



Implementing National Health Observatories

Operational Approach and Strategic Recommendations



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- Improving the Structure and Performance of National Health Information Systems, Operational Approach and Strategic Recommendations.

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Executive Summary

This document outlines the operational approach and strategic recommendations for the implementation of national health observatories. A national health observatory (referred as "Observatory" in this document) is operationally assumed to be "a policy-oriented virtual-based national center aimed at performing systematic and ongoing observation on relevant issues about population health and health systems, in support of effective and evidence-based health policy, planning, decision-making and action in public health and health systems. The ultimate goal is to contribute to the preservation and improvement of health of the population, including the reduction of inequalities".

The expected contribution of the Observatory is the networked integration of specific participants and systems, sharing key contents of information and methods already existing among the varied specific information, surveillance and monitoring systems. It includes the integrated contribution – within a functional network - from diverse teams working on the production of information, either in monitoring and surveillance systems or the development of national health profiles and health systems profiles. Through that information network, it is possible to perform comprehensive analytical overview, for the systematic reporting of relevant, rigorous and meaningful national health information and evidence. Reporting includes variations, trends, current and forecasted scenarios, analysis, conclusions and policy-oriented recommendations.

Based on its capacity and functions, the Observatory can serve simultaneously as a functional center for: public health surveillance; monitoring health systems; specialized analysis of health-policy related matters; health-related warning; policy-oriented advice; and health information and knowledge production and management.

The introduction in Chapter 1 describes the needs for a systematic national health overview, the expected contribution of the Observatory, the empirical basis already existing in countries, and the main opportunities and challenges for its

implementation. Chapter 2 outlines the operational framework of the Observatory with emphasis on the underlying concepts; a model for health as framework for meaningful observation; the basic structure and performance; and the main functions to be performed by the Observatory.

Chapter 3 outlines the empirical basis (systems, processes and observatories already in place) given by some useful experiences and tools that could contribute to the Observatory implementation and performance. There are some successful initiatives developed by international organizations that are used by countries to carry out the processes aimed to support integral observation, such as the selection and collection of relevant data and information, the development of national health profiles and health system profiles, and periodical essential public health functions assessment. The experience already existing in effective surveillance and monitoring systems, as well as some specific observatories in place - at national and international levels - provides valuable orientation and tools to facilitate the design and implementation of the Observatory.

Chapter 4 outlines key aspects of the use of information for decision making in public health and health systems that could be facilitated and improved by the Observatory's contribution. A wide range of information is needed to support decision-making at different levels of health systems, although the Observatory is focused just on key relevant information that is necessary to perform its functions. Teams working with the implementation and further management of the Observatory – to be effective - should be aware of the definition and selection of the meaningful information and evidence that is needed to support evidence-based decision-making.

Chapter 5 outlines the main aspects of the implementation process, including:

- Outlining and proposing an initial plan
- Assessment of the readiness and possible alternatives for implementation.
- Establishment of the steering committee

- Refinement of the implementation plan and the Observatory design
- Establishment of the organization and structure
- Setting up the Observatory functions and modules
- Consolidation of the organization, structure, and performance

To ensure successful implementation, it is suggested that the Observatory should have a

gradual development (according to national needs, priorities and feasibility, including readiness for carrying out observatory functions). It could start with the implementation of some modules based on some systems that are already in place and performing effectively (such as some specific monitoring and surveillance systems or observatories).

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1. Introduction

The Introduction outlines: the needs for systematic national health overview, primarily to support the work of policy- and decision-makers; the expected contribution of the national health observatory (referred as “Observatory” in this document); the empirical basis already existing in countries; and the main opportunities and challenges for its implementation.

1.1 The Need for Policy-oriented Meaningful Information and Observation

Health planners and high level decision-makers in the health sector need nationwide integrated and analyzed information and evidence to support health policy, planning and decision-making, in a wide range of areas related to public health and health systems. Information on cross-sectional variations – comparing different areas or socio-economic groups of the population - can support equity-related findings, analysis, conclusions and policy-related recommendations. Information on trends and forecasted scenarios facilitate the planning process. Information on unexpected emerging risks, vulnerability or events can activate warning and emergency systems, leading to timely health action able to prevent and control situations in an effective way, and adopt the necessary mechanisms to ensuring the fulfillment of plans towards pursued goals.

National health authorities and international organizations frequently point out the needs for information and evidence on objectives, plans, programs, structure, organization and performance of health systems. Most countries in Latin America and the Caribbean are introducing reforms widely involving the state and the social sector. These reforms may involve significant changes in the organization, financing and function of health systems.

Some of the relevant issues (related to attributes and performance of the system) in these reforms are efficiency, equity in access to and financing of health services, quality of care, and effectiveness, including priority setting and the search for cost-effective interventions. Management of health systems is gradually becoming more complex, with the participation of multiple sectors and a user population that is progressively empowered.

National health information, - when available - is frequently fragmented and dispersed in several sources of information (such as libraries and virtual documentation centers, research, evaluation, routine information systems, monitoring and surveillance systems). Thus it is needed to integrate and use all those information inputs in the development and systematic reporting of a comprehensive national health overview.

1.2. Expected Contribution from the Observatory

The Observatory integrates (but does not replace) the findings and/or the functions of information, monitoring and surveillance systems (such as epidemiological and public health surveillance, health situation rooms, health sector analysis, monitoring and evaluation of health systems and services). The content and functional integration of those systems enables the Observatory to produce such comprehensive, coherent and solid overview.

The expected value added by an integrated national health observatory includes:

- The development of an integrated national management information tool to support the work of high level policy and decision-makers in public health and health systems.
- The availability of systematic national health overview (including descriptive, analytical and interpretative components) that can be comprehensive, covering simultaneously the health situation, influence health determinants and the role of health systems, including information on different sectors.
- Reported information and overviews that can be customized to the culture and specific information needs of policy- and decision-

makers, facilitating better analysis and use of information by them.

- The Observatory can promote a managerial culture for searching and using multi-source information for policy- and decision-making purposes. Managers who receive and use information provided by the Observatory are likely to become more motivated to seek further information and increase its usefulness, facilitating further improvement of the Observatory and better responsiveness of its information.
- The national capacity to perform the Observatory functions could be gradually developed, throughout the progressive and reasonable implementation of modules and observatory functions, according to priorities and national capacities for implementation.
- Given that the health sector is a component of the wide social sector in a country, the Observatory could become a pioneer module within a wider social and/or development observatory, where the Observatory could become an initial empirical module and a training center.

1.3. The Empirical Basis for the Observatory

The Observatory is an entity that functions through the secondary use and integration of information inputs and processes that already exist or are performed in the country (unless an exception, it does not reports or produces primary information). The basic inputs are found in a series of primary sources of information, and the capacity for surveillance and monitoring is generally found in some specific systems in place (such as those dealing with communicable diseases, nutritional situation or health systems performance). Also, some groups located at ministries of health have diverse capacity to analyzing and producing reports that allow the production of scenarios, health and health systems profiles, to support policy and decision making. Those who take decisions related to public health and health systems (or their advisor group) are also an empirical part of the Observatory, in the extent that they have the capacity to analyze and apply information to evidence-based decision making.

That wide set of observation-related elements and processes means that countries already have, at different degree, an empirical basis for the development of an Observatory (as a secondary and integrated instance, based on what already exists). In the way that those elements could be functionally integrated within a network, this will facilitate the design, implementation and performance of the Observatory. Those countries that are already involved in performing any kind of effective health-related observation (through surveillance and monitoring systems, event some specific observatories), have higher possibility to successfully embark in the planning and implementation (and further management) of an Observatory.

1.4. Opportunities and Challenges for Implementation

Opportunities for gradual implementation of the Observatory depend on the perceived needs by decision-makers, the priority given by them, and the feasibility to integrate all the information sources and specific observatory systems to start a secondary integrated virtually-based center.

Priorities are also related to the political and institutional will to support an organized and integrated observatory, as well as the managerial capacity of key planners and decision-makers for analysis and use of information in their decision-making.

The national production and availability of core health data, surveillance of key diseases subject to prevention and control, as well the development of national health profiles and health systems profiles provide very useful basis for the expected observatory inputs (the empirical basis).

To ensure effectiveness of the Observatory, policy and decision-makers should know what the Observatory is, and what to expect from it.

Information is an essential input for the description and measurement of health systems and services (goals, structure and functions) in support of managerial processes (policy-making, planning and management), at different levels, and information-based evaluation-related systems (surveillance, monitoring and evaluation) (Gattini C., 2007b).

The staff performing Observatory functions, at different levels, should understand the nature, roles and information needs of policy and decision makers in the field of public health and health systems. In this regard, the value (potential usefulness) of the information becomes actually effective upon being used for decision-making in practice, and not when it is mainly stored or systematically reported for just potential use.

There are factors depending on the decision-making capacities that could facilitate or hinder the use of information, as is the case of managerial training. Information can be more effective for decision-making when management is more effective and managers know how to analyze and use the available information (Sauerborn, 2000).

Some of the challenges that could be faced in the implementation include:

- Developing and managing an Observatory could be perceived by authorities and managers as an extra activity for busy managers, implying an increased burden of work, with no real extra value or benefit. Thus, it is important to estimate the expected cost/benefit of the Observatory and also to advocate for its implementation (if the Observatory is needed, feasible and cost-effective).
- Limitations in the information produced by national routine health information systems with weak structure and performance reduce in turn the Observatory performance and products, and the improvement (if feasible) could take so long. The challenge also deals with the search for the necessary information by using alternative

mechanisms (e.g. by using sentinel sites, in absence of information system in place, to report the necessary information).

- Monitoring and surveillance systems with limited performance and coverage also imply an initial limitation or extra challenge for the development of the Observatory.
- The Observatory could be mistakenly perceived as an alternative or replacement for routine information, monitoring and surveillance systems, and this could cause some resistance to its implementation, especially by groups already involved in monitoring and surveillance.
- The implementation plan could be ambitious, especially if national capacity and difficulties for implementation are not properly taken into account. That is why it is recommended that the Observatory should have a gradual development, starting by modules based on effective monitoring or surveillance systems in place.
- The actual linkage between information and decision-making in public health and health systems could be poor due to limitations in information, managerial capacity to use information, or a limitation in reporting and sharing information.
- Identifying information needs in case of policy- and decision-makers can be difficult, given the complex nature of health systems and services, the multiple levels and with diverse management involved and the types of decision making that are needed to be taken (Gattini C., 2007b).

2. Operational Approach

This chapter outlines: the operational framework of the Observatory with emphasis on the main concepts; the models for health and health systems as framework for meaningful observation; surveillance and monitoring systems seen as specific observatories in practice; and the basic structure, performance, and main functions of the Observatory.

2.1. Operational Concepts

As a broad definition, *observation* is the process of paying attention to someone or something that is happening or might appear or happen, using instruments and tools to properly detect and record an observed situation, in relation to a defined context. *Overview* is a broad survey, a general or comprehensive outline (a brief summary) of a defined situation under interest.

Based on this concept, it is possible to assume that as a result of observation, a national *health-related overview* is a broad, general and comprehensive outline or summary of the health situations of the population in a country or defined geographical area, including health and health systems determinants, at a defined period or point in time.

The reported overview includes descriptive and analytical information, with a comprehensive and coherent scenario (and forecasted scenarios, when necessary), as well as conclusions and policy-oriented recommendations.

As a policy-oriented tool, the Observatory is mainly focused on effective “information for health decision and action”, and more specifically “information and knowledge for evidence-based health policy- and decision-making”.

The Observatory is operationally assumed to be:

“a policy-oriented virtual-based national center aimed at performing systematic and ongoing observation on relevant issues about population health and health systems, in support of effective and evidence-based health policy, planning, decision-making and action in public health and health systems. The ultimate goal is to contribute to the preservation and improvement of health of the

population, including the reduction of inequalities”.

According to this general approach, the Observatory should be primarily:

- A policy-oriented (management) tool primarily focused on supporting the role and effectiveness of high level national health policy-makers, planners and managers, as well as political and health authorities.
- An operational- and problem solving-oriented tool, despite its intrinsic capacity for scientifically-oriented analysis and research.
- A multi-partner nationwide networked entity, under the management and coordination of the national health authority.
- A virtual-based center, supported by secondary information that is collected and managed by using information and communication technology.
- An entity that shares information within an information network, with expected benefits for all participants of such network.
- A health intelligence unit with an adequate capacity for collection, analysis, reporting and sharing information, in a creative evidence-based way that produces added knowledge to the field.
- A tool for health planning, able to provide valid and comparable overview or scenarios, including cross-sectional variations (with implications to equity) and alternative forecasted scenarios.

However, according to its original aim, the Observatory should not be:

- An alternative information-related entity that could be used to replace or duplicate the role that

should be assumed by current specific information, monitoring and surveillance systems (those systems should be strengthened, but not simply replaced by the Observatory);

- An extra administrative unit (increasing bureaucracy) within a ministry of health or a health system, that could overload the routine work of staff that is already producing and analyzing information, as well as managers, with no significant added value or cost/benefits;
- A primary self-centered scientific, academic or research entity (even if it has become an “intelligent unit” de facto). To be effective, The Observatory should remain essentially as a problem- solving- and policy-oriented functional center, with operational purposes.

As identified in the concept, the Observatory’s goal is to provide information and knowledge in support of better and more effective policy- and decision-making in public health and health systems, leading to effective health action. The ultimate aim is to contribute to the preservation and improvement of population health.

The specific objectives of the Observatory are to:

- Perform systematic, ongoing and integrated health-related observation and report updated overview, focused on selected key issues that are relevant for policy and decision-making. This includes the development of updated and comparable national profiles on health and health systems.
- Perform public health surveillance (either using contents or functions of a public health surveillance system) or performing that function by default (in absence of nationwide surveillance systems).
- Perform integrated monitoring of health systems, either by using contents and functions of a monitoring system, or by performing that function by default (in absence of effective nationwide monitoring systems).
- Provide policy-oriented information, statistical and contextual analysis, as part of routine

reporting and also according to specific requests from high level policy-makers, planners and managers.

- Provide policy-oriented forecasting, based on trends, as well as current and projected scenarios, in support of planning and decision-making.
- Provide policy-oriented advice according to specific requests from high level policy-makers, planners and managers. That can include support to improving national capacity, including the provision of guidelines, methods, techniques and training.
- Provide information and knowledge management and sharing customized to its primary audience (policy- and decision-makers) and to secondary users (according to priorities and possibilities).

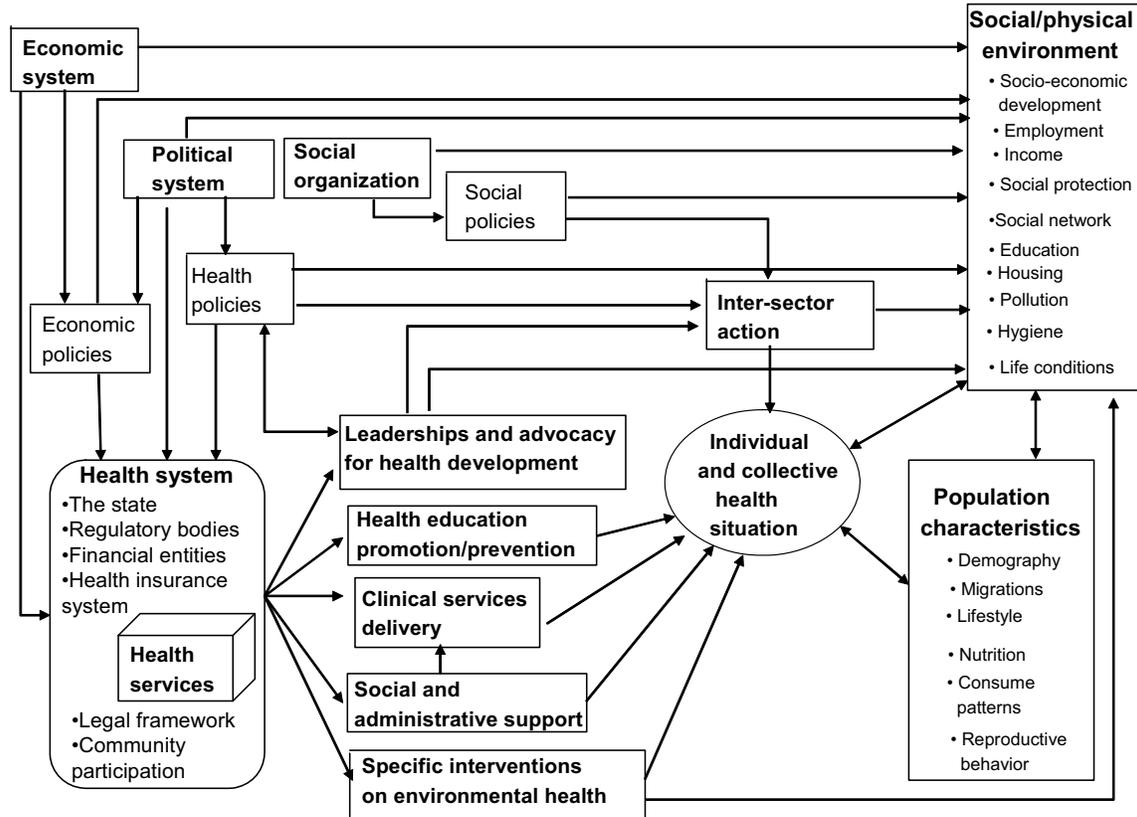
2.2. A Health Model as Framework for Observation

The potential range of health-related issues that could be subject to observation is very wide and detailed. However, effective observation needs to be focused on those key issues that are considered a priority for public health, such as those events subject to prevention and control (covered by the public health surveillance function), as well as aspects of the structure, performance and context of health systems (covered by monitoring).

Understanding and analyzing health situation is facilitated through models showing the interactive relationships between multiple determinants on health, including health systems’ action. This is illustrated in the macro-model on health presented in figure 2.1, which is in line with most other conceptual models (Ellenczweig, 1992).

In general, the same groups of factors or determinants also influence the way that systems organize (mixture of public or private, formal and informal sectors) as well as how they respond to health needs of the population. The structure and performance of health systems are highly dependent on the political, economic and social context in which they exist (Gattini, 2007a).

Figure 2.1 Integrated view of health related factors influencing individual and collective health



Source: Gattini C. (2007a)

Main health conditions and problems that could be selected as key issues for observation depend on the following factors:

- Age group or stage within the life cycle (such as reproductive period), gender and ethnicity;
- Health-related vulnerability and risk, according to different personal conditions, lifestyle and exposure to socioeconomic and physical environmental determinants;
- Risky and vulnerable health events and conditions (personal, socioeconomic and environmental) that are feasible to be improved with current means and technology;
- Health-related risk and damage subject to prevention and control throughout promotion and prevention-oriented interventions;
- Priority given to health action (according to magnitude and relevance of the problem, feasibility to intervention or control, and cost/benefit of interventions).
- Relevance of the issue for health policy or health interventions on the population (e.g. HIV/AIDS, sanitation, nutrition)
- Health goals, policies, plans, programs or projects subject to monitoring and control.
- Social determinants highly variable and influential on population's health or health systems (e.g. employment, health insurance, key financing)
- Areas or conditions already under national and sub-national monitoring or surveillance (such as vaccination programs and preventable communicable diseases)

- Feasibility of getting the necessary information to support performance of the Observatory functions

The preparation and reporting of national health overview usually follows a template with key topics to cover public-health related issues. PAHO has experience in the application of templates to developing country health situation profiles in countries of the Americas that have been used for the PAHO publication *Health in the Americas 2007*; the guideline is presented in Annex 1 (PAHO, 2006).

An operational model on health systems is also needed as a reference for observation and overview reporting. However, there is no unique definition or model for health systems (aim, nature, functions, boundaries, participants). WHO (2000) defines health systems as all the organizations, institutions, and resources that are devoted to producing health actions.

The information of some key factors helps to understand main health systems characteristics, such as the legal framework, the financial framework and flow, the human and technological resources, and the delivery of services to the target population. Health systems and services' roles and functions are highly dependent on the political, economic and social context in which they exist.

The context directly influences the way that health systems organize to respond to the health requirements of the community. Health systems are aimed at responding to the health needs of the population and this should be done by using the available resources as efficient and reasonably as possible.

A *health system* includes the whole set of elements and stakeholders organized around the main goal to preserve, protect, recover, rehabilitate or provide palliative support to the health of the population, both at individual and collective levels. A health system includes various entities who participate according to different roles: regulatory entities,

financing agents, insurance agents, buying agents and service providers.

A specific system in a particular setting can be operationally defined by taking into account:

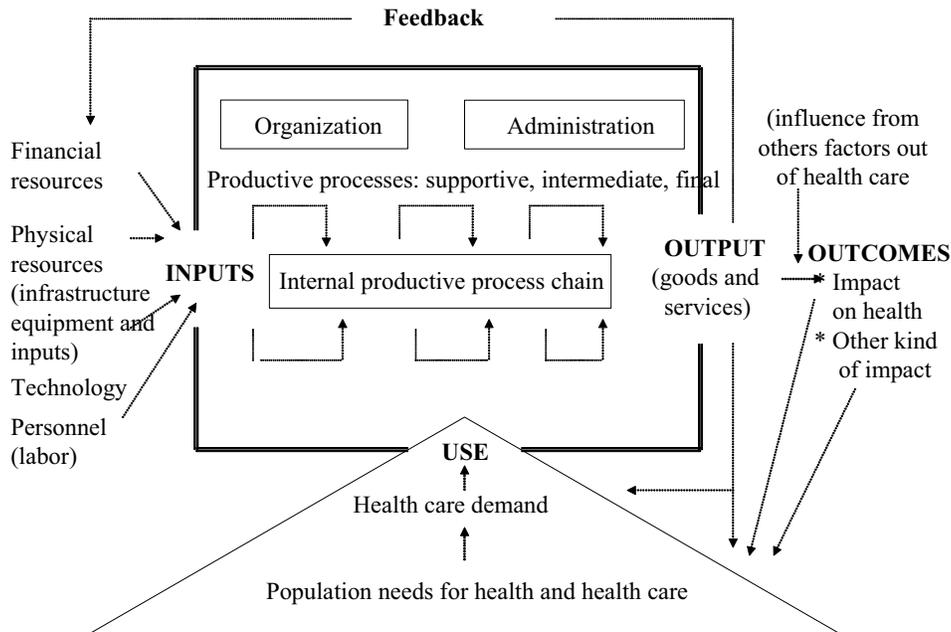
- The state (political, economic, social authorities, parliament, regulatory bodies);
- Social security institutions;
- Financial and health insurance institutions;
- Public and private health care providers (intermediate or final provision of health services);
- Non-governmental organizations (social assistance, health care, teaching, research and advisory entities);
- Universities (health care, teaching, research and advisory centers);
- Other training institutions;
- Health professional and workers associations;
- Community organizations;
- International institutions (political, technical assistance, financial entities).

The population itself has multiple roles, such as: target of health care and health policies; beneficiary and user of health systems; a direct or indirect financial source, and an active element in the control of those groups that provide health services (helping with political, social, economic and legal accountability).

Health services are the component of health systems that are focused on the delivery of health care-related goods and services to the population. At least five types of services provided to the population can be recognized:

- Leadership and advocacy for the development of the health;
- Health education and other strategies and interventions to support promotion, prevention and proper use of health care;
- Delivery of clinical services;
- Social, economic, and administrative support to the delivery of services (as maternal subsidy or leaves in case of disease); and
- Specific interventions to care of the environment

Figure 2.2 Key elements of health services: inputs, processes and outputs



Source: Gattini C. (2007a)

The systemic approach on health services (as illustrated in figure 2.2) provides a useful framework for orientation in measurement, evaluation and integral observation. Main elements are the inputs, processes and outputs.

Health services include a network of centers, with different level of technological complexity - which has as an intermediate or final purpose - to provide health care to the target population. The different areas of management depend on the:

- Level of geographical aggregation: local level, regional, national
- Level of assistance complexity: primary level, secondary, tertiary
- Level of integration of assistance units: intra-establishment (final productive or intermediate centers), establishments of similar complexity, establishments of patient referral, networks of functional or institutional establishments.
- Predominant focus of the type of management (such as: clinical, administrative, financial)

- Predominant type of health care (either oriented to prevention- or curative-oriented);
- Period for planning projections: short (two or less years) medium (five years) and long term (ten years or more)

In its modern health systems organization, public health care centers traditionally managed by the state can function as institutions open to the competitive market, including contracting services. WHO promotes a way of determining and evaluating health systems, centered on a global performance, which included a macro conceptual framework developed for that purpose (WHO, 2000). When services are subject to development and reform processes, the information should be consistent through time to monitor change processes with comparable data. The participation of policy- and decision-makers is essential in order to orient the development of information systems (Lippeveld, 2000).

PAHO and the European WHO Regional Office for Europe have developed templates to help with the search of findings and prepare reports on health systems profiles in countries; this is described in

chapter 4 (Figueras J. and Tragakes E., 1992; PAHO, USAID, 1997).

2.3. Structure and Performance

Although the Observatory is a virtually-based entity, some administrative arrangements, trained staff, other resources and a defined organization are usually needed, to ensure proper coordination and performance.

Administrative arrangements and structural requirements could include:

- An administrative framework, with the administrative and technical organization, rules, regulations, formal agreements, criteria, and standards;
- Formal recognition from the national health authority, including responsibilities of different stakeholders;
- Appropriate staff with the necessary training, especially those who are part of the central team, at the management and coordination center;
- Physical resources and technology (budget, infrastructure, equipment, supplies, technology and personnel);
- Supporting the necessary services for connectivity, information and communication technology.

The resources could be directly allocated to a formal Observatory or shared with other units. Some of the Observatory functions can be performed by external centers or units, reducing the needs for Observatory's resources.

The coordinating and management center of the Observatory could be administratively or physically located at the ministry of health (which assumes the role of secretariat and one of the main users). However the Observatory should remain as a networked entity – belonging to multiple institutions - and not as a simple dependency of a ministry of health.

Given its virtual, functional and networked nature, the Observatory needs to be virtually-connected to many public and private institutions and entities,

through formal, informal and electronic communication.

The management and coordinating center needs to be closely related to the steering committee and the working group supporting the implementation and further management of the Observatory.

Specific information-based systems and entities participating in the Observatory network can adopt several roles: primary sources, secondary sources, information processing centers, analytical and/or research functional entities, dissemination and communication centers, primary users (health policy and decision-making groups), and secondary users (other entities and the general public).

The group of participants of the Observatory network may include:

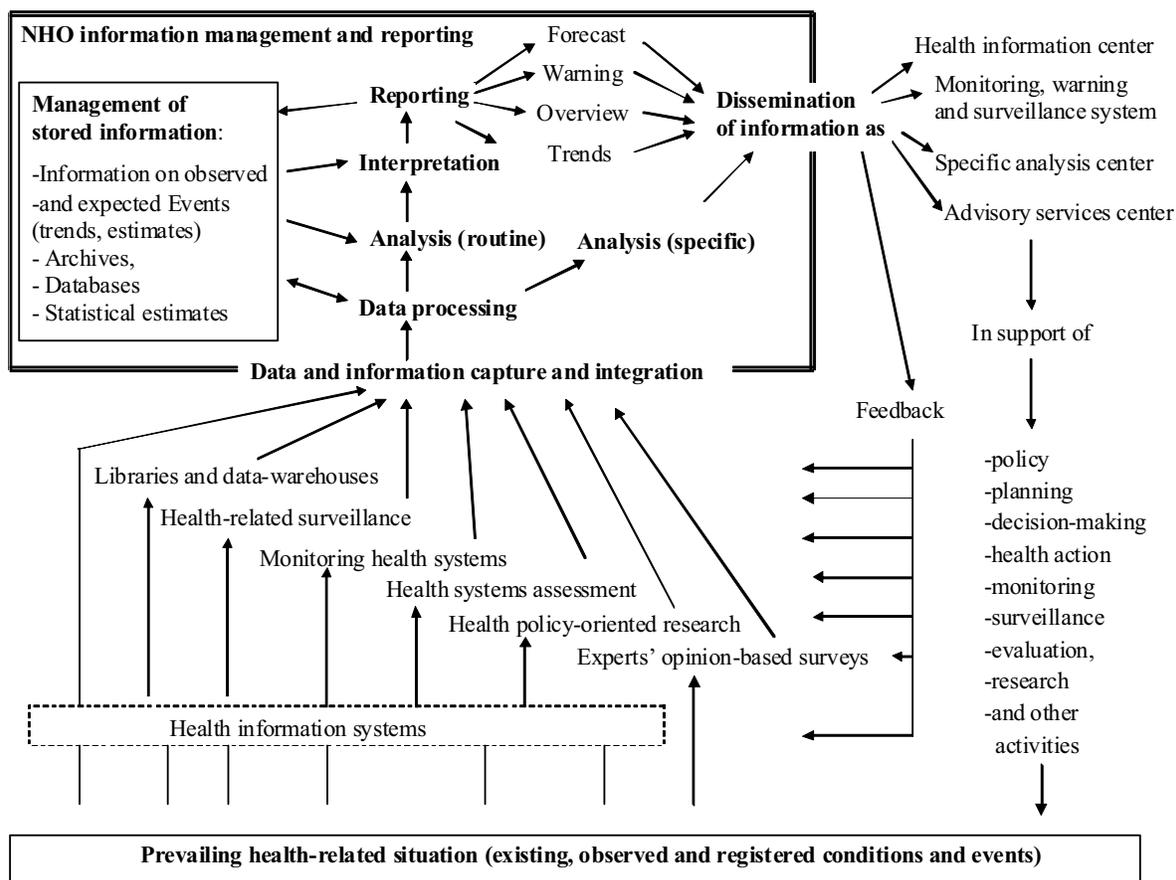
- National health authority, especially high level planners and managers, and supporting analysts
- Political authority, especially high level managers and analysts
- Responsible officers of public and private health systems and services
- National offices of statistics
- Other ministries and governmental entities
- Inter-sector groups and committees for social development and health
- Libraries and data warehouses
- Research and teaching institutions
- Epidemiological and public health surveillance entities
- Monitoring and evaluation systems
- Health Information systems
- Information and communication technology-related entities.

The Observatory technical operation is carried out through a chain of several information- and analytical-based processes, leading to reporting and dissemination. It includes the collection and integration of key secondary information from

external sources and stored data and information; this is followed by data processing, analysis, interpretation and reporting, with dissemination of information and knowledge. The process of analysis and development of reports should include predefined routine for reporting, as well as

readiness for reporting when some specific requests come from key policy- and decision-makers from the national health authority, or other key users. Figure 2.3 summarizes the main aspects related to the information management and general performance of the Observatory.

Figure 2.3 Information sources and management and Observatory functions



The Observatory needs a technological platform that can be supported by a host institution (e.g. ministry of health) or companies providing inputs or services to the Observatory management and coordinating center. Through internet, main participants can establish a functional wide area network to support effective integration of the Observatory.

a) Collection, integration and storage of secondary data and information

A predefined set of contents and a list of data and indicators can be adopted (as used by international initiatives, described in Chapter 3). The effective

search for key information could be facilitated by an inventory, periodically updated, on the existing sources of information, located at different centers, units and offices in the country.

Some of the principal usually available sources of information are:

- National and specific health information systems
- Population census and social and health-related surveys, in documentation that is usually available in the National Offices of Statistics
- Physical and virtual libraries, documentation centers and data warehouses

- Epidemiological and public health surveillance systems as well as health situation rooms
- Monitoring of health systems and health sector reforms
- Health sector analysis and reports
- Health systems' assessment (general and specific aspects of the structure or performance)
- Policy oriented public health research (especially on health systems and services)
- Experts and of public opinion surveys

The set of sources could contain extensive potential information, however the search for key information should be focused on selected predefined contents of information (especially for routine reported overview) plus additional information for reporting in case of non-routine requests.

Some ad-hoc non-routine data can be collected, for instance after an economic crisis or a disease outbreak not considered in existing surveillance, or for particular observation purposes. Quality and completeness of data could be different at different administrative levels, geographical areas and specific systems. The quality of information collected at the Observatory depends on how the different sources have integrated and consolidated the information.

The establishment of a dynamic information network allows a more expedite access to information sources and sharing key data and information. Agreement on information sharing will facilitate the systematic data flow between information sources and the Observatory central management unit.

Once the Observatory is fully functioning, and systematic overviews are reported, there will be important data and information gradually accumulated and electronically stored, increasing the observatory capacity to manage historic data and estimation of tendencies of key indicators.

Textual information, databases, historical trends in data and indicators, profiles, reports and other will convert the Observatory in a powerful information and knowledge management center. However, the main application of the stored paper- and computer-based information should remain mainly as an internal input for information management, focused on the Observatory functions.

b) Data processing

Data processing is mainly applied to quantitative information, where data and indicators can be used to estimate historic and seasonal trends, cross-sectional variations and comparisons. Results from this process can be used in the reporting process, and also incorporated to update and enrich the internal databases with historical trends of data and indicators.

c) Statistical analysis

Trained staff is a critical factor to perform appropriate statistical analysis. Statistical analysis requires the support of specific software (for data processing and analysis), usually user-friendly (such as Epi-Info, SPSS®). Sophisticated statistical analysis could be needed, but probably not on a daily basis. Statistical analysis could be performed by the Observatory central team or by external groups such as those working in monitoring and surveillance systems, or research or academic institutions.

d) Comprehensive analysis and interpretation of findings in context

Statistical analysis, with its consequent conclusions, can be complemented and become more meaningful when findings are analyzed and interpreted in a comprehensive way in the wider context of the real setting under observation. Comprehensive analysis requires taking into account all the conditions and determinant factors influencing health systems and health of the population.

Some conditions facilitate the comprehensive analysis of findings: the existence of an initial national health situation analysis, an explicit health system model with all the elements of structure and performance, and legal and financial frameworks are clear. The development of scenarios – current and projected - is a critical aspect of the comprehensive analysis, as it is the basis for forecasting.

e) Reporting and dissemination of information and knowledge

Reporting involves the development of reports and dissemination of produced material though

different ways and means, including the use of internet sites, either restricted to a selected group of policy- and decision-makers, or opened to the general public. Non-routine reporting could be an ad-hoc activity according to specific requests. This will depend on information needs of those responsible for policy and decision-making, especially when the country faces an unexpected scenario and new decisions cannot be postponed. Development of reports is facilitated by guides, templates and predefined technical norms and standards.

Dissemination and sharing of information requires methods, techniques and training to ensure that the information will be effectively received and used by the key users. Technological computer-based tools and links are crucial for dynamic and effective dissemination of information. Reports can be complemented by tables of core health indicators provided by electronic table generators,

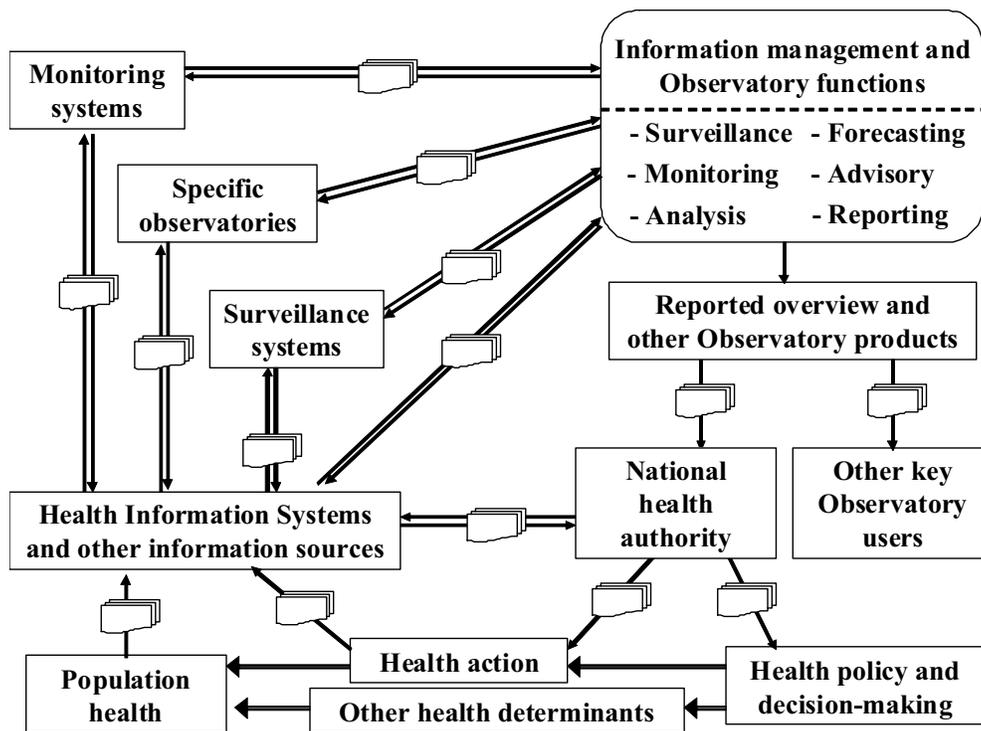
including historical trends and cross-sectional variations. Information to compare areas by using through geographic information systems is also a useful complement.

Reports on national health profiles and health system profiles are a crucial input from the Observatory's overview reporting function. The challenge should be to have a combined profile based on those two types of specific profiles.

2.4. Observatory Functions

The Observatory's global function is based on an intertwined set of methods, techniques, processes and activities already used by specific information-based systems. Main observatory functions include surveillance, monitoring, analysis, forecasting, advisory, and reporting and communication, as illustrated in figure 2.4.

Figure 2.4 Information Management and Observatory Functions



The systematic reported overview, through electronic or printed means in user-friendly form, is the main routine output of the Observatory. However, other relevant information and

knowledge can be produced and shared to those responsible for health policy and decision-making.

All those functions could provide the functional platform for the Observatory to become a multi-

functional entity capable of being a: health information center; public health surveillance system, monitoring and evaluation center, health analysis center; advisory services center; and a knowledge management and sharing center.

2.4.1 Public Health Surveillance

Public Health surveillance is performed through the collection of key information on population health that is considered a priority in public health, with nationwide coverage. Then the information is processed, analyzed, interpreted and timely reported – including overview, conclusions and recommendations for action - to those responsible for public health policy and action.

The Observatory does not replace the role of specific public health surveillance systems that already exist in countries, but integrates their contribution to the whole observation process. It means that the Observatory can use the contents provided by a Public Health Surveillance System, or include that system's function as part of the Observatory. Just by default, the Observatory could perform primary public health surveillance (in absence of those kinds of systems at national level).

If a public health surveillance system is already performing that function, then the Observatory can be concentrated in the secondary use of the key information.

Useful functions performed in public health surveillance are to:

- Estimate the magnitude of those problems that have been defined as a priority for public health, including those aspects subject to international health regulation.
- Determine and analyze the geographic or socioeconomic distribution of diseases, risk factors, or health determinants, including equity-related variations.
- Estimate trends and projections of the natural history of diseases and events under observation, as well as scenarios under public health expected intervention.

- Detect epidemics or events that are a priority in public health, mainly those that are subject to prevention and control, including communicable and non-communicable diseases, as well as risk factors.
- Evaluate prevention and control measures and interventions.
- Provide reports with results, conclusions and recommendations aimed at facilitating planning, monitoring and evaluation (CDC, 2001).

2.4.2 Monitoring Health Systems

Monitoring focuses on the structure and performance of health systems as well as health related policies, plans, programs and interventions.

Similar to the surveillance function, the Observatory does not replace those monitoring systems for health systems that already exist in countries, but integrates their contribution to the whole observation process. It means that the Observatory can use the contents provided by a monitoring system, or include that function as part of the Observatory. Just by default, the Observatory could perform primary monitoring of health systems (in absence of that type of systems at national level). If a monitoring system is already operating effectively, then the Observatory can be concentrated in secondary use of the key information.

Under a similar methodological approach to surveillance, monitoring is performed through the secondary collection of key information on population health and health systems that is considered a priority for health policy and decision-making in health systems. Then the information is processed, analyzed, interpreted and timely reported – including an overview, conclusions and recommendations for action - to those responsible for policies, plans, management and action in health systems.

2.4.3 Health Policy-Related Analysis

Comprehensive analysis includes quantitative, statistical and interpretative contextual aspects. Overall analysis is facilitated when there is already: an empirical background coming from previous health situation analysis and overview; there is a

health system model that is defined and available; and there are coherent legal and financial frameworks.

Comprehensive analysis and interpretation of evidence in context are critical element for the development of an overview including scenarios and causative explanations for problems and changes, as well as projections, conclusions and recommendation for policy- and decision-making. Statistical analysis, with consequent conclusions and recommendation are very important to orient decision-taking. The analysis of findings is more meaningful when they are analyzed and interpreted in a wider context (i.e. all the conditions and factors existing in real settings under observation), beyond the traditional analysis of cause-effect relationships. Comprehensive analysis requires taking into account all the pros and cons that could come from all the series of determinant factors existing in health systems and the population (Gattini C., 2007b).

Following non-routine demand from policy- and decision-makers, the Observatory could provide specific analysis on matters that are relevant at some point in time. Thus, the Observatory's occasional role as health analysis center could depend on requests from key users, in the case that other analytical centers (such as universities, NGOs) cannot provide those functions.

The analysis could be applied to issues such as: unexpected health-related conditions, without clear cause; gaps in meeting health goals planned by governments; unexpected economic crisis affecting health and health systems; and the needs to support planning and health sector reforms.

2.4.4. Forecasting Function

Forecasting is the result of developing the most likely future scenario of a situation that could happen with the highest probability (indicating the time horizon), described coherently, with all the necessary influential factors (assumptions for opportunities and threats) that could change the forecast, reported in a manner that can be understood by policy- and decision-makers and that motivates strategic thinking as well as effective and opportune decision-taking. Policy- and decision-making in public health and health systems generally face some situations with an

uncertain future, complex situations influenced by multiple and unpredictable factors. The development of multiple possible future scenarios could be complex and confuse, mainly in situations with many variables under the influence of multiple determinant factors and analyzed under different assumptions. This raises the need for forecasting some possible alternatives for the future, beyond traditional analytical techniques (Venable et al, 1993)

Developing options and future scenarios for decision-making represents the final stage of information of decision-making. The final products based on information will depend on the managerial style and decision to be taken, as well as the specific processes carried out (planning, administrative management, clinical management, supervision, control, monitoring, and evaluation) at different levels and offices of the health system (Gattini C., 2007b).

Thus, making health scenarios for policy is becoming a complementary tool to the traditional monitoring and surveillance systems. Scenario analysis has been adapted from business to be a strategic planning technique to describe and evaluate health settings. A scenario can be defined as the description of plausible or possible trend outcomes expected in the future, starting from the current situation, taking into account factors and variables that define that future, and explained in a logical and consistent manner. The alternative scenarios developed can differ according to likelihood of occurrence and level of optimism about the expected situation. This will help planners and managers in exercising strategic thinking and accepting the most possible scenario (best guess) (Venable et al, 1993).

The analysis and reporting of those complex scenarios is facilitated by the use of coherent approaches to health; this includes the development of health models; the development of health scenarios; and the use of health models and health scenarios to inform policy- and decision-makers (Kristie et al, 2004).

Starting from the information provided by sources, findings, statistical analysis and analysis in context (traditional analytical techniques), the method for scenario analysis is mainly a qualitative technique which can include the opinion of policy makers, planners and managers to evaluate current situation

and its projection according to their possibility of occurrence and likely impact. In this regard, the process of forecasting is based on experience, perceptions and even intuition. The current and future influence of external factors on the situation under observation is identified and analyzed in terms of opportunities and threats, supporting the development of forecasted scenarios with more precision.

2.4.5. Advisory Function

Once fully functioning, it is expected that the Observatory will become an “intelligent unit”, with key databases, information and reports, and with staff skilled to collect, analyze, report and perform specific Observatory functions, including reporting and disseminating information. It means the capacity to manage information and knowledge to perform comprehensive and coherent overview of situations under observation, with integral analysis, leading to conclusions and recommendations, even projected to the future.

The intelligent capacity of the Observatory supported by the privileged information stored, will enable it to become a specialized health-related advisory center, ready to support non-routine key requests for advisory services from national policy- and decision-makers.

The Observatory can also support the improvement in national capacity, especially for policy- and decision-makers (or their close advisors) to use the information and apply it to their actions. It could be carried out by informal or formal training, support to use of Websites, provision of Software, methods and techniques, and improvement of evidence-based management.

2.4.6. Reporting, Information and Knowledge Sharing

Information and knowledge management and sharing includes customized reporting and dissemination through printed and electronic means. To be effective, reporting and disseminating information to different users should be performed in a way that can be properly understood and used by different types of users.

Internet has become extensively used and reachable by the worldwide public. However, some

literacy is necessary for decision-makers (and analysts supporting them) to know how to search for information and then to get proper access to it.

Cheap and user-friendly development and management of servers and websites, allow the continuous development of a vast multitude of potential sources of information.

Decision-makers (depending from their individual capacity for managing information), could request systems analysts and experts in internet for the necessary support and training to enable them to navigate in internet and get active access to the appropriate sources of information.

Information and Knowledge Management and Sharing (IKMS) disciplines, methods and tools provide strategies, mechanisms, training and support for a better use of information for decision making. IKMS promotes a new culture for managing information, knowledge and evidence (involving all key managers and staff of institutions adopting the IKMS approach), as well as learning how to get efficient and effective use of information technology (Gattini C., 2007b).

Strategies and activities that could be effective in improving the dissemination and sharing of produced information are:

- Establishing formal mechanisms for sharing information among offices and institutions (such as agreements between the ministry of health, national institute of statistics and civil registry office, for production and reporting of vital statistics);
- Training on reporting and presentation of information and reports;
- Promoting institutional virtual health libraries with electronic reports and key databases;
- Promoting and extending the type of PAHO core health data reporting and table generator;
- Application of techniques and computers programs for editing and publishing data and information, both in printing as well as virtually;
- Use of information and knowledge management as well as information sharing approaches and electronic tools;

- Promoting dialogue between managers of health systems and services - as potential users of specific information for decision making - and those responsible for the planning, management and production of information (Gattini C., 2007b).

The experience achieved with systematic reporting, through electronic and printed means, will help prepare effective documents and will also be the basis for developing the Observatory website.

The Observatory website could be the window for a wide audience and the general public, although some key information will be primarily reported to the high level health planners and decision makers of the national health authority (restricted reports, not included in the website). The website can be virtually linked to all those entities that participate as stakeholders of the Observatory and have their key information available to the general public, through websites.

Given that a website disseminates “official” information from the Observatory, it will need an editorial committee to review and approve what should be disseminated.

Information to be given to the public should be:

- Accepted by the political and health authorities as valid, objective and scientifically sound
- Useful for policy and action
- Relevant to national health plans, projects and programs
- Valid, coherent, reliable, representative and sensitive
- Comprehensive
- Ethical (Adapted from WHO, 1997)

The prestige of the Observatory as a valid center to approach policy-oriented evidence depends strongly on the quality and validity of the information provided, including reports with analysis and forecasting. This is why the management of the information to be uploaded in the website is sensitive (normal printed publications have a much longer period to prepare, review and edit documents, until fulfilling all the requisites for publication). On the other hand, preparing and uploading documents to the website can be an easy and rapid process, although there is some risk of providing information with limited quality and validity, if it lacks an editorial and quality control process.

3. Empirical Basis for the Implementation of the Observatory

The experience on surveillance and observation coming from successful surveillance and monitoring systems, as well as some specific observatories in place – both at national and international levels - provide valuable orientation and tools to facilitate the design and implementation of the Observatory.

This chapter also presents some initiatives developed by international organizations that are used by countries for the production of relevant data, indicators and information, national health profiles and health system profiles, monitoring and surveillance systems and observatories.

3.1. Experiences and National Capacity for Observation and Observatories

The proposed implementation of the Observatory is greatly facilitated when the country already has national capacity for managing information and performing some observatory functions. Countries already involved in Observation of specific health issues performed by surveillance and monitoring systems – even some specific social and health observatories – are more likely ready to embark in planning and implementing a national health observatory.

Some of the conditions existing in countries that can facilitate the implementation of an Observatory are:

- Most the necessary content to support the Observatory performance is already available in national information sources (even if that information is not formally reported or published).
- National health information systems are effective in their capacity for information management at all national levels, as the observatory should have similar process (for key selected information) at a secondary level of information management.
- Most part of the methodological basis that will be used in the Observatory is already found in effective nationwide surveillance and monitoring systems (performing specific observatory functions).
- Teams working on the development and updating of national health profiles and health systems profiles, having the capacity to perform descriptive and analytical overview.

- Specific observatories for specific issues have been developed at country level (such as for human resources in health systems, and equity in health).
- National and international observatories – focus on public health or health systems - are taken as role models for the design and implementation of a national health observatory.

The main challenge is then to integrate all contents and methods within a national health observatory, and to develop and run that Observatory essentially as a policy-oriented and managerial tool responsive to the needs of the national health authority. Thus, policy and decision makers should be relevant actors of the Observatory, at all stages of its planning, implementation, and management.

International organizations - such as PAHO/WHO, WHO European Region, and OECD - have been promoting harmonized and standardized data sets, guidelines, methods, software and experience to develop and collect relevant data, indicators and information. The overall contribution expected from those initiatives can cover most of what is necessary for an effective collection, management and analysis of information.

PAHO has developed templates and tools to assist in the collection and management of national health data and production of national and regional information – with a standardized approach – to collect data and produce key indicators, information and overview. Main initiatives are the Core Health Data initiative, the Template for Country Chapter for Health in the Americas, and the Health Systems Profiles. The European Office of the WHO uses similar tools within the European

Region: the Health for All Data Set and the Health Systems Profiles Template. The European tools could be taken as a complementary reference to the PAHO's existing tools. The Organization for Economic Cooperation and Development (OECD) has also developed a useful data and indicators set, with a wider range of topics. Some successful experiences and tools useful for observation and Observatories are described in chapter 4.

3.2. Specific Observation Performed by Surveillance and Monitoring Systems

Health-related surveillance and monitoring are the two main methodological approaches already performing some specific observatory functions. In general, there are several types of monitoring and surveillance systems that have similarities in the approaches and methods used to observe health-related issues.

a) Health-related surveillance

According to the CDC and WHO definitions (quoted by Nsubuga et al, the WB, 2006):

“Health surveillance is the ongoing systematic collection, analysis and interpretation of health data essential for planning, implementing, and evaluating public health activities, closely integrated with timely dissemination of the data to enable effective and efficient action to be taken to prevent and control disease”.

Forecasting suggests what will happen, as an early sign to predict or work out something is likely to happen for ex weather condition. This includes prediction of future development, with estimation or calculation of what is likely going to happen in the future on health-related situation

The series of diverse information- monitoring- and surveillance-based systems should provide the background information to develop and update the overall overview on the health sector and health. Observation or watch is paying attention, the attentive watching and recording of somebody or something that is happening or that might appear or happen, using instruments and tools to properly detect and record the observed situation, in relation to a defined context. The developed overview is a broad survey, a general or comprehensive outline (a brief summary) of health-related situation in a

country, or within particular population at a defined period of (or point in) time.

Public health surveillance is part of the overall health-related surveillance, but is specifically focused on the public health ground.

Thus, main goal is to report timely pertinent information to those responsible for public health related policy and action.

CDC (2001) has defined Public Health Surveillance as:

“...the ongoing, systematic collection, analysis, and interpretation of data (e.g., regarding agent/hazard, risk factor, exposure, health event) essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those responsible for prevention and control...”

Epidemiological surveillance has same approach than public health surveillance, although it is even more focused on disease prevention and control. It deals with health status and risk factors, as well as epidemiological programs, and main users are those responsible of epidemiological-related policy and action.

Epidemiological surveillance is especially focused on communicable diseases, with population and services-based data; chronic non-communicable diseases; mental health and injuries; food and nutrition; and maternal and child health. Epidemiology is also used for environment health information surveillance, mainly for vector control; water quality; food safety; and waste management;

Warning services are provided through information reported in terms of alert or caution on a health-related situation of a defined geographical area, target population at a defined point of time

b) Monitoring health policies and systems

Monitoring is the systematic knowledge of aspects of a program, project, or strategy that tries to establish the extension in which the delivery of goods and services are occurring in accordance with what is planned, so that appropriate measures to correct detected deficiencies can be adopted.

Monitoring health systems is the systematic process of gathering ongoing core information on health systems' structure and performance, as well as their target populations, then analyzing, interpreting and reporting timely the resulting information to those responsible of health systems and services-related policy and action.

3.3. Health Observatories

Some initiatives to develop national and international health observatories have been successfully developed in the last two decades, especially in the European Region. Several countries in Europe are developing public health observatories at national and sub-national levels, and sharing efforts and experiences, such as the case of the establishment of a Regional Health Observatory Network (RHONE), aimed at creating a network of public health observatories in Europe. The Association of Public Health Observatories (APHO) represents a network of 12 public health observatories working across five European countries. APHO produces information, data and intelligence on people's health and health care for practitioners, policy makers and the wider community (APHO, 2007).

The WHO Regional Office for Europe – in partnership with some governments and agencies - has developed the European Observatory on Health Systems and Policy, which has been producing relevant systematic information and documents on health systems at national and regional levels (WHO Europe, 2006).

PAHO/WHO has also been promoting and supporting the development of national and regional observatories on issues such as human resources (in the health sector), equity in health, and gender issues.

The Government of France uses a national observatory to monitor the health situation in all French Health Regions (FNORS, 2007). The emphasis is on epidemiological information and surveillance. The Swiss Health Observatory, developed in 2002, provides monitoring, reports of key focal topics, and serves as information, analytical and advisory center.

Current health observatories tend to be specific and focus on some key public health areas, such as:

- Health systems
- Human resources
- Health sector reforms
- Public health
- Public health surveillance
- Natural disasters
- Inequities in health
- Health determinants
- Gender inequities in health

The development of health observatories has been facilitated by factors such as:

- International collaboration and networking between different participating entities around public health, with the support of international organizations such as WHO;
- International agreements, criteria and standards to improve harmonization of information (allowing comparison and consolidation);
- Support provided by information and communication technology, facilitating the effective production, integration and updating of great amounts of information at national and international levels;
- Improvement in policy-and decision-making leading to the increased demand and use of information; and
- Perceived needs and efforts made by countries and agencies to develop better accountability, monitoring and evaluation to strengthen health systems performance.

Following the experience coming from existing observatories, national health observatories could be successfully implemented, if adapted to national needs, feasibility, capacity and readiness for moving - from fragmented information, surveillance and monitoring systems - towards an integrated and effective Observatory.

3.4. Initiatives and Tools for Information Management and Overview Reporting

International organizations - such as PAHO/WHO, WHO European Region, and OECD - have been promoting harmonized and standardized data sets, guidelines, methods, software and experience to develop and collect relevant data, indicators and information. The overall contribution provided by the reviewed initiatives imply a conceptual and methodological support that is useful for due orientation and inputs to most of what is necessary for an effective collection, management and analysis of information and for effective observation and reporting of situation.

In order to guide in the collection and management of national health data and information under a standardized approach, PAHO has developed three tools that are periodically used in countries of the Americas to produce key indicators, information and overview: the Core Health Data initiative, the Template for Country Chapter for Health in the Americas, and the Health Systems Profiles. The European Office of the WHO uses similar tools within the European Region: the Health for All Data Set and the Health Systems Profiles Template. The European tools could be taken as a complementary reference to the PAHO's existing tools. Besides, the Organization for Economic Cooperation and Development (OECD) has developed a useful data and indicators set, with a wider range of topics.

National data and indicators collected by those organizations are used to develop historical tables that are available to the general public through internet, by using a table generator system.

3.4.1. Core Health Data Initiatives

a) PAHO Core Health Data Initiative

The Core Health Data defined by PAHO/WHO constitute a list of 108 indicators (PAHO, 2007) that cover the following areas:

- Demography (12 indicators)
- Socioeconomic situation (11)
- Mortality (30)
- Morbidity (32)

- Access, coverage and resources and health services coverage (23)

These indicators have more specific categories (e.g. population by specific age group) that increase the list of specific indicators used. To facilitate annual surveillance, a more select set of 55 basic indicators are updated every year in each country of the Americas.

Even though these indicators are considered basic, there are difficulties in some countries for developing and maintaining a complete, reliable and timely registry of each indicator.

The development of these indicators at a sub-national level can support the surveillance of health situation at a more disaggregated level and facilitate the comparison between geographic areas.

b) Health for All Databases from the Euro WHO

Similar to the PAHO Core Health Data initiative, the indicators used in the Strategies of Health for All (WHO Euro, 2007), have an important potential usefulness, aimed at observing the situation and trends in socioeconomic determinants, health situation, and the response of health systems. It includes the following components:

- Demographic and socioeconomic
- Information based on mortality
- Morbidity, disability and hospital discharges
- Lifestyles and environment
- Health care resources.

c) Health-related data set monitored by the OECD

The Organization for Economic Cooperation and Development (OECD) is a monitoring agency of 29 member countries (from Europe and including the countries of North America), providing the Member Governments a common ground to discuss, prepare and to enhance the economic and social policy. The Health data of OECD (OECD, 2007) is an interactive database that includes the data systematically compiled on a large number of key aspects of health care systems within a

demographic, economic and social context. OECD health-related indicators of the OECD (database 2007) are organized in 10 categories:

1. Health status
2. Health care resources
3. Health care utilization
4. Health expenditure
5. Financing and remuneration
6. Social protection
7. Pharmaceutical Market
8. Non-medical determining factors on health
9. Demographic references
10. Economic references

3.4.3. Essential Public Health Functions Assessment

PAHO has developed a framework and template to assess essential public health functions at national level, under the perspective of the role assumed by the national health authority. It includes several topics such as health systems attributes and functions, with more specific issues such as health promotion, stewardship, equity, and quality assurance (PAHO, 2002a).

PAHO has defined Essential Public Health Functions (EPHF) as

“the indispensable set of actions, under the primary responsibility of the state, that are fundamental for achieving the goal of public health which is to improve, promote, protect, and restore the health of the population through collective action” (PAHO, 2000).

The essential functions include:

- Surveillance, assessment and analysis of health status
- Surveillance, research, and control of the risks and threats to public health
- Health promotion
- Social participation in health

- Development of policies and institutional capacity for public health planning and management
- Strengthening of public health regulation and enforcement capacity
- Evaluation and promotion of equitable access to necessary health services
- Human resources development and training in public health
- Quality assurance in personal and population-based health services
- Research in public health
- Reduction of the impact of emergencies and disasters on health

The specific framework is given by the concepts, standards and indicators defined for each element of an essential function. The resulting final report is mainly based on the qualitative and narrative answers to the set of questions addressed to assess each function.

3.4.3. Country Health Profiles

To prepare the periodical PAHO publication on Health in the Americas (PAHO, 2007), there is a standard PAHO template indicating the specific issues to be described, the size and format of the chapter to be developed (so as to integrate within a regional volume and facilitate country comparisons).

The contents which are covered by this national health profile summarize the country's health conditions during a defined period, emphasizing current health issues of particular importance:

- a) General Context and Health Determinants; the country's macroeconomic, political, and social context, demographic aspects, and mortality. It includes macroeconomic, political, and social issues; leading health determinants; and mortality trends and other demographic variables
- b) Health Problems: this section covers the different mortality and morbidity profiles in the country by age group and sex: (i) by population group (health problems and their changes and trends; disaggregate data by sex and gender), and (ii) by health problem, disease, or condition

(status, changes, and trends of natural disasters and disasters caused by human activity). It includes communicable diseases; non-communicable diseases and other health problems or issues of impact on health from emergencies and disasters

c) Public Policies and the National Health and Social Protection Systems: (a) National Health Policies and Plans; Health Strategies and Programs; and (b) Institutional Organization of the Health System. It includes:

- Public Health Services
- Individual Care Services
- Health Promotion
- Human Resources
- Health Supplies
- Health Research and Technology
- Health Sector Expenditures and Financing
- Technical Cooperation and External Financing

Details of the guide for the contents of this profile are found in the Annex 1, “Guidelines to Development of the Country Chapter for Health in the Americas, 2007 Edition”.

3.4.4. Health System Profiles

a) PAHO Health System Profile

Since 1998, PAHO has been using methodological guidelines for the preparation of Health Systems Profiles, aimed at describing health systems and monitoring health sector reforms. The health systems profiles developed under that guide have been completed and even updated in most countries of the Americas. The analysis included in those profiles has been useful to assess reforms and has become a tool for national authorities (policy and decision-makers) and international entities.

The analytical description of the national health system, and its context, includes issues such as: the reforms, the essential public health functions, strengthening the steering role of the national health authority, human resources development and social protection in health.

The areas covered by the guidelines to develop health system profiles include:

- a) Context: Political, social, economic, demographic/epidemiological context which influences health systems development and performance
- b) Health system: general structure; human resources, medicines, equipment and technology; and functions of the health system: steering role; financing; assurance; and service provision
- c) Health sector reform: it focuses on the monitoring of the process: dynamics of the reforms and content of the reforms; and the evaluation of results (equity, efficiency, effectiveness/quality, sustainability, social participation).

b) Euro WHO Health Systems Profile

The European Observatory on Health Systems and Policies has developed a Health Systems Profiles template and questionnaire as a tool used to collect standardized and comparable information to develop reports with analytical overview of health systems in transition.

The template provides the detailed guidelines and specific questions, definitions and examples needed to compile a profile (Mossialos et al, 2007). The template and the health system profiles can be downloaded in PDF format from the website of the European Observatory (www.euro.who.int/observatory).

Quantitative data on health services used in those profiles are provided by different sources, in particular the WHO Regional Office for Europe Health for All Database, the Organization for Economic Co-operation and Development (OECD) Health Data and data from the World Bank.

The European Observatory supports and promotes evidence-based health policy-making through comprehensive and rigorous analysis of the dynamics of health care systems in Europe. The Health Systems in Transition profiles are country-based reports that provide a detailed description of each health care system and of reform and policy

initiatives in progress or under development (Mossialos et al, 2007).

Compiling the information and developing the health system profiles faces some methodological limitations, such as:

- Relatively little information available on health systems and impact of reforms in some countries.
- Most of the information is based on material submitted by experts in the respective countries, therefore some information could be subjective

and even biased (even if reviewed by an independent expert); and

- Lack of a common agreed terminology to define the wide diversity of systems in Europe.

A set of common definitions has been developed in an attempt to overcome and standardize this, but some discrepancies may still persist, as those limitations are inherent to international comparison of health systems by using diverse perspectives (Mossialos et al, 2007).

4. Use of Relevant and Responsive Information for Decision- Making

The Observatory can contribute to facilitate and improve the use of information for decision making in public health and health. A wide range of information is needed to support decision-making at different levels of health systems; however, the Observatory is focused just on the key relevant information that is needed to perform its functions. Teams responsible for the management of the Observatory should be aware of the need to define and select meaningful information that is needed to support evidence-based decision-making.

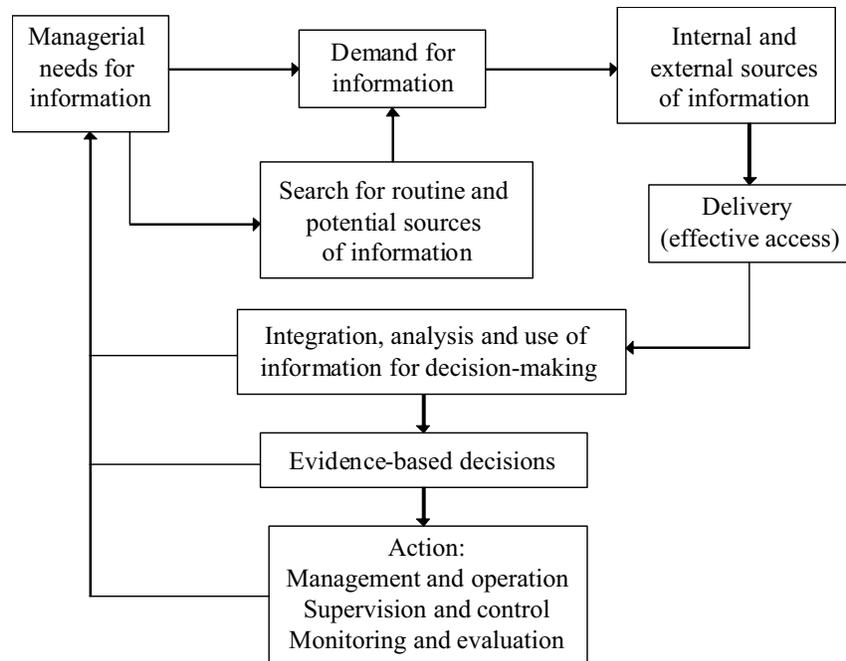
4.1. Understanding and Facilitating the Use of Information for Decision Making

Evidence-based decision-making, to be effective, needs be supported by the necessary appropriate and meaningful information that could meet the information needs of policy-makers and managers, at different levels. In the extent that the

Observatory has an effective performance and is responsive to information needs, it could become a valuable tool to support decision-making.

The relationship between information and decision-making implies a circle of needs, demand and use of information, as shown in figure 4.1.

Figure 4.1 Needs, demand and use of information for decision/making



Source: C. Gattini (2007b)

Main processes involved in the demand and use of information, from the decision-makers' perspective is shown in table 4.1. In this regard, the Observatory can help to get integrated information, provide solid analytical overview, support further

analysis, and use of information. To ensure that the Observatory will be responsive to information needs, decision-makers should be properly represented and involved in the implementation and further management of the Observatory.

Table 4.1 Processes involved in the demand and use of information by decision-makers

Aspect	Processes involved (decision-maker's perspective)
Needs	<ul style="list-style-type: none"> • Perceived and technical identified needs for information • Evaluation to meet the explicit demand, according to expected availability and usefulness of information
Demand	<ul style="list-style-type: none"> • Explicit request for information <ol style="list-style-type: none"> a) Routine (usually implicit, following historic delivery of information) b) Ad hoc (specific information at one point in time)
Provision/Access	<ul style="list-style-type: none"> • Information sources (especially health information systems) deliver information as key output. This means access to information (input for action) by decision-makers. • Delivery/access to information includes the necessary information sharing between producers and users of information
Use	<ul style="list-style-type: none"> • Information received and adapted to decision-making understanding, analysis and use • Analysis of information (decision-maker's perspective), and • Application of information and assumed evidence to the decision-making process • Feedback and secondary perceived needs and demand of information
Feedback	<ul style="list-style-type: none"> • Return of information on the information accessed and used providing the opportunity for further improvement in the production and use of information

Demand of information is influenced by the existing managerial expectations on the overall value, usefulness, quality, opportunity, coverage and accessibility of information that they perceive as necessary and relevant. Effective access and use of the proper information is crucial, and also the possibilities for effective use also depend from managerial capacities for access, analysis and use of information. If information to be produced does not take into account the managers' needs, then it could become unresponsive and with limited value as a tool for decision-making. The Observatory management team could assist in all the process, according to needs and requirements.

Decision-making usually faces the needs for actions and solutions of diverse degree of certainty. For the operational purposes of this document, decision-making is understood as a rational process

for the selection of a course of action to be taken, among different alternatives. In practice and given the usually is not possible to postpone some necessary decisions, the decision process can be fully rational, rational with an intuitive component, or it can be highly intuitive based on previous experiences and personal type of management, with a prevailing guessing approach.

The use of information depends on available information and evidence; the managerial style, capacity and culture of the decision-makers and of the institution to deal with information and decisions; and the perceived urgency or pressure for taking particular decisions. For that reason - as far as possible - the process should be evidence-based, so access to useful information and knowledge management is essential.

Table 4.2 *Specific processes in the development, dissemination and use of indicators for decision-making*

Specific Process	Outputs
Recording health or health care events	<ul style="list-style-type: none"> • Primary data (e.g. infant deaths, medical consultations)
Recording or estimating target population for the event	<ul style="list-style-type: none"> • Primary data (e.g. live births; population)
Development of the indicator	<ul style="list-style-type: none"> • Composite data (e.g. infant mortality rate; medical consultations per population)
Comparison of the indicator against a reference (either normative or empirical)	<ul style="list-style-type: none"> • (Relative) excessive or low mortality; high or low level of medical consultations
Statistical analysis	<ul style="list-style-type: none"> • Comparison of trends, areas, factors to approach magnitude, causality, forecast
Interpretation of findings in context	<ul style="list-style-type: none"> • Meaning and implications for real settings under analysis
Report of findings and analysis	<ul style="list-style-type: none"> • Reports with findings, conclusions and implications for policy, management and action
Dissemination and information sharing	<ul style="list-style-type: none"> • Communication of results and reports to decision-makers
Access and Use (at different levels and types of management)	<ul style="list-style-type: none"> • Information received and adapted to decision-making understanding, analysis and use • Analysis of information (decision-maker's perspective), and • Application of information and assumed evidence to the decision-making process

Specific processes involved in the production, dissemination and use of data and information for decision-making are illustrated in table 4.2. Producers and users of information have complementary role. The Observatory could contribute to adding value and ensuring that the resulting information could be solid, integral, meaningful and responsive. It also could help decision-makers to increase capacity for analyzing, interpreting, reporting and applying information to decisions and action.

The first stages are usually carried out by producers of information: health events are recorded as primary data in the health care setting. Obtaining data on population, usually available at the statistical offices, contributes to the development of health-related indicators. The assessment of the indicator level could use the comparison of a defined indicator against a reference (theoretical, empirical or normative reference). Surveillance and monitoring can use cross-sectional variations or time trends of

indicators to develop specific observations and forecasting.

The statistical analysis could have a different degree of sophistication, but usually routine statistics supporting decision-making do not need sophisticated analysis, and computer programs available to managers are usually sufficient to provide evidence to routine management. Interpretation of descriptive and statistical findings and in the context of health and health systems can provide more meaning to information.

A properly disseminated report of findings and analysis enables better understanding and communication with decision-makers. However the use of information requires the managerial capacity to use it for decision making, at different levels of management. The analytical phase, previous to a final choice, requires enough information to have a dynamic overview of the situation including the potential pros and cons of each alternative and the expected (forecasted) scenario.

Decision-makers, key users of the observatory, are more motivated to better use information when the culture in health systems becomes more patient centered, honest and trustworthy, understanding of the benefits of training and change, team work oriented, and open to transparent information sharing.

Some strategies and activities could be effective to improve managerial capacity to use information, such as:

- Support to managers - within a multi-disciplinary approach - in the process of identifying information needs and content selection;
- Support training to managers on analysis of relevant information, assumed to approach evidence to support effective decision-making;
- To strengthen the use of computing equipment and software by managers, for the analysis and evaluation of information;
- Development, adaptation, and transfer of techniques adequate for non-routine additional data collection and the information analysis;
- To introduce or develop statistical and epidemiological methods, to be used by those presenting information on inequities in health and access to health care, and their determinants. It includes graphic, analytical and synthetic presentation.
- Support training to managers on understanding health systems and services, and the role of health-related information for decision-making and action;
- Application to management information systems that can provide reports and secondary indicators in support of health care performance analysis and evaluation (such as the PAHO WINSIG program);
- Provision of methodological guides for the analysis of information, when it is not feasible to produce such guides;

- Use of geographic information systems (GIS), as well as methods for rapid analyses and the use of surveys in order to evaluate health situation and health systems response;
- Establishing a monitoring system on the access and use of information by managers, as well as a dynamic register of managerial information needs, to be periodically discussed with those responsible of the production of information.

Training modules for the managers probably need to be adapted to the most general types of management (administrative, clinical, financing), which could be complemented with modules for training of those responsible for coordinating and providing information, so that they can better understand the institutional perspective of the decision-making.

4.2. Dynamic Use of Information Domains as Sources for Observation

Different domains of information can serve as primary sources of information for the Observatory information management and overall performance. It is important to know the health-related information contained in each source, what they can share, and how to establish an information shared network with benefits for all the participating sources. Primary sources providing information to the Observatory could be benefited by reports produced by the Observatory.

4.2.1. *The National Health Information System*

Most information used for statistical report, historical series and geographical comparisons, come from the national health information system. This system is a complex information network composed of several specific information systems run in various programs, offices and institutions, organized and coordinated by the health authority. Health information systems are aimed at producing health-related information with emphasis on the support to health-related policy, decision-making and action. Table 4.1 illustrates the main specific information systems (Gattini C., 2007a)

Table 4.1 Main specific health information systems and sources of information

Specific information systems	Main sources of information
1. Population-based information systems	
Demographic and vital statistics	<ul style="list-style-type: none"> • Census • Civil registry • Statistical national office • Ministry of health • Health services • Health and housing surveys • Community-based information • Ministry of economy • Ministry of education • Schools (records and statistics) • Research and tertiary teaching centers • Agriculture and commerce • Other sectors • International agencies and statistical entities
Socio-economic or social statistics	
Health status (self-reported)	
Risk factors	
Morbidity (surveys, sentinel sites and services-based)	
Disability (surveys and services-based)	
Mortality (maternal, infant and other avoidable mortality)	
Food and nutrition	
2. Surveillance-oriented information systems	
Communicable diseases (including surveillance) population and services-based	<ul style="list-style-type: none"> • Ministry of health • Health services • Epidemiological surveillance systems • Health surveys • Ministry of education • Schools (records and statistics) • Research and tertiary teaching centers
Chronic non-communicable diseases, mental health and injuries (including surveillance)	
Food and nutrition (including nutritional surveillance)	
Maternal and Child health (nutrition, morbidity, mortality, risk factors)	
3. Health system and services information systems	
Health financing	<ul style="list-style-type: none"> • Ministry of health • Health system and services • Health insurance institutions • Statistical national offices • Commerce and pharmaceutical institutions • Ministry of finance • Central bank
Human resources	
Physical infrastructure	
Specific medical technology (medical equipment, laboratory, imagenology, pathology)	
Pharmaceutical drugs;	
Health care network (primary health care, hospital, referral system)	
National health programs (reproductive health, child health, adolescent health, ageing health)	
4. Patient-centered information systems (health-services based)	
Patient administrative and clinical data	<ul style="list-style-type: none"> • Ministry of health • Health system and services • Health insurance institutions
Electronic records databases	
5. Environment health information systems (including surveillance)	
Vector control (malaria, dengue, others)	<ul style="list-style-type: none"> • Ministries of health and/or environment • Health and environmental services • Water and sanitation authorities • Municipalities • Ministry of labor • Industries • Research and tertiary teaching centers • International agencies and statistical
Water quality	
Food safety	
Waste management	

Occupational health	entities <ul style="list-style-type: none"> • Health and housing surveys • Community-based information
6. Virtual library and data warehouse	
Virtual library	<ul style="list-style-type: none"> • Libraries • Documentation centers
Data warehouse	<ul style="list-style-type: none"> • Research and tertiary teaching centers • Internet web-based community

Source: Gattini C., 2007a

4.2.2. *Epidemiological and Public Health Surveillance Systems*

Epidemiological and public health surveillance systems can provide essential contents to the Observatory. Improving the structure and performance of those systems, as well as ensuring their nationwide coverage, is critical to provide the key information on population health that will be the basis for the health overview. Several types of surveillance systems have been implemented in countries, such as:

- Public health surveillance system (composed by several specific systems)
- Epidemiological surveillance system (composed by several specific systems)
- Surveillance system for specific communicable diseases
- Surveillance system for non-communicable diseases
- Mental health surveillance system
- Behavioral risk factor surveillance system
- Social determinants surveillance system
- Disability surveillance
- Mortality surveillance (composed by several specific systems)
- Injuries surveillance system
- Nutritional surveillance system
- Environment health surveillance (composed by several specific systems)
- Vector control surveillance system
- Water quality surveillance system
- Food safety surveillance system
- Waste management surveillance system

- Occupational health surveillance system

4.2.3. *Health Systems Monitoring*

Information coming from monitoring of health systems is also crucial for the overview contents. In general, there are some isolated monitoring systems covering some parts of health systems (such as human resources, productivity, financing). Some monitoring systems evaluating health care reforms can provide more comprehensive information to be used by the Observatory.

Monitoring health systems covers issues such as:

- Health financing
- Human resources
- Physical infrastructure
- Specific medical technology (medical equipment, laboratory, imagenology, pathology);
- Pharmaceutical drugs;
- Health care network (primary health care, hospital, referral system);
- National health programs (reproductive health, child health, adolescent health, ageing health)

Some monitoring systems cover specific plans, projects and programs that are autonomous or independent (e.g. a specific project on VIH/AIDS, financed by international sources) but are subject to accountability of their inputs, process and outputs.

4.2.4. *Libraries, Documentation Centers and Data-Warehouses*

Physical and virtual libraries, documentation centers and data-warehouses contain extensive and useful stored information in different means

(quantitative, qualitative, textual, graphic, multimedia including audiovisual) that can be accessed by users to respond to specific demand for information.

Some traditional libraries have become electronic documentation centers and also information and knowledge management centers. They manage a combination of printed and electronic material supported by a computer-based platform for connectivity and knowledge sharing. Access and use of those centers could be partly through Internet.

The main documentation centers (with different level of automation) and data warehouses can be found in official governmental or public institutions - such as ministries, national health services, national institutes of statistics, and research centers.

4.2.5. Health Policy-Oriented Research

Health policy-oriented research – especially health systems research and health services research - is a very valuable source of information and evidence to complement the pieces of information and evidence used to develop a comprehensive overview of a defined situation under observation. The contribution of research is important for those relevant issues that cannot be measured or reported by routine health statistics or the traditional information systems.

Policy-oriented research and evaluation has often been used for planning the strengthening of health systems and health sector reforms. However, the representativeness of findings and conclusions should be taken into account, since many research projects are not representative of the whole country (for instance, studies on hypertension in a specific geographic area). Researchers can provide an important support and orientation to the implementation and management of the observatory, although the Observatory functions should not include the research function.

4.2.6. Experts' Opinion-Based Surveys and Reports

Documentation coming from surveys or systematic methods to know experts' opinion (such as Delphi) could provide a solid and complementary approach

- to understand and interpret in context - some aspects of a defined situation, that cannot be properly estimated or analyzed by other potential sources. Expert's opinion, even having some subjectivity and risk for bias, can provide more meaning to the analysis and interpretation of data and information or to situations with no available information (for instance, causes of TB treatment abandonment or limiting factors in the doctor-patient relationship).

Expert's opinion could be used to approach knowledge in issues such as:

- Health and health care needs
- Pros and cons for access to health services in different groups of population
- Expected benefits of health sector reforms
- Needs and priorities for financing
- Health systems responsiveness to needs of the population

4.3. Role of Responsive Information for Decision-Making in Public Health

Decision-making in public health deals with the public health organization; funding health care and public health, developing national strategies, applying criteria used for priority-setting and decision-making, working with intersectoral collaboration, and performing monitoring and evaluation of public health policies (Allin S. et al, 2004). Information to support those areas for decision making - including information and reports coming from public health surveillance - covers normative, institutional, financial, planning, institutional and population-based contents.

Most the essential functions include an information, surveillance, assessment or research component. The Observatory could support information-based public health functions and also provide orientation for the other related to decision-making.

Allin S., et al (2004) published a review of making decisions in public health in eight countries, including an initial attempt to map priority-setting in national public health. They identify four areas that mostly cover the most relevant public health interventions: altering individual behaviors and

lifestyle, controlling and preventing infectious disease, tackling the broader determinants of health, and secondary prevention, for instance screening programs for cancer.

Key public health action issues related to lifestyle and behavior are: the behavioral risk factors for non communicable diseases and injuries, smoking and tobacco control, alcohol and drug control, promotion of physical activity, healthy nutrition and sexual health.

Current priorities in control and prevention on communicable disease, beyond the existence of the traditional diseases with importance in public health, include immunization strategies and the level or reemergence of diseases and environmental hazard subject to prevention and control, such as: HIV/AIDS, Tuberculosis, Malaria, Avian and Human Influenza. Public health actions have also expanded to issues such as chronic diseases, violence, road injury prevention, emerging pathogens and threats of bioterrorism. The International Health Regulation provides the background for action in this regard.

The analysis, policy and action related to social determinants for health concentrate on issues such as poverty, income, housing, environment and sanitation, education, and employment. A special contribution from the Observatory could be the supply of information and surveillance to support the identification of high-risk population groups or geographic areas – according to social determinants - to better target interventions and guide analytic studies.

Nowadays, there is an international priority for the reduction of inequalities and reduction of poverty, as found in the national and international targets pursued by the Health For All and the Millennium Development Goals.

In the secondary prevention of diseases, main focus is given to early detection of diseases, such as the use of screening for cancer. Prevention of avoidable deaths, such as those causing infant and

maternal mortality, is also a priority and is included in the Millennium Development Goals.

To ensure effectiveness of public health action, it is necessary to monitor the prevention and control measures, intervention strategies, and evaluate their attributed impact (Garcia-Abreu A. et al, 2002).

4.4. Role of Responsive Information for Decision-Making in Health Systems

Management of health systems includes a wide range of policy- and decision-making processes at different administrative levels – under the responsibility of multiple managers - in close interaction with other stakeholders.

Managerial decisions can be classified according to the length of planning or management period and administrative level of management: (a) strategic decisions, used in medium and long-term planning at central or regional level (normative level); (b) tactical decisions, related in general to medium-term planning, and (c) operational decisions that are generally performed in context of routine operation, control, and evaluation in local level (Rodrigues R. and Israel K., 1995). However, the processes of decentralization of national health institutions in many countries (related to reforms) give more responsibility and dynamic role for managerial decisions at local level.

Information is needed for planning, decision-making, routine management, and the processes of evaluation and monitoring. The contents of information and level of aggregation should be defined – according to administrative level – to ensure that the information will be responsive to managerial needs. Policy and decision-making need different level of aggregation of data and information to support their roles, according to the level of management, ranging from local level (ambulatory health care facility, hospital or and internal productive center such as laboratory or pharmacy), middle (regional) or macro (national) level, as illustrated in table 4.4.

Table 3.4 Level of data aggregation, according to level of management (*)

Level	Type of management / action	Detail	Aggregation
National	National normative health sector management		+++
	National monitoring and surveillance systems	++	+++
	Management of national health care integrated networks		+++
	National management of environmental intervention programs		+++
Regional	Regional normative health sector management	++	++
	Regional monitoring and surveillance systems	+++	++
	Regional health care network management	++	++
	Regional management of environmental intervention programs	++	++
Local	Local normative health sector management	++	++
	Management of local health care network	++	++
	Hospital management / operation	+++	+
	Ambulatory care center management / operation	+++	+
	Management / operation of productive or costing units within big size hospitals	+++	+
	Local management of environmental intervention programs	+++	++

Note: The use of computational telecommunication networks can facilitate that detailed disaggregated data are shared at various levels. Intensity: (+++) high, (++) medium, (+) low

With current development of telecommunication in medicine, it is possible that individual data based on care or transactions can be shared in a network among the different administrative levels of geographical aggregation, as it is in the case of deaths, hospital discharges, or report of communicable diseases. Paper based information systems that produce a gradual consolidation of the data - from local levels to national levels – have limitations as the primary details from the local level are lost.

4.4.1 Policy and Planning

The national health authority, with a normative role for the health sector, has the responsibility to formulate, update and disseminate the standards and technical and administrative procedures, as well as the normative standards in order to define the policies, strategies, plans, and activities that will be in place for a period of time ahead. In order to be effective, planning should be based on an adequate diagnosis of public and institutional health that includes the identification of the set of resources for financing, physical space and infrastructure, equipment, inputs, personnel, organization, and technology both existing, and that which is planned to have in the future, in order

to fulfill the objectives that every center has proposed to achieve. The end result should produce a clearly formulated plan that includes both administrative aspects, technical processes and a description of the impact sought in the health of the population. Information and observation is needed at all administrative levels and all policy and planning -related processes

The processes of technical, administrative, and budgetary planning include research, creation of proposals, and formulation beforehand, of a set of decisions and actions that will lead to compliance with the plan. Although similar to the plan (and can even be regarded as a short-term plan), programming refers to a briefer future period (in general a year, compared with three, five or ten of a plan) and are more specific with regard to strategies, activities and goals to fulfill.

Planning includes a set of coordinated activities and tasks that are to be implemented in sequential order, with the intention of fulfilling the goals pursued in the plan, in a defined period. Furthermore, it is appropriate to take into account all those variables that ultimately will influence the implementation of the plan, according to what is

expected, in the most correct and precise possible way.

Most standards are defined by the opinion of experts and refer to each type of specific activity, to the target group taking action, type of assistance personnel, coverage, concentration, and performances. The planning is based on analysis of the situation, in the priorities of assistance intervention according to the most relevant problems, and the decisions to face these problems with given coverage and concentrations of activity in given terms, utilizing the available resources.

The overall management of health systems and services needs to consider all those determinants influencing the efficiency, effectiveness, organization and trends of every health service. At the national level, the political and socioeconomic context of the country plays an important role.

At different levels, management is performed through a cycle following several phases, such as:

- Formulation of national policies, regional, local
- General programming
- Detailed programming
- Decision-making, routine or daily
- Execution
- Control and evaluation including monitoring and surveillance
- Feedback and reprogramming, according to need
- Restart the cycle of planning–action–evaluation.

In the managerial process of national health development, general programming is carried out accordingly with the formulation of major national health policies, that reflect the principles and medium and long term priorities for plan formulation, in a context of principles and global priorities of the state in general and of the social sector, more specifically.

Detailed programming brings about the indications of general programming in areas and more specific times. In this context, it collects the available resources (financial, human, physical, technological), the organizational strategies and operation with possible objectives to measure in

the short and medium term. The challenge is to harmonize the resources and institutional culture with the local needs and the general objectives of the medium and long term national plans.

Information provided by monitoring and evaluation enables knowing the degree and quality of the implementation of a defined plan, project or program (in relation to an original plan), what is assessed to make the necessary corrections, if needed, in order to fulfill goals and plans. It helps to propose the corresponding modifications, ratification, strengthening or innovations to improving the proper continuation of the planned process, also getting lessons for the future. Both monitoring and evaluation need reference standards to assess (by comparing expected and observed situations) what is actually found.

The evaluation process could be either applied just to a specific issue of the health system, or wider and integral, so as to include simultaneous aspects such as effectiveness, efficiency and the impact of health systems interventions.

4.4.2. Routine Management

Managers that receive good and useful information are likely to become more effective and also motivated to seek further information and use it appropriately. High-quality health services are also likely to possess a good management and institutional culture, as well as good information, or at least make the most effective use of available information. In turn, the improvement in the production and use of information creates the potential of having a positive feedback effect on motivating and supporting subsequent development of information and statistical and information systems.

In the daily performance of tasks, those responsible for management face continuous situations that can emerge as unforeseen problems, for which they should assume solutions and make decisions on the basis of all the information they have at that time, combining the quantitative and qualitative, what is formal, and what is informal, the rational and what is intuitive.

It is important to have an adequate information system for management that should be aimed at responding to the most frequent or important

questions that have directives in its management, for the purpose of permitting adequate decision-making.

The process of decision-making is devoted to facing problems, for which there is a request of data to characterize and measure the problem and contrast it with the already available knowledge. In addition, it is required that there is knowledge of solution alternatives. In the event that the problem can be solved, the decision is made, within the set of the possible solutions considering known restrictions. Otherwise, knowledge is utilized to seek alternatives to solve the problem, up to the decision-making. The need for information is present in all steps of the process of decision-making (Ferrero, 1979).

Management in health care centers (mainly hospitals and ambulatory centers) usually deals with continuous and detailed information and decisions, with a combination of detailed, individual and aggregated information.

4.4.3. National Health Programs

In the management and operation of health services, a series of health programs and specific projects are usually established by central level, aimed to cover defined target populations. The approach of those programs can be by type of vulnerability (e.g. newborn) preventable health events (e.g. malnutrition), corporal organ or system (e.g. oral health, mental health).

Many of those programs have technical and administrative national standards and use the health care networks, so that several sub-national levels can be involved (e.g. Expanded Programs of Immunization). Information is essential to support measuring, monitoring and evaluation to support management and operation of such programs.

Most frequent health programs and projects, at national and sub-national level, are:

a) *Basic health programs.* These can be focused on:

- age conditions (as child, adolescent, adult and senescent);

- related to fertility and maternity issues (women or maternal);
- specific problems (communicable and non-communicable diseases, nutrition); and
- specific interventions (immunization, complementary feeding).

b) *Specific health programs by area of intervention,* such as:

- Supplementary feeding programs
- Expanded Program of Immunization programs
- Primary health care programs
- Rural health care programs
- National program for tuberculosis
- Health education programs
- National programs of anti-cancer drugs
- National programs of blood banks
- National programs of radiation therapy
- Prevention and control of hospital infections
- Programs of control of acute respiratory infections and diarrhea in children
- Programs for surveillance, prevention, and control of communicable diseases (general and specific): sexually transmitted diseases, AIDS, cholera, malaria.

c) *Programs and projects*

Most are routine or continuous programs. Projects are some programs which are delimited in their scope, expected impact, and duration of the intervention, such as:

- Programs to strengthening the quality and coverage of or primary health care
- Health programs focused on rural, poor and vulnerable populations
- National programs for chronic disease control, such as diabetes mellitus, hypertension and epilepsy
- National programs for prevention and control of alcohol and drugs
- National programs for smoking prevention and control.

d) Programs on health-related conditions of the environment (environmental health).

Environmental health programs involve a wide range of interventions, such as basic sanitation, especially drinking water, and sewage, food control and occupational health. Some types of programs are:

- Zoonosis programs
- Basic sanitation programs
- Environmental protection programs
- Programs of occupational health, including hygiene and industrial safety

In general, information on national health programs at central levels is mainly based on consolidated

data and indicators. However, monitoring and evaluation of those programs need to manage some geographical disaggregation, to approach equity analysis and to investigate gaps that represent the need for a better geographical distribution of resources and delivery of services.

The collection of information at local level can be facilitated by the richness of existing detailed information - coming from services and the community - existing at that level. Besides, community based information, which is not usually recorded or reported by routine information systems, can be incorporated periodically. A network of sentinel sites, focused on local or community-based information, could provide the basis for national monitoring or observation of national programs on health and equity.

5. The Implementation Process

This chapter outlines the main steps of the implementation process; which is expected to be gradual, with increasing number of modules to be put in place. The plan for implementation is a key tool for guidance in the implementation process, whilst an assessment of readiness could help to ensure that the plan will be feasible and successful, following a pace of development that the country can reasonably afford.

5.1. Outlining and Proposing a Plan for Implementation

Following international experiences on successful observatories and national conditions for readiness, the first step is to outline an initial draft plan to be presented to national health authorities, with the corresponding advocacy, as well as to potential partners.

The background of the plan should contain the needs and rationale (value added by the Observatory), the conceptual and methodological framework proposed, as well as the opportunities and challenges for developing the Observatory.

The proposed organization could include the steering committee, the coordinating and management center and the national participating network. The proposed organization will depend on the level of development and national capacities existing at the national health authority to start and effectively manage the functions of a national integrated observatory.

The proposed set of information sources of the Observatory could be based on the national health information network (that should be sufficiently defined and active within the national health information system), plus the nationwide networks established for monitoring and surveillance systems as well as specific observatories that could have been implemented at national level.

The necessary resources to be considered in the plan include sources of funding, financial and physical resources, staff and information and communication technology. In general, most the contributing inputs are already available (within diverse information, surveillance and monitoring systems), so what is required to estimate is the additional required resource for the implementation

as well as for further management of the Observatory.

The initial outlined plan could propose one or more options for progressive implementation of modules and functions, under an expected time table, until reaching a consolidated level for the full organization, structure, and performance.

5.2. Assessment of the Readiness and Alternatives for Implementation

The assessment of the readiness for Observatory implementation includes the assessment of availability and level of harmonization of the necessary information, existence and performance of surveillance and monitoring systems, experience on developing national health and health systems profiles and the possibility to establish effective partnerships and information network to perform in a proper, expedite and coordinated way.

The reference for assessment will be the proposed Observatory model and outlined design

Main aspects to be assessed are:

- Information needs of the main potential users, especially national authorities, with emphasis on those responsible for policy- and decision-making, as well as their analyst advisors.
- Managerial culture for information search, use, analysis and application on decision-making;
- Level of political and institutional interest, will and effective support to the proposed Observatory;
- Political and financial feasibility of planning and implementing the Observatory (either total or gradually) at a short, middle and long term;

- The quality, timeliness, completeness, validity of each type of relevant data and indicator;
- Existence and effectiveness of performance for each specific surveillance and monitoring system;
- National capacity in disciplines such as public health, epidemiology, health policy, planning and decision-making;
- Existence of historically stored information and databases containing core health-related data and other key health-related information;
- Existence or potential establishment of a nationwide and multi-entity health information network;
- Existence or affordability to develop information and communication technology as the platform for nationwide health information network responsive to national needs and capacity;
- Level of information sharing among different sources of information, and role of the national health authority to collect and integrate it;
- Level of harmonization of the necessary key information;

The findings and recommendations of the assessment will provide the framework to refine the plan and the Observatory design. Feasibility of developing the components of the Observatory at short, medium and long term will be discussed with the findings of the assessment and users' as well as the opinion of experts.

5.3. Establishment of the Steering Committee

The Steering Committee should include representatives of the main stakeholders, experts, policy-makers and those who will be co-responsible for the Observatory. Thus, key participants of the Observatory steering committee could comprise representatives from:

- The national health authority (ministry of health or equivalent)

- Authorities related to health policy, financing and decision-making areas
- Epidemiological and/or public health surveillance groups
- Health systems performance assessment and monitoring systems
- Teams working with health statistics and information systems
- National offices of statistics or census
- Libraries, documentation and knowledge management centers
- Universities, NGOs and groups working with research
- Entities dealing with advocacy and social communication
- Entities dealing with information and communication technology

5.4. Refining the Plan of Implementation and the Observatory Design

Taking into account the initial plan, the readiness assessment and the indications coming from the Steering Committee, the definite plan for implementation should be clearly defined in at least the following issues:

- Sources of funding
- Financial and physical resources
- Staff
- Technology
- Training
- Organization
- Administrative arrangements for functioning
- Observatory network and stakeholders
- Timetable
- Criteria, standards, norms and guides
- Monitoring and evaluation processes

The redefined Observatory design should be focused on the organization, structure and performance details, as the proposed concrete

Observatory modules could be progressively developed.

reporting of vital statistics). To ensure effective partnerships, it will be necessary to develop partnership maps, leverage financing (use funding obtained from diverse specific programs) and use of inter-agency approach to sourcing financing and harmonization of information.

5.5. Establishing the Organization and Structure

a) Establishment of the Partnerships Network

Development of the Observatory-related multi-entity network will need to establish formal mechanisms for sharing information among offices and institutions (such as agreements between the ministry of health, national institute of statistics and civil registry office, for production and

b) Establishment of the Management and Coordinating Center

A core management team - to coordinate and manage the Observatory at a central level - could comprise at least the type of staff suggested in table 6.1.

Table 6.1 Basic staff and roles of the Observatory coordinating and management center.

Staff	Role
Observatory manager	To lead and coordinate the implementation project To lead the management team and coordinate with institutions and offices To coordinate the Observatory assessment To coordinate interaction with all national Observatory participants as well as sources and users of information To coordinate the monitoring and evaluation of the Observatory implementation and Observatory operation
Information technology specialist	To coordinate the information reporting and dissemination To advise and support the assessment of IS/IT in countries meaning readiness for the Observatory To assess options for IT To contribute to the procurement and installation of IT To support and control the IT functioning
Statistician	To advise and support the harmonization of data and information The contribute to the refined design of the statistical component To control and ensure the proper collection, flow, completeness and quality of data To support statistical processes carried out To provide training, if needed To contribute to routine information reports
Administrative staff	To provide administrative support to the manager and technical staff To ensure communication among all Observatory participants To support administrative control of documentation and information reported from sources and specific systems

The composition of the definite management team will depend on:

- the amount and type of the activities performed as well as the areas covered;
- the way of producing, sharing or outsourcing services;
- the availability of external trained professionals that could provide indirect or part time support to the Observatory team

It could be needed some short term hired staff. For instance, trainers could support better production, access and integration of information. Many countries with small population sizes do not have enough trained staff or budget to maintain Observatory teams, and so the establishment of a multi-country common Observatory team could be an option among countries under similar condition.

c) *Deployment of the Information and Communication Technology*

Deployment of information and communication technology (ICT) is critical to ensure the production of key health information and establishment of the proper communication network. At national level, additional financial resources could be needed for the acquisition, maintenance and operation of ICT. Some key issues to consider are:

- Procurement of hardware: computers, printers, screens
- Software acquisition and licenses
- Telephone and telephone services
- Maintenance services
- Fax
- Internet services
- Video conference services
- Furniture according to needs
- Supplies

Necessary training will be needed to install, use and maintain that technology as well as resources and services for communication at national and regional levels.

Specific costs involved in information technology will be decided after the stage of exploring and

analyzing the most appropriate, affordable and cost benefit options for ICT.

d) *Training for information management and Observatory functions*

According to needs, training - as necessary – will aim to properly perform Observatory functions (secondary collection and processing of information, analysis, monitoring and surveillance)

Areas for training could include:

- Searching for key technical literature and sources of information;
- Use of internet and related electronic means;
- User friendly processing, reporting and analytical software;
- Statistical, epidemiological and managerial analysis;
- Identifying information needs;
- Evidence-based decision-making;
- The role of national and specific health information systems;
- The role and specific processes of health systems and processes;
- The role of analysis and planning for decision-making;
- Monitoring, surveillance and evaluation Systems;
- Developing and using health system profiles.

Training could also include the high level planners and managers of the health sector, as key and primary beneficiaries of the Observatory. Training strategies and activities could include:

- Training for managers on analysis of relevant information, assumed to approach evidence to support effective decision-making;
- Strengthening the use of computing equipment and software by managers, for the analysis and evaluation of information;
- Introduction or development of statistical and epidemiological methods, to be used in analysis on inequities in health and access to health care,

and their determinants. This includes graphic, analytical and synthetic presentation.

- Training for managers in understanding health systems and services, and the role of the Observatory for decision-making and action;
- Promotion of the use of geographic information systems (GIS), as well as methods for fast analyses for evaluation of epidemiological situations in general, such as the use of surveys in order to evaluate health needs, among others;

5.6. Setting up the Observatory Functions and Modules

The chain of productive processes of the Observatory function, as described in the operational model, will probably be already operating in those modules that are initially selected, such as Epidemiological surveillance. The improvement of the productive processes in initial modules could help that kind of module could become a model for further development of some other modules.

Priority for deciding to start with the development of some specific modules and then to move to others will depend on individual readiness and national decision taking into account national interest and possibilities.

Possible modules to be developed, according to existing specific information systems as well as monitoring and surveillance systems:

a) Surveillance of key health conditions of the population

- Health determinants
- Equity in Health
- Gender Equity
- Morbidity (surveys, sentinel sites and services-based data)
- Disability (surveys and services-based data)
- Avoidable Mortality (maternal, infant and other avoidable mortality)
- Food and nutrition

b) Epidemiological surveillance systems

- Communicable diseases (including surveillance) population and services-based
- Chronic non-communicable diseases, mental health and injuries (including surveillance)
- Food and nutrition (including nutritional surveillance)
- Maternal and Child health (nutrition, morbidity, mortality, risk factors)

c) Monitoring health system and services

- Health financing
- Human resources
- Physical infrastructure
- Specific medical technology (medical equipment, laboratory, imagenology, pathology)
- Pharmaceutical drugs;
- Efficiency of health services (primary health care, hospital, referral system)
- Performance of national health programs (reproductive health, child health, adolescent health, ageing health)
- Hospital infections
- Quality of care
- Health services performance

d) Environment and occupational surveillance systems

- Vector control (malaria, dengue, others)
- Water quality
- Food safety
- Waste management
- Occupational health
- Traffic accidents

5.7. Consolidation of the Organization, Structure and Performance

As it has been proposed, it is expected that at the beginning there could be the initial implementation of some modules (for instance core vital and health

statistics), followed by further implementation and consolidation that could be pursued so as to provide a comprehensive (but synthetic) overview in support of main users. Feedback coming from main users is critical for ensuring a solid implementation. The active participation of an Observatory steering committee is crucial in facilitating the development of an effective Observatory.

In parallel, the national capacity to perform the Observatory functions could be gradually developed according to the resulting implementation and gained experience. Starting from some pioneer modules managed by national groups that are capable of performing specific observatory functions (such as epidemiologists working in surveillance systems), other modules can be developed, under management of teams with increasing multidisciplinary training and experience to cover wider and more complex topics.

According to national availability of information and capacity for performing Observatory functions, as well as priorities for monitoring and evaluation, the Observatory could have a progressive implementation starting with those systems and areas with readiness to start, that are a priority for the national authorities.

The consolidation of the Observatory network includes the harmonization and nationwide integration of health information and surveillance systems.

Information got from primary sources need to have quality and should be pertinent, complete and timely. The improvement of national health information (although it is not under the Observatory's responsibility) implies an essential platform for proper development and consolidation of the Observatory. This is facilitated by strengthening and harmonizing the production and sharing of information in information-based

domains such as health statistics and information, monitoring and evaluation systems.

Within a very wide and massive context for potential information to be collected, it is important that the responsible staff of the Observatory should be focused on the key factors of interest and subject to observation. Thus, the harmonization could be focused on just a few key data and indicators (among all sources), or the Observatory could start covering only those specific issues with good quality of information, such as mortality and communicable diseases.

Accessibility of information is facilitated by the mechanisms for information dissemination and sharing, including the capacity that information systems have for proper dissemination, the physical and virtual distribution of information to the public, and the capacity of decision-makers to search and access appropriate information for decision-making purposes.

Strategies and mechanisms supported by information and knowledge management and sharing disciplines, methods and tools (IKMS) facilitate the existence of information in the internet, the interaction between producers and users of information, and expedite communication of information. Beyond the necessary technological platform, the Observatory participants and main user entities require a new culture for managing information, knowledge and evidence (involving all key managers and staff of institutions adopting the IKMS approach), as well as learning how to get an efficient and effective use of information technology.

Taking as a baseline the efforts and agreements held when implementing the Observatory, it is also important to promote and keep with dialogue between policy- and decision-makers within the health sector and also with other sectors, mainly those responsible for the planning, management and performance of health systems and public health actions.

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Operational Glossary

Assessment	Evaluation (including description, measurement, analysis, conclusions and recommendations) of a defined situation or the goal, structure or performance of a system, plan, project or action
Effectiveness	Capacity to meet the goals or objectives of a system or program, achieving the planned or expected impact (either optimal or planned) The degree to which health systems, projects and actions meet successfully goals
Efficiency	Acquisition of results with the greatest performance (highest output for defined costs and resources), compared with other alternatives to achieve the same result, and in accordance with what is initially planned.
Epidemiological surveillance:	Systematic process of gathering ongoing core data and information on health status and risk factors, as well as epidemiological programs, then analyzing, interpreting and timely reporting information to those responsible for epidemiological-related policy and action. Process of observation of relevant demographic characteristics in public health, subject to control, with the objective of reporting in a timely fashion, in order to guide the consequent action of the services and health programs
Essential Public Health Functions	The indispensable set of actions, under the primary responsibility of the state, that are fundamental for achieving the goal of public health which is to improve, promote, protect, and restore the health of the population through collective action.
Evaluation (Assessment)	Process of granting value to something; comparing it to a reference (expected situation) Process that attempts to determine (in such a systematic and objective way that is possible) the importance, effectiveness, efficiency and impact of activities in light of given objectives. Study of certain aspects of structure, process, or outcomes of a program or service, destined to contribute an operational knowledge in order to support those who plan or take decisions
Evidence	Data, indicators or other piece of information to be assumed as a signal or proof of truth (approaching reality) of a defined situation
Forecasting	Predicting or working out what is likely to happen in the future, in matters related to public health and the health sector, in a defined country, geographical area or target population. The result of developing the most likely future scenario (indicating the time horizon), described coherently, with all the necessary influential

factors (assumptions for opportunities and threats) that could change the forecast, reported in a manner that can be understood by policy- and decision-makers and that motivates strategic thinking as well as effective and opportune decision-taking.

Health Observatory

Physical or virtual center used for scientific observation of a situation under interest A virtual-based center used for scientific observation of public health and the health sector to support health-related policy and action through overview, warning and forecasting.

Health services

Institution or network of institutions whose essential objective is to provide personal health services, either of curative or preventive orientation, and collective services that bear a relation to the health of the people.

Intervention or services provide aimed at helping to improve health, to get the diagnostic, treatment or rehabilitation of sick people (and not necessarily medical or clinical care). It also includes collective action such as those interventions on the environment (adapted from Euro WHO, 1997).

Health System

Institution - or group of institutions - that are determined by legal, financial, or contractual frameworks with the functions to provide health services to the population, as well as to ensure the resource and operation of the services and the access of the population for its use.

The people, institutions and resources, arranged together in accordance with established policies, to improve the health of the population they serve, while responding to people's legitimate expectations and protecting them against the cost of ill-health through a variety of activities whose primary intent is to improve health (WHO, 2000).

Impact

Effects of a specific program or intervention on a target population or area, in health conditions, of their determinants, attitudes or behaviors before-and-after of the program.

Indicator

Objective way (quantitative, qualitative, textual or graphic expression), that measures or indicates in a synthetic manner (directly or indirectly) a situation of event of interest.

A variable aimed at measuring a given situation or changes (directly or indirectly), and that should orient, as much as possible, to action.

Information System

An organized set of resources, technology, and processes around the objective of producing information; It can be organized formally or functionally, and is part of the institution that provides informative inputs or constitute a specific component of the information network

An ordered and integrated set of data, and their relations, that make it possible to contribute information for decision-making

A solution based on use of the computation and technology, in order to respond to the information needs.

	<p>The same technology of computation (hardware, software) and connectivity that is used in health institutions</p> <p>A specific software program (as the executive systems of management)</p> <p>A company or entity organized at formal or informal level (including resources and interrelated processes) around the objective to produce information.</p>
Management	<p>The process of administration of an institution based on a set of rules, procedures and operational methods as planning, programming, organization, motivation, control, supervision, and evaluation, with the objective that the organization carries out the fulfillment of the objectives, functions, and institutional goals.</p>
Management Information System	<p>An executive information system is a system on the basis of computer programs that makes it possible for the executives (managers) to dispose of information for fast information, decision-making analysis, and support.</p>
Monitoring	<p>Systematic and continuous collecting and analysis of information about the progress of a piece of work over time... is the key tool to good planning (Gosling & Edwards, 1995).</p>
Monitoring health systems	<p>Systematic process of gathering ongoing core information on health systems' structure and performance, as well as their target populations, then analyzing, interpreting and timely reporting information to those responsible for health systems-related policy and action.</p> <p>Systematic knowledge of aspects of a situation, program, project, or strategy that tries to establish the extension in which the delivery of goods and services are occurring in accordance with what is planned, so that appropriate measures to correct detected deficiencies can be adopted</p>
National health information system	<p>The nationally organized set of sources, resources and processes (run in various programs, offices and institutions), organized and coordinated by the health authority, aimed at producing health-related information, to support health-related policy, decision-making and action.</p>
Observation	<p>Systematic close watch of people, events, situations or the environment, that are considered relevant and subject to recording and reporting.</p>
Observatory	<p>Physical or virtual center used for systematic and scientific observation and recording of pre-defined events or situations which are under interest.</p>
Observatory functions	<p>Information-based processes that support health policy and action through overview, warning and forecasting about an observed situation in a defined geographical area or target population. Those functions are performed through observatory processes involving the collection and integration of key secondary information (from other sources), followed</p>

	by analysis, interpretation and reporting according to request from national authorities as well as policy- and decision-makers.
Overview	A general or comprehensive outline of something; a general or comprehensive outline (brief summary) of a health-related situation of a defined geographical area, target population at a defined point in time
Oversight	To observe something covertly or secretly while it is happening. To watch over, manage, and direct somebody or a task done by somebody.
Productive process:	An organized set of activities and systematized and interrelated procedures aimed at providing intermediate or final products that make it possible to provide specific health services to the user population.
Public health	The science and art of promoting health, preventing disease, and prolonging life through the organized efforts of society, through health promotion, disease prevention and other forms of health intervention (Allin et al, 2004).
Public health surveillance	Systematic process of gathering ongoing core information on population and health-related characteristics that are relevant to public health, then analyzing, interpreting and timely reporting that information to those responsible for public health-related policy and action
Relevance	Importance of a situation, event or program, as a condition of determinant factor in matters related to public health and the health sector.
Scenario	Description of plausible or possible trend outcomes expected in the future, starting from current situation, taking into account factors and variables that define that future, and explained in a logical and consistent manner.
Surveillance	Systematic on-going close observation of a situation or events of interest in a person, group or environment setting, within a geographical area and period, to provide alarm and necessary action when necessary.
Warning	Notice or information report in terms of alert or caution on a health-related situation of a defined geographical area, target population at a defined point in time

Annex 1. Guidelines to Developing the Country Chapters for the 2007 Edition of Health in the Americas

Draft document HDM/HA,
PAHO, 2006

General structure:

- Executive summary
- Chapter 1. Determinants of health
- Chapter 2. Health problems and the situation of specific groups in the population
- Chapter 3. Public policies, national health system and social protection.

Chapter's description:

- **Executive summary: Country situation in the global scenario.** A synthesis of the most relevant aspects of the health situation of the country in the 5-year period analyzed and, in particular, on the current situation. It will highlight the principal health problems that continue to be faced, most important achievements in health, and new challenges. Maximum size will be a page or a text box.
1. **General context and determinants of health.** Political and social context, demographics and mortality; macroeconomic trends and their implications to health; evolution of poverty; conditions of life and work; political dimensions of health.
 2. **Health problems and among different population groups.** Using the life cycle discusses morbidity and mortality profiles prevalent in the country; sustainable development and environmental health.
 3. **Public policies and National Health and Social Protection System.** Analyze the evolution and general context of policies, national health and social protection system, determinants of access to health services and social protection systems; Primary Health Care. Health practices, lifestyles, individual skills and community support.

Executive summary

CH. I General context and determinants of health

- a) **Macroeconomic, political and social context.** Discuss recent trends in political, economic and social processes, national development plans and their impact on the conditions and quality of life, particularly on equity and population health on the last five years, with emphasis on the MDGs and their interaction with health; national actions in coordinating sub-regional initiatives or others.
- b) **Determinants of Health:** State, trends and policy: education, nutrition, environmental determining factors such as water and sanitary conditions, security, violence, internal displaced population in the country and/or refugees, food safety, vulnerability and persons at risk, risk of epidemics, and other natural or man made threats.
- c) **Mortality trends and other demographic variables.** Highlight changes over the last years in: population growth and size (by age and sex), births and general mortality, by sex, male and female, life expectancy at birth, fertility, internal and external migration, urbanizations, particular situations that may have affected these behaviors such as natural disasters; analysis should address inequalities in health at national and sub-national levels by age, sex and other socio-economic categories.
- d) **Present mortality by broad cause groups** showing differences and commonalities among regions in the country. And different age groups and sex. If possible, relate mortality trends with variables such as: occupation, income, ethnicity, and other variables. Also, analyze mortality by broad causes: Communicable disease, malignant neoplasms, diseases of the circulatory system, certain affections originating in the perinatal period,

external causes and all other causes. (PAHO 6/67 list).

- e) **Emergency and disaster risk or other characteristic problem:** (or of national relevance): describe the main natural and man made threats, prioritizing according to magnitude, impact, frequency and geographical location.

CH 2. Health problems and among different population groups

Two components:

- 1- Health problems among different population groups.
- 2- Related to disease or specific injury or harm.

1. Health problems among different population groups

Consider for each of the contents to be developed, the action framework in public health for the region of the Americas in the XXI century, trying to highlight aspects related to resolving the unfinished agenda, protect achievements and facing new challenges.

For the population groups listed below, data must be disaggregated by sex and analyzed from a gender perspective, discuss differences that exist and the distribution of health problems in each of the groups in relation to living conditions, geographical area and other important variables that characterize the situation.

For each group: describe the situation, changes and trends of their particular health problems or most frequent ones, using mortality, morbidity, and disability data; and conditioning factors and others available.

Some topics will be dealt with, as much as possible, in relation to all the groups such as: nutritional problems, alcoholism, tobacco, drugs use, mental disorders; accidents and violence in all its manifestations (public, domestic, sexual, etc.); occupational health and environmental risk and access to health services.

- a) Children's health; infant and perinatal mortality (late fetal deaths, precocious and late

neonatal mortality, post neonatal); mortality of 1- 4 years old, levels and causes; child growth and development.

- b) Health of the school population (5-9 years)
c) Health and adolescence (10-14 and 15-19 years). Analyze each group separately.
d) Health of the adult population (20-59 years) emphasize reproductive health, levels and fertility structure, prevalence of use of contraceptives by method, prenatal care, partum and postpartum care, maternal mortality; caesarean births coverage and PAP smears.
e) Health of the older adult (60+ years) structure and dynamics of the population, family or institutional residence, work situation and social security, abuse and ill treatment, policies and attention programs for this group.
f) Family health: family structure, single parent families, specific programs oriented to family and health.
g) Occupational health: Child labor, informal workers, and working women and sex workers.
h) Disabled
i) Ethnic groups (indigenous populations, African descendants, gypsies).
j) Health of other special groups (border populations, migrants, displaced).

2. By disease or specific injury or harm

For each item listed, describe and analyze the situation, changes and trends. Utilize information on mortality, morbidity and disability. As much as possible, try to relate risk factor and protection and health promotion factors, associated with living conditions and lifestyles, to occurrence and uneven distribution of diseases and health problems among the different population groups. Disaggregate data by sex and age.

- a) Natural disasters
b) Vector transmitted diseases: malaria, yellow fever, dengue, plague, Chagas disease, schistosomiasis and lymphatic Phylariasis
c) Vaccine preventable diseases (elimination of rubella and congenital rubella syndrome; introduction of new vaccines)
d) Infectious intestinal diseases, including helminthiasis and others.
e) Chronic communicable diseases: TB, Leprosy, Sickle cell anemia.
f) Acute respiratory infections

- g) HIV/AIDS and Sexually Transmitted Diseases
- h) Metabolic and nutritional diseases. Special areas of interest are: caloric and protein malnutrition in those below 5 years of age, micronutrient deficiencies: Vitamin A, iron and iodine; breastfeeding: exclusive and continuous; obesity and Chronic Non Communicable Diseases (CNCDS) associated to nutrition.
- i) Cardiovascular diseases
- j) Malignant tumors
- k) Mental health, alcoholism and drug addiction
- l) Zoonosis and other diseases affecting livestock (Madcow disease, Foot and Mouth disease, others)
- m) Effects of plaguicides and other environmental contaminants
- n) Oral health
- o) Diseases transmitted through blood transfusion
- p) Other diseases posing new challenges

CH 3. Public policies, national health and social protection system

Present and analyze the situation and trends from the application of the essential functions, health care and public health services. Present the response of health systems and services to the problems of health injury and harm; differentiating between men and women; forms of social response to the demands to promote, protect and recover individual and population health. Incorporate aspects related to policy formulation (general and specific) that are materialized through the organization of health services; the way in which resources are distributed and utilized and what health services are offered to different population groups. Include all information that will allow demonstrating the impact of services on population's health and particularly in relation to inequities in response to demands and health needs. Where pertinent, disaggregate policies, resources, coverage and services to the population, according to the following sectors: public, private and social security. Highlight aspects of technical cooperation among countries.

Thematic areas:

1. National health policies and plans. The right to access health and health as a human right..

2. Stages of health service decentralization and the exercise of essential public health functions. Analysis of social exclusion and its ties to exclusion in health.
3. Describe strategies and health program in the country and their relation to principles of equity, quality, efficiency, financial sustainability and social participation.
4. Institutional organization of the health system:
 - Institutional organization of the health sector
 - Main developments in health legislation
 - Degree of population segmentation by types of institution.
 - Degree of health service decentralization
 - Private participation in the health system and of other actors.
 - Modalities of insurance and their coverage.
5. Organization of legislative and regulatory actions.
6. Organization of healthcare services for the population:
 - Primary health care: Situational analysis and perspectives
 - Health promotion
 - Prevention and disease control programs
 - Health situation analysis systems, surveillance and public health laboratories.
 - Potable water and sewage services
 - Municipal solid waste management services, including hospitals
 - Prevention and control of environmental and air contamination
 - Protection and control of food
 - Food aid programs
 - Occupational health services
 - Response to natural and man made disasters
7. Organization and function of individual health care services:
 - Ambulatory, hospitalization and emergency services
 - Auxiliary diagnostic services and blood banks
 - Specialized services: rehabilitation, dental, mental health, reproductive health, gerontology, and other specialized services that are relevant to the country

8. Inter-sectoral approach; social participation and community organization for health.

- Healthy Municipalities
- Health Promotion
- School Program Promoting Health

9. Sustainable development and environmental health

- Accessibility to potable water and sewage services
- Solid waste
- Environmental and air contamination
- Persistent Organic Contaminants (POC's)
- Plaguicides
- Infant Environmental Health
- Work environment
- Food aid programs
- Diseases affecting livestock (Mad cow disease, Foot and Mouth disease, others)

10. Comment on local production, imports, marketing, commercialization and public supply, good manufacturing practices and quality control of:

- Pharmaceuticals, drugs
- Immune biological (vaccines and hyper immune serums)
- Reagents
- Equipment

11. Human resources:

- Existing Human Resources by type and sex
- Training of health personnel
- Continuous education for health personnel
- Labor market for health professionals

12. Health research and technology:

- The organization, financing of scientific activities and formation of HR for research
- Technological development process including development of regulatory policies and incorporation of health technologies; use and impact of health technologies
- Scientific and technical documentation: (publications and other technical materials), access, production and dissemination.

13. Sector expenditure and financing.

Sector expenditure

- Public and private expenditure in preventive services, according to regions and social groups
- Public and private expenditure in ambulatory and hospitals services, according to regions and social groups
- Public and private expenditure in drugs, equipment and other supplies, according to regions and social groups
- Public and private expenditure in public, private and foreign health providers

Sector financing:

- Health Ministry and other government resources from the central, provincial and local level
- State social security resources at different levels of government
- Direct and indirect private resources from individuals and their homes
- Direct and indirect private resources of institutions and corporations
- NGOs and community resources

14. Technical cooperation and external financing in health. With international organizations, bilateral, private, foundations, corporations and with countries with sub regional integration initiatives and other types of technical cooperation and financing among countries. Mention cooperation received and given by the country according to the origin of the funds, total amounts, destination of funds and areas of allocations. Detail according to:

- Amount of resources for technical cooperation ; international and bilateral financing in health
- Resources from international institutions: IDB. WB. BCIE, others
- Resources from foundations and corporations
- Resources from the EU
- NGO resources of international nature or regional with country presence.

Annex 2. Relevant Thematic Areas and Indicators for Development of Observation

This Annex outlines the content areas and indicators that could be useful and interesting to developing scenarios on health situation.

The most frequently thematic areas refer to health situation of the population, its conditions and the health sector. In turn, those areas emphasize some topics that are subject to health related observation.

- *Macro context of health situation, its determinants and the health sector*

- General context, history and geography
- Political system
- Economic context
- Social context

Population and health conditions

- Bio-demographic dimension
- Dimension geographical distribution
- Socioeconomic dimension
- Dimension of health situation
- Conditions of the environment of importance in health
- Dimension health insurance and beneficiary condition

Health System

- Global health system, described as the prevalent model
- Normative organization of the system: legal regulatory framework and norms and regulations
- Financial model according to legal and economic framework and main financial flows
- Specific health systems, within the national health system, according to property (public, private), services provided and population covered for each system
- Stakeholders or main actors of the health sector according to their role (regulation, financing, insurance, purchase, provision)
- Role and relevant functions of the State, with respect to the health sector
- Main determinants of the health system market
- Financing and health expenditure according to sources, funds and type of expenditure
- Health insurance system and main companies or agencies

- The public and private mix in the national health system
- Inter-sector action in health-related matters
- Community participation and its involvement in the health system
- Nongovernmental action in health
- International action in health-related matters
- Types and organization of health care delivery providers (public and private sectors)
- Administrative organization of health services
- Health care organization
- Health care network according to level of technological complexity
- Health services financing and financial flows, including outsourcing
- Legal and financial changes in health systems and services due to health sector reforms
- Change in health systems functions following reforms (regulation, financing, purchase, provision)
- Changes in interaction between different entities participating of health system, mainly for regulation, financing, insurance and provision of health services
- Changes of roles in access and provision of care, related to health sector reforms

Health services

- Organization
- Types, according to public/private sector
- Administrative organization
- Assistance organization
- Levels of complexity
- Financing and financial flows
- Resources
- Assistance human resources
- Equipment and assistance infrastructure
- Drugs and other assistance inputs
- Technology
- Activities
- Ambulatory activities of preventive orientation
- Ambulatory activities of curative orientation
- Hospital activities (curative orientation)
- Collective activities of promotion and prevention

Access and use of services

- Perception of needs
- Effective use of services
- Coverage of programs
- Epidemiological estimates of potential demand on services
- *Processes of development and reforms of health services.*
- Legal and financial changes
- Asunción of functions (regulation, financing, purchase, provision)
- Interaction between entities of regulation, financing, insurers and health service providers
- Changes of roles in assistance
- Implications of the sector health reforms.
- Interaction between growths and national and sector health crises.
- *Logistics of Patient Care*
- Registry
- External admission
- Admission of hospitalization, discharge and transfer
- Management of services and appointments
- Orders
- *Clinical Data Management*
- Medical records
- Nursing care
- Clinical audit
- *Operation of diagnostic technical support services and therapeutic*
- Clinical laboratory
- Medical diagnostic imaging of diagnosis and intervention
- Radiation Therapy
- Pharmacy
- Transfusion and blood bank
- Dietary service
- Other services
- *Community and environmental-oriented services*
- Health of the environment
- Immunization
- Clinical surveillance and databases

- *Administrative management*
- Financial management
- Payments, accounts to receive
- Accounts payable
- General accounting of accounts
- Accounting of costs
- General accounting
- Management of Human Resources
- Lists of salaries
- Management of human resources
- Personnel
- Benefits
- Management of materials
- Purchases
- Control of inventories
- Management of fixed assets
- Medical equipment maintenance
- Physical equipment maintenance
- Services of laundry
- Services of transportation
- Budget and executive support

The types of indicators that are relevant for observation vary according to the thematic areas covered and managerial processes supported:

a) Thematic issues:

- Indicators of population and bio-demographic characteristics
- Indicators of socio-economic circumstances
- Indicators of health situation (positive health, risk, morbidity, disability and mortality)

b) Indicators of health of systems (regulation, financing, insurance, provision of services)

- Indicators of resources
- Indicators of health care delivery services
- Indicators of access and use of services
- Indicators of health services coverage

c) Indicators of the health care productive process:

- Indicators of structure
- Indicators of process
- Outcome indicators (immediate or 'outputs' and mediate or 'outcomes')

- d) *Indicators approaching needs, demand and use of health services:*
- Health indicators (as needs for health and health care),
 - Socioeconomic indicators (as needs for health care and determinants of access),
 - Perceived indicators of need for health care,
 - Indicators of demand,
 - Indicators of access and use of services
 - Indicators of access to services (geographical, economic, social and cultural)
- b) *Indicators to support management:*
- Indicators for planning (different length of periods and levels)
 - Indicators for programming (technical, administrative, financing)
 - Indicators for decision-making and routine management
- Indicators for monitoring and surveillance (information for action)
 - Indicators for evaluation
- e) *Indicators to measure and assess overall quality of health systems and services*
- Indicators of efficiency (economic, managerial, distributive, social)
 - Indicators of effectiveness (attributable impact, at various levels)
 - Indicators of equity (access, use, impact)
 - Indicators of humanity and ethics of care, including satisfaction of personnel and users
 - Indicators of distribution of the resource and use (distributive efficiency and equity)
- Table A2.1 describes the main types of indicators used according to the health-related issue they refer to.

Table A2.1 Types of indicators according to health-related issues

Issue	Specific types of indicators
Population Characteristics	<ul style="list-style-type: none"> • Age and sex structure • Population growth • Urbanization and density • Indigenous populations • General mortality
Socio-economic Context	<ul style="list-style-type: none"> • Macro-economic level • Income and poverty • Employment • Education • Nutrition • Housing and sanitation • Physical environment • Summary socio-economic development
Health Situation	<p>a) Positive health status</p> <p>b) Health risk</p> <ul style="list-style-type: none"> • Maternal and child risks • Lifestyle related risks • Nutrition-related health risks <p>c) Morbidity</p> <ul style="list-style-type: none"> • Morbidity by communicable diseases

	<ul style="list-style-type: none">• Safety food-related morbidity• Oral health-related morbidity• Morbidity by cancer• Morbidity by chronic diseases• Injuries-related morbidity• Morbidity by congenital causes
	d) Disability <ul style="list-style-type: none">• Disability-related events
	e) Mortality <ul style="list-style-type: none">• Specific life expectancy• Child mortality• Abortion• Maternal mortality• Mortality by communicable diseases• Mortality by chronic diseases• Mortality by cancer• Mortality by external causes• Mortality by iatrogenic causes• Mortality by respiratory system causes• Mortality by digestive system causes• Mortality amenable to curative health care• Mortality by endocrine system causes• Mortality by diseases of the hematological system• Mortality by mental and neurological causes• Mortality by genitourinary system causes• Mortality by ill-defined causes
Social Protection	<ul style="list-style-type: none">• Social security• Health insurance coverage
Health System Resources	a) Financial resources
	b) Human resources
	c) Physical resources <ul style="list-style-type: none">• Infrastructure• Hospital beds• Medical technology
Health Care Delivery	<ul style="list-style-type: none">• Access to health services• National health programs• Ambulatory care• Hospital performance• Hospital use

More Detailed Data and Indicators to Support Local Health Care Management	<ul style="list-style-type: none">a) Health care resources<ul style="list-style-type: none">• Human resources• Physical resources• Financial resource and costsb) Economic and geographical accessc) Health services delivery<ul style="list-style-type: none">• Ambulatory care• Inpatient care• Clinical Support activities• General services• Administration, education and research
Patient-centered Information	<ul style="list-style-type: none">• Identification• Clinical history• Contact with services• Insurance and billing



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