HSR: Frameworks, Metrics and Methods

Christopher Murray MD, D.Phil
Director IHME
Professor of Global Health
University of Washington
Outline

Frameworks
Typologies
Metrics
Methods
Prospects
Health System Frameworks

Many competing frameworks – e.g. WHO HSPA v1, WHO HSPA v2, WHO Building Blocks, control knobs

What value are frameworks?

1. Measurement requires standardized definitions such as what activities should be included as in the health system.

2. Health systems are complex and empirically diverse yet share key attributes in common (individual-provider interactions focused on technology delivery). Frameworks can facilitate a common understanding of the complexity.

3. Health system frameworks should help frame key hypotheses: does the public-private split of resource generation matter, does stewardship improve performance, do outreach workers enhance efficiency etc.
WHO HSPA Framework V1 and V2

Three years of vigorous academic and policy debate on framework
WHO HSPA Framework V1 Health System Functions

Stewardship (oversight)

Responsiveness (to people’s non-medical expectations)

Creating resources (investment and training)

Health

Delivering services (provision)

Financing (collecting, pooling and purchasing)

Fair financial contribution
WHO HSPA Framework V2 Emphasized the Coverage and Effective Coverage of Interventions

Information on coverage or effective coverage of interventions strengthens the evidence on the link between provision of services and outcomes.
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Typologies

Like frameworks, reducing the complexity of health systems from 200+ jurisdictions to a smaller number can aid in common understanding, cross-national study design, and hypothesis generation.

Typologies can be based on system organizing principles (e.g. Beveridge vs Bismarck) or on empirical measurement of different health system functions, inputs, outputs and outcomes.

Empirical typologies have the potential to highlight commonalities between systems that are not otherwise noted.

Large scope for further empirical research on typologies using increased measurements available.
An Example of a Financing Typology Based on Empirical Cluster Analysis

Using WHO NHA results, and formal clustering techniques, the following typology emerges with four clusters and small number of countries that are on the margin of belonging to two clusters
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Metrics: Getting the Balance Right

Many research methods on health systems require comparable, valid and reliable measurements of inputs, functions, outputs and outcomes.

Comparable metrics have been slow to improve over the last 20 years.

Metrics especially for complex phenomena like health systems take investment in common definitions, data systems and an iterative approach to enhancing comparability.
OECD Quality Report 2010 In-Hospital AMI Case-Fatality Rates: Is This A Meaningful Performance Metric?
Implausible Results: Problems with In-Hospital Death Rates

1. Variations in age profile of patients in different health authorities

2. Variation in co-morbidities such as diabetes, COPD, other chronic conditions.

3. Only counting one category out of five of deaths that health system can influence:
   a. deaths before arriving at hospital,
   b. deaths in the emergency room,
   c. deaths within 30 days in-hospital,
   d. deaths after 30 days in hospital,
   e. deaths after discharge.
Using patient level records for all emergency room admissions, hospital admissions and vital registration cause of death certificates: we can analyze how various definitions of the AMI CFR change relative performance in 15 US States with requisite data.
Some Common Problems with Metrics

1. Often intensity of effort for measurement not correlated with importance of factors.

2. Metrics for a given process e.g. Acute myocardial infarction focus attention on one step in a causal chain missing critical steps earlier or later in the pathway.

3. Natural tendency to gravitate to process measures alone because they appear to be more comparable and need less risk-adjustment but may be misleading.

4. Many quality or health system activity metrics ignore groups excluded from the system: the problem of missing denominators.
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Diversity of Methodological Approaches

1. Analysis of specific policy changes in a particular context.
2. Time-series cross-sectional analysis of outcomes and a range of health system attributes or policies.
3. Case-studies of performance outliers
4. Constraints analysis
Analyzing Specific Policy Changes

1. Strongest evidence coming from randomized trials – e.g. health insurance in Mexico, conditional-cash transfers in numerous settings, contracting out in Rwanda, many narrower policy changes.

2. Growing use of large household surveys, individual administrative records using observational methods to analyze policy changes
   a. Range of statistical methods -- matching, differences in differences, marginal structural equation modeling….
   b. Always a risk of residual confounding but body of work is useful.
Time-Series Cross-Sectional Studies

1. Descriptive studies attempt to characterize who is performing well in terms of producing health outcomes. Analytical studies go a step further to relate outcomes to attributes of the system or policies.

2. May be the only method to study some aspects of architecture or the interaction between architecture and social and cultural factors.

3. Problem of attributing outcomes to health system actions versus other factors.

4. Problem of time lags in the effect of health system action and outcomes confound many analyses.

5. Use of coverage or effective coverage of interventions as the dependent variable can solve some of the causal attribution and time lag problems.
Outlier Analysis

Assessments of an outcome or change in an outcome identify outliers – individuals, providers, communities, nations.

Outliers may be measurement errors or due to exceptional performance (bad or good).

Qualitative and quantitative investigations of these outliers can yield insights into the contextual and policy factors contributing to exceptional performance.

Care must be taken to balance positive with negative outliers to reduce the risk of inappropriate inference.
Constraints Analysis

1. Individual level data on coverage or effective coverage of interventions with linked data on providers provides the opportunity to analyze both supply and demand aspects of services.

2. Analyses can examine proximal determinants such as distance, price, supply availability, human resource availability, perceived effectiveness of services, cultural access etc.

3. More complex pathway analysis can attempt to simultaneously assess distal determinants and proximal determinants such as educational attainment, discrimination, and other factors on supply and demand.
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Increasing Potential for Building an Evidence-Base

1. Availability of large datasets, improved analytical methods, heightened awareness of the importance of health system attributes on scaling up interventions all point to a major expansion of research on health systems.

2. As evidence on specific policies, outliers or constraints in particular contexts expands, moving to more generalizable insights on health system architecture or organization of functions will remain difficult.

3. Common definitions, well-designed metrics, broader understanding of the methodological toolkit will aid in building the discipline and the possibility of more generalizable knowledge.