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# FRAMEWORKS AND MEASURES FOR HEALTH SYSTEMS PERFORMANCE ASSESSMENT

Review  
Article

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*Health system;  
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## **Abstract**

*Population health is a duty for all the governments. In order to improve the quality of health services and to ensure sustainability of the health systems, the assessment of systems performance became mandatory. World Health Organization undertook in 2000 a comparative assessment of the performance of health systems for 191 member states, based on a generic framework. The results highlighted the strenghts and the weaknesses of the systems, stimulating the political interest for monitoring health systems performance. The purpose of this paper is a critical review of the frameworks applied for performance assessment of the health systems. The article summarizes the steps taken in frameworks design and the sets of indicators derived from them. These evaluations provide effective models for health systems stewardship, guiding policy-makers. The emphasis is put on unifying reporting standards of data and indicators and on coordination of methodologies, to ensure reliable cross-country comparisons for mutual learning.*

## INTRODUCTION

Health System Performance Assessment became mandatory for all countries after 2000, when this topic was brought into the political attention by the report of World Health Organization (WHO) on world health. WHO designed a generic conceptual framework for health system performance and undertook an analysis, ranking 191 member states in a league table (Murray & Frenk, 2000; WHO, 2000). The report generated many debates, mainly regarding methodological aspects: data availability, weighting methods for composite indicators, validity of rankings, the focus of measurements on healthcare system, without taking into account the social and educational determinants of health or the delayed effects of health interventions (Veillard, Armesto, Kadandale & Klazinga, 2010). Despite controversies, this endeavour raised awareness of national governments. It emphasized the need for accountability in health system for good stewardship and stimulated the international health system comparisons. In time, these comparisons have facilitated mutual learning, strategy development and benchmarking (Wait & Nolte, 2005; Veillard, Armesto, Kadandale & Klazinga, 2010).

The health system performance framework proposed in 2001 by Organisation for Economic Co-operation and Development (OECD) brought a few modifications to WHO's framework. Without having ranking goals, OECD focused on healthcare system and reported performance by its dimensions, in order to provide evidence for decision-makers (Hurst & Jee-Hughes, 2001). The quality of care was considered the core dimension of performance and a set of common indicators for international comparisons was provided through Health Care Quality Indicators Project (HCQI). The results of HCQI and the international comparisons are available since 2007 through the publication of the OECD's biannual report, "Health at Glance" (Carinci et al., 2015).

Following the proposals of WHO and OECD for performance assessment of health systems, a large number of initiatives were undertaken at international or national levels, aiming to construct performance frameworks and indicators against multiple objectives. The purposes cover policy development, coordination of actions within the health systems for goals achievement, accountability to citizens and stakeholders, managerial control and evaluation of progress and also research objectives (Perić, Hofmarcher & Simon, 2017, 2018). The indicators are designed to examine the whole system, a sector or a specific domain or disease. They are ranging from macro to meso level aspects and even further, reflecting individual patients experiences with healthcare

services (Bankauskaite & Dargent, 2007; Perić, Hofmarcher & Simon, 2018). Some of the approaches aim to bring solutions to epidemiological, economic or geopolitical aspects and measure health systems performance on factors related with these aspects (Veillard, Armesto, Kadandale & Klazinga, 2010). As a result, currently there is a proliferation of indicators, with many overlaps or gaps, determining a lack of comparability between countries (Perić, Hofmarcher & Simon, 2018).

This paper offers a brief and critical perspective over the assessment process of health systems and its evolution in time. Section 2 discusses the performance frameworks of the international specialized bodies, WHO and OECD and their major revisions. They are the reference ones and they also provide standards for data and indicators, unifying the reportings. Section 3 looks into the sets of indicators derived from those two international frameworks and their dynamics. Indicators for comparisons between countries are available on WHO European health information gateway, OECD health statistics, the European Core Health Indicators and Eurostat (Perić, Hofmarcher & Simon, 2018). Section 4 concludes over the current trend of frameworks and indicators for health systems performance assessment.

## METHODS

A documentary study was conducted over the reports and working papers of WHO and OECD, available online and on the articles released by researchers reunited for revisions of frameworks and for indicators analysis, available on *Archives of Public Health*.

## HEALTH SYSTEM PERFORMANCE FRAMEWORKS

For the discussion of health system performance it is important to mention the working boundaries of the health system and to present its goals, as they are the conceptual basis for health system performance. Then, the natural pursuit is to define performance within the health system and to look into the sets of indicators designed to measure it.

In a restrictive way, health system is seen as a healthcare provider system. The broader sense includes all the actors, institutions and resources involved in unrolling health actions. Health actions are those activities whose main target is to improve or maintain population health (WHO, 2000; Bankauskaite & Dargent, 2007).

Three intrinsic goals were formulated for health system: a) health improvement, b) responsiveness and c) fairness in financial contribution (Murray &

Frenk, 2000). ‘Health improvement’ is defined in terms of outcomes: individual outcomes, ensured by treatments and the health status of the population. ‘Responsiveness’ is the ethical and psychosocial dimension of health system and captures the non-medical expectations of the population. It includes the respect for the person (dignity, autonomy and confidentiality) and the client orientation component (prompt services, access to social support when receiving care, quality of basic services and choice of provider) (Murray & Frenk, 2000; Smith, Mossialos, Papanicolas & Leatherman, 2010). ‘Fair financing’ involves the normative that “every household should pay a fair share towards the costs of the health system”, according to its income and also outlines the financial risk protection from catastrophic healthcare costs (Murray & Frenk, 2000, p. 720).

The concept of performance assumes meeting the objectives of the system and it is defined through its most used dimensions: effectiveness, efficiency, quality and equity (Hurst & Jee-Hughes, 2001; Bankauskaite & Dargent, 2007). WHO released an assessment framework with five components of health system performance, using average level and distribution as measures for the first two goals, ‘health improvement’ and ‘responsiveness’ (Hurst & Jee-Hughes, 2001). Murray and Frenk (2000), the authors of the framework for WHO, consider quality, equity and efficiency as dimensions of performance. In their acceptance, quality is expressed through the level of goal attainment for ‘responsiveness’ and ‘equity’ is given by the distribution of all three goals, as it can be seen in figure 1. Efficiency is represented by “how well the socially desired mix of the five components of the three goals is achieved, compared to the available resources” (Murray & Frenk, 2000).

The performance of the countries ranked in World Health Report 2000 was estimated as a weighted sum of all five components. The weights were established based on a survey of 1006 respondents from 125 countries. The overall reported score, which reflects health improvement, was obtained using the statistical technique, frontier analysis. Thus, the actual goal achievement was expressed as a proportion of the difference between maximum and minimum expected goal achievement (Hurst & Jee-Hughes, 2001; Arah et al., 2003). WHO adopted the wider definition of the health system, including all health actions, although at the indicators level focused mostly on healthcare system (Veillard, Armesto, Kadandale & Klazinga, 2010).

This framework was revised in 2007, as a reaction to a changing world, moving the emphasis on the functions of the health systems or the instrumental goals. The aim was to clarify what a health system is and what strengthens it (WHO, 2007). The four

functions of the health system from the initial model were redesigned in a six distinct building blocks: 1) service delivery; 2) health workforce; 3) information; 4) medical products, vaccines and technologies; 5) financing; 6) leadership and governance (stewardship). The interactions between these six blocks ensure the achievement of the intrinsic goals of the system, the primary one being health improvement (Papanicolas, 2013).

OECD’s framework brought a few significant modifications to WHO’s framework for performance. First, it added ‘access’ to ‘responsiveness’ goal, in order to explicitly evaluate equity of access to healthcare. Second, it highlighted the financial aspects of health system by including the level of health expenditure as a goal. Two new concepts have emerged from this: macroeconomic efficiency (the desired level of health expenditure) and microeconomic efficiency (attained productivity of the system against the maximum attainable productivity, for a given level of resources) (Hurst & Jee-Hughes, 2001). As a result, performance could be estimated based on six components of health system, as shown in figure 2. The average levels of the three goals indicate the efficiency of the system, while the distributions of the goals measure equity.

As dimensions of performance, OECD framework has four ones: 1) health improvement / outcomes; 2) responsiveness; 3) equity (of health outcomes, access and finance); 4) efficiency (macro and microeconomic) (Arah et al., 2003). Quality is divided in two components, ‘health outcomes’ and ‘responsiveness’, and is measured through their levels. In the revised framework, released in 2006, quality of care is the core dimension and includes effectiveness, safety and responsiveness, according to the definition given it by the US Institute of Medicine. ‘Responsiveness’, also seen as ‘patient centeredness’, has two new categories, forecasting future indicator development: the ‘individual patient experiences’ and ‘integrated care’ (Carinci et al., 2015; European Commission, 2016).

The revised frameworks of WHO and OECD over the health systems performance assessment capture the new directions of European health policies. The topics on the agenda are sustainability and efficiency of healthcare expenditure, cross-border healthcare for EU citizens and a single European health information system (Perić, Hofmarcher & Simon, 2017). The Tallinn Charter, signed in 2008 by 53 states, promotes the Health 2020 policy framework to strengthen health system accountability. All member states have assumed to establish national health strategies and to measure health system performance in order to ensure sustainability of the system and the quality of care (Tello & Baez-Camargo, 2015).

## RELEVANT TOOLS FOR HEALTH SYSTEMS PERFORMANCE ASSESSMENT

A major challenge for health system performance assessment was and still is to establish reporting standards of data and indicators and also to coordinate methodologies. Health data are a powerful tool to support health policy-makers and require effective and comprehensive analysis. The World Health Report 2000 was the first notable step to unify data reporting for cross-country comparisons, although raised many methodological questions.

Significant achievements have been made regarding nature and timeliness of data, but a European-wide framework for cross-country comparisons does not exist yet (Perić, Hofmarcher & Simon, 2017, 2018).

For international comparisons of health systems, Global Reference List of 100 Core Health Indicators (WHO, 2015) and Health Care Quality Indicators (OECD, 2001, with systematic revisions in 2006 and 2013), are the most relevant instruments. The collaboration of the international agencies with the European Commission, through its relevant Directorates-General (DG) and the Member States produced satellite sets of indicators: European Core Health Indicators shortlist and OECD System of Health Accounts, providing comparable health financial data. The Directorates-General of European Commission also collect data and generate works that focus on specific aspects or dimensions of health systems performance: sustainability of health services, for country-specific recommendations; health information; quality control methods; timely access to healthcare services (Carinci et al., 2015; Perić, Hofmarcher & Simon, 2017).

The Global Reference List of 100 Core Health Indicators, designed by WHO, is “a standard set of 100 core indicators prioritized by the global community to provide concise information on the health situation and trends, including responses at national and global levels” (WHO, 2015, p. 10). A core indicator is a prioritized indicator and is included in the list if it meets the following criteria: 1) is prominent in monitoring of major international declarations or has been identified through international mechanism as a priority indicator in specific programmes; 2) is measurable, time-bound, achievable, accessible, scientific robust and useful; 3) there is a strong track record of extensive measurement experience with the indicator; 4) it is used in monitoring of national plans or programmes (WHO, 2018).

The set covers the health system in its wider acceptance, accounting for healthcare and for the social and environmental determinants of health. It is organized on 4 domains of indicators: a) health status, b) risk factors, c) service coverage and d) health system. ‘Health status’ includes indicators of

mortality by age, sex and cause, indicators of fertility and morbidity, as ‘HIV incidence rate’ or ‘cancer incidence, by type of cancer’. The ‘Risk factors’ are evaluated in terms of nutrition, infections, environmental risk factors, non-communicable diseases and injuries. ‘Service coverage’ includes reproductive and health aspects for different stages of child development and also immunization, communicable diseases and the preventive care. ‘Health systems’ measures aspects of healthcare (inputs and outputs), as shown in table 1: quality; safety; access; health force; health informations; health financing and security (WHO, 2018).

Compared to WHO’s work on health system performance indicators, OECD’s efforts focused on healthcare services. The instrument released by the Health Care Quality Indicators Project included at its last revision 70 indicators, grouped mainly by the type of service: Primary Care, Acute Care, Mental Health, Cancer Care, Patient Safety and Patient Experiences. The structure of the set follows Donabedian’s model for quality of care. Donabedian identified three domains that provide information for quality of care: structure, process and outcomes (European Commission, 2016). HCQI includes process and outcome measures, as can be seen in table 2.

Data availability is the main criteria for inclusion or exclusion of the indicators into the set. They are considered proper for international comparisons and added to the set only when at least ten countries can provide stable data, according to the agreed definitions (Veillard, Armesto, Kadandale & Klazinga, 2010).

Currently, healthcare indicators are mostly used because they accurately reflect the contribution of health systems to population health. However, not all variations in health outcomes can be attributed to health systems and in order to capture other influences have emerged new concepts, as ‘disability’ or ‘avoidable mortality’ (“death should not occur in the presence of timely and effective medical care”) (Nolte, Bain, McKee, 2010, p. 44). Also, patient-reported outcome measures have an increasing use in capturing health improvement, although they can be applied only when patients are reliable reporters about their conditions (presence of disease, risk behaviours) and they received medical services (Smith, Mossialos, Papanicolas & Leatherman, 2010; McGlynn, 2010). Patient’s perception underlies the assessment of responsiveness through patient satisfaction or patient experience surveys. It is a measure wide reported in quality management reports, due to the promotion of patient-centered care (Busse, 2013).

## CONCLUSIONS

Population health is not only a medical issue, but also a social, economic and political one. A large deployment of researches, bringing together international working groups, aim to provide constantly solid evidence to policy-makers and to maintain the state of the health systems on the political agenda. The assessment of health system performance is a laborious process and the effects are registered in terms of increased quality of healthcare services and a strategic management of the health system. This is meant to ensure population health and the sustainability of the healthcare. The international endeavours tend towards a unique and standardized operational framework and to core indicators, able to ensure reliable and comparable measures. Quality is undoubtedly the main dimension of performance for healthcare, as principal component of health system, having the patient in center. Patient-reported outcome measures, patient satisfaction and patient experience are subjective measures with an increasing use in health systems assessments. However, the efficiency of the health system, expressed through expenditure indicators, correlated with outcomes, remains of primary interest for stakeholders.

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<b>Components for assessment</b>	<b>Average level</b>	<b>Distribution</b>
<b>Goals</b>		
Health improvement	√	√
Responsiveness to expectations	√	√
Fairness in financial contribution	—	√
	<b>Quality</b>	<b>Equity</b>

**Efficiency**

Figure No. 1  
**WHO health system performance framework**  
*Source: Murray & Frenk, 2000*

	<b>Average Level</b>	<b>Distribution</b>
Health improvement / outcomes	√	√
Responsiveness and access	√	√
Financial contribution / Health expenditure	√	√
	<b>Efficiency</b>	<b>Equity</b>

Figure No. 2  
**OECD proposed health system performance framework**  
*Source: Hurst & Jee-Hughes, 2001, adapted from Murray & Frenk, 2000*

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Table no. 1

### The indicators included in 'Health system' domain

<b>Quality and safety of care</b>	
<ul style="list-style-type: none"> <li>• Perioperative mortality rate</li> <li>• Obstetric and gynaecological admissions owing to abortion</li> <li>• Institutional maternal mortality ratio</li> <li>• Maternal death reviews</li> <li>• Antiretroviral therapy (ART) retention rate</li> <li>• Tuberculosis (TB) treatment success rate</li> <li>• Service-specific availability and readiness</li> </ul>	
<b>Access</b>	
<ul style="list-style-type: none"> <li>• Outpatient service utilization (also: inpatient admissions and surgical volume)</li> <li>• Health facility density and distribution (also: access to emergency surgery)</li> <li>• Hospital bed density</li> <li>• Access to a core set of relevant essential medicines</li> </ul>	
<b>Health workforce</b>	
<ul style="list-style-type: none"> <li>• Health worker density and distribution</li> <li>• Output training institutions</li> </ul>	
<b>Health information</b>	
<ul style="list-style-type: none"> <li>• Birth registration</li> <li>• Death registration</li> <li>• Completeness of reporting by facilities (also: completeness and timeliness for notifiable disease)</li> </ul>	
<b>Health financing</b>	
<ul style="list-style-type: none"> <li>• Total current expenditure on health as % of gross domestic product (also: total capital expenditure on health as % of current + capital expenditure on health)</li> <li>• Public domestic sources of current spending on health as % of current health expenditure (also: private)</li> <li>• External source of current spending on health (% of current expenditure on health) Proportion of the population with impoverishing health expenditure</li> <li>• Proportion of the population with large household expenditure on health as a share of total household consumption or income</li> <li>• Total net official development assistance to medical research and basic health sectors</li> </ul>	
<b>Health security</b>	
<ul style="list-style-type: none"> <li>• International Health Regulations (IHR) core capacity index</li> </ul>	
<b>Governance</b>	
<ul style="list-style-type: none"> <li>• Existence of national health sector policy / strategy / plan</li> </ul>	

*Source: World Health Organization, 2018.*

Table no. 2

### Indicators included in HCQI project

<b>Care for acute conditions</b>	
<b>Outcome</b>	<b>Process</b>
In-hospital acute myocardial infarction case-fatality rates	Waiting time for surgery after hip fracture, age 65+
In-hospital ischaemic / haemorrhagic stroke case-fatality rate	
<b>Cancer care</b>	
<b>Outcome</b>	<b>Process</b>
Survival rate for colorectal cancer	Mammography screening
Survival rate for breast cancer	Cervical cancer screening
Survival rate for cervical cancer	
<b>Care for chronic condition</b>	
<b>Outcome</b>	<b>Process</b>
Hospital admission rate for asthma (age 18+)	Annual retina examination for diabetics
Asthma mortality rates (age 5-39)	

*Source: Veillard, Armesto, Kadandale & Klazinga, 2010*