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# Construction of a monitoring framework for universal health*

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**ABSTRACT**

*The objective of the study was to construct a conceptual framework for monitoring progress on policies and actions aimed at reaching universal health.*

*Conceptual models and proposed methodologies for monitoring universal health coverage and access were reviewed. A literature review was also done to select relevant indicators. This review was supplemented with a process of consultation with health systems experts from the Region of the Americas.*

*A comprehensive framework was developed for monitoring policies and actions for universal health coverage and access. This monitoring framework contains four components (strategic actions, outputs, outcomes, and impacts) and identifies a set of policy options to guide the transformation of health systems toward universal access to health and universal health coverage. Sixty-four out of 500 indicators were chosen for evaluation of the monitoring framework components. The proposed approach for use of the framework is based on measuring inequities in access and coverage, and on collecting qualitative evidence on the degree to which policies and actions have been implemented.*

*The proposed framework could help strengthen health systems tranformation processes toward universal access to health and universal health coverage.*

**Keywords** Health care; health policy; health system; health situation assessment.

In 2014, the Member States of the Pan American Health Organization (PAHO) approved the *Strategy for Universal Access to Health and Universal Health Coverage* (1). The Strategy defines a set of strategic interventions aimed at strengthening or transforming health systems and achieving equitable access to health (1). It emphasizes that equity, solidarity, and the right to health are fundamental values and recognizes the need for a people- and community-centered health care model as a linchpin in the transformation of health systems, and an intersectoral approach to ensure equitable access to these systems (1).

The Strategy makes it clear that universal access to health and universal health coverage are the two distinct and complementary bases of an equitable health system. It defines *universal access to health* as "the absence of geographical, economic, sociocultural, organizational, or gender barriers," which is achieved through "the progressive elimination of barriers that prevent all people from having equitable use of comprehensive health services" (1). Health coverage, in turn, is defined as "the capacity of the health system to serve the needs of the population, including the availability of infrastructure, human resources, health technologies (including medicines), and financing" (1). The term *universal health* was later approved by PAHO as an acceptable shortened equivalent that encompasses both universal access to health and universal health coverage (2).

This renewed emphasis on the need to transform the health systems in the Region of the Americas raises the need to have a regional reference framework for measuring progress of policies aimed at strengthening health systems and achieving universal health. However, there is no consensus monitoring framework to help decision-makers

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understand the implications and effects of health system transformations (3). Consistency between conceptual frameworks is important because it facilitates collaborative efforts and regional learning.

Although there have been recent efforts to monitor universal health coverage (UHC), especially the global indicator framework for the Sustainable Development Goals (SDGs) (4–6), these proposals are limited to measuring population health service coverage and financial protection (4–6). While these metrics offer a comprehensive understanding of the quality, relevance, and financial affordability of health services, they do not fully identify the different health access barriers, nor do they identify the types of interventions needed to improve access conditions (7, 8). In the meantime, there is no regional proposal for the Americas that specifically takes into account the institutional, political, and intersectoral mechanisms inherent in the health system transformation processes that allows to measure the impact of such efforts on universal health.

To address this gap, in October 2014 PAHO embarked on a plan to develop a conceptual framework for monitoring policies aimed at achieving universal health. The goal was to support analyses, evidence generation, and decision-making aimed at strengthening or transforming health systems. This article describes the process and results of constructing such monitoring framework.

## MATERIALS AND METHODS

Several methods were used, including literature review, consultation with experts, and key informants interviews based on approaches previously used (9–11). The process took place between April 2015 and November 2017, divided into the following four phases: formation of the working group, expert consensus, pilot testing of the tool, and collection and analysis of the results. (Further information on the methodology used to construct the monitoring framework for universal health may be obtained from the corresponding author.)

The three members of the working group combined expertise in health governance, leadership, policy, and planning; monitoring and evaluation; and health system research. This group was responsible for selecting the panel of experts, formulating the criteria for the expert consultations, reviewing the literature, and developing the proposed conceptual framework. For the latter, several existing conceptual models and proposed methodologies related to universal health were reviewed. An initial list of 500 indicators was identified based on a mapping of databases and existing monitoring frameworks.

For the expert consultations, actors regularly involved in health system decision-making, including representatives from national health authority technical offices, were invited. The final panel had 68 experts from nine countries (Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Panama, Peru, and Uruguay) to ensure a diversity of experiences and regional representation. The process involved two rounds of consultation, with an intermediate phase to consolidate the opinions and report back to the participants. In both sessions, the expert panelists received a proposed monitoring framework and predefined criteria to guide the consultation process.

The indicators were prioritized according to five criteria: 1) relevance for advancing toward universal health; 2) validity (that they measure what they are supposed to measure); 3) feasibility (measurable through household surveys, routine information systems, and administrative data); 4) availability in the countries of the Region; and 5) capacity to enhance or complement other related monitoring frameworks (SDGs, UHC, Primary Health Care Initiative).

The validity and feasibility of the indicators and the methodology of the monitoring framework were studied in six pilot studies, conducted in Chile, Cuba, Jamaica, Panama, Peru, and Trinidad and Tobago. Government officials, representatives of civil society, and other health system actors in these countries were engaged in the process. Finally, interviews were conducted with key informants to analyze the groups' opinions on each component of the monitoring framework. The working group compiled the comments made during the expert consultations and the pilot studies, organized them by thematic areas, and also interviewed 12 experts in these thematic areas. Finally, the team compiled the interviews and analyzed them by subject matter. All the differences were discussed and resolved within the group.

In all, 314 experts from 20 countries participated in one or more phases of developing the monitoring framework and selecting the indicators for universal health.

## RESULTS

The experts agreed on four areas of analysis: strategic actions, outputs, outcomes, and impact indicators (Figure 1). This classification was consistent with the Strategy approved by the PAHO Member States (1).

The order and relationships between these areas reflect the theory and assumptions that underlie the need for an integrated approach to formulate and execute policies related to each strategic action in order to improve access and coverage conditions (12, 13).

For each dimension, 13 strategic actions and 64 indicators were decided on, including 24 outputs, 22 outcomes, and 18 impacts. The definitions, calculation methods, disaggregation levels, and the information sources were also agreed on for each indicator. (Further information on the quantitative indicators for monitoring universal health may be obtained from the corresponding author.)

### Components of the framework for monitoring universal access and coverage

**Strategic actions**. Strategic actions are interventions undertaken by health authorities in an effort to strengthen or transform health systems with the goal of achieving universal health.

The strategic actions were grouped into four strategic lines in accordance with the Document CD53/5, Rev.2 (1) (Table 1). Under the first line, "expanding equitable access to comprehensive, quality, people- and community-centered health services," the analysis looks at progress in the delivery of comprehensive people- and community-centered health services with special emphasis on the response capacity of the first level of care and the organization of services into integrated networks. In the second line, "strengthening stewardship and governance," focus is on the political and technical capacity of health authorities to lead the health system transformation process and to formulate, regulate, and oversee adherence to the regulatory frameworks aligned with the values of universal health.

**FIGURE 1. Monitoring framework for universal health access and universal health coverage**

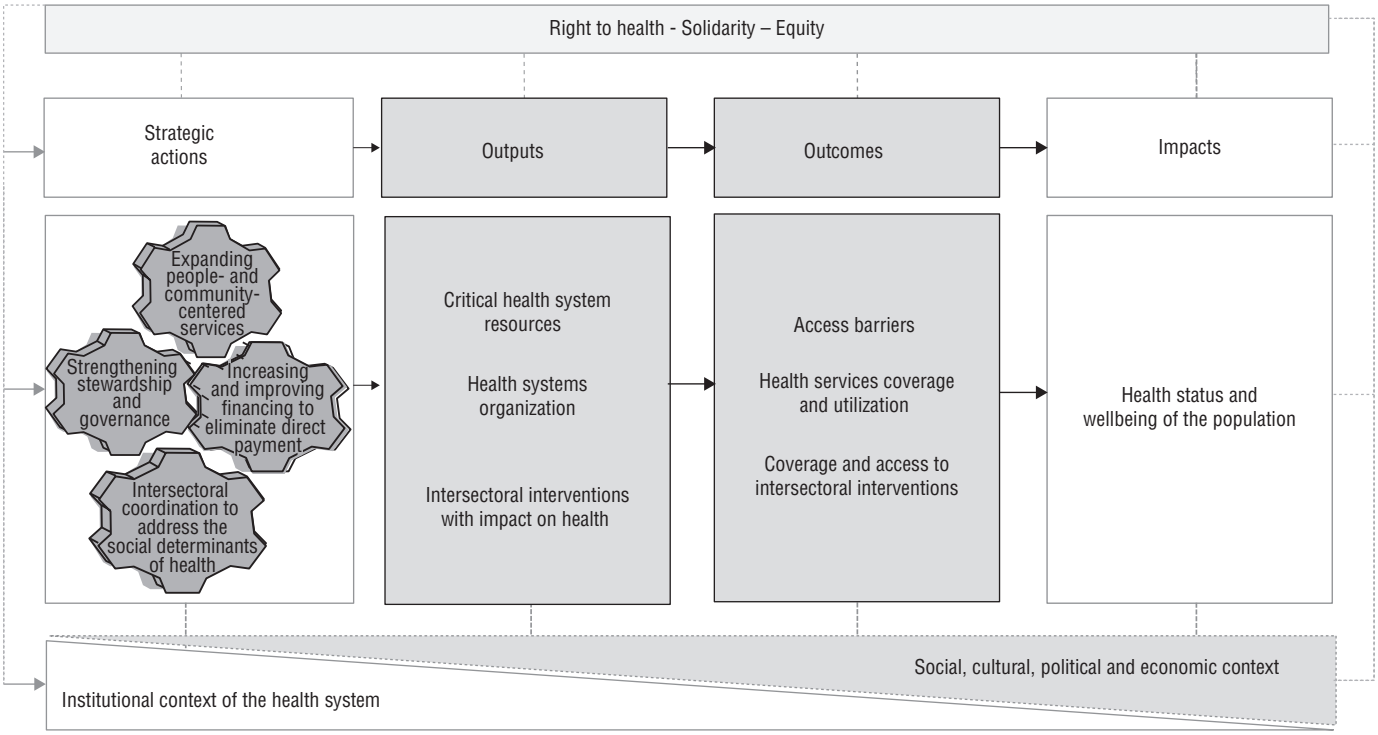


**TABLE 1. Strategic actions for universal health**

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| **Strategic line 1. Expanding equitable access to comprehensive, quality, people- and community-centered health services** |
| SA 1.1. Increase the resolutive capacity of the first level of care. |
| SA 1.2. Strengthen health services organization and management through integrated health services networks (IHSNs). |
| SA 1.3. Establish mechanisms to include the participation of health service users, their families, and the community in decision-making with a view to improving the quality of care and promoting self-care. |
| **Strategic line 2. Strengthening stewardship and governance** |
| SA 2.1. Develop norms and standards for improving the quality of health services delivery. |
| SA 2.2. Ensure the availability, equitable distribution, and quality of human resources for health. |
| SA 2.3. Define processes for improving the availability and regulation of medicines and other health technologies. |
| SA 2.4. Facilitate the empowerment of people and communities and guarantee the representation of all population groups in the policy-making process with a view to strengthening coordination between health and the community. |
| SA 2.5. Strengthen information systems by ensuring availability of data disaggregated at the national and subnational levels to identify health needs, health inequalities, and access barriers. |
| SA 2.6. Prioritize research on universal health in the national research agenda. |
| **Strategic line 3. Increasing and improving financing with equity and efficiency, and advancing toward the elimination of direct payments that constitute a barrier to access at the point of service** |
| SA 3.1. Use fiscal regulation as an instrument to promote the mobilization and allocation of health financial resources. |
| SA 3.2. Advance toward complementarity of health resources from different sources. |
| **Strategic line 4. Strengthening multisectoral coordination to address the social determinants of health** |
| SA 4.1. Establish or strengthen intersectoral coordination mechanisms. |
| SA 4.2. Establish or strengthen the capacity of national health authorities to successfully implement intersectoral public policies. |

SA; strategic action.

The third line, "increasing and improving financing with equity and efficiency, and advancing toward the elimination of direct payments that constitute a barrier to access at the point of service," considers the capacity to increase and optimize public health financing, strengthen financial protection, minimize direct payment at the point of service, and use pooling funds to strengthen the model of care and ensure universal access. Finally, the fourth line, "strengthening intersectoral coordination to address the social determinants of health" looks at health service coordination and integration with different social sectors, as well as mechanisms for regulating the production, marketing, and consumption of goods and services that affect the health of the population.

**Outputs.** Since it was not practical or feasible to measure the indicators for all the strategic actions, 24 quantitative indicators were selected that represent the combined and integrated effect of the strategic actions. These indicators were grouped into three areas: critical resources

of the health system (health workforce, financing, medicines, and technologies), health services organization, and intersectoral action (Table 2).

**Outcomes.** A total of 22 quantitative indicators, grouped into three categories, were selected to assess the effect of the outputs on access conditions. The categories were: access barriers, health services coverage and utilization, and coverage and access to intersectoral interventions (Table 3).

**Impact indicators.** A total of 18 quantitative indicators were adopted as tracers of the health status and well-being of the population (Table 4).

## PROPOSED APPROACH FOR USING THE MONITORING FRAMEWORK

Monitoring focused exclusively on tracking trends without being associated with contextual information related to health system transformation processes, usually does not inform properly on the effectiveness of government policies (3). Hence it is necessary to complement monitoring with qualitative information, collected through systematic processes, to analyze the characteristics and depth of the changes introduced in the health system (14).

To meet this need, the experts agreed on a methodology for using the monitoring framework that links equity analysis with policy analysis. This analysis encompasses the disaggregation of indicators for different socioeconomic variables and the collection of qualitative information that indicates the extent to which key health system transformation policies are implemented. To analyze the quantitative data, health authorities can select from the total list of 60 indicators those that are most relevant to their national context, taking into account the availability of information and the priorities of their health system, including the epidemiological profile and policy needs.

The objective of the qualitative approach is to complement the quantitative data analysis with contextual information related to the characteristics and depth of the changes introduced by health system policies and to explore policy options aimed at addressing the gaps and challenges identified (15–18). To achieve this, a questionnaire was developed to collect information and analyze each strategic action in terms of organizational aspects that affect the capacity of health services to respond to the needs of the population; institutional factors that influence the regulatory frameworks and resource allocation mechanisms (financial, technological, and human resources) to strengthen the health system; political aspects reflected in the actions taken by national health authorities and other actors, leading to institutional changes; and specific intersectoral interventions that facilitate these processes. (Further information on the analysis of strategic actions may be obtained from the corresponding author.)

**TABLE 2. Outcome indicators of universal health**

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| **Critical health system resources** |
| • Density and distribution of health workers. |
| • Percentage of health professional or medical specialist teams that receive remuneration based on pay-for-performance with a view to increasing access and improving the quality of health services. |
| • Per capita public and private spending on pharmaceutical products (in United States dollars). |
| • Number of high-energy teletherapy units (cobalt-60 and linear accelerators) per million inhabitants. |
| • Blood donation rate per 1 000 population. |
| • Population covered by health financing schemes. |
| • Public spending allocated to health as a percentage of gross domestic product (GDP). |
| • Public spending on the first level of care as a percentage of total public health spending. |
| **Health services organization** |
| • Percentage of hospitals financed by historical budgeting and pay per service. |
| • Percentage of hospitals that use prospective financing based on health products. |
| • Percentage of hospitalizations for ambulatory care sensitive conditions. |
| • Prevalence of health care-associated infections. |
| • Percentage of user satisfaction with the health services. |
| • Percentage of first-level of care facilities with a population assigned on a territorial basis. |
| • Percentage of the national population covered by integrated health service networks (IHSNs). |
| **Intersectoral interventions that impact health** |
| • Proportion of the population using improved drinking water source. |
| • Proportion of the population using improved sanitation. |

Historical budgeting = budgeting based on formulation and execution of budgets from previous years.

**TABLE 3. Outcome indicators**

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| **Access barriers** |
| • Percentage of the population reporting access barriers to health (cultural, institutional [acceptability, desirability, availability, waiting period], economic, geographical). |
| • Proportion of out-of-pocket health expenditure (compared to total health expenditure) |
| • Percentage of catastrophic out-of-pocket health expenditure |
| • Percentage of out-of-pocket health expenditure that cause impoverishment. |
| **Coverage and use of health services** |
| • Coverage with three doses of DTP vaccine during the first year of life. |
| • Proportion of women aged 30 to 49 who report having been screened for cervical cancer. |
| • Unmet family planning needs. |
| • Percentage of antenatal care coverage by skilled birth attendants of 4+ visits. |
| • Percentage of deliveries attended by skilled health workers. |
| • Percentage of preventive health care visits per year. |
| • Access to community health programs for older adults. |
| • Coverage of care for persons with disabilities. |
| • Percentage of persons 18 years or older with hypertension controlled at the population level. |
| • Percentage of persons 18 years or older with diabetes controlled at the population level. |
| • Treatment of mental health in outpatient facilities. |
| • Percentage of coverage with antiretroviral therapy. |
| • Coverage with prophylactic HIV treatment to prevent mother-to-child transmission. |
| • Coverage of pregnant women with treatment for syphilis. |
| • Percentage of patients with tuberculosis treated successfully. |
| • Average time between onset of malaria symptoms and start of treatment. |
| • Percentage of leishmaniasis cases diagnosed and treated. |
| • Percentage of viral hepatitis cases treated. |
| **Coverage and access to intersectoral interventions** |
| • Use of solid fuels. |
| • Per capita alcohol consumption in population >15 years of age. |
| • Tobacco use by adolescents. |
| • Tobacco use by adults. |
| • Insufficient physical activity in adolescents. |
| • Insufficient physical activity in adults (IPA>18). |
| • Breastfeeding in infants under 6 months old |

DTP = triple vaccine against diphtheria, tetanus, and whooping cough; HIV = human immunodeficiency virus.

**TABLE 4. Impact indicators**

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| • Healthy life expectancy |
| • Infant mortality rate |
| • Maternal mortality ratio |
| • Mortality amenable to health acre rate |
| • Premature deaths from noncommunicable diseases and risk factors (cardiovascular diseases; malignant tumors, diabetes mellitus, and chronic respiratory diseases) |
| • Mortality from HIV/AIDS |
| • Mortality from tuberculosis |
| • Mother-to-child transmission of HIV infection and congenital syphilis |
| • Homicide rate in young people 15 to 24 years old |
| • Death rate from suicide |
| • Mortality due to road traffic injuries in young people 15 to 24 years old |
| • Overweight and obesity |
| • Standardized prevalence of high blood glucose levels and diabetes in people 18 years and older |
| • Proportion of older adults with disability (years lived with disability) |
| • Low birthweight (< 2,500 g) |
| • Prevalence of chronic malnutrition in children under 5 years old |
| • Specific fertility rate in women 15 to 19 years old |
| • Prevalence of partner violence |

ADLs = activities of daily living.

## DISCUSSION

This article describes the process and results of constructing a conceptual framework for monitoring universal health. The framework was developed following an expert consultation process and validated at regional meetings and in pilot studies. It is important to have a consensus monitoring framework accompanying health systems transformation processes that guide actions geared toward achieving universal health in the Region of the Americas

Achieving universal health involves the formulation of innovative policies and actions that accelerate health systems transformation. From this perspective, the monitoring framework should facilitate these processes of change. By building consensus, it was possible to produce an instrument that the key actors agreed on in terms of the importance, validity, and feasibility of the selected metrics and methodology. Acceptability of the tool is a key factor in facilitating the processes of change (19).

Furthermore, the inclusion of dimensions of analysis (strategic actions, outputs, outcomes, and impacts) allowed for a mixed approach in which both quantitative and qualitative methods were used to better explain the effect of policy interventions on access and coverage conditions. This methodological approach should also guide the design and development of future in-depth evaluations on the effect of policies aimed at transforming the health system, including processes, contextual factors, and causal relationships.

Developing the monitoring framework also included a review of existing proposed methodologies. It was essential to incorporate many of the recommendations and metrics found in these instruments in order to harmonize global efforts and have a common lexicon for communication among actors. However, none of the instruments available at the global level were considered sufficient for monitoring policy in the contexts of the Region of the Americas.

Recently, Hogan et al. (6) developed an index of essential health service coverage indicators for monitoring UHC. As in other recent efforts (4, 5, 19–21), the approach used is based on grouping together several metrics of health services coverage, availability of resources, and/or health status in order to construct a synthetic measurement of UHC. Although this type of approach has significant advantages—especially its methodological simplicity, relevance, and use of data already available from household surveys—analyzing such data poses major challenges in effective monitoring of universal health policies.

First, combining different indicators in a single synthetic metric makes it difficult to attribute changes in service coverage to particular differences in performance under a given policy, since the changes observed may reflect differences between the surveys used, different collection times, the availability of data, or all of the above. Furthermore, the focus on country *rankings*, added to the lack of contextual information on the health system transformation processes, makes it even more difficult to interpret the meaning of the index. For example, the scores for Brazil, Costa Rica, and Cuba, countries widely recognized for their significant progress in improving access and universal health coverage, are the same as those for El Salvador, Ecuador, and Peru, respectively (6). It is then difficult to understand how these countries can yield similar results in terms of universal access and coverage.

To support development of the proposed methodological approach within this monitoring framework, consideration was given to existing qualitative instruments used to produce and analyze health system performance. Examples of such instruments included the WHO Framework for Monitoring the Building Blocks of Health Systems (22), the health system profiles of the European Observatory on Health Systems and Policies (23), and International Compendium of Health Indicators developed by the Organization for Economic Cooperation and Development (OECD) (24). One of the main strengths of these instruments is the use of conceptual frameworks that include different dimensions to guide the analysis and interpretation of the results in terms of health system performance (23, 24). However, each dimension tends to be analyzed independently, without any effort to identify causal relationships or offer a comprehensive policy analysis.

Other instruments, including the methodology for assessing health system performance (PROADESS) developed by the Oswaldo Cruz Foundation (25), the health system profiles of the South American Institute of Government in Health (ISAGS) (26), and the virtual platform of the Ibero-American Observatory on Health Systems and Policies (OIAPSS) (27) have analytical matrices that offer a comprehensive approach that includes various dimensions and indicators of health system performance. The dimensions are designed to guide the analysis of health system outcomes and incorporate stewardship as a structuring element of the health systems. However, while these approaches share similarities with the monitoring framework proposed here, they do not help to identify explicit policies that would support health system transformation processes.

Although there have been efforts to develop instruments for monitoring and evaluating primary health care (PHC) (28–30), including the Primary Health

Care Performance Initiative (PHCPI) (28), their scope is limited to PHC and service delivery; and they do not undertake a comprehensive analysis of the health system as a whole. The review of existing instruments reinforced the importance of including a comprehensive analysis that would capture the changes occurring in the institutional, political, and intersectoral mechanisms that are characteristic of the dynamics and nature of the health system transformation processes (12, 13). Indeed, the integrated nature of these processes is essential to expanding the coverage of critical resources within the health system, ensuring access to health services, and impacting health outcomes (12).

The process of developing and validating the monitoring framework was not without its challenges. Some of the feedback received during the consultations with experts referred to the difficulty of analyzing the complete list of indicators and strategic actions. Indeed, analysis of the areas included in the monitoring framework can be quite complex in large countries where responsibility for policy implementation is assigned to different authorities at the federal, state, and local levels. This poses a challenge when interpreting the policy analysis at subnational levels. Therefore, it was considered important to develop a robust instrument that will allow health authorities to select the dimensions and indicators most relevant to their national context.

Other challenges have to do with the scarcity of data disaggregated by socioeconomic variables that are important for monitoring equity. The list of indicators is not exhaustive as there are many indicators of health status. However, it was considered more practical to select a set of trace indicators that countries could adapt to their needs. The experts recommended that each country prioritize the indicators and strategic actions that are most relevant and feasible to apply in their specific context.

While the existence of a consensus framework for the Region of the Americas facilitates regional learning about the implications and effects of health systems transformation, the framework was not designed to make comparisons between countries. The main intention is to support each country in monitoring its national goals and support the identification of areas that need greater attention and the introduction of corrective measures.

Finally, the monitoring framework represents only an initial input. Producing, analyzing, and making use of the information on universal health will require robust monitoring systems at the national level. It will be essential to strengthen the governance of monitoring systems and make greater investments to effectively analyze and monitor universal health policies, as well as other programs and activities in the health system. Furthermore, it will be necessary to strengthen national information systems so that they can integrate data from household surveys and health institutions and ensure the adequate flow of information. These and other aspects related to the construction of national monitoring systems will need to be addressed in future studies.

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**RESUMEN**

## Construcción de un marco de monitoreo para la salud universal

El objetivo del trabajo es construir un marco conceptual de monitoreo sobre los avances de políticas y acciones orientadas a alcanzar la salud universal. Se revisaron modelos conceptuales y propuestas metodológicas relacionados con el monitoreo del acceso y la cobertura universal de salud. Se realizó también una revisión de la literatura para seleccionar indicadores relevantes. Esta revisión fue complementada con un proceso de consulta con expertos en sistemas de salud de la Región de las Américas. Se desarrolló un marco integral para el monitoreo de políticas y acciones para el acceso y la cobertura universal de salud. El marco de monitoreo contiene cuatro componentes (acciones estratégicas, resultados inmediatos, resultados intermedios y resultados de impacto) e identifica un conjunto de opciones políticas para guiar la transformación de los sistemas de salud hacia el acceso y la cobertura universal de salud. Se eligieron 64 indicadores entre un total de 500 indicadores para la evaluación de los componentes del marco de monitoreo. El abordaje propuesto para la utilización del marco se basa en la medición de inequidades en las condiciones de acceso y cobertura, así como en la recolección de evidencia cualitativa sobre el grado de ejecución de políticas y acciones. El marco propuesto podría contribuir a fortalecer los procesos de transformación de los sistemas de salud para avanzar hacia el acceso y la cobertura universal de salud.

**Palabras clave** Atención de salud; políticas de salud; sistemas de salud; evaluación de la situación de salud.

**RESUMO**

## Construção de um quadro de monitoramento para saúde universal

Construir um quadro conceitual de monitoramento do progresso de políticas e ações voltadas à saúde universal.

Foram examinados modelos conceituais e propostas metodológicas de monitoramento do acesso universal à saúde e cobertura universal de saúde. Foi realizada também uma revisão da literatura para selecionar os indicadores relevantes, complementada com um processo de consulta com especialistas em sistemas de saúde da Região das Américas.

Foi elaborado um quadro completo para o monitoramento de políticas e ações para o acesso universal à saúde e a cobertura universal de saúde. O quadro de monitoramento contém quatro componentes (ações estratégicas, resultados imediatos, resultados intermediários e resultados de impacto) e expõe uma série de opções políticas para direcionar a transformação dos sistemas de saúde para o acesso universal à saúde e cobertura universal de saúde. Foram selecionados 64 de um total de 500 indicadores para avaliar os componentes do quadro de monitoramento. A abordagem proposta para a aplicação do quadro se baseia na mensuração das iniquidades das condições de acesso e cobertura e na coleta de evidências qualitativas do nível de implementação de políticas e ações.

O quadro proposto pode contribuir para consolidar os processos de transformação dos sistemas de saúde rumo ao acesso universal à saúde e cobertura universal de saúde.

**Palavras-chave** Atenção à saúde; políticas de saúde; sistema de saúde; diagnóstico da situação de saúde.