Annex L

What is a health system? [*]

A "system" can be understood as an arrangement of parts and their interconnections that come together for a purpose (von Bertalanffy 1968). What sets apart a health system is that its purpose is concerned with people's health. A health system has many parts. In addition to patients, families, and communities, Ministries of Health, health providers, health services organizations, pharmaceutical companies, health financing bodies, and other organizations play important roles. The interconnections of the health system can be viewed as the functions and roles played by these parts. These functions include oversight (e.g., policymaking, regulation), health service provision (e.g., clinical services, health promotion), financing, and managing resources (e.g., pharmaceuticals, medical equipment, information). Describing the parts, interconnections, and purpose, Roemer (1991) defined a health system as "the combination of resources, organization, financing and management that culminate in the delivery of health services to the population." The World Health Organization (2000) redefined the main purpose in its definition of a health system as "all activities whose primary purpose is to promote, restore, and maintain health." In recent years, the definition of "purpose" has been further extended to include the prevention of household poverty due to illness.

Many factors outside the health system influence people's health, such as poverty, education, infrastructure, and the broader social and political environment. Because they are open to influence from outside, health systems are known as open systems. A health system's many parts operate at many levels. Smaller systems may be self-contained and have limited scale and scope, such as those involved in running a clinic or a managing a health information system. Larger systems might involve the coming together of various smaller systems (e.g., clinics, hospitals, health promotion programs) to provide coherence at community or national level. Given the purpose, scale, and scope of a country's health system, it is not effectively controlled centrally, and changes in a system are not predictable in great detail (even if some parts of the system appear to behave predictably). This is partly because people and organizations innovate, learn, and adapt to change and partly because reorganization occurs continually in health systems in both formal and informal ways. These features have led systems thinkers to describe health systems as complex adaptive systems (Plsak 2001). Understanding health systems as complex adaptive systems has important implications for approaches to influencing health systems to produce better health outcomes, or to do so in a more efficient or equitable manner.

Building on the definition of a health system, this annex describes the important functions of the main parts of the health system, highlighting some of the key issues for low- and middle-income countries. Interpreting the parts and functions of a health system can be done independently, but greater power comes in bringing the parts together to improve people's health and illness-related poverty. We conclude with further discussion of how to understand health systems as complex adaptive systems and the practical implications.

---

[*] Most of the discussion and information in this a draws (and quotes) extensively from findings and recommendation of: (a) The World Health Report (2000), "Health Systems: Improving Performance," World Health Organization, Geneva, Switzerland, 2000; (b) Baeza C. and Packard T., "Beyond Survival: Protecting Households Against the Impoverishing Effects of Health Shocks," World Bank, Stanford University Press, 2006; and (c) from contributions from the Health Services Team of the HNP Hub led by David Peters.

Health System Functions

Health service provision, health service inputs, stewardship, and health financing are the four main health system functions. Households' demand behavior as well as overall health sector governance largely determine how these functions perform.

Stewardship (overall system oversight) sets the context and policy framework for the overall health system. This function is usually (but not always) a governmental responsibility. What are the health priorities to which public resources should be targeted? What is the institutional framework in which the system and its many actors should function? Which activities should be coordinated with other systems outside the realm of health care, and how (e.g., highway safety, food quality control)? What are the trends in health priorities and resource generation and their implications for the next 10, 20, or 30 years? What information is needed and by whom to ensure effective decision making on health matters, including prevention and mitigation of epidemics? These questions are the core of the stewardship function. An additional central function of stewardship is generating appropriate data for policymaking. These range from public health surveillance data to health system performance and provide the basis for assessing health status, regulating the sector, and tracking health system performance, effectiveness and impact. Stewardship remains a fragile function in many Bank client countries.

Public and private health service provision is the most visible product of the health care system. The best systems also promote health and try to head off illness through education and preventive measures such as well-child consultations. All these roles and activities mean that the system has to perform a wide range of activities. "Delivering health services is thus an essential part of what the system *does*—but it is not what the system *is*" (WHO 2000).

Health service inputs (managing resources) is the assembling of essential resources for delivering health services, but these inputs are usually produced at the borders of the health system. These inputs include human resources (produced mostly by the education system with some input from the health system), medications, and medical equipment. Producing these resources often takes a long time (e.g., a trained medical doctor, a new vaccine or drug). This function is generally outside the immediate control of health system policy makers who, nevertheless, have to respond to short-term population needs with whatever resources are available. An example of this problem is the current crisis of medical education in Sub-Saharan Africa.

Health system financing includes collecting revenues, pooling financial risk, and allocating revenue (strategic purchasing of services). We briefly examine them in this annex.

- *Revenue collection* entails collection of money to pay for health care services. Revenue collection mechanisms are general taxation, Development Assistance for Health (DAH, donor financing), mandatory payroll contributions, mandatory or voluntary risk-rated contributions (premiums), direct household out-of-pocket expenditures, and other forms of personal savings. Traditionally, each method of revenue collection is associated with a specific way of organizing and pooling funds and buying services. For example, public health systems are typically financed through general taxation, and social security organizations are usually financed through mandatory contributions from workers and employers (payroll contributions).

In most countries, health financing is a mix of general taxation, mandatory social insurance contributions, and household out-of-pocket expenditure (OOP). The relative importance of each source of financing varies greatly across countries. While countries in the Organization for Economic Cooperation and Development (OECD) rely heavily on public financing (either fiscal or mandatory payroll tax), the importance of OOP is larger in middle-income countries (MICs), and it is the largest in low-income countries (LICs), where it often reaches 70 or 80 percent of total health expenditures. DAH is an important source of health financing in a number of LICs, mainly in Africa. However, DAH on average contributes only about 7 percent of all health expenditures in LICs, ranging from 3 percent in a few LICs to more than 40 percent in a few.

- *Risk pooling* refers to the collection and management of financial resources in a way that spreads financial risks from an individual to all pool members (WHO 2000). Financial risk pooling is the core function of health insurance mechanisms. Participation in effective risk pooling is essential to ensure financial protection. It is also essential to avoid payment at the moment of utilizing the services, which can deter people, especially the poor, from seeking health care when sick or injured. Each society chooses a different way of pooling its people's financial risk to finance its health care system. Most high-income countries follow one of the two main models: the Bismarck model (Bismarck's Law on Health Insurance of 1883) or the Beveridge model (from the report on Social Insurance and Allied Services of 1942──the Beveridge Report). In most developing countries, multiple and fragmented forms of risk-pooling arrangements coexist. Population participation in risk pooling is lowest in LICs and among the poor. It is also low in MICs among the informal and self-employed population. Improving financial protection in Bank client countries requires a substantial effort to increase participation in risk pooling.

  Fragmentation is the most distinctive characteristic of LIC and MIC health systems. Within each system, different types of risk-pooling arrangements coexist, creating a complex set of incentives for households trying to cover their health care costs. These incentives not only shape how households decide to face potential financial losses from health shocks, but also influence life-style and economic decisions such as whether to work in the formal or informal sectors of the economy. Reducing health system fragmentation is essential to improve performance and systemic capacity to serve and protect the poor.

- *Strategic purchasing.* Strategic purchasing is the way most risk-pooling organizations (purchasers) use collected and pooled financial resources to finance or buy health care services for their members. In the practical, day-to-day interaction between purchasers and providers, the purchaser, within a regulatory framework, plays a key role in defining a substantial part of the external incentives for providers to develop appropriate provider-user interaction and health service delivery models.

Systems Thinking

When trying to intervene in any system, it is important to be able to distinguish whether its nature is primarily mechanical or adaptive. In mechanical systems, what results will occur in response to a given stimulus can be predicted, usually in great detail and under different circumstances. A mechanical system may be complex, like an automobile, but it does not show emergent behavior. Adaptive systems, on the other hand, have the freedom to respond to different stimuli in different and unpredictable ways and are interconnected with the actions of other parts of a system. Many

human systems, including health systems, are adaptive. Health outcomes are not merely a product of a set of physical inputs, human resources, organizational structure, and managerial processes. They are complex adaptive systems that have the following key characteristics (Plsek 2001):

- *Adaptable elements*. They can learn and change themselves. In mechanical systems, change is imposed, whereas under adaptive systems, they can happen from within.
- *Context*. Systems exist within systems, and this context matters, because one part of a system affects another. In health systems, changing the financing system may change availability and performance of health workforce, the use of other inputs, and the relationship with patients. In adaptive systems, optimizing one part of the system may lead to poor overall system performance. In a hospital, for example, reducing the length of stay of patients in one ward may lead to queuing and readmission in other parts of the hospital, compromising overall quality or cost.
- *Inherent order*. Systems can be orderly even if there is no central control, often because they self-organize. Health systems are self-organizing; different types of provider organizations, associations, and behaviors emerge continually, either formally or informally.
- *Not predictable in detail*: Changes are not linear or easily predictable. For example, a large health program may have little impact, but a rumor may spark a strike or a riot at a clinic. Forecasting and modeling in health systems can be done to predict effects on health and poverty, but they are not predictable in detail because the elements and relationships are changeable and nonlinear, often in creative ways. The only way to know what complex adaptive systems will do is to observe them.

What are the practical implications of viewing health systems as complex adaptive rather than mechanical systems? In the first place, giving up a mechanical approach means spending less time on blueprints and detailed plans. It also means that it is less important to search for the "correct" health financing or organizational approach for a given country or a given context. It does mean the following:

- Understand the context, look for connections between the parts (e.g., between programs, between demand and supply, across sectors), anticipating downstream consequences and identifying upstream points of leverage.
- Focus on simple rules to produce complex outcomes. Balance three types of rules that: (1) set direction (e.g., leadership and vision); (2) set prohibitions (e.g., regulations and boundary setting); (3) provide permission (e.g., setting incentives or providing resources).
- Understand how organizational structure influences behavior. How Ministries are organized, and how development assistance is provided matter a great deal. Health workers hired and trained under a centrally managed disease program will work differently from those accountable for all outpatient conditions and hired by a local health service organization.
- Use data to guide decisions. Constantly looking at how health systems perform is the best way to see how it is actually behaving and whether a project or new intervention is making a difference.