapse everything into one system, but to maintain and update data sets and standards in a flexible and dynamic way.

6. **Avoiding excessive data collection**: The problem of overloading the local health facilities with excessive data collection needs however to be dealt with and will put restrictions on health program's additional data demands. As a general rule no information should be asked for which is not useful for that level to collect for its own use. Similarly no data should be asked to be transmitted to the level above unless it is clear what use is going to be made of it.

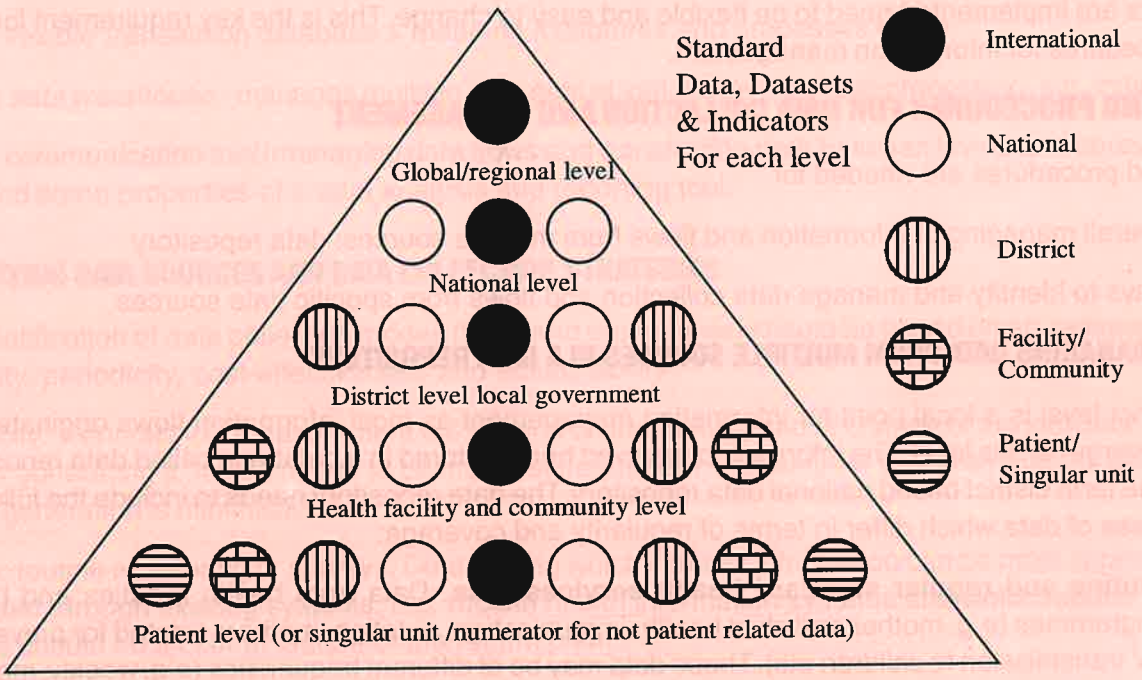


Figure 3:The hierarchy of data standards.The hierarchy relates to figure 1 which emphasises that lower levels in the hierarchy both need and collect more data than the higher levels.

Equity Concerns and HMIS: The essential data set collected needs to incorporate some degree of disaggregation of gender and for inequity by geographic location, caste, ethnicity and religion. Not all of it can be generated in all data sets. Building a strategy of generating and using this data to correct health system functioning and access to weaker sections is one of the imperatives of HMIS design. But this has to be done in such a manner that the other principles of HMIS- especially as related to the use of data and the load of information collected are respected.

Data and indicators need to be defined in a data dictionary. The data dictionary is a crucial tool for information management. Information needs, as expressed by updated data and indicator sets, for each level should be the determining factor driving information management, and the design and implementation of tools for data collection and management. However quite often we find that when the data indicators needed at the state or national level change, no corresponding change is made in the existing tools – the formats and communication protocols at the peripheral levels.

Managing changes – changing information needs. Data and indicator sets need to be flexible and easy to change as new needs are identified. In practical terms this means that the tools – the formats, the computer software, the analysis package, the display package etc -in which the standard data and indicators are implemented need to be flexible and easy to change. This is the key requirement for tools and procedures for information management.

TOOLS AND PROCEDURES FOR DATA COLLECTION AND MANAGEMENT

Tools and procedures are needed for

1. Overall managing of information and flows from multiple sources: data repository
2. Ways to identify and manage data collection and flows from specific data sources

1. MANAGING DATA FROM MULTIPLE SOURCES IN A DATA REPOSITORY

The district level is a focal point for information management as most information flows originate from and "converge" at this level. The information received here is stored in a database called data repository. Hence the term district based national data repository. The data repository needs to include the following broad types of data which differ in terms of regularity and coverage:

1. **Routine and regular standard health services data**. Data from health facilities and health programmes (e.g. mother and child health, immunisation, nutrition, mothers treated for preventing HIV transmission to children etc). These data may be of different frequencies (e.g. weekly, monthly, and quarterly). Summary data from other systems such as vital registration (birth/death) and patient based hospital information systems.
2. **Semi-permanent data**. Data from the demographic population census and data on e.g. health facility infrastructure (e.g. number of beds, equipment) and personnel (number of doctors, nurses etc.), financial (receipt and spending of user fees etc).

3. **Survey data.** Data from Health and Demographic surveys and other types of surveys (also "ad-hoc" and irregular surveys).

The data repository can be regarded as a hybrid application suite that addresses at least three major requirements:

1. Flexibility. The ability to rapidly include new data elements and indicators so as to be able to design tools for a variety of purposes
2. Analysis of data. The ability to quickly and efficiently analyse relatively large and complicated data sets.
3. Use and dissemination of information. The ability to efficiently capture or import/collate a variety of data in an "integrated" manner, monitor the processing and flow of this data, and finally to disseminate and communicate data and information to various stakeholders during this process including the health workers who are sending in the data.

The term "hybrid" denotes that the specified data repository combines the typical properties of being

a) a flexible *transaction* database > meaning it captures and processes data

b) a *data warehouse* - manages multiple data sets at various levels of pre-processing e.g. indicators),

c) a *communication tool* (managing data flows and transferring data between levels and horizontally) and some properties of a data analysis and reporting tool.

IDENTIFYING DATA SOURCES AND DATA COLLECTION STRATEGIES

The identification of data collection modes (tools and procedures) should be based on an assessment of feasibility, periodicity, cost-effectiveness and sustainability.

Periodicity: Periodicity of measurement will depend on the likely speed of change of the indicator and the costs of generating it. It also needs to be the least frequency necessary for action so that the work load of data generation is minimised.

Source: routine monitoring or surveys: Determining which items of information can be most appropriately generated through existing systems, e.g. routine health information systems and which require special surveys should be a central feature of the reform plan.

For any given indicator there may be a wide range of data sources available. Each should be critically reviewed with a view to ascertaining whether the indicator could be more cost-effectively generated through alternative data collection approaches. No single data source generally provides all the information needed within a health system. the challenge is to put in place the most cost-effective way of ensuring that the full range of data needs is met in a timely way. It is important to note that although the use of routine service-based health information systems may be least costly option, they can be subject to

considerable biases and a tendency to inflate health service coverage and use. The use of household surveys may correct for the biases that are inherent in routine information systems. Data validation and correlations across data sources are therefore important aspects of information management.

> **Data validation and correlations across data sources are therefore important aspects of information management.**

(In the NRHM one of the principles stated is of triangulation, by which it is meant that data from internal HMIS systems would be validated by correlating with data from external surveys and from community monitoring. Triangulation as a form of data validation was to be institutionalised. We have discussed community monitoring in book 7, and the use of surveys in book 10).

The steps in a data collection strategy:

- inventory of the different data collection modes available;
- assessment of the overall quality of each data collection mode in terms of the quality of information generated and the cost;
- evaluation of the extent to which existing data collection modes are sufficient to generate all the information required by health system actors at various levels, including those required to produce core health indicators;
- identification of key information gaps and ways of filling them, including assessment of the statistical and survey capacity at country level;
- identification of cost-effective data collection modes solutions to fill the information gaps. This may include supplementing missing information through statistical modelling and statistical procedures

MANAGING THE INFORMATION FLOWS – INCLUDING ANALYSIS AND DISSEMINATION

Managing the information flows between and within the levels of the health services and including multiple data sources and stakeholders in a district or state is a complex task. There are three dimensions to manage information flow: Coverage, quality and timeliness of data reporting. There is also the need to build and maintain databases and other tools.

Coverage: Data coverage is the most important issue in ensuring data quality. Often, for example, immunisation data is faulty because a number of Sub-Center or sector reports were not included at all. The practical way to manage data coverage is to institutionalise a system whereby each level keeps

track of the number of sub-units that have reported for each required reporting time period, and to have a system which makes it possible to update the reporting system with late reports from individual sub-units. In a fully paper- based system this task is difficult if data is aggregated before reporting. The principle way to solve the problem is to store and manage the data in a database by singular reporting unit (e.g. health facility), and never aggregate before reporting. (Aggregation that is required for using the information at that level or at the higher level is done in parallel).The database will then easily calculate data reporting coverage and provide a list of units that have not reported and for what time periods. This example illustrates that information management is about human capacity, sound procedures and appropriate tools.

Quality of data: One element in this is the correct choice of indicators and data definitions and having ensured that everyone on the chain knows these. Another element is to ensure that there is a process of built in validation of data – both internal and some limited external cross-checking. In case there is over reporting or under reporting the level at which this happens most and the determinants of poor quality data need to be assessed and corrected.

Timeliness: Adequate staff for these functions supported by adequate functional hardware and software is also important for quality of data as well as for timeliness.

Timeliness is also a function of how well the data is being converted into information and used not only at the state and district levels but at all intermediate levels. If there is no use, sending the data up is a chore of the least priority and can be done when no other important work is left. A strong officer can force a more timely report – but that would be at the cost of quality.

DATA ANALYSIS, PRESENTATION AND DISSEMINATION

The key objective of information management is to provide appropriate information to the various levels of the health services and to other user groups. The data flowing in, needs to be analysed to become information. Epidemiological capacity is the first priority in order to ensure appropriate analysis of data, and then come appropriate tools.

Data once analysed needs to be presented in (at least) the following ways, which also then make up requirements of the data repository:

- Standard statistical reports: This is routine and made for each level and each user group.
- Customised reports: This is in addition to standard or routine reporting – it is delivered upon request by the information managers.
- Pivot table analysis. Raw data and indicators need to be made available for pivotal analysis by the users at all levels
- Graphs and tables. Both standard and customised reports need to be presented in these forms

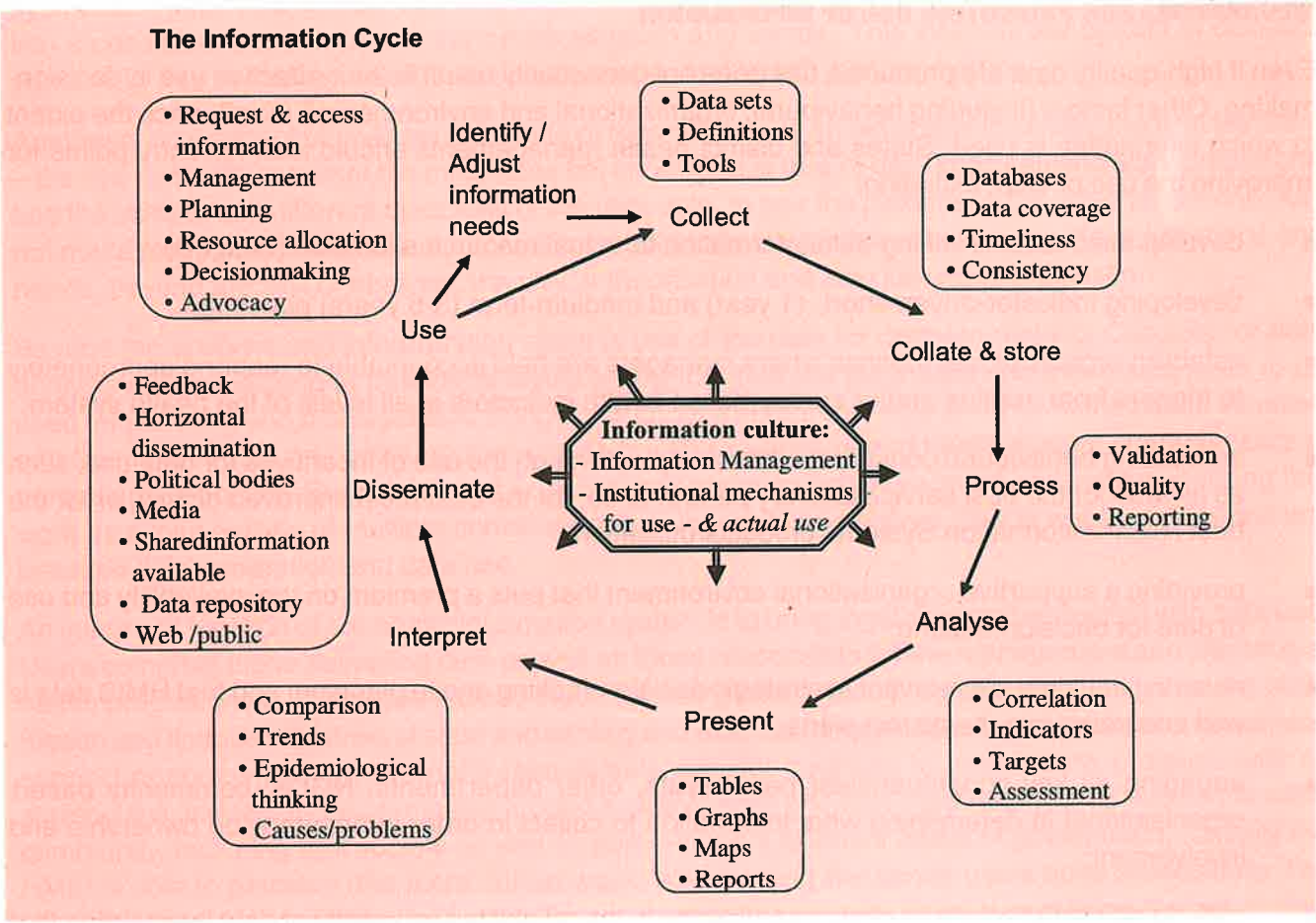
- Maps (Geographical Information Systems). The data repository unit needs to include tools for presenting data and indicators with respect to geographical distribution using maps, and where possible tools for map layering and special analysis.
- Web- loaded information: Information and specific reports from the system need to be shared and disseminated on the Internet (/intranet)

DISSEMINATION AND USE OF INFORMATION

One prevailing and important combined problem in most states is that health information is poorly used and that this information is made up by data of poor quality. Poor quality data is not used, and because it is not used, it remains of poor quality. To what extent information is appropriate for its specific purpose, timely and easily accessible, and presented in understandable ways, also need to be included in the concept *quality of information* concept.

If information needs are not being specified and quality information not requested by the various user groups, this information will not be provided, and use of information will not improve. This dynamic interlink between demand and supply of information need to be addressed along two dimensions:

- **The Information System dimension**: The whole *information cycle* (figure 4) needs to be taken into account when promoting information use. Use of information is not restricted only to its actual application (action). Analysis, interpretation, presentation and dissemination of information are all integral parts of its use, and without committed data collectors seeing that their interests are being addressed by the system, poor data will result. User participation is crucial: without a sense of ownership to the information system among information users and producers, quality information and its sound use will be hard to achieve. In practical terms it means – in what way does the ANM benefit from the data she regularly submits, in what way does the supervisor benefit from the data he collects or that he submits, in what way does the block medical officers stand to gain in terms of assistance to achieve his goals from the information flowing to him or her and more important from the information he submits to the district?
- **The organisational use-dimension**: The need for developing an information culture where information is demanded and use of information promoted. This would happen only in a context where planning is decentralised to village, block and district levels. In practical terms this is about establishing *institutional mechanisms and incentives for information usage*. The most effective mechanisms being: to *link data/information to actual resource allocation (budgets)* and developing *indicator-driven planning*. The relationship between an indicator- based planning and goal based or objective based planning would need to be kept in mind. Most indicators capture only a part of the goal.



(Defines the norms for sharing of information among stakeholders and creation of incentives for evidence-based decision making and transparency)

At every step of the information cycle we need to be aware

a) Who collects, at which level, for what purpose

b) Information required for Planning

c) Information required for Health System Management

   i. Individual performance assessment and supervision

   ii. Quality assurance and improvement

d) Information required for Advocacy

MECHANISMS FOR PROMOTING USE OF INFORMATION

Even if high-quality data are produced, this does not necessarily result in their effective use in decision-making. Other factors (including behavioural, organizational and environmental) all influence the extent to which information is used. States and district health managements should look for entry points for improving the use of data, including:

- develop mechanisms linking data/information to actual resource allocation (budgets);
- developing indicator-driven short- (1 year) and medium-term (3-5 years) planning;
- establish organisational routines where managers are held accountable to respond appropriately to triggers from routine and/or survey-based health indicators at all levels of the health system;
- addressing behavioural constraints, for example, through the use of incentives for data use, such as awards for the best service delivery performance, for the best/most improved district, or for the best Health Information Systems products/utilisation;
- providing a supportive organizational environment that puts a premium on the availability and use of data for decision-making;
- ensuring that data are relevant to strategic decision-making and to planning; and that HMIS data is well integrated into the district plans;
- engaging all key constituencies(panchayats, other departments, NGOs, community based organisations) in determining what information to collect in order to ensure wide ownership and involvement;
- making maximum efforts to ensure confidence in the reliability and validity of data by ensuring that external cross-checking is done periodically and that cross –checking is built in as an element of externality into the internal HIS;
- avoiding the provision of too much excessively detailed information, and making sure that important aggregations are provided;
- providing essential disaggregations, such as health status by major measures of equity;
- customizing data presentation to the needs of specific target audiences; and
- ensuring the timeliness of data.

The interpretation of data:

Data by themselves do not always tell a straightforward story; meaning is acquired when they are analysed and interpreted. Data should be synthesized, analysed and interpreted within the overall context of the health systems functioning and of health intervention delivery. A critical aspect of analysis is the

synthesis of data from multiple sources, examination of inconsistencies and contradictions, and summary into a consistent assessment of the health situation and trends. This includes the burden of disease, patterns of risk behaviour, health service coverage, and health system metrics.

Another critical aspect of analysis is the role of theory. There is an old adage in clinical medical teaching – the eye does not see what the mind does not know. This is true of data interpretation also. Unless one has the skills to ask different questions of the data sets, to see the patterns in the information, one may not make much use of the data at all. And to be able to see such patterns and ask these questions one needs, beyond the skill of analysis, the skill of theorisation and also just plain imagination.

Beyond the analysis and interpretation stage is use of the data for decision-making. Capacity for data analysis is often lacking at peripheral levels where the data are generated and the results need to be used for planning and management. Bringing together a comprehensive analysis of the health situation and trends with data on health inputs, such as health expenditure and health system characteristics is particularly important. Such analytical work requires planning and investment and institutionalizing this work as a joint activity of multiple constituencies in the state and district. This is what provides the link between data generation and data use.

An important function of the health information system is to bring together data production with data use. Users comprise those delivering care as well as those responsible for the management and planning of health programmes. Users also include those financing health care programmes, both within the state (health and finance ministries of state and center) and external (donors, development banks and technical support agencies). Users of health-related data are not confined to health care professionals or statisticians. Indeed, decision-making around country health priorities must necessarily involve the wider community, including civil society as well as policy-makers at senior levels of government. Usually the HMIS is able to perceive (the more critical would say deceive) the senior users quite successfully. The usual blind spot is in seeing the data producer themselves as data users – in making the act of data production and its subsequent analysis, useful for organising the work of the health service provider and the peripheral supervisor or middle level manager such that it is more effective and easier.

Roadmap for improving the use of information

One way of sketching a roadmap for information management is to take the current period or situation as the benchmark and the following three years as three phases where deliverables, milestones and criteria for assessment focus on three levels of increasingly sophisticated information usage. This approach follows the TALI tool developed in South Africa:

> The TALI Tool assesses the level of information usage at facility, district, zonal, and central levels. Three levels of information usage are specified. Level 1 is the most basic level, and level 3 is the most advanced level. Each level is attained when certain criteria regarding data completion, accuracy and use for management decisions have been fulfilled.

The TALI Tool assesses levels of information use at different points in the information hierarchy (from the facility to the central level). The criteria that need to be fulfilled differ somewhat at each point in the hierarchy because, for example, the role of a facility information responsible is different from that of a district information officer.

Table: lists key criteria that are assessed at each level.

Level	Broad description	Detailed description of criteria
Level 1	The criteria that need to be attained in this level are to ensure that timely and accurate data is submitted to the district information officer, and that the district information officer provides feedback to the facility.	Has an Essential dataset been defined? Has an information manager been appointed /identified? Have all the expected routine reports been submitted? Have feedback reports been issued
Level 2	Indicators are being assessed on a regular basis.	Are indicators graphed? Are indicators discussed in management meetings?
Level 3	Indicators are used by managers to inform their action plans.	Are indicators interpreted and understood? Are problems identified? Have any problems been addressed, and can these steps be documented, and an improvement shown?

Table: Summary Guidelines and Tool for Assessing Level of Information Usage

Level 1:	Level 2	Level 3
Facility:		
• Facility has an Essential Dataset defined (or uses that for the District) • Has submitted all of the expected reports in the last year within the period set for the submission of reports (this period may vary from district to district) • Feedback reports (at a minimum a printout of facility data for the last few months – standard report) are received	• At least 4 indicators are graphed and up to date for the past year. • At least 3 self-assessment meetings were held in the last 6 months to monitor progress towards targets. • Information on key health problems, targets and indicators disseminated to community and their representatives at least quarterly	• At least one problem has been identified and addressed through a written action plan. • The resultant activity has been demonstrably monitored. • The actions are documented in a written report. • Meeting on key targets and indicators held with representatives from

by the facility within the set timeframes. • The facility manager has validated 80% of the feedback reports.		community at least every 6 month
District:		
• District has an Essential Dataset defined • District has received 80% of expected reports from facilities for the last reporting month within the period set for the submission of reports. • 80% of expected feedback reports have been issued within agreed timeframes. • Validation checks (data integrity, duplicate records, absolute and expert rule violations run on each monthly submission) have been run for each facility and district at least quarterly. • District database/ data repository established and maintained and capacity in information management is being developed. • Skilled information manager is in charge	• District has determined which reports (detailing indicators with targets) are required for each manager. • At least 80% of expected reports are made available within the expected timeframe. • At least 4 indicators with targets are graphed and up to date in the district office for the year. • The District office has held at least 3 self-assessment meetings in the last 6 months to monitor progress to targets. • Information and key targets and indicators disseminated to district assembly and other public constituencies	• At least three problems have been identified and addressed through a written action plan. • The effect of the action has been demonstrably monitored. • The actions are documented in a written report. • Meetings with reps. from local government and public constituencies on key targets and indicators every 4 month. • Advocacy campaigns using local information /indicators addressing target groups and/or wider community in collaboration with local community, at least 3 per year
State:		
• National has a Minimum Essential Dataset defined • National has received reports from 95% of sub-national areas for the last reporting month within the period set for the submission of reports. • 100% of expected feedback reports to sub-national areas have been issued within the timeframes set for feedback reports. • Validation checks have been run for each district and sub-national on each submission at least quarterly	• National has determined which reports are required for each manager. • At least 80% of expected reports are received within the expected timeframe. • At least 10 indicators are graphed in the national office for the year and last reported month. • Each program officer has two up-to date graphs of relevant indicators • At least 3 meetings held in the last 6 months to evaluate the indicators.	• At least 5 problems have been addressed through a written action plan. • The effect of the action has been demonstrably monitored. • The actions are documented in a written report. • Specific reports on e.g. MDGs disseminated to appropriate public and government constituencies • Advocacy campaigns organised together with reps. from these constituencies.

• National data repository established and maintained, at least for all MDG relevant information • Information team includes skilled manager and epidemiological capacity	• Information from data repository disseminated on web	• Cross-sector sharing and compiling of information; at least MDGs on education and poverty reduction

Review questions

1. What are the best uses of an HMIS?
2. What are the essential qualities of a useful HMIS?
3. What are the three layers of information processing?
4. What are the 6 points to be kept in mind for managing the data layer?
5. How can we improve dissemination and use of data?

Application questions

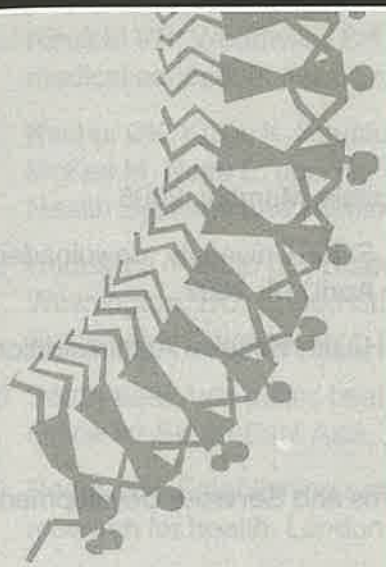
1. Do you have experience of using an HMIS? Analyse your experience to specify its strengths and weaknesses.
2. Why is false reporting of data so common? What features of a HMIS design would help reduce this problem?

Project assignment

1. Create an information loop for the monitoring of the malaria programme in a block giving exact steps at every level. (Remember – who collects, what is to be collected, who analyses and aggregates, how will it be validated, how is it used...). Represent the loop diagrammatically using the example given in the lesson.
2. Propose a monitoring system design for the use of untied funds of different sorts to assess the improvement of performance and equity of access concerns with respect to CHCs in ones area.

Lesson EIGHT

References, Technical Resources and Further Readings



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Annexure

WHO Drug Use Indicator

Core Drug Use Indicators

Prescribing Indicators

1. Average number of drugs per encounter
2. Percentage of drugs prescribed by generic name
3. Percentage of encounters with an antibiotic prescribed
4. Percentage of encounters with an injection prescribed
5. Percentage of drugs prescribed from essential drug list or formulary

Patient Care Indicators

6. Average consultation time
7. Average dispensing time
8. Percentage of drugs actually dispensed
9. Percentage of drugs adequately labelled
10. Patient's knowledge of correct dosage

Health Facility Indicators

11. Availability of a copy of essential drugs list or formulary
12. Availability of key drugs

Complementary Drug Use Indicators

13. Percentage of patients treated without drugs
14. Average drug cost per encounter
15. Percentage of drug costs spent on antibiotics
16. Percentage of drug costs spent on injections
17. Prescription in accordance with treatment guidelines
18. Percentage of patients satisfied with care they received
19. Percentage of health facilities with access to impartial drug information

Reference:

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