MANAGEMENT IN HEALTH CARE PRACTICE A Handbook for Teachers, Researchers and Health Professionals	
Title	**HEALTH CARE AS A SYSTEM: ELEMENTS, BOUNDARIES, LEVELS**
Module: 1.2	**ECTS (suggested): 0.2**
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Learning objectives	After completing this module students and public health professionals should: • be aware of advantages in applying system analysis; • recognize relation of boundaries and objectives of the system; • know to list the elements of the health care system; • improve the knowledge and understanding of the functions of the health care system.
Abstract	Introduction to system analysis and health care system. A systematic examination of a system (situation, problem) is described. Elements and boundaries of health care system. Description and taxonomy of health care system. Levels of health care with characteristics of each level. Two exercises are given.
Teaching methods	Introductory lecture, exercises, field exercises, individual work and small group discussions.
Specific recommendations for teachers	• work under teacher supervision /individual students' work proportion: 30%/70%; • facilities: teaching room; • equipment: transparencies, colour flow masters, overhead projection equipment; • training materials: readings, hand – outs;
Assessment of students	The final mark should be derived from the quality of individual work and assessment of the contribution to the group discussions.

HEALTH CARE AS A SYSTEM: ELEMENTS, BOUNDARIES, LEVELS

Luka Kovačić, Želimir Jakšić

THEORETICAL BACKGROUND

The system

System can be defined as a set of inter-related elements organized to achieve a common purpose in the environment in which the system exists. The elements should function as a functional whole.

Inter-related elements and common purpose are the key words of the quoted definition. Every element can be regarded as a subsystem, and on the other side, the system makes a subsystem of a larger system. This structure is known as hierarchical structure.

The term system is very much used in everyday language and because of that, it may have many connotations and different meanings. The most frequent understanding is that it means an organized hierarchical administrative structure. The term health system is often used instead of the terms health administration or health services. Health administration will sometimes be described as a "non-system" or "there is no system" to stress that it is not well organized. Theoretically, this is not quite correct, because it actually means that a system operates which does not meet our expectations, or we do not understand it. Another example of misunderstanding is to combine elements without any inter-relation or inter-dependency of components of the system. It is not correct because in the system a change in one element is bound to affect other parts and the functioning of the whole. The health care system is one of the subsystems of the broader social system.

Systems analysis

In order to know how the system or subsystems work the process of analysis known as **systems analysis** could be applied. The term systems analysis has many different meanings. In general, it could be defined as a formal inquiry carried out to help someone (referred to as the decision maker) to identify a better course of action and make a better decision than he might otherwise have made.

The characteristic attributes of a problem situation where systems analysis is called upon are complexity of the issue and uncertainty of the outcome of any course of action that might reasonably be taken. Systems analysis usually has some combination of the following: identification and re-identification) of objectives, constraints, and alternative courses of action; examination of the probable consequences of the alternatives in terms of costs, benefits, and risks; presentation of the results in a comparative framework so that the decision maker can make an informed choice from among the alternatives.

The typical use of systems analysis is to guide decisions on issues such as national or corporate plans and programs, resource use and protection policies, research and development in technology, regional and urban development, educational systems, health and other social services. The nature of these problems requires an interdisciplinary approach. There are several specific kinds or focuses of systems analysis for which different terms are used: A systems analysis related to public decisions is often referred to as a **policy analysis** (in the United States the terms are used interchangeably). A systems analysis that concentrates on comparison and ranking of alternatives on basis of their known characteristics is referred to as decision analysis (2).

System analysis is based on the notion of the systems. All situations in real life can lead us to the description of a system. It can be a social system, an administrative system, a biological system, or any other kind. One can describe the health services as a system, there are different systems in our body, and there are railway systems and systems of thoughts.

A systematic examination of a system (situation, problem) should be done in steps in which each step is made as explicit as possible. The steps are:

- **listing** all elements which can be related to the system or its environment;
- defining **goals and objectives** of the system, identifying also their hierarchy and the most important objective in an observed situation according to the purpose of the analysis;
- choosing elements which will be considered as the proper system **(bounding or bordering the system)** and others which will be regarded as environment according to defined goals and objectives;
- describing and examining **elements and their relations**;
- **generating optional solutions, alternatives** by manipulating elements and relations to fit better the objectives of the system or to find solutions for identified problems;
- **comparing and evaluating different alternatives and modelling** a complex new system.

The question is how to choose elements which are relevant for the system? The solution is to start from the common purpose. The element contributing directly to the purpose will be regarded as the element of the proper system and all others as elements of the environment in which the system exists. In that way different elements might make our proper health system when we consider the financial situation of health services, and different elements when we consider health status. The important point is that in both situations **all elements will be initially considered** and some of them deliberately chosen as elements of the proper system of our concern.

There are several advantages in using system analysis. First, it stimulates us to list all relevant factors which might be involved. This is very important, because it helps us to overcome a common mistake and to consider only few closest elements along with our usual thinking. For instance, very often when we examine the health services, the users are forgotten, the most important element of the system. Organizational structure, resources, manpower, equipment and facilities are examined, but not people who will use it.

Second, system analysis is forcing us to proceed systematically starting from specified objectives. Every step is performed deliberately and when shortcuts are used we are aware of them.

Third, system analysis stimulates us to think about different new approaches and alternatives, even out of usual ways of thinking. It is made easier because some elements which are considered "untouchable" in real life are also taken into account during "theoretical" consideration. For instance, new ways in mobilizing resources, new patterns of supervision and reporting, etc. might come into the picture.

Organization

Organization (**as a process**) is the arrangement of parts which form an effective whole. The term is also used to describe **a structure**: a group of people with a special purpose, e.g. a unit of health services, an institution.

The organization may be regarded as an open dynamic **socio-technical system**. It is a dialectical relation of a given technology and social aspects of its application, i.e. work connected with that technology (division of labour, relations toward means of production,

inter-personal and group relations). Because of that, the organization of health units with different types of technology has different work relations and different organizational problems, for instance, a big hospital in comparison with a health centre.

The organization may also be regarded as having different characteristics as the consequence of **size**, level of **complexity** and **phase** of development.

Macro-organization will deals with big overall systems, and **micro**-organization with small units (e.g. a rural hospital or a district health centre). In every-day life expressions such as "young organization", "traditional organization", "handicapped organization", etc. are used and they indicate the lively social dynamics of organizations.

Because organization is a complex socio-technical system it may be understood from different points of view:

- as a **functional** system, in which the main importance is given to technology and the purpose of organization is to perform in the best way, i.e. in accordance with technological requirements and giving the maximal output of an acceptable quality;
- as a **rational** system, in which a rational order is of the main importance, i.e. neat division of tasks, clear responsibilities, hierarchical decision-making, disciplined subordination;
- as a group of people in which the **psychological relations**, individual behaviour and group dynamics play the essential role;
- as a **social system** in which the main influence have interests of individuals and groups, the power structure and permanent dynamic tension regarding domination and authority to decide about utilization of resources, personal and group benefits.

The described concepts reflect the relative importance given to different aspects of the same process. Consequently they will also influence the style of how organizational problems are solved.

Organizing implies the ability to coordinate activities necessary for implementation in such a way that: **the right things are done, in the right place, at the right time, in the right way, and by the right people**. To reach that, a manager has to observe:

- Objectives;
- Definition of tasks for each group and every individual;
- Clear line of authority, command, responsibility.

Health care system

The health care system is a whole of political, economic and cultural, technical and organizational factors, relations, processes and elements, in which individuals, groups and communities interrelate, having the goal to satisfy their health needs.

Health and health care can be well understood only in the broadest context of human life. That includes social, economic and political issues besides understanding of biological facts. It also requires the understanding of environmental, historical and cultural circumstances.

These various aspects can be observed differently according to given situation and purpose of study. The depth of understanding will be influenced by our own experience, knowledge and ideology. Because of that, an active effort will be needed to observe, listen and compare, sometimes with patience and prudent tolerance. Without active involvement, honesty and openness the reward will be minor, or meaningless.

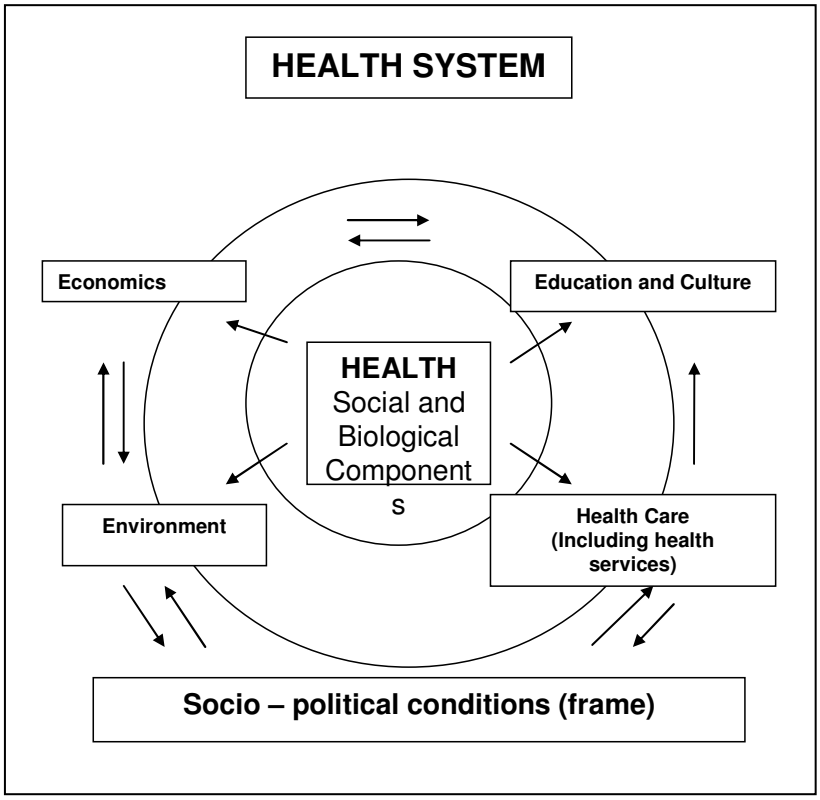

Figure 1. Relations of the health care system and other systems

The health care system is the subsystem of social organization system and it has various subsystems:

- **Socio-political subsystem** - the main health legislation is as a rule at the national level, but communities could be more or less self-reliant and responsible for planning and organization of health care. Solidarity and support is usually at higher levels;
- **Subsystem of users** (communities and individuals) - responsibility and participation of the community in planning, organization, operation and control;
- **Socioeconomic subsystem** - health insurance (obligatory, voluntary, private), and private relation of health providers and users;
- **Managerial subsystem** (decision making process): level of autonomy of health institutions, type of management (autocratic, birocratic, corporative laizess-fair);
- **Technological subsystem** - Comprehensive approach in provision of primary health care, segmented at secondary level;
- **Organizational subsystem** – levels of the health infrastructure (primary, secondary, tertiary), type of health institutions (individual practices, group practices, health centres, day hospitals, clinical hospitals);
- **Health care infrastructure** (health care facilities) - infrastructure could be a subsystem which supports the operations of an organization (health centre, health sub-centre, hospital, medical centre, institute of public health, rehabilitation centre and spas, pharmacy, specialized institutes - vaccine production, emergency services in large cities, blood supply, etc, private practice - dentists, physicians, nurses, herbalists and other alternative practitioners);
- **Supporting systems** - training and research institutes, health related industries (production of drugs, equipment, etc.).

Levels of the health care system

All models of health care systems are imperfect and there is no a model which is the best and broadly accepted and recommended. There are big differences among countries influenced by history, tradition, socio-cultural, economic, and political and other factors. But, regardless of all present differences, there are some common characteristics, typical for the organized health care system (3). One of common characteristics of organization of health care is a level of organization. Health care systems are usually organized on three levels: primary, secondary and tertiary. The main characteristics of each level are presented in table 1.

On **primary level** we can recognize several sublevels with their characteristics:

- **Primary community (home) level** with 2-100 or more members. Primary community (or group) is one in which people are in permanent relations, have regular contacts and know each other well. Discussions and decisions are within the group itself and through direct personal communication. This type of communities is for example families, some neighbourhoods, small villages, workers in smaller workers' units, members of some societies, etc. These groups are often practicing self-help and mutual aid, traditional forms of health care. Volunteer promoters have sometimes an important role.
- **Local community level** (2000-3000+ members). Local communities are groups usually living in the same setting or otherwise sharing facilities or other resources or interests. This community is often formally recognized and some temporary social structures may exist with guiding and facilitating communication. The members know each other, but they do not live so close to have regular personal contacts. The decisions are often made at public meetings or in other organized ways. Besides, there are informal structures sharing information and exercising some power. The local communities are of a medium size which is limited by efficiency in running different common social services, like churches, shops, schools, etc. At this level the first recognized and established health worker may be found. He/she works at least partly on a professional basis. The first health facility is also established (dispensary, health posts, health stations and similar). A midwife, nurse, health technician or a general practitioner may be the typical health worker. In more developed areas health teams operate. Usually integrated preventive and curative service is provided, including simple common treatment.

Table 1. Characteristics of levels of health care

	Population	**Type of community**	**Desired level of integration**	**Type of health providers**
Primary	1-5+ 100-1000+ 50-1000+	Family Neighbourhood Municipality School Firm	Very high or high	Individual practice Group practice Health centre Pharmacy
Secondary	1000-10000 100000-20000	District Larger city	Selective (specialized)	Municipal hospital County hospital Special hospital Policlinic Public health institute
Tertiary	500000-2000000 or more	Region Country	Highly selective (sub-specialized)	Regional Clinical hospital National public health institute

- **Intermediate (municipal) level** (population of 10.000- 50.000+people). The municipality (commune) or other similar social structure usually needs to function also as the basic administrative unit. Often the first official administrative needs are fulfilled, and an office exists which operates permanently. Very often the decision making is formally prescribed and implemented according to certain rules and laws. At this level the offices may exist, in which different governmental and local regulations are issued, data collected and other administration fulfilled. The established health unit is staffed with a team, having often some epidemiological duties (e.g. surveillance), and also guiding and coordinating work of health workers in the local communities. The unit is often called the health centre. A medical assistant, a nurse or a general medical practitioner might be in charge.
- On the **secondary level**, the district (or region in some countries) with population of about 50.000-150.000 or more people) is a larger administrative centre, being also often a centre of trades, manufacture and more developed cultural and social institutions. A representative of the government in his office performs different governmental duties. Services start to be specialized, and local representatives of different central programs might be permanently present. It is often a small or larger hospital (depend on the population size) and/or a larger health centre, comprising also beds for maternity and short-term observation and treatment. Besides GPs, there might be several main medical specialists. The first referral services are provided. The guidance, management and supervision of health services is expected, and in training of health workers etc.

– The **tertiary level** is regional or national level (population of more than half of million) is usually regional or national administrative centre with regional or national authorities and legislation. Clinical hospitals or clinical centres located on that level have referral function for the health services located on lower levels, educational and research functions. These health institutions are usually responsible for development of national guidelines and standards. National institutes of public health are responsible for monitoring of national health, international communications and high specialized public health services (laboratories, blood supply, etc.).

EXERCISES

Task 1: set-up the boundaries of an emergency health care system in a district of 70,000 inhabitants

There are many ways to present a health care system. Many different elements may be chosen as essential for the system depending on problems we are dealing with and objectives of the exercise. A permanent thinking "forward-backward" is going on during designing a system: what are the objectives, which elements can help in satisfying them. All the time analytical and syntactical skills are involved. The exercise cannot be solved mechanically. Creativity is playing an important role, supported by imagination. It is difficult to decide how many details are needed and what can be regarded as a subsystem. During designing the system you are already stating your hypotheses and greatly determining the final conclusions.

Your task is:

1. Make individually a list of all relevant elements you think that they are in the system of emergency health care in a district of 70,000 inhabitants. You could make also a list of elements outside the emergency health care what can contribute to that system.
2. Draw a diagram presenting elements in and out the emergency health care system and connect the elements with the lines.
3. Comment and explain your findings in a small group.

Task 2: Levels inside primary health care

As it was described earlier in this module, it is possible to identify three sublevels of social structures to which correspond levels of health care. There are however variations in size and relative importance of individual levels, as well as in health manpower and between rural and urban settings. It is important to identify these differences, explain them and discover if they influence outcomes of primary health services.

The students' task is to:

1. Describe a situation in your district or country: name, size, services and health manpower in different sublevels inside primary health care in urban and rural settings;
2. Compare your findings with those of other participants in your group and identify differences. Discuss the reasons and consequences;
3. Report to the plenary and consider advantages and disadvantages of different solutions.

In consideration of different solutions for the organization of services on the grass-root level of primary health care, the following factors have to be taken into account:

- The interface between population and services;
- The inter-relation between levels, communication and span of control;
- Differences between the rural and urban settings, and explanations of that;

- Practical problems in functioning of different levels.

Expected outcomes: List of comments and experiences gained during discussions. Each student should explain what changes are necessary in his/her circumstances. What type of changes students expect in his/her situation during further development?

REFERENCES

This module is adapted from: Jakšić Z, Folmer H, Kovačić L, Šošić Z, eds. Planning and management of primary health care in developing countries. Training guide and manual. Zagreb: Andrija Štampar School of Public School, Medical School, University of Zagreb, 1996.

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2. Murray CJL, Evans DB, eds. Health systems performance assessment: debates, methods and empiricism. Geneva, World Health Organization 2003.
3. Donev D. The role and organization of health care system. In. Bjegovic V, Donev D (editors). Health system and their evidence based development. Lage: Hans Jacobs Publishing Company, 2004. p. 19-46.

RECOMENDED READINGS

1. Bjegovic V, Donev D (editors). Health system and their evidence based development. Lage: Hans Jacobs Publishing Company, 2004.
2. WHO. Improving Performance. The World Health Report 2000, Health Systems: WHO, Geneva, 2000.