

Series:
**PRODUCTIVE
MANAGEMENT
METHODOLOGY
FOR HEALTH SERVICES**

Introduction

October 2010

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**Pan American
Health
Organization**

Regional Office of the
World Health Organization

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3. QUALITY OF HEALTH CARE
4. PRIMARY HEALTH CARE – organization & administration
5. HEALTH SERVICES NEEDS AND DEMANDS
6. PUBLIC HEALTH ADMINISTRATION
7. MANAGEMENT

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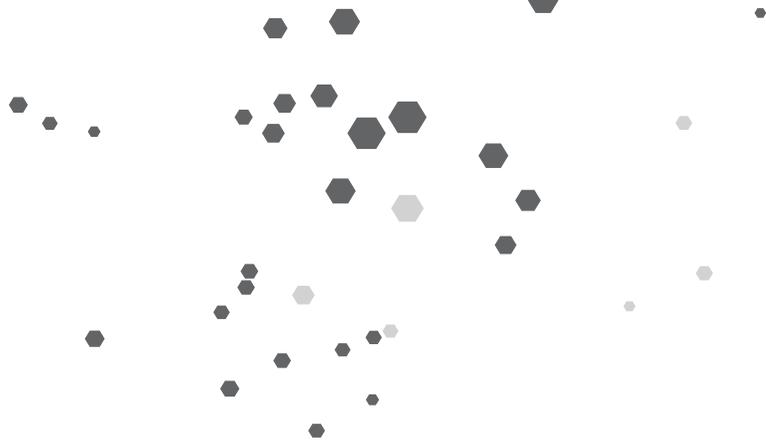
Over the last three decades, PAHO has been developing the Productive Management Methodology for Health Services and its tools, known by different names in the different stages of their evolution - PRRC, SIG, WinSIG. During this evolution process, many professionals of different disciplines have made important contributions. The following table lists the names of some of the most prominent collaborators.

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This manual is part of a series of documents resulting from collaboration between the Integrated Health Services Project of PAHO's Area of PHC-based Health Systems, the Hospital Cooperative of Antioquia (COHAN), St. Georges University-Grenada, and the Regional Team of Experts that supports the development of the PMMHS.

* NOTE: This list is not exhaustive.





CONCEPTUAL FRAMEWORK AND PAHO'S STRATEGIC MANDATES

Three decades after the Alma-Ata meeting, Primary Health Care (PHC), conceived since then as a strategy for strengthening a society's capacity to reduce inequities in health and develop health systems, is gaining renewed strength with the growing recognition that health systems based on the PHC strategy are more equitable and obtain better health outcomes.

FIGURE # 1 SISTEMAS DE SALUD BASADOS EN APS VALORES, PRINCIPIOS Y ELEMENTOS



PAHO's Member States, based on Governing Bodies agreements, are in the process of renewing Primary Health Care in the Americas characterised by the transformation and consolidation of health systems based on PHC as *"...an overarching approach to the organisation and operation of health systems that makes the right to the highest attainable level of health its main goal, while maximising equity and solidarity"* (1). (Figure # 1)

This strategy calls on the countries of the region to: i) Complete the implementation of the PHC where it has failed (i.e. the unfinished agenda); ii) Strengthen PHC to address new challenges, and iii) Incorporate PHC in the broader agenda of equity and human development.

The 2008 World Health Report states that PHC is now *"more necessary than ever"* and proposes four sets of reforms necessary for refocusing health systems towards health for all (Figure 2). The report emphasises that *"these four sets of PHC reforms are driven by shared values that enjoy large support and challenges that are common to a globalising world"* (2).

FIGURE # 2 THE PHC REFORMS NECESSARY TO REFOCUS HEALTH SYSTEMS TOWARDS HEALTH FOR ALL



1. CURRENT CHALLENGES TO HEALTH SYSTEMS AND SERVICES

a. Segmentation and Fragmentation

Within this renewed PHC framework, health systems face two major challenges that affect progress toward health systems based on PHC, namely segmentation of health systems and the resulting fragmentation of the services. *Segmentation* is defined as the coexistence of independently operating subsystems with varying financing mechanisms that cover various segments of the population usually in accordance with ability to pay (3). *Fragmentation* is defined as the “coexistence of several units or facilities with no integration within the healthcare network” (4).

The predominant health system model in the Region Americas segments populations based on employment status and ability to pay. In organisational terms, segmented models are characterized by the existence of multiple financing and insurance schemes in which one or more public subsystems (central or local government financing and social security systems represented by one or more entities) coexist with private financing/insurance entities, all competing within the health sector. These various financing mechanisms in turn, create fragmented healthcare delivery services that operate without coordination, and provide health services to the segmented populations as defined by the financing entities.



Fragmentation is a major cause of low performance levels by health systems and services and it has been identified as one of the main obstacles to the achievement of health goals, including the Millennium Development Goals. This fragmentation can have myriad causes and effects on both the population and health systems; Table 1 summarises some of the most relevant. On the other hand, the 2008 World Health Report shows that this also goes one step further in that *fragmented care* constitutes one of the common deficiencies in the delivery of health care (5).

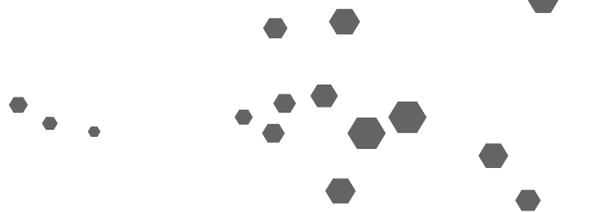
TABLE # 1

CAUSES AND EFFECTS OF FRAGMENTATION	
CAUSES:	
<ul style="list-style-type: none"> • Segmentation of financing systems • Insufficient financing that impedes the delivery of comprehensive services • Weak steering role of the national health authority • Lack of skilled human resources 	
EFFECTS:	
ON POPULATIONS	ON THE SYSTEMS AND SERVICES
<ul style="list-style-type: none"> • Lack of access to services and/or opportunities for care • Loss of continuity in health care processes • Lack of conformity of the services with the needs and the expectations of the users 	<ul style="list-style-type: none"> • Lack of coordination and communication between the different levels of the system and healthcare sites • Duplication of services and infrastructure • Un-utilised productive capacity in some cases • Over-utilisation in other cases • Healthcare provided in the least appropriate place, particularly at the hospital level.

b. Management Challenges

Management of health services that is aimed at obtaining efficiency with quality requires methodologies and tools that respond to the needs of managers in their mission to improve the health status of the populations they serve. These managers typically face the negative effects of segmented health systems and fragmentation in the health services on a daily basis.

Moreover, health services managers must constantly adapt to changes and “reforms” in their environment that are multifactor in origin and which determine that only those services with sufficiently flexible and adaptable management will be able to perform with acceptable levels of efficiency.



These changes are predominantly generated, by increases in the demand for services secondary to demographic changes, by shifts in population morbidity and mortality profiles, and by innovations in health technology. Most countries are experiencing changes in their demographic profiles as a result of many factors including longer life expectancy levels and better health status of their populations. Current morbidity profiles indicate an increase in the prevalence of chronic diseases and co-morbidities as well as their respective complications, which run parallel to the “unfinished agenda” of infectious and preventable diseases, and the threat of emerging and re-emerging diseases. This pressure on the health services is compounded by models of care and delivery systems that are inadequate for the management of chronic conditions and a lack of coordination in the continuum of care through properly organised and coordinated health services networks.

Other important elements to consider in the managerial environment are the changes generated in the supply of health services when higher levels of complexity and increased use of new technologies incur significant increases in the cost of care. In some countries, efforts to maintain levels of efficiency in the health services have resulted in new modalities of contracting and payment to providers being put in place, which often limit or pre-determine the provision of service to the population.

Additionally, the current delivery model based on curative services, is evolving into a health care model that covers a wide spectrum from health promotion (including the promotion of protective habits), to disease prevention, timely diagnosis and treatment, including palliative care, and coordination with social services that guarantee continuity of care beyond the health facility. The new challenge in health services will be the delivery of comprehensive and integrated continuous care that gives special emphasis to caring for the demands and health needs of the population.

In addition, the low levels of performance exhibited by the public health services, the difficulties experienced by populations in gaining access to them, and the high costs of private services, represent an important challenge for governments in their role of safeguarding the health status of their respective populations. This has led to modernisation and decentralisation processes in health services delivery that seek to increase efficiency and ensure the most effective use of the resources invested in health with greater accountability on the part of healthcare providers.

Managers of health facilities and services face equally critical situations, while shortcomings in their managerial capacity affect efficiency, efficacy, and effectiveness of the services provided. Foremost among these shortcomings is the poor use of management information for decision-making, the lack of critical competencies for information analysis, execution of anticipatory or corrective action, performance evaluation, and change management in institutions that are in constant evolution, moulded and driven by external realities, as well as the new exigencies and challenges of a globalised society.



This state of things requires that the health services vision be re-oriented to new models of health services organisation that respond to the problems generated by fragmentation, and to models of care centred on people, with emphasis placed on health promotion and disease prevention based on Primary Health Care Strategies and which are pro-equity. These models should necessarily hold health services networks responsible for the health care of a defined population and providing integrated management of the most appropriate care while decentralizing the provision of services from the hospitals. Moreover, the health services network should be comprised of multidisciplinary teams, have mechanisms in place for quality assurance and continuous improvement, ensure community participation and promote self-care, all within an environment of shared responsibility with other sectors.

Achieving the objectives of transforming health systems and services will demand strengthening of managerial capacity at all levels and will require of the managers new management competencies and the use of methodologies and tools that aid efficient performance.

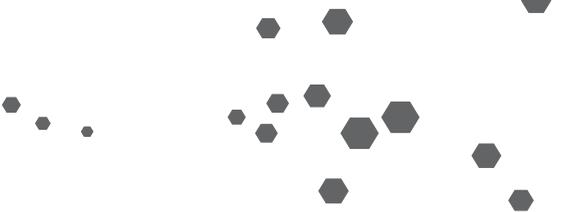
2. PAHO'S MANDATES

The improvement of the efficiency of health systems in the context of the renewal of Primary Health Care and the transformation toward PHC-based health systems should be the result of collaboration between health authorities at global, regional and national levels, as well as all health sector stakeholders in a country.

PAHO Member States agreed in 2005 to initiate a renewal process for the Primary Health Care Strategy in the Americas, which proposes the need for reviewing models of care. This is underscored by Article III of the Montevideo Declaration, which proposes that "health care models should... promote the establishment of health care networks and coordination of social services that ensures adequate continuity of care" (6).

The 2008-2017 Health Agenda for the Americas stresses the need for "strengthening the referral and counter-referral systems and improving information systems at the national and local levels in order to facilitate the delivery of comprehensive and timely services" (7), while the Iquique Consensus, agreed at the XVII Ibero-American Summit of Ministers of Health, underlined the need for developing PHC-based healthcare networks of services, of public financing and universal coverage, given its capacity to diminish the effects of segmentation and fragmentation, articulated by the appropriate social services" (8).

As a strategy to address the pervasive fragmentation of the health services in the Region of the Americas, PAHO's Directing Council approved resolution CD49.R22 on Integrated Health Services Delivery Networks based on Primary Health Care (IHSDN) (October 2009). The document expresses the concern of the Governing Bodies about "the high levels of fragmentation of the health services and over its negative impact in the general performance



of the health systems, recognising that integrated health services delivery constitute one of the main operational expressions of the PHC approach at the health services level". The resolution urges Member States to "prepare a national plan of action promoting the creation of integrated health services delivery networks with a family and community health approach as the preferred modality for health services delivery in the country" (9).

The IHSDNs proposal introduces fourteen essential attributes that comprise an integrated network. These attributes, in turn, are framed in four areas of approach, one of which is organisation and management. Building IHSDNs will require policies and strategies for the integrated management of clinical, administrative, and logistical support systems; integrated human resources management in order to guarantee sufficiency, competency and that health workers feel valued by their organisations, integrated information systems that link all members of the network, and creating and consolidating a culture of results-based management as a guarantee of accountability and transparency. This all implies promoting the acquisition of new competencies (new policies and training programs), strengthening of the managerial environment (policies, administrative systems, etc.) as well as the managers' stewardship abilities (leadership, authority, new competencies).

In this conceptual context and as a contribution to the task of building and strengthening managerial capacity in health systems and services, improving the use of information and evidence for decision-making and action, PAHO provides the *Productive Management Methodology for Health Services* (PMMHS) and its support tools as an option for health services managers. The PMMHS is presented as an alternative that provides information for analysing the relevance, efficiency and quality of healthcare provision, negotiation of management agreements (contracts) and costing and financing of health care services.



WHAT IS THE PMMHS?

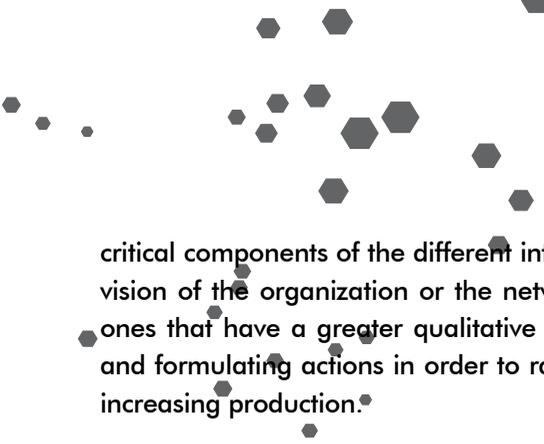
The *Productive Management Methodology for Health Services* is a management methodology developed by the Pan American Health Organization as a response to new approaches and emerging practices in the management of health services, that aims to optimise the organisation and management of health services as they transition to PHC-based health systems. It provides fundamental and essential elements of information to facilitate analysis of the pertinence, efficiency, and quality of the facility's productivity, negotiation and control of management agreements, and for the creation of a new institutional culture oriented around appropriate cost reduction to optimise efficiency and maximised productivity.

The PMMHS uses its components (production report tables, indicators, etc.) to promote intelligent and informed decision-making on the part of managers that is compatible with the new paradigms of the modernised civil service and the sectoral transformation in health. The PMMHS directly addresses many of the fundamental problems of the organisation and management of health services. Its potential lies in its ability to complement and in turn be improved by interaction with other instruments of programming, quality assurance, functional analysis and performance evaluation.

The PMMHS is based on the analysis of the production, efficiency, resources, and costs (PERC)¹ of the health services. The PERC analysis is achieved through the use of performance indicators that provide managers with a strategic vision for the management of health facilities or health services networks. The basic principle of the methodology is that each aspect of the productive process should and can be quantified for control and evaluation purposes; it also provides the basis for continuous improvement in the productive capacity of the health services. Accordingly, "... the health organization is conceived as a productive enterprise in which the services are made up of the production centres and sub-centres, characterized with regard to their outputs, the resources used in the productive processes, the resulting costs of resources and outputs of these processes; and are subject, in every phase of the productive process, to criteria for quantifiable analysis" (10).

In order to support this process, the basic tool of the methodology, PERC (formerly WinSIG), offers essential information for decision-making that allows for a wide-ranging vision of the organization and management with selective intervention strategies in critical areas so as to establish change processes aimed at strengthening the relationships between efficiency, quality, production, and coverage. Instrumentally PERC is a tool for selecting and correlating

¹ Traditionally the acronyms used were: **PPRC** (production, performance, resources and costs), but recently the "performance" component has been changed for "efficiency", which is of more general use and is more in line with productive management of health services.



critical components of the different information subsystems in order to offer a comprehensive vision of the organization or the networks of establishments, detect strategic problems (the ones that have a greater qualitative and quantitative impact on the services and on costs), and formulating actions in order to rationalize the use of the resources while improving and increasing production.

In summary, the PMMHS is an analytical process for decision-making based on evidence that does not generate new information needs, but selectively correlates the existing information in order to offer a strategic vision for the management of health services. It constitutes a managerial methodology oriented to productivity and transparent accountability since it displays the reality of the institution or network under clear concepts of efficiency and quality of care. Its basic objective is accordingly, to support the health services manager in making informed decisions that leads to optimized productivity and rational use of resources, helping to improve access to, and quality of care.

1. EVOLUTION

It all began in the 1970's as a PAHO/WHO-WHO initiative to define the basic concepts of a management methodology for health services, which in its first stage of development was known as **PRRC**, (Spanish acronym for **P**roduction, **P**erformances, **R**esources and **C**osts), and subsequently **SIG** (Spanish acronym for **M**anagement **I**nformation **S**ystem (MIS)). Since then, partial implementations have been piloted in Colombia, Honduras, Guatemala, Bolivia, and Uruguay, as the development of the methodology has continued to evolve.

Throughout this process, the basic objective has been the strengthening of managerial capability in the health services in the Region of the Americas.

■ *Initial Stage*

In 1973, a meeting was held in Colombia to propose the basic concepts and elements of a methodology for health service management. Following this, pilot projects were carried out in Bogotá and Cundinamarca.

From 1975-1978, a more extensive and systematic implementation project was developed in Honduras. During this period, the vision of an instrument for the individual health care facility gave way to the vision of an entire health services network, particularly at the analytical level, and thus national management indicators were integrated.

Between 1978 and 1981, this successful experience was extended to Guatemala, and subsequently to Bolivia (1981-1984)



■ **Automation of the MIS**

In 1984, the first version of the MIS software was developed. This preliminary version functioned on an MS-DOS platform and on computers with memory capacity no higher than 10 megabytes. Developed in three languages (Spanish, English and Dutch), this software allowed for greater dissemination of the methodology, and projects were implemented in the Caribbean, Central America and Venezuela.

■ **Integration and standardisation of concepts and instruments**

Early in the 1990s, a sub-regional Project for Strengthening and Improving Managerial Capacity in Health Services was financed by UNDP. This project allowed for a series of innovations and a more aggressive application of the SIG in Panama and other Central American countries. Notable achievements include: i) Systematisation and expansion of documents with the basic concepts of the SIG, ii) Development of manuals with complete information on the operation of the SIG and its application for managerial improvement, iii) Development of a new software version, in line with the technology of the time, which by then had evolved. Hence, versions 2.2.1 and 2.2.2 of the SIG were replaced by SIG version 3.0; and iv) Implementation in Central America.

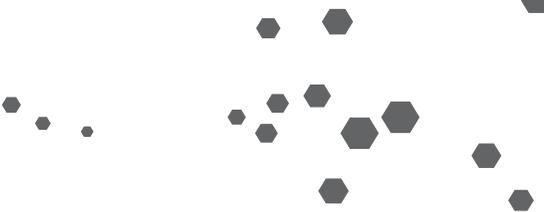
■ **SIG in MS-Windows® environment**

By the end of the 1990s, a SIG version had been designed on the MS-Windows® platform, and was then called **WinSIG**. This new computerised version was implemented in several countries of the Region with stand-out experiences in Panama, El Salvador, Honduras, Guatemala, the Dominican Republic, Bolivia, Ecuador, Brazil, Trinidad and Tobago, Belize, Mexico, Chile, Venezuela, and Colombia.

■ **From SIG to PMMHS and from WinSIG to PERC: A New Phase**

In August 2007, an International Workshop on Strengthening of Health Services Management was held in the city of Medellin, Colombia. Organised by PAHO/WHO in collaboration with the Cooperative of Hospitals of Antioquia (COHAN), it included participants from 18 countries in the Region.

Based on the experiences of several successful implementations in the Region, this workshop identified difficulties encountered by users, and areas for improvement of the methodology and the computerised tool. It also documented the needs and requirements of the COHAN associates, who, from this moment on, and within the framework of a strategic partnership with PAHO/WHO, undertook a key role in the development of the methodology, its new tools and the modernisation of the software.



The importance of COHAN'S contribution is derived from the extensive experience they have garnered from the day to day application of the PMMHS as part of their supervisory role in health services management in several institutions in Colombia. They confirmed the existence of several important lessons originally learned during the various implementation projects, the most important of which were that the implementation: i) requires country-level leadership and involvement at the managerial level and management teams, ii) needs a certain level of development and arrangement of the information in the health institutions, iii) demands knowledge and information of costs and expenditures of the institution or network, and iv) that the existing implementation methodology and the available international or national experts were insufficient to meet the demand for advisory services and implementation.

After the workshop in Medellin, PAHO/WHO and COHAN made the necessary changes for the required strengthening of the project in order to accomplish the improvements needed for implementation and technical cooperation as well as the development of new tools. Several working meetings and advanced training workshops with expert users from multiple countries were held in order to develop a Regional Support Team for the PMMHS, and COHAN assembled an in-house Project Team in order to undertake modernisation of the computational tool. On 9 April 2009, the official launch of the new software, the PMMHS-PERC took place in Washington D. C.

This re-thinking process and the lessons learned along the way clarified the urgent need to differentiate the Methodology from the Tool. The previous software-focused approach created in many instances unrealistic expectations that contributed to losing sight of the importance of strengthening the analytical and managerial capacity of those in charge of the delivery of healthcare services. Accordingly, the decision has been made that the PMMHS and the tools that lead to the strengthening of managerial capacities should be the principal products of PAHO'S technical cooperation and not the promotion of a software product.

Similarly, it became necessary to align and update the orientation of the PMMHS to the conceptual framework of the *Renewal of Primary Health Care (PHC) in the Americas*, which proposes that the transformation of Health Systems should be based on PHC and gives special importance to Integrated Health Services Delivery Networks as a model for organization and management of health services, placing its application in the Member States within the context of PAHO'S strategic plan for technical cooperation.

Another important step forward is the substantial modification of the procedures for implementing technical cooperation through the establishment of a process with: i) clear definition of the roles and responsibilities of the stakeholders who share responsibilities that determine a successful implementation, ii) establishment of training processes for managers, and iii) the establishment of permanent support mechanisms for users. In addition, new support tools for implementation have been designed for institutions and health services networks.



STRUCTURAL ELEMENTS OF PMMHS

1. OPTIMAL MANAGEMENT

Optimal organization and management are essential elements in the transformation to Health Systems based on Primary Health Care. It is thus defined as the development of the capacity for health facilities or health services networks to meet standards of quality, offer satisfactory work environments for health workers, and respond to the needs of the citizens. It includes:

- ▶ **Information Culture:** The capacity for data capture and indicator use and analysis is necessary for optimal management and evidence-informed decision-making.
- ▶ **Performance Measurement:** Appropriate monitoring is necessary for evaluating the performance of the health services and management in accordance with agreed objectives and goals.
- ▶ **Change Management:** The capacity to generate participatory environments that facilitate open communication and generation of new competences for the implementation of solutions and projects aimed at addressing the challenges faced by the health services and to boost its capacity to respond to the demands and health needs of the population. It includes planned processes that are not only limited to structural and technological aspects but fundamentally to aspects of the organizational culture (values, attitudes) and climate.

2. PROCESSES

- ▶ **Strengthening of Managerial Capacity:** implies promotion of training and continuing education for the health managers to enable the acquisition and maintenance of competencies required for contemporary management of health services.
- ▶ **Construction of Management Indicators:** lays the foundation for measurement of the productivity, score cards and dashboards for management, and control of the institutions, and the creation of day to day managerial elements such as trend graphs that document habitual behavioural patterns and immediately identify any deviations.
- ▶ **The Analysis of Information:** once the decision has been taken to adopt an information culture, the next step is to establish systems for information analysis, through the definition and utilisation of score cards and management dashboards consolidated for the institution or health services network.

- 
- ▶ **Decision Making:** the generation and analysis of information are not sufficient to guarantee successful management; a clear methodology for its interpretation and use, which permits decisions that are more correct in the managerial activities of health services, is also required.
 - ▶ **Improvement Plans:** implies the planning and execution of proactive or corrective, deliberate and focused actions to achieve the goals of the organization and of the health system. It may include radical actions or successive approximations, depending on need, but always based on the best information and available evidence and results should be evaluated. They constitute the essence of Results-based Management.

3. TOOLS

- ▶ **The PERC Tool:** Thus-called as the acronym of Production, Efficiency, Resources, and Costs, it consolidates and tabulates the information, generating tables, graphs and dashboards that, in turn, facilitate analysis of the variables by cost centres and services with preparation of productivity patterns, cost, trends, and output analyses and levels of efficiency.

It is an online tool that facilitates data processing for management, by selecting and relating critical components of the different sources of information in order to present an overall vision of the productivity, detects strategic problems, and formulates actions to enable appropriate use of resources and improve and increase the productivity of the facility or health services network.

- ▶ PAHO and its collaborating partners have developed and will continue to develop new support tools, to improve the collection and analysis of management information, as well as tools for training of managers at all levels in the health services.

4. OBJECTIVES

The implementation of the PMMHS and its tools in health care facilities contributes to the achievement of four basic institutional objectives:

- ▶ **Efficiency with Quality:** Optimal use of resources does not imply diminished quality in the delivery of health services. On the contrary, it is the basic objective required to enable improvement of health services to the population, especially in the public sector
- ▶ **Appropriate Distribution of Resources:** Efficient delivery of services is attained through appropriate use of resources while permitting the greatest utilisation of the same and optimising the investment in health to reach higher levels of coverage and clinical effectiveness.



- ▶ **Continuous Improvement:** When a certain level of organizational development is attained, sustainable management allows integration of the methodology's components in an autonomous process in which the health services benefit from continuous improvement and achieved goals can continually be improved upon with application of improvement process and plans based on current information on the situation.
- ▶ **Dissemination of Successful Practices:** Sharing of information from lessons learned from experiences in the management of health services networks or the efficient use of resources in independent health facilities, through the establishment of communities of practice, facilitates comparison of results from similar institutions that have used the methodology successfully, and thus contributing to the dissemination of good practices.

5. OBJECTIVES IN THE MANAGEMENT OF INTEGRATED HEALTH SERVICES DELIVERY NETWORKS (IHSDN)

Equally, in the implementation of the methodology in IHSDN, the new culture that is generated contributes positively to the achievement of the objectives laid out by the network. In particular, four objectives to be achieved in the management and improvement of health services networks are (11):

- ▶ **Integrated Management of Administrative, Clinical and Logistical Support Systems:** Arrangements for integrated management depend on the size of the health services network (population and geographical area covered, size of health workforce, etc.) and the level of complexity of care provided (types and proximity of health care facilities). All facilities and/or networks need detailed organisational management arrangements to facilitate the delegation of decision-making power and organisational coordination; the amount of detail will vary by size and level of complexity of the facilities or networks. Management changes include the transfer of management responsibilities from individual departments to multidisciplinary teams tasked with managing specific services for population groups throughout the care continuum, thereby facilitating the creation of basic organisational structures and clinical service lines, as well as creating the catalyst for logistical support systems, such as health transportation and integrated health information systems.
- ▶ **Integrated Information Systems:** An information system should offer a wide range of data to meet the information needs of all members of a health service network. The design of an integrated system should be part of a strategic planning process for the health services network, and be able to inform on the health status of the population served, the demand for and use of services, patient progress throughout the care continuum, clinical issues, user satisfaction and financial information, such as billing, insurance coverage, costs, etc.

- 
- ▶ **Integrated Management of Human Resources for Health:** The number and distribution of the human resources for health services, combined with the appropriate competencies, translate directly into the ability to provide appropriate care and services to meet the needs of the population. The goal is to achieve a “Sufficient, Competent, and Committed” workforce that feels valued by the organization.
 - ▶ **Results-Based Management:** Is defined as a strategy or approach by which an organisation ensures that its processes, products, and services contribute to the achievement of clearly defined expected results. It also corresponds to a strategy of broad management aimed at achieving significant changes in the way the facilities operate, with improvements in the performance and achievement of results as their central orientation, along with monitoring and evaluation of the progress towards achievement of pre-defined and realistic expected results, and integration of the lessons learned from management decisions and performance reporting.



FUNCTIONS OF THE PMMHS AND PRODUCTS OF THE PERC TOOL

The implementation of the PMMHS is accomplished in phases, delivering the tools and the necessary elements for the implementation of reliable information systems, as well as the creation of a space for change in the organisational culture of the health services, and always with the intention of improving services for the users. These are neither temporary solutions nor a programme for the preparation of managerial reports. It is a management methodology that needs to have its components completed systematically and implemented in the entire facility or network achieving step-wise objectives until development of a complete system for generation, analyses and use of the information.

The principal functions of the PMMHS are:

- Evaluation of the performance of institutions, programmes, and health services networks.
- Identification of the factors or problems most relevant to the institutional productivity profile.
- Analysis of these factors or problems in order to determine change options, within the framework of the PHC transformation processes and modernisation of health management.
- Monitoring of the processes of change and the impact assessment of the organisational fine tuning measures adopted in order to address the problems that the methodology identifies.
- Establishment of the costs of the services as results of efficiency in the production functions.

In order to fulfil these functions, the PERC tool offers managers the following products:

- Up-to-date information for management that includes managerial dashboards, management indicators and trends. The PERC offers a set of indicators for monitoring and evaluation based on results when there are processes based on management agreements. These indicators quantify coverage, production, resources, performances, and costs.

- An instrument that permits programming and budgeting based on the analysis of the demand, institutional productive capacity and clinical management protocols. In addition, offers more solid options in order to determine the production goals, and the requirements for diagnoses and treatment, and of other nature, and of human resources and essential supplies.
- A scheme of evaluation of productivity and analysis of the institutional efficiency by comparing the results with programming, care provided in accordance to protocols, actual costs with presumptive, real versus potential productive capacity.
- A system of visual consultation on the definitions, formulae and interpretation (conditioning factors, implications, etc.) of the indicators utilised by PERC in the processes of facility/network management.



PMMHS: BASIC CONCEPTS

1. WHO ARE THE HEALTH MANAGERS?

In health systems, management occurs at three levels, known as macro, meso and micro (12) (Figure # 4). *Macro-level management* refers to the steering role played by the national health authority, in determining health policies, harmonising the mechanisms, sources and entities involved in financing, regulating all aspects related to health, including the delivery of health care services, and guaranteeing equity. At this level, the development and implementation of health policies and health sector management entails an implicit and significant decision-making function (*policy management*) with an important technical component.

Meso-level management refers to all management activities involved in the production of health services (hence it is also known as *productive management*) in healthcare networks and facilities and their organizational subdivisions. It concerns the productive processes in health services that lead to results in improvement of the health status of the population. In many instances, managers at this level are also responsible for implementing and enforcing health policies, regulations, and Public Health standards, which implies a certain degree of political management.

Micro-level management or Clinical Management refers to the direct delivery of care to individuals by clinical personnel. Under the leadership of the medical professionals and the active participation of multidisciplinary teams, it defines the decision-making process in the direct provision of care to the health needs of the people, and which yields clinical results.

Accordingly, we use the term *Health Manager* to refer to all persons who manage health care settings be it a locality (country, region/district, village) or a facility (hospital, ambulatory care centre, programme, etc.). This includes the person in charge of the National Health Authority (e.g. Minister of Health) and all other persons in the health systems who manages resources and in so doing are responsible for decision-making that can affect health outcomes.

The more specific term of *Health Services Manager* designates those responsible for the delivery of healthcare services (meso and micro level) in networks and health facilities.

FIGURE # 4 MANAGEMENT IN HEALTH SYSTEMS



Adapted from Vicente Ortun Rubio

2. MANAGEMENT FUNCTION

We define *Management* as coordinated actions aimed at the achievement of institutional objectives (effectiveness) with the best possible use of resources (efficiency). It is the process of planning, organizing, executing and controlling all available resources in an organization for the achievement of goals and objectives.

The principal objective of the manager is to obtain results. The task begins with the identification of needs, the establishment of goals, and the selection of appropriate courses of action in order to minimize uncertainties, the execution of proactive or corrective actions, the evaluation of processes, and motivating people toward the achievement of goals (13). In each of these stages of the management process, the manager must *make decisions, lead and take action*

Therefore, an excellent manager is, above all other functions, a leader and decision-maker, and, in the particular case of the PMMHS, this begins with institutional analysis and application of a productive approach based on the premise that all inputs, processes and outcomes are susceptible to quantitative and qualitative control.

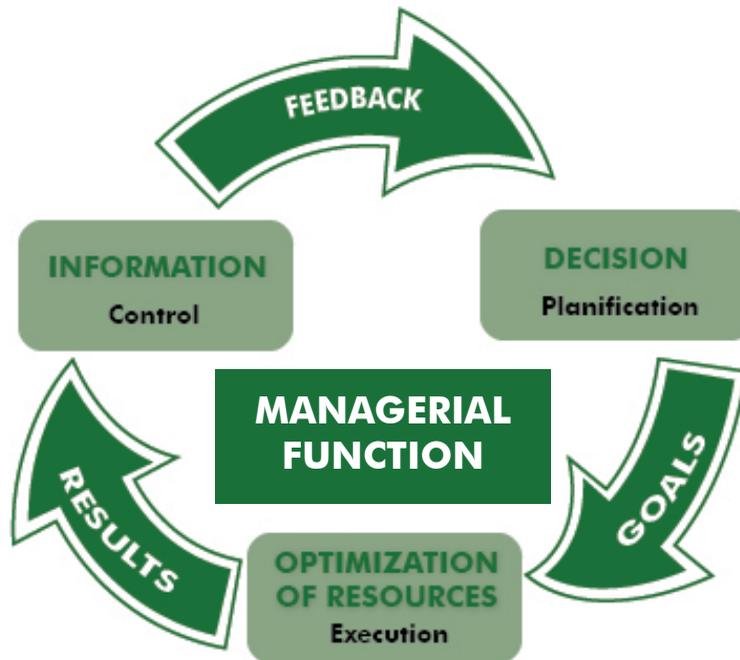
a. Productive Approach

The productive approach considers managerial function as the relationship between planning, execution, and control for adequate decision-making based on evidence from



the information, which allows optimization of health resources (Figure 5). This permits the identification of production goals, verification of results and feedback of information for efficient management.

FIGURE # 5 PRODUCTIVE APPROCH



b. Institutional Analysis

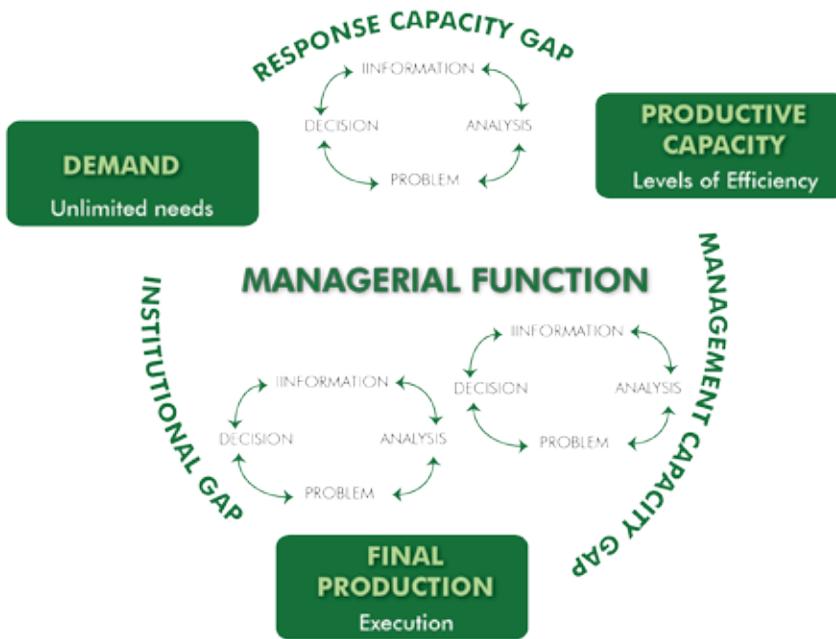
PMMHS generates elements necessary for institutional analysis in planning health interventions to reduce existing gaps between Demand, Productive Capacity and Final Production (Figure 6). These elements determine in turn: i) the response capacity to the needs of the population; ii) the levels of efficiency of the organization in the use of the productive capacity; and iii) the execution of the organizational objectives in order to achieve the health goals of the population.

The relationship between the three elements of the process can generate three possible types of gaps:

1. A *Response Capacity Gap* occurs between demand and productive capacity when, for example, the installed capacity of the health facility (hospital, health centre, laboratory, etc.) does not support the level of demand for health services;

2. A *Gap in Managerial capacity* occurs when final production is not consistent with the capacity to produce services. A classic example is found in cases where final production does not meet the demand because of managerial factors (execution, levels of efficiency, resource management).
3. *Institutional Gaps*, occurs between final production and demand, for instance, when the final production of the health facility does not meet the demand (unmet demand), despite adequate productive capacity.

FIGURE # 6 PROCESS OF INSTITUTIONAL ANALYSIS



The identification, analysis, and reduction of these gaps are crucial aspects of the managerial functions where the balance between Production, Efficiency, Resources, and Costs, become the key for the success of a health system and an efficient health service facility. It is only through the generation of adequate information that problems can be analyzed adequately for appropriate decision-making. The methodology permits determination of goals, monitoring and verification of results, and feedback.



KEY CONCEPTS IN PMMHS

1. FUNDAMENTAL ELEMENTS OF THE PMMHS

The methodology has four fundamental elements aimed at achieving institutional objectives and health goals: **PRODUCTION**, the operational expression of the fulfilment of the service; **EFFICIENCY**, the factor relating inputs and products; **RESOURCES**, the necessary inputs to generate a product; and **COSTS**, the financial expression of the process.

PMMHS is a methodology for the critical recognition of the institutional, network or national reality and for strategic decision making in managing health delivery services. A key principle of the concept is that the inputs, processes and outcomes of health facilities are susceptible to quantitative control.

One of the basic objectives of the methodology is to improve the productive capacity of health services to achieve greater coverage, increase effectiveness and achieve equity in the allocation of resources and provision of health services. It is therefore necessary to conceive the health service institutions as productive enterprises made up of production cost centres, and support services cost centres, which generate quantifiable processes.

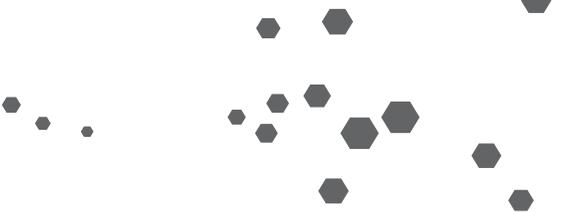
2. PRODUCT

In general terms, product is the central supply produced by the organization, whether profitable or not, to satisfy the needs and desires of its market (in this case the population) and achieve organizational objectives.

In a service sale system, the product is the set of attributes that the user considers the service has to meet his/her needs. It has two fundamental dimensions. The first refers to its characteristics as determined by the production process and defined quality control standards. The second dimension is associated with the value judgments that the consumer conveys upon the service (14).

3. PRODUCTION

Production is the operative expression of the fulfilment of the purpose of the service. It is constituted by quantifiable units of production produced according to the institutional complexity, characteristic of the services and coverage area.



It also implies a form of management that optimizes the use of factors of production to obtain greater benefits for the population. The concept shares a traditional economic vision where value-added activities are generated and not only the clinical and administrative processes in providing care to the user of the service.

4. EFFICIENCY

Efficiency is an economic criterion that reveals the administrative capacity to produce the maximum of the results with the minimum of resources, energy, and time. Effectiveness is an institutional criterion that reveals the administrative ability to meet the targets or proposed results. Efficacy is a criterion that reflects the administrative capacity to meet the demands raised by the community.

Efficiency and effectiveness are two qualitative adjectives that are both applicable to logistical and other processes, usually aimed at optimization. Effectiveness is the quantification of the achievement of goals, whether or not it is achieved efficiently. In some cases, effectiveness is seen as the satisfactory achievement of a goal selected in the planning process, that is, the hypothesis that produced the suitable solution to the problem or existing need.

5. RESOURCES

Resources refer to absolute physical, human and material resources involved in the production of goods or services; they include combinations and relative weights related to their provision. All resources should generate a product or service.

In economics, resources are those factors that when combined, are capable of generating value in the production of goods and services.

6. COSTS

Cost is the monetary expression of resources and productive processes and their relationship to institutional or sectoral financing.

The term has multiple meanings and to date there is not a single definition that encompasses all its aspects. In economic terms, it is linked to the theory of value - "Value Cost", and the theory of prices - "Price Cost." Cost accounting consists of a series of procedures to determine the cost of a product and the different activities required for its production and sale, such as planning and evaluating the execution of the work.



- ▶ **Variable or Direct Costs:** are those costs that tend to fluctuate in proportion to the total volume of production, sale of products or delivery of a service and are incurred as a result of the activity of the institution. Their magnitude fluctuates directly or almost directly proportional to changes in the volume of production or sale, for example direct raw material or direct labour.
- ▶ **Fixed or Periodic Costs:** are costs that remain constant or almost constant, regardless of fluctuations in the volumes in production and/or sale. They are constant within a given margin of volume of production or sale, for example depreciations (straight line method), insurance premiums on properties, site rental, service fees, etc.
- ▶ **Semi-variable costs:** are those costs that have both fixed and variable elements, experiencing sharp variations when there are changes in the volume of production or sale. Examples of these are indirect materials, supervision, water, electric power, etc.

Characteristics of variable or direct costs: Variable cost does not exist if there is no production or service delivery. The quantity of variable cost tends to be proportional to the quantity of production. Variable costs are not time-related. The simple course of time does not mean that variable cost is incurred.

Characteristics of fixed costs: Fixed costs tend to remain the same within certain margins of capacity, without importance to the volume of production or service delivery. They are time-related. Total fixed cost basically does not change without a significant and permanent change in the institutional capacity, either in the level of production or service provision. These costs are necessary for maintaining the structure of the institution.

METHODOLOGICAL CHARACTERISTICS OF THE PMMHS

One of the basic principles of the methodology is that it conceives the health institution as a productive enterprise. The services are made up of production centres that generate productive processes with criteria for quantifiable and measurable analyses.

The services of the institution are divided in two major groups:

- ▶ **Final or Substantive Services:** are those related to the achievement of organizational objectives. The products of these services always involve interaction with the patient. They include emergency, hospitalization, surgery, outpatient visit, and others.

- ▶ **Support or Complementary Services:** are those that without a direct relation to the purpose of the organization are intermediate steps for the comprehensive care of the user. They are facilitators of the final services, and are classified into two groups.
 - **Technical or Operational Support Services** comprised of diagnostic and treatment support services such as laboratory, diagnostic imaging, and nutrition.

 - **Administrative Support Services** comprised of management, administration, surveillance, maintenance services, among others.

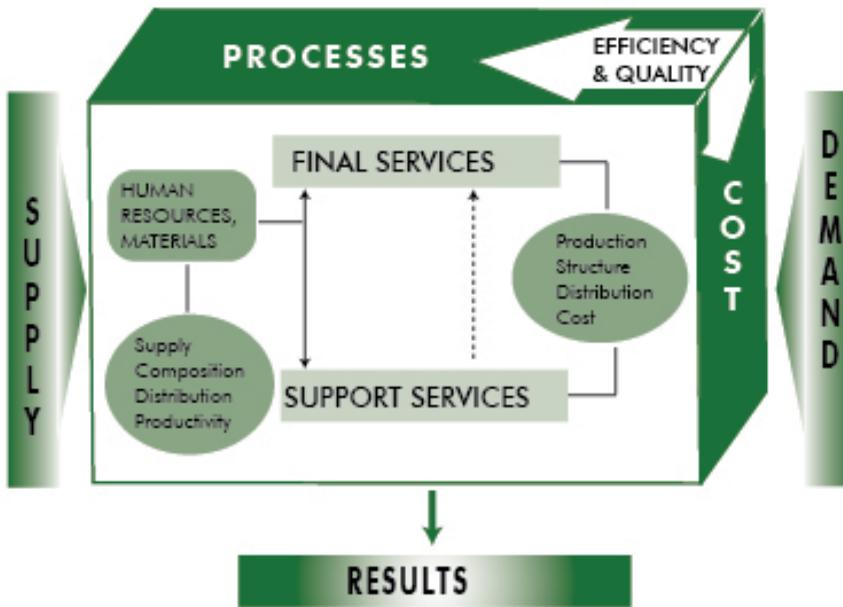
This division allows the distribution of support services costs to the final services according to their consumption and by prorating some cost elements to determine the expenditures and costs of a service and its production with greater accuracy.

If we analyze the context of a service, there is a supply created with fundamental infrastructure characteristics, human resources, technical resource, and quality standards that are intended to meet the needs of a demand through health care processes with quality control and efficiency as institutional goals.

The execution of these health care processes occurs in final and support services that have elements of production, structure, distribution, and costs.



FIGURE # 7 PRODUCTION OF SERVICES DIAGRAM



The other two elements of the process are human resources and material resources that are classified in accordance to allocation, composition, distribution, and productivity.

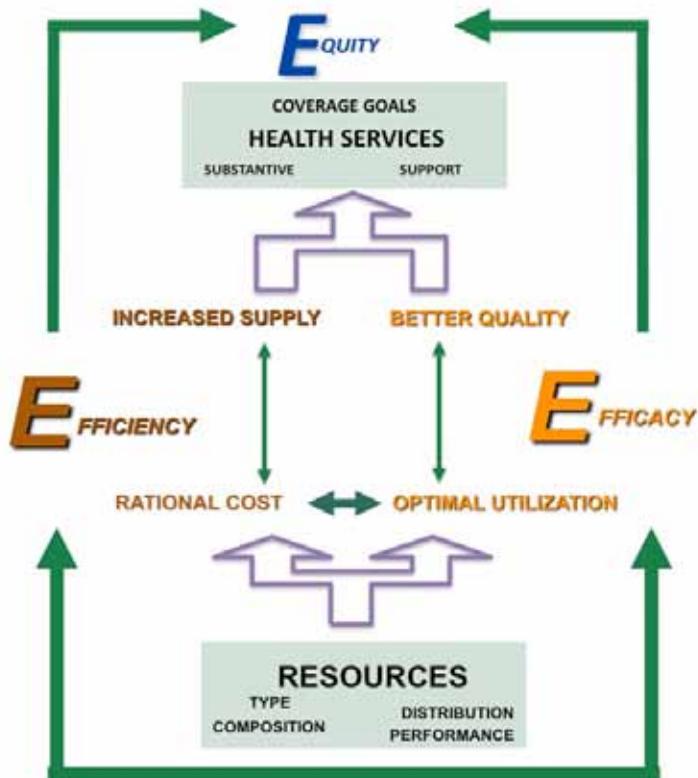
Resources are distributed to both final and support services, and subsequently support services resources are distributed to the final services. In this way, all the resources of the institution are linked to a specific final service.

1. MANAGERIAL PROCESS INDICATORS

The role of the PMMHS indicators is fundamental. They intend to diminish uncertainty in decision-making and to improve analytical capacity and the use of information.

PMMHS conceives health service delivery systems as productive processes, subject to quantitative analysis of equity, effectiveness, and efficiency. In accordance with this conception, the health services are made up of production centres and sub-centres that are subject in every phase of the productive process to certain quantifiable analyses and are characterized in terms of their products, resources used in the productive processes, performance of these processes and resources, and resulting costs (15).

FIGURE # 8 CHARACTERISTICS OF THE PRODUCTIVE PROCESS



There are three fundamental types of indicators in the PMMHS:

- 6. Structural indicators:** relate to the physical and institutional conditions in which health care is provided. They include patient safety, portfolio of services, supply of services, types of services and health care programs, material resources, organizational variables and institutional culture.
- 7. Process indicators:** relate to conditions that constitute quality health care. They evaluate the processes and operational procedures, in other words, the moments of contact with the user, evaluated as an interaction which is effective or not, with or without quality, and with or without risk.
- 8. Outcome indicators:** relate to the final evaluation of the service and its impact on the needs and expectations of the population. Therefore, it includes two sub-groups of indicators: i) indicators that measure the impact on peoples' health, and ii) those that measure the user's perception of their experience in the health services.



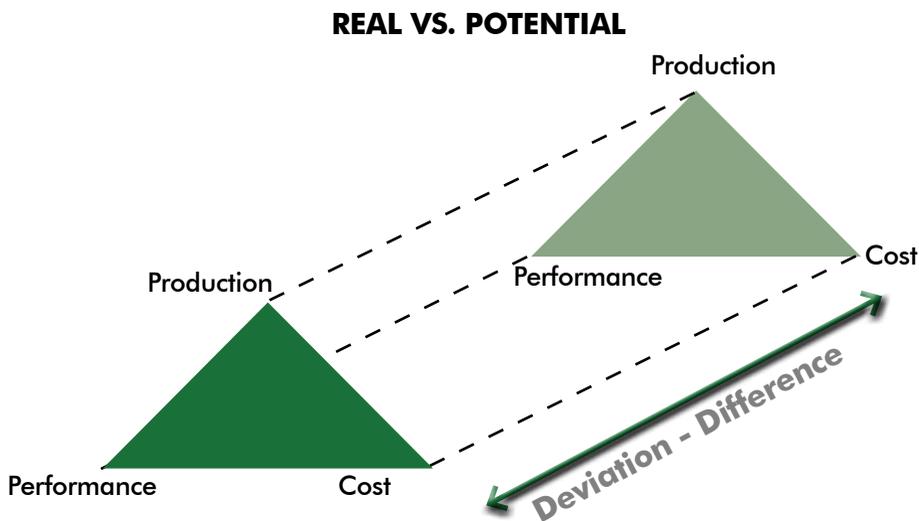
As a managerial tool, PMMHS identifies and quantifies the expected outputs and services according to the demand (health needs of the catchment population), the installed capacities, service portfolio and supply capacity of clinical services of the institution. It identifies the production centres, and helps to defines goals and coverage. It also provides inputs for determining the procedures necessary for guaranteeing the appropriate execution of the products and services, with the expected characteristics and quality standards.

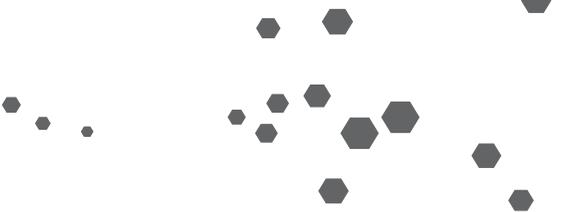
In terms of expenditures, the methodology quantifies the amount of inputs or supplies required in the execution or production process, and allow comparison to given efficiency standards as goals to be achieved. The human resources necessary for producing the product or executing the process is also associated to this.

The PERC tool generates monthly information on production, performance, resources, and costs for each defined production centre. It permits analysis of the execution of planned performance through an information matrix that correlates: execution of volume of products and services, performance of inputs and human resources, operational cost by centre of responsibility or development unit, costs for final and support services, revealing deviations between what is planned and what is actually carried out.

PMMHS facilitates the identification of structural gaps between what is real and the potential of the institution, in terms of production, performance, and costs (Figure # 9). This stimulates a process of analysis of the deviations and, in turn, allows for the generation of corrective measures to achieve the complete potential of the process and diminish the differential elements that constitute a gap, thereby achieving adequate levels of efficiency, both for individual and organizational processes.

FIGURE # 9 PMMHS PROJECTION





The process of analysis and decision-making becomes a proactive managerial function where results are not simply hoped for, as early deviations can be identified and corrective measures taken at the most appropriate time. As a result, the organization is able to move forward in the fulfilment of its mission, by using the institutional potential to obtain adequate coverage and satisfy the needs and expectations of the population.

- ▶ Some possible benefits of implementing the methodology are:
- ▶ Opportunity in critical managerial decision-making.
- ▶ Contribution to change in management styles
- ▶ Mobilization of resources under the concept of prioritization or continuous improvement.
- ▶ Utilization of available resources to their full extent.
- ▶ Avoidance of improvisation and taking actions under conditions of uncertainty.
- ▶ Facilitation of accountability process to the State or local regulators.



PMMHS AND PAHO'S TECHNICAL COOPERATION

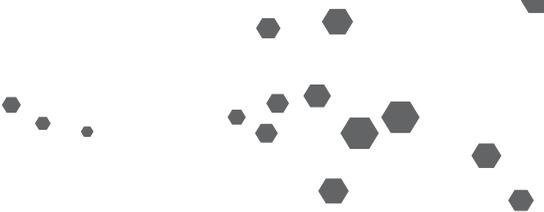
Technical cooperation for the implementation of the PMMHS is conducted within the strategic context of the regional initiatives for the *Renewal of Primary Health Care (PHC) in the Americas* that proposes the transition toward Health Systems based on PHC, and the Integrated Health Services Delivery Networks (IHSDN) initiative as a model of organization and management of health services. The technical cooperation programme puts forward the PMMHS as a tool for the strengthening of managerial capacity and acquisition of necessary competences for the management of IHSDN. The fundamental purpose of this technical cooperation is the strengthening of the management capacity in the health services of the Region.

1. THE SCOPE OF THE PMMHS

The PMMHS does not constitute a foolproof formula for solving problems in the management of health systems and services, which is beyond the scope of any management methodology. It is a management methodology that helps generate a new institutional and managerial culture in health systems transformational processes.

The methodology prioritizes productivity within the context of the three critical dimensions of health services coverage: equity, effectiveness, and efficiency. It is an evolution of traditional management information systems that better inter-relates efficiency, quality of service and relevance of production, guided by principles of equity and social productivity.

It focuses on productivity, efficiency, and effectiveness, and promotes changes in institutional culture and management styles, in two important and complementary ways. On one hand, it is essential to change processes that a greater sense of social responsibility for the management of resources is imbued in those entrusted with them and who are a part of the health systems. Health systems should incorporate mechanisms for quantification of results and accountability so that the community has reasonable certainty that it is getting services of quality and quantity appropriate to its needs and consistent with the level of social investment in health.



On the other hand, managers should take on the challenge of optimizing the productivity of resources in order to achieve higher levels of coverage with greater equity. The notion of productivity used here, integrates the concepts of efficiency (resource performance) and effectiveness (services impact) within a perspective of social equity. Productivity can be defined as the efficiency with which the resources are transformed into services with a sufficient degree of relevance, quality and coverage for the effective attainment of development objectives, measured in terms of satisfactory response to the needs and expectations of the citizens.

The methodology is a tool that is essentially for managerial use as opposed to administrative processes, given its applicability to managerial strategies, overall planning, and organizational direction. It permits institutional diagnosis as a permanent, practical and systematic evaluation of the critical points of the processes. It offers the possibility of quickly visualizing a reduced and manageable set of critical problems in the institutional productivity profile.

2. IMPLEMENTATION OF THE PMMHS AND ITS TOOLS

a. Conditioning factors and requirements for success

The new implementation programme for countries in the Region of the Americas begins with the necessary creation of a political-institutional and, in second term but equally unavoidable, of the training of the managers as end-users. The training tools include manuals and virtual courses aimed at managers of health services at various levels of the health organisation.

The decision to implement the methodology requires understanding that even though the management information system supports the administrative processes, it basically is a management instrument. This implies that the responsibility for the implementation and utilization is the responsibility of the directors and higher levels of management, without prejudice of delegating responsibilities to the operating level. Additionally, it is important to note that it is also neither a tool for costing nor billing. It is a tool designed specifically for those who must make decisions on the use of resources (human, material, financial) in the production of health services that influence costs and end results. Accordingly, the *end-user* is the Health Manager.

Thus, the process of implementation of the methodology must be preceded by confirmation of support at the highest authorities from institutional, regional, or ministerial levels. This is essential to avoid the most frequent threats to implementation: i) interests that revolve around the commercial market of information systems that perceive it as a threat, ii) public institutions with an organizational climate of great resistance to change that may perceive the PMMHS as an attack on the existing balance of power, or iii) the prevalence of an organizational climate of misinformation and non-accountability that conceals inefficiencies.



In second term, the successful implementation requires that all the health managers be committed to participate actively in the training processes that accompany such implementation.

Accordingly, important factors for successful implementation are:

- ▶ Political support from the highest level
- ▶ Managerial leadership
- ▶ Administrative support
- ▶ Sustainable financial support
- ▶ Training of health managers to enable the development of new competencies
- ▶ Active participation of the local implementation team in managing the implementation process
- ▶ Access to all necessary documentation
- ▶ Initial technical assistance
- ▶ Constant monitoring and support
- ▶ Previous existence of an information platform
- ▶ Computer updating tools.

The scope of the implementation of the PMMHS and its tools are:

- ▶ Evaluation of the global performance of health services organizations and networks
- ▶ Identification of factors or most relevant problems in the corresponding institutional productivity profile
- ▶ Provide the analysis of these problems in order to determine change options within the framework of the modernization of the health system.
- ▶ Monitoring of change processes and the impact of the organizational fine tuning measures adopted by the institutions or hospital networks.
- ▶ Establish a relation of the costs of the services as result of the efficiency in the production functions.

b. Implementation Process

One of the greatest advantages of the methodology is its implementation process: the possibility of systematic organizational growth in accordance with the capacity of each institution to adapt. This permits the assimilation of new tools, as well as the promotion of an organizational culture based on information.



Each step is part of a logical pathway for growth of the institution until it attains the necessary levels of information and knowledge of its processes to carryout decision-making and achieves continuous institutional improvement.

The first logical step is the training of the managerial team. The methodology makes available to countries, networks and institutions, on-line courses that provide the introduction to the PMMHS, training in the analysis of indicators, and training of the local implementation teams, to ensure the appropriation of the methodology and its implementation and local support.

The second logical step is the creation of a diagnostic baseline to determine the starting point for comparison of the institutional development achieved during the application of the methodology and to show quantifiable and strategic success or failure in managerial decisions. This diagnosis also permits the identification of institutional information needs and development of the first improvement plan according to capacity and the structure of management indicators and dashboards.

Once the basic structure for the generation of information is developed, a second organizational level is developed: establishment of costs and expenditures by strategic units or cost centres. Structuring the institution and organizing its internal processes permits the identification of all expenditure items and their relationship to real production.

When this development process is concluded, the institution will be at a high level of maturity permitting the completion of its capacity to generate indicators and carryout institutional analysis of efficiency and quality; a complete managerial structure of indicators to guarantee the development of management dashboards for each institutional process.

Once this is achieved, the organization can then focus on the implementation of the PERC and other tools. The PERC digital tool is the core instrument of the methodology that consolidates the information and permits structured analysis. Its correct configuration through processes carried out jointly between the Technical Implementation Team² and the country and institutional teams (also called Support Teams³) will ensure that the information delivered to PERC has the necessary quality and accuracy to ensure that the analytical process is reliable. In this phase, technical support includes provision of and training in the use of tools for the collection of the information required by the software.

2 Teams comprised of experts from PAHO or collaborating institutions that accompany implementation processes.

3 Country, network or facility teams responsible for the implementation of the PMMHS.



Obtaining this ample and precise information permits the detection of deviations from pre established parameters or standards. The following step is to develop capacity for analysis and use of the information. The result of the institutional process is obtaining systematic comparison of standards and objectives for planning and budgeting with evidence, improvement plans with high levels of prioritization and quantifiable institutional improvement. The Technical Implementation Team, with the assistance of the Regional Team of PMMHS Experts, will provide support for the interpretation and analysis of the managerial reports and tables as a part of the training process and technological transfer.

Simple achievement of institutional improvement would be only a partial application of the methodology. Its radical success is determined by the capacity to manage health services networks standardizing the information of every institution and developing regional diagnosis, identification of improvement needs and administration of the networks under clear parameters for prioritization, and efficiency for productivity that results in higher value for money in health.

The implementation process ends when the Local Teams (Support Desk) have a sense of “ownership” of the process and are able to replicate it locally. Regardless of this appropriation process, PAHO’s technical cooperation will continue to guarantee permanent technical support.

c. Getting information on the PMMHS and accessing PERC

This new phase of the PMMHS and the digital tools also discards the old system of stand-alone compact disks replacing it with an Internet-based configuration, which allows greater versatility for networking and minimises technical dependence.

- The first level can be accessed by the public by typing the URL address (www.mgpss-perc.com) in their browser. There they will find general information on the PMMHS, PERC, and the institutions that collaborate in the PERC Community. From this level, the user can also choose to become member of the regional forum of Registered Users by simply registering as such.
- After submitting your request, the system will send you a password that will allow you to enter the reserved space for Registered Users in which you will be able to share and exchange information in what we hope will become a Forum On Management of Health Services for the Region of the Americas (PERC Community). The Regional Group of Experts of the PMMHS will moderate this forum. The Registered User will also have access to courses, publications, and documents on different matters related to organisation and management of health services.

- The third level, which provides access to use of the PERC tool (exWinSIG), is reserved exclusively for health services institutions that have established technical cooperation agreements with PAHO. These agreements are typically established with Ministries of Health, academic entities, or health services networks, through a process directed by PAHO and in which other collaborating institutions participate.

d. The PERC Community

The *PERC Community* (Figure # 10) is one of the fundamental concepts of the new development of the Productive Management Methodology for Health Services (PMMHS).

It is a Virtual Community of Users of the PMMHS and its tools in Latin America, the Caribbean and, soon other regions of the world. It is intended to become a permanent forum for discussion and sharing of experiences and good practices on the management of the health services. It is also expected to permit rapid dissemination of information on new developments of the PMMHS and regional events of interest for managers of health services. This forum will be moderated by the Regional Group of PMMHS Experts that will provide users with permanent access to a group of experts with many years of experience in the development and use of the methodology.

The coordination of the development of new tools for the Productive Management Methodology for Health Services, and the technical cooperation programmes that are derived are the responsibility of PAHO/WHO, specifically the Area of Health Systems and Services Based on Primary Health Care.

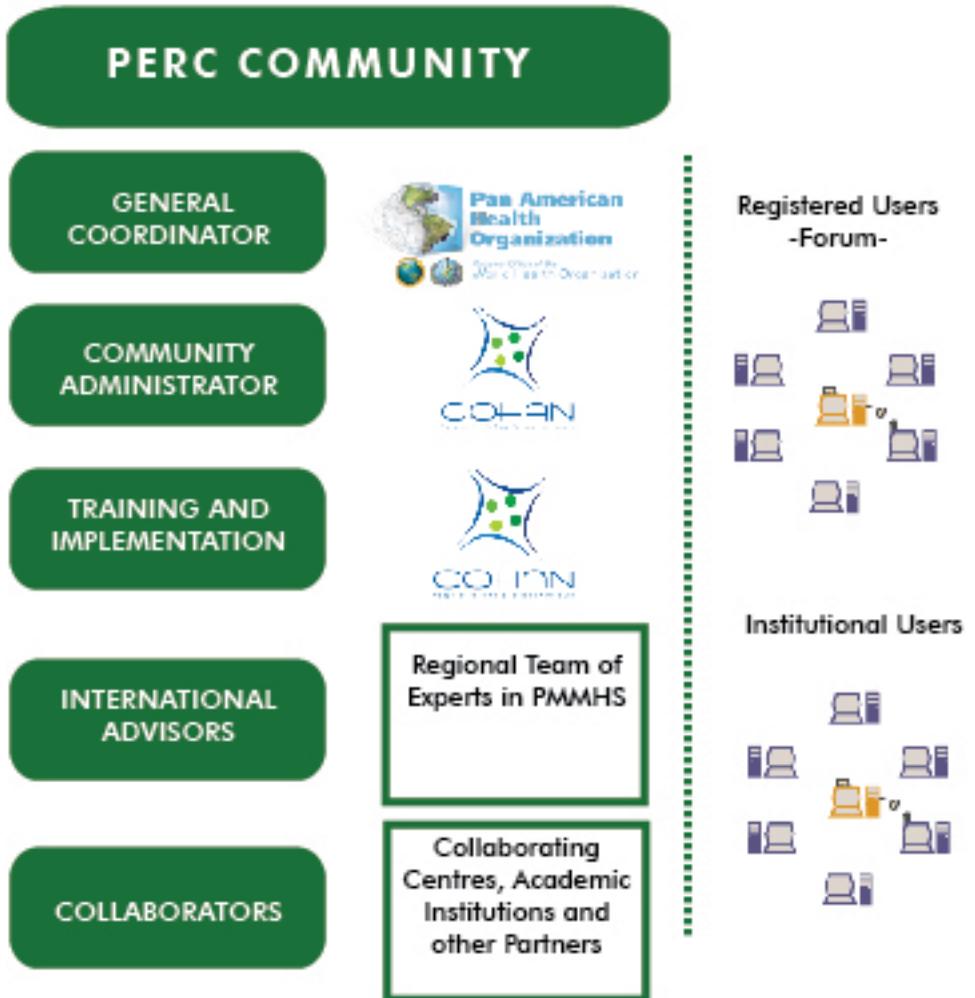
The process of developing new tools for the PMMHS, the maintenance, administration, and updating of the Web page are carried out by the Cooperative of Hospitals of Antioquia (COHAN)-Colombia and St. George's University-Grenada (SGU).

In order to respond to the high demand for technical cooperation from countries of the Region of the Americas, PAHO/WHO has created a Regional Team of Experts comprised of participants from several countries.

The technical support for the training and implementation is coordinated by PAHO/WHO and implemented through COHAN and SGU.



FIGURE # 10



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