

A Review of Conceptual Barriers and Opportunities facing Health Systems Research to inform a Strategy from the World Health Organization

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Background paper commissioned by the Alliance for Health Policy and Systems Research to develop the WHO Health Systems Research Strategy

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Final version submitted on 1 June 2012 to the
Alliance for Health Policy & Systems Research
World Health Organization

Preface

This paper was commissioned to provide a conceptual underpinning for the WHO Global Strategy on Health Systems Research that is currently under development. It reviews existing definitions, terms, conceptual models, taxonomies, standards, methods and research designs which describe the scope of health systems research as well as the barriers and opportunities that flow from them. It addresses each of the five main goals of the WHO Strategy on Research for Health, including organization, priorities, capacity, standards and translation.¹ Any feedback would be greatly appreciated and can be sent by email to Steven Hoffman (hoffmans@mcmaster.ca).

Acknowledgements

Thank you to Lucy Gilson for sharing an advanced copy of the Methodological Reader (2012) she edited, which is now freely available.² Thank you to Diana Araja, Elizabeth Bradley, Emily Cherlin, Abdul Ghaffar, Lucy Gilson, Andy Haines, Anne Mills, Yvo Nuyens, Nhan Tran and Merrick Zwarenstein for providing feedback on earlier drafts of this paper, and to Julia Olesiak at the McMaster Health Forum for help with layout design.

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¹ World Health Organization. 2010. WHO's Role and Responsibilities in Health Research: Draft WHO Strategy on Research for Health. Sixty-Third World Health Assembly. A63/22. Geneva: World Health Organization. Available at http://apps.who.int/gb/ebwha/pdf_files/WHA63/A63_22-en.pdf

² Gilson L, ed. 2012. *Health Policy and Systems Research: A Methodological Reader*. Geneva: Alliance for Health Policy & Systems Research. Available at http://www.who.int/alliance-hpsr/resources/alliancehpsr_reader.pdf.

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“Something is wrong. For the first time, public health has commitment, resources, and powerful interventions.

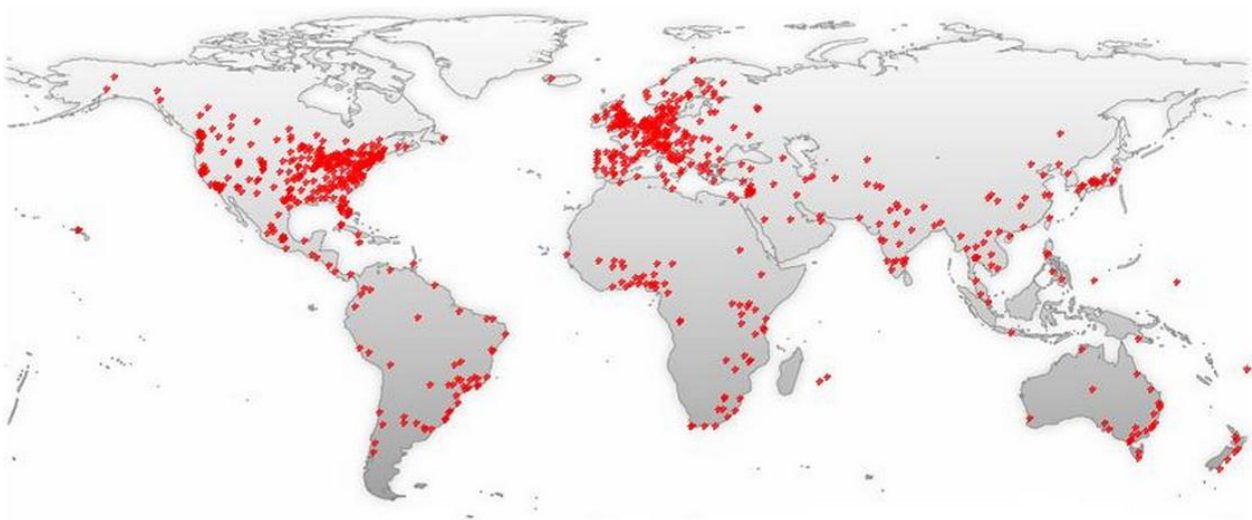
What is missing is this: the power of these interventions is not matched by the power of health systems to deliver them to those in greatest need, on an adequate scale, in time. In part, this lack of capacity arises from the failure of governments all around the world to invest adequately in basic health systems. It also arises, in part, from the fact that research on health systems has been so badly neglected and underfunded. The two go together. So long as investments in health systems are given low priority, research in this area will also be neglected. **In the absence of sound evidence, we will have no good way to compel efficient investments in health systems.”**

Dr. Margaret Chan, Director-General of the World Health Organization
Beijing, China, October 29, 2007

Abstract

Health systems research is widely recognized as essential for strengthening health systems, getting cost-effective treatments to those who need them, and achieving better health status around the world. However, there is significant ambiguity and confusion in this field's characteristics, boundaries, definition and methods. Adding to this ambiguity are major conceptual barriers to the production, reproduction, translation and implementation of health systems research relating to both the complexity of health systems and research involving them. These include challenges with epistemology, applicability, diversity, comparativity and priority-setting. Three promising opportunities exist to mitigate these barriers and strengthen the important contributions of health systems research. First, health systems research can be supported as a field of scientific endeavour, with a shared language, rigorous interdisciplinary approaches, cross-jurisdictional learning and an international society. Second, national capacity for health systems research can be strengthened at the individual, organizational and system levels. Third, health systems research can be embedded as a core function of every health system. Addressing these conceptual barriers and supporting the field of health systems research promises to both strengthen health systems around the world and improve global health outcomes.

Figure 1: World Map of the 9,818 MEDLINE Records Containing the Term “Health Systems”



Source: GoPubMed, which reports the frequency that terms appear in MEDLINE indexes for publications, which include titles, abstracts, journal names and corresponding author's affiliation. Many regions of the world will be underrepresented in this figure given the popularity of other indexes, such as LILACS for Spanish-language literature. This data was obtained on 25 February 2012.

1. Conceptualizing Health Systems

Pragmatic solutions already exist to address many of the greatest global health challenges, yet progress remains frustratingly slow because many health systems are constrained and cannot fully operationalize them. Eliminating two-thirds of child mortality and three-quarters of maternal mortality would be possible if only the world knew how to effectively support the widespread implementation of the simplest of existing interventions.³ Achieving better health internationally thus requires new knowledge for both the discovery of biomedical innovations as well as the health policies and systems necessary to actually deliver them. Achieving the Millennium Development Goals and nearly every global health priority depends on it.⁴

Health systems have been defined in many ways. The most widely-used definition is from the World Health Organization's World Health Report 2000, which defines health systems functionally as "all the activities whose primary purpose is to promote, restore or maintain health."⁵ These activities are often grouped into six categories or "building blocks", namely 1) service delivery, 2) health workforce, 3) health information systems, 4) medical products, vaccines and technologies, 5) health systems financing and 6) leadership and governance.⁶ Health systems have also been defined at least in part in terms of contributing actors. The European Observatory for Health Systems & Policies, for example, defines health systems as the "people, institutions and resources, arranged together in accordance with established policies, to improve the health of the population they serve, while responding to people's legitimate expectations and protecting them against the cost of ill-health through a variety of activities whose primary intent is to improve health."⁷ The Tallinn Charter from the 2008 WHO European Ministerial Conference on Health Systems defines health systems as the "ensemble all public and private organizations, institutions and resources mandated to improve, maintain or restore health" which "encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health."⁸

Health systems have also been conceptualized in numerous ways. We conducted a comprehensive search of the academic and grey literature in Google Scholar, Science Direct, PubMed and Web of Science and consulted key informants in an attempt to find as many conceptual frameworks as possible that were published over the last 20 years which describe the functions, actors, goals and/or reform opportunities of health systems. Our search led us to 41 different frameworks, which we have classified as either *system frameworks* (i.e., focused on the whole health system), *sub-frameworks* (i.e., focused on particular parts of the health system) or *supra-frameworks* (i.e., focused on how other societal systems interact with the health system). Although since our search only targeted system frameworks, the lists of sub-frameworks and supra-frameworks have been included for illustrative and comparative purposes only. We also categorized the frameworks according to whether they were

³ Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS, and the Bellagio Child Survival Study Group. 2003. How many child deaths can we prevent this year? *The Lancet* 362: 65-71.

⁴ Travis P, Bennett S, Haines A, Pang T, Bhutta Z, Hyder AA, Pielemeier NR, Mills A, Evans T. 2004. Overcoming health-systems constraints to achieve the Millennium Development Goals. *The Lancet* 364(9437): 900-906.

⁵ World Health Organization. 2000. *World Health Report 2000. Health Systems: Improving Performance*. Geneva: World Health Organization.

⁶ World Health Organization. 2007. *Strengthening Health Systems to Improve Health Outcomes*. Geneva: World Health Organization.

⁷ European Observatory for Health Systems and Policies. *Observatory Glossary, 2007*. Available at <http://www.euro.who.int/observatory/Glossary/Toppage>.

⁸ WHO European Ministerial Conference on Health Systems. 2008. *Tallinn Charter: Health Systems for Health and Wealth*. Resolution EUR/RC58/R4. Geneva: World Health Organization.

developed to offer a better *understanding* of health systems, to offer a way of *comparing* them, to help with *informing changes* to health systems, or to outline a method of *evaluating* their performance or changes to them (see Table 1).

Table 1: Categorization of 41 Health System Frameworks

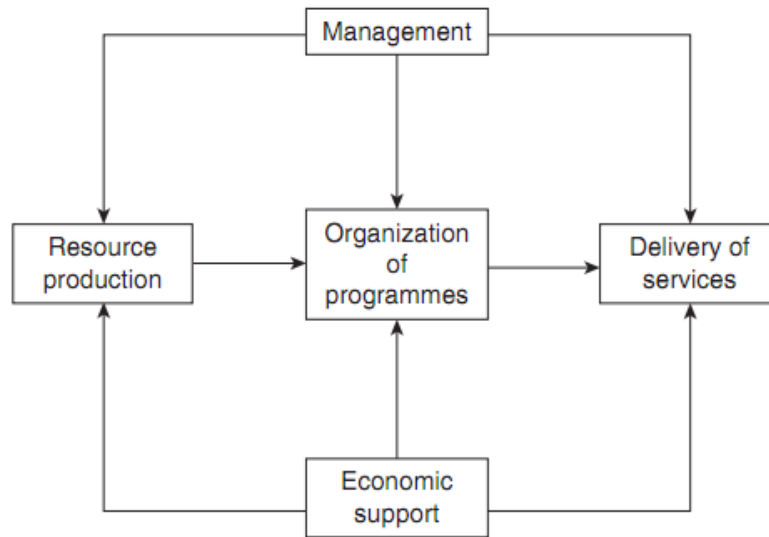
Goal	Type of Framework		
	Sub-Framework	Framework	Supra-Framework
<i>Understanding</i>	<ul style="list-style-type: none"> • Yett, <i>et al.</i>, University of Southern California, 1972[†] • Kutzin, WHO Regional Office for Europe, 2001[†] • Mills, <i>et al.</i>, World Bank, 2006[†] 	<ul style="list-style-type: none"> • Evans, University of British Columbia, 1981 (“Actors Framework”)* • Roemer, University of California, 1991 (“Basic Interactions Framework”)* • WHO, 2000 (“Health Systems Performance Framework”)* • Khaleghian & Das Gupta, World Bank, 2004[†] • WHO, 2007 (“Building Blocks”)* • Global Fund, 2008* • Mikkelsen-Lopez, <i>et al.</i>, Geneva Health Forum, 2010[†] 	<ul style="list-style-type: none"> • Hsiao & Heller, International Monetary Fund, 1997[†] • Atun & Menabde, Imperial College, 2008 (“Systems Thinking Framework”)[†] • Veillard, <i>et al.</i>, Canadian Institute for Health Information, 2011*
<i>Comparing</i>	<ul style="list-style-type: none"> • Feldstein, <i>et al.</i>, Harvard University, 1972* • Feldstein & Friedman, Department of Health, Education and Welfare, 1976* • Nixon & Ulmann, University of York, 2006[†] 	<ul style="list-style-type: none"> • Rechel, <i>et al.</i>, European Observatory on Health Systems and Policies, 2010 (“HiT Template”)* 	<ul style="list-style-type: none"> • Hurst, OECD, 1992 (“Fund Flows and Payment Framework”)* • Anell & Willis, Swedish Institute for Health Economics, 2000* • Hurst & Jee-Hughes, OECD, 2001* • Docteur & Oxley, OECD, 2003* • Anand & Bärnighausen, University of Oxford and Harvard University, 2004* • Siddiqi, <i>et al.</i>, WHO Regional Office for the Eastern Mediterranean, 2009*
<i>Informing Change</i>	<ul style="list-style-type: none"> • WHO, 2008 (“Primary Healthcare”)* • Savel, <i>et al.</i>, Centers for Disease Control and Prevention, 2010[†] 	<ul style="list-style-type: none"> • Frenk, Mexican Health Foundation, 1994 (“Reform Framework”) † • Londoño & Frenk, Inter-American Development Bank & Mexican Health Foundation, 1997[†] • Sicotte, <i>et al.</i>, University of Montreal, 1998 (“Integrated Performance Framework”) † • Mills & Ranson, London School of Hygiene and Tropical Medicine, 2001* • Population Health and Wellness, British Columbia Ministry of Health Services, 2005* • Commonwealth Fund, 2006* • Van Olmen, <i>et al.</i>, Institute of Tropical Medicine Antwerp, 2010[†] 	<ul style="list-style-type: none"> • Cassels, 1995[†] • World Bank, 2007 (“Healthy Development”)[†]
<i>Evaluating</i>	<ul style="list-style-type: none"> • Ergo, <i>et al.</i>, USAID, 2011 	<ul style="list-style-type: none"> • Aday, <i>et al.</i>, University of Texas, 1998 (“Behavioural Healthcare Framework”)* • Roberts, <i>et al.</i>, Harvard University, 2003 (“Control Knobs Framework”)* • Ramagem & Raules, Pan American Health Organization, 2008* • International Health Partnership, 2008[†] 	<ul style="list-style-type: none"> • Arah, <i>et al.</i>, University of Amsterdam, 2006* • Shakarishvili, <i>et al.</i>, The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2011*

Note: *indicates a descriptive framework and † indicates an interactive framework. Full citations listed in Appendices 1 and 2.

For example, Milton I. Roemer of the University of California, Los Angeles developed a basic interactions framework in 1991 as a way to *understand* health systems (see Table 1, first row, middle column). In his framework, a health system is “the combination of resources, organization, financing and management that culminate in the delivery of health services to the population” (see Figure 2). Resources include health professionals, facilities, commodities and knowledge. Organization includes one principal authority of government (at several levels), other governmental agencies with health

functions, voluntary health agencies, enterprises and a private health care market. Management includes health planning, administration, regulation and legislation. Economic support includes governmental tax revenues (at different levels), social insurance (statutory), voluntary insurance, charity, personal households and foreign aid (where relevant). Finally, delivery of services include primary health care, secondary care and tertiary care.⁹

Figure 2: Roemer's Framework for Understanding Health Systems (1991)



Source: Roemer MI. 1991. *National Health Systems of the World. Vol 1: The Countries*. Oxford: Oxford University Press.

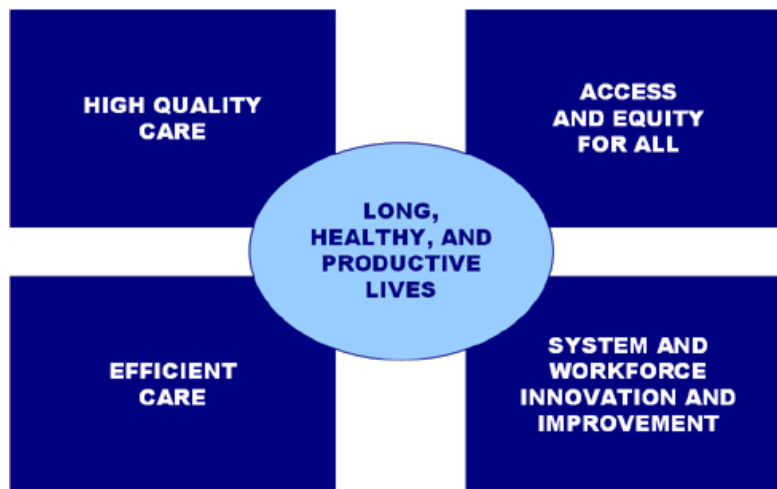
One example of a framework for *comparing* health systems comes from the European Observatory on Health Systems & Policies (see Table 1, second row, middle column). In their latest template for authors writing a Health Systems in Transition (HiT) profile, key components of a health system are to be presented in separate chapters. These include: 1) an *introduction* that outlines the broader context of the health system; 2) *organization and governance*, which explains how a health system is organized, the main actors, their decision-making powers, historical evolution, regulation, and the level of patient empowerment in the areas of information, rights, choice, complaints procedures, safety and involvement; 3) *financing*, which provides information on the level of expenditure, who is covered, what benefits are covered, the sources of health care finance, how resources are pooled and allocated, the main areas of expenditure, and how providers are paid; 4) *physical and human resources*, which deal with the planning and distribution of infrastructure, IT systems, and health professional registration, training, trends and career paths; 5) *provision of services*, which concentrates on patient flows, organization and delivery of services; 6) *principal health reforms*, which reviews policy and organizational changes that have had or will have a substantial impact on health care; 7) *assessment of the health system*, which provides an evaluation based on the stated objectives of the health system and other indicators; and 8) *conclusions*, which highlight lessons learned from health system changes, remaining challenges and future prospects.¹⁰

⁹ Roemer MI. 1991. *National health systems of the world. Vol 1: The countries*. Oxford: Oxford University Press; Roemer MI. 1993. National health systems throughout the world: lessons for health system reform in the United States. *American Behavioral Scientist* 36(6):694-708.

¹⁰ Rechel B, Thomson S, van Ginneken E. 2010. *Health systems in transition: Template for authors*. United Kingdom: European Observatory on Health Systems and Policies.

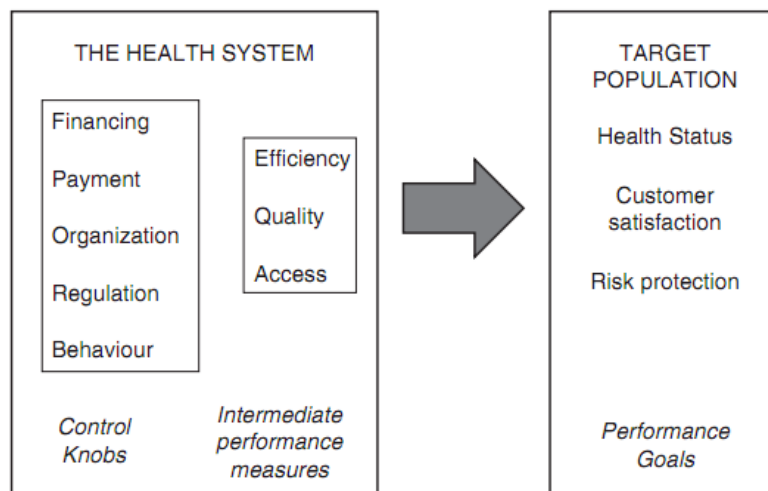
The Commonwealth Fund’s Framework for a High Performance Health System for the United States offers an example of a framework for *informing changes* to health systems (see Table 1, third row, middle column). Their framework, developed in 2006, identifies four goals and priorities for performance improvement, namely 1) high-quality care, 2) efficient care, 3) access and equity for all, and 4) system and workforce innovation and improvement (see Figure 3). Various policy options and indicators are outlined for each goal.¹¹

Figure 3: Commonwealth Fund’s Framework for Informing Changes to Health Systems (2006)



Source: Commonwealth Fund Commission on a High Performance Health System. 2006. *Framework for a High Performance Health System for the United States*. New York: Commonwealth Fund.

Figure 4: Roberts et al.’s “Control Knobs Framework” for Evaluating Changes in Health Systems (2003)



Source: Roberts MJ, Hsiao WC, Berman P, Reich MR. 2003. *Getting Health Reform Right*. New York: Oxford University Press.

¹¹ Commonwealth Fund Commission on a High Performance Health System. 2006. *Framework for a High Performance Health System for the United States*. New York: Commonwealth Fund.

Finally, the “Control Knobs Framework” developed by Marc J. Roberts and colleagues at Harvard University in 2003 and adopted by the World Bank Institute’s Flagship Program on Health Systems Strengthening offers an example of a framework for *evaluating* changes to health systems (see Table 1, fourth row, middle column). In their framework, health systems are conceptualized as “a set of relationships where the structural components (means) and their interactions are associated and connected to the goals the system desires to achieve (ends).” This framework identifies five major “control knobs” of a health system which policymakers can use to achieve health system goals: 1) financing, 2) organization, 3) payment, 4) regulation, and 5) behaviour. These knobs influence the achievement of efficient, quality and access as intermediate performance measures and ultimately performance goals of improved health status, customer satisfaction and risk protection (see Figure 4).¹²

The diversity of existing frameworks highlights the great variety of ways in which health systems are understood by different people, disciplines and regions, and how health systems have been conceptualized differently over time. Such discrepancies may represent a lack of coherence, inefficiencies and untapped opportunities for collaboration, as well as the large number of conceptual issues for which there is no consensus and for which greater research and deliberation is necessary. Alternatively, the plethora of frameworks may further highlight the continued need for diversity in health systems research, its context-specificity, opportunities to build on work in other fields, and how such frameworks may need to be fit for purpose (see Appendices 1 and 2 for tabular comparisons and brief summaries of 41 health system frameworks).

2. The Promise of Health Systems Research

Despite ambiguity in their exact definition and conceptualization, there is arguably now a global consensus that strengthening health systems is necessary for achieving better global health and that this issue requires greater attention. There is also arguably now a global consensus that research on health systems is essential for making this happen (see Panel 1; see Appendix 3 for institutional supporters).

While not perfect, research is the best way currently known to systematically search for new knowledge and generate new evidence. It is a process by which sources, objects and processes are studied to establish facts, test hypotheses, explore ideas, evaluate interventions, develop theories and advance new conclusions. At its core, research involves posing questions, gathering information, and proposing answers. As such, it represents the best starting point for decision-making, or at least one key input, especially for decisions concerning public policy.¹³

Recognition for the instrumental and conceptual value of health systems research is not new. It has been repeatedly called for and prioritized over the past decades in a series of important events and documents, including the:

- Commission on Health Research for Development (1990);
- Ad Hoc Committee on Health Research Relating to Future Intervention Options (1996);
- Alliance for Health Policy and Systems Research (1999);
- WHO World Health Report 2000 – Health Systems: Improving Performance (2000);
- WHO Task Force on Health System Research Priorities for Equity in Health (2004);

¹² Roberts MJ, Hsiao WC, Berman P, Reich MR. 2003. *Getting Health Reform Right*. New York: Oxford University Press.

¹³ Lomas J. 1997. *Improving Research Dissemination and Uptake in the Health Sector: Beyond the Sound of One Hand Clapping*. Hamilton, Canada: Centre for Health Economics & Policy Analysis, McMaster University.

- World Report on Knowledge for Better Health (2004);
- Ministerial Summit on Health Research (2004), Mexico Statement on Health Research (2004), and the related World Health Assembly Resolution A58/22 (2005);
- High Level Task Force on Scaling up Research and Learning for Health Systems (2008), Global Ministerial Forum on Research for Health (2008) and the Bamako Call to Action on Research for Health (2008);
- WHO Strategy on Research for Health (2009/2010); and
- First Global Symposium on Health Systems Research in Montreux, Switzerland (2010).

Future important milestones for health systems research are likely to include WHO's World Health Report 2012: No Health Without Research (2012) and the upcoming Second Global Symposium on Health Systems Research in Beijing, China (2012).

Panel 1: Ten Opportunities for Health Systems Research

- **Enhance the image of health systems.** Interventions for strengthening the governance, financial or delivery arrangements of health systems do not engage important stakeholders the way visible or emotive topics such as child mortality or HIV/AIDS might engage them.
- **Enhance the image of health systems research.** Other areas of research like biomedical science and drug discovery are perceived as rigorous, whereas health systems research is often incorrectly perceived as “fluffy,” “pedestrian,” and “too applied.”
- **Publicize the types of health systems questions amenable to scientific enquiry.** Some believe that health system problems are primarily political, and therefore best solved using common sense or ideology rather than research evidence.
- **Emphasize the long-term nature of health systems research.** Answers from such research can be slow to arrive and uncertain. Health systems development is a long-term process and there are complex and indirect links between changes and final outcomes.
- **Help generalize research findings across contexts as possible.** The effects of interventions crucially depend on the environment in which they are implemented such that it is important to know the extent to which any research findings may be applicable in different contexts.
- **Encourage dedicated funding for health systems research.** Health systems research usually does not have a disease-specific focus such that it can be difficult to secure funding when it is often dedicated to certain illnesses or conditions.
- **Educate about the complex nature of health systems research.** Health system interventions are part of large, messy reforms with strong political imperatives, such that systematic evaluations are difficult to design and may be difficult to defend.
- **Take every opportunity to evaluate health system reforms.** There are only approximately 200 national health systems in the world and they rarely undergo large-scale changes.
- **Expand research capacity and build on the best of each disciplinary tradition.** It will be important to address the dearth of obvious institutional homes with clear career structures.
- **Ask the right questions.** Improved understanding is needed about the types of research that really change the way decision-makers think and will inform their work.

Adapted from Travis P, Bennett S, Haines A, Pang T, Bhutta Z, Hyder AA, Pielemeier NR, Mills A, Evans T. 2004. Overcoming health-systems constraints to achieve the Millennium Development Goals. The Lancet 364(9437): 900-906.

3. Conceptualizing Health Systems Research

It is clear that health systems can be defined and conceptualized in different ways, that better knowledge about health systems is essential for improving health, and that investing in health systems research is the best way to generate this knowledge. From a functional point of view, health systems research can therefore be understood as a search for knowledge which contributes to health systems strengthening and our understanding of health systems. However, there is a need for better describing and defining what constitutes health systems research. It is assumed that health systems research is a field of study that should be equally relevant for health systems across low-, middle- and high-income countries. Indeed, it is clear that health systems research is conducted in every part of the world (see Figure 1 on page 5). However, this assumption deviates from the reality that the various domains of research related to health systems seem to have developed separately in low- and middle-income countries and in high-income countries and across different disciplines. It also seems that whereas the term “health services research” has evolved to encompass all the constituents of the field in high-income countries, the term “health systems research” is used primarily for research focusing on low- and middle-income countries.

It has been said for the term “quality” that it is difficult to define but easy to detect when it is present. The same may be true for health systems research. There is probably a rather high degree of agreement when deciding whether a study should be considered health systems research or not; however, there is greater difficulty in precisely describing and defining the field. But in an attempt to do so, the field and its characteristics will first be described, then its boundaries examined, and finally, a definition for health systems research will be proposed.

3.1 Characteristics of Health Systems Research

Health systems research is a field of study that can largely be characterized by the questions it poses and the answers it provides that can help strengthen health systems or better understand the context in which they are shaped and function. One of the field’s greatest strengths is how multiple disciplines, knowledge paradigms, research designs and methods are all contributing to this endeavor (see Table 2). However, this is also perhaps the field’s greatest conceptual challenge compared to other fields of health research. Health systems research is a truly multidisciplinary field, but to position itself as a mature field of research it also needs to develop a stronger interdisciplinary culture. A truly interdisciplinary ethos would mean that researchers from different traditions are not only informed about others’ positions, but also acknowledge, understand and utilize those complementary perspectives and judge research according to each discipline’s own standards. There is a need for crossing traditional divides between, for example, a positivist paradigm often utilizing quantitative methods and, say, a constructivist or relativist paradigm that usually relies on interpretations of qualitative data. When a broader set of methods are used to address each problem, decision-makers benefit from having more information and gaining deeper insights that are less biased.

However, there is increasing understanding of the importance of health systems research and of its academic complexity and scientific opportunities and challenges. In fact, recently there has been a crowding-in effect from below and from the side which is promising and can be fostered. From below, researchers and health professionals with experiences from clinical medicine, epidemiology and program delivery have realized that the biggest barrier for improving health is not the development of new health technologies or bundles of clinical interventions, but how these technologies and interventions can be better implemented, integrated and delivered within organizational and system structures to improve

quality and performance. From the side, social scientists have seen how the health sector is expanding, representing power relationships in society, and presenting an opportunity for addressing inequities and relieving poverty. This crowding-in may inadvertently lead to turf wars over who owns the field of health systems research and decides its paradigms and priorities, and may even end up with battles like in the “science wars” of the 1990’s¹⁴ or divides as described in C.P. Snow’s *The Two Cultures*.¹⁵ There have been some tendencies for conflict where one group promotes more robust, rigorous and statistically valid research (that, for example, can answer whether system interventions work and how they should be implemented) and another group argues for emphasizing context and participant understandings and asking why interventions work in specific settings, how they impact the system as a whole, and how their implementation was negotiated among relevant stakeholders. However, the general impression is that the different research paradigms are acknowledged as giving necessary complementary insights and that they are also combined in multi-methods research to answer concrete applied questions related to how to improve health system performance. Such developments need to be nurtured, though, since paradigm wars alienate decision-makers and therefore reduce the impact of research.

Table 2: Characteristics of Health Systems Research

Characteristic	Categories	Comment
Disciplines	Epidemiology, public health, medicine, psychology, economics, political science, sociology, demography, geography, anthropology, history, law, ethics/philosophy, management	HSR is a field of multidisciplinary, interdisciplinary and transdisciplinary research with contributions from both health sciences and social sciences.
Paradigms	Positivist, realist, relativist, constructivist, interpretivist	The positivist view of the natural sciences used in epidemiology and economics meets the relativist view of other social sciences.
Perspective	Reductionist focusing on single factors or holistic using complexity and systems science	Research may aim to understand single causal relationships or the interconnectedness of the system as a whole.
Designs	Fixed or flexible	Research designs can be fixed or be changed during the research process.
Approaches	External, internal or participatory like action research	Researchers can be external and either observe or intervene, or the approach can be more participatory like in action research.
Methods	Quantitative, mixed methods (combined) or qualitative	The use of methods partly follows the knowledge paradigms, designs and approaches.
Aim	Evaluative, normative, descriptive, explanatory or explorative	The purpose of the research can be descriptive, explanatory or explorative.
Intention	Instrumental and applied, theoretical and fundamental or critical and emancipatory	Research can have a short term applied intention with potential direct impact or purposes which may have more indirect impact on the system in the long run.
Level of study	Macro (system as a whole), meso (institutions) or micro (individuals)	This is the classical way of dividing the different types of research questions.
Vertical or horizontal	Disease program or system oriented	Research may focus on improving a delivery of a specific program or the performance of delivery over all.
Focus	Outcomes and outputs or processes	Research can focus on the outputs or outcomes of policies and decisions or on the processes of how they were developed and implemented.
Country focus	Low, middle and high income countries	Research and its methods have developed in parallel instead as one community.

¹⁴ Brown JR. 2001. *Who Rules in Science? An Opinionated Guide to the Wars*. Cambridge, MA: Harvard University Press; Parsons K, ed. 2003. *The Science Wars: Debating Scientific Knowledge and Technology*. Amherst, NY: Prometheus Books.

¹⁵ Snow CP. 1959. *The Two Cultures*. London: Cambridge University Press.

Actors	Academic researcher or policy maker and practitioner	Unlike in clinical medicine where the roles of researcher and practitioner often meet in one individual the actors are most often separate.
Standards	Diversity of standards relevant for the different paradigms, designs and methods	No uniform standard is possible in the same way as in clinical areas where there is one common paradigm. However, more work can be done to develop relevant standards that are intellectually coherent and fit for purpose.

Sources: Gilson L. 2012. *Health Policy and Systems Research: A Methodology Reader*. Alliance on Health Policy and Systems Research: Cape Town; Sheik K, Gilson L, Agyepong IA, Hanson K, Ssengooba F, Bennett S. 2011. Building the field of Health Policy and Systems Research: framing the questions. *PLoS Medicine* 8(8): e1001073; Gilson L, Hanson K, Sheik K, Agyepong IA, Ssengooba F, Bennett S. 2011. Building the field of Health Policy and Systems Research: social science matters. *PLoS Medicine* 8(8): e1001079; Bennett S, Agyepong IA, Sheikh K, Hanson K, Ssengooba F and Gilson L. 2011. Building the field of Health Policy and Systems Research: an agenda for action. *PLoS Medicine* 8(8): e1001081; Mills A. 2011. Health Policy and Systems Research: Defining the terrain; identifying the methods. *Health Policy and Planning* 2011: 1-7; Fulop N, Allen P, Clarke A, Black N (eds). 2001. *Studying the Organisation and Delivery of Health Services, Research methods*. London: Routledge Publishers; Howard S. 2011. Background paper to UK funders' workshop on health policy and systems research in low and middle income countries. ESRC, Wellcome Trust, MRC, UKCDS and UKAID: London.

The field as a whole should embrace discussions on the merits of different approaches, acknowledge that there is no single approach or solution, and help seemingly competing paradigms co-exist and contribute to increased learning and understanding. Answering specific questions on effectiveness or feasibility serves an instrumental goal and may have a short-term direct impact on policy formulation. However, more fundamental questions and development of theory or a more critical perspective may have more indirect effects and possibly higher impact on the system in the longer term. If health systems research is to be a multi- and interdisciplinary field of inquiry, it will need to promote and preserve its diverse characteristics and promote sensitive collaboration across paradigms and traditions (see Table 2). The field must avoid being captured by any single paradigm, tradition or discipline, or excluding any perspective that may be important or helpful.

3.2 Boundaries of Health Systems Research

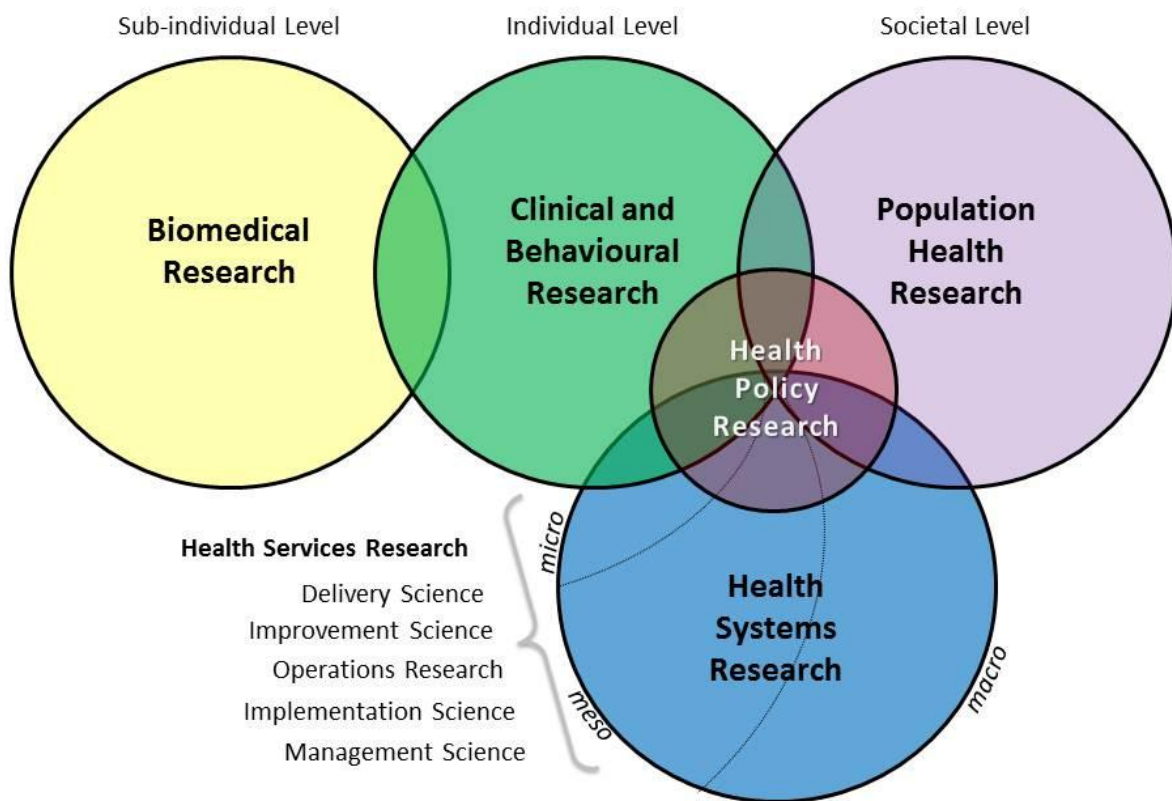
Health systems research is clearly a field within the larger domain of health research. Most would agree that it overlaps partly with clinical and behavioral and with population health research, but not with biomedical research. The overlap with clinical and behavioral research may be most apparent in sub-domains related to improving the delivery of services, such as improvement science and implementation science (see below). The overlap with population health research includes research on the public health system and the delivery of non-personal public or population health services, programs and interventions. Excluded from health systems research would be population health research's focus on measuring or describing health, examining the determinants of health status and outcomes, and assessing the effects of specific health promotion interventions. Most of health policy research¹⁶ is also part of the health systems research field, but not the health policy research that is purely relevant to the clinical or population health domains such as policies on the safety of a prescription drug or on reimbursement coverage or the built environment, respectively (see Figure 5).

There is general consensus that meso- and macro-level questions falls within the remit of health systems research. There has been some discussion on whether micro-level questions related to the delivery of health services, programs and interventions should be considered health systems research.

¹⁶ Health policy research has been defined as a multidisciplinary field involving instrumental analyses of policy alternatives that affect the health care system or the health of the general public, and scholarly inquiries into the process of health policy making and how it is shaped by ideas, interests, and institutional arrangements. (Canadian Association for Health Services and Policy Research. *What is 'HSPR'?* 2011. Available at <https://cahspr.ca/en/resources>, which was adapted from McMaster University. 2007. *Strengthening Health Policy Scholarship in Canada*).

Some may argue these micro-level questions are purely within the domain of health services research. However, health services research has evolved to denote research on micro-, meso- and macro-level questions. Likewise, even if health systems research often has had a macro-level approach, much of it today is addressing micro- and meso-level questions on both delivery of care and policy and planning. The terms “health systems research” and “health services research” have been used independently in ways that suggest they are either two separate fields of research or the same field of research but denoted by different terms, yet they have clearly evolved together in parallel. Our impression is that the two terms today denote the same field of research, but that the term “health systems research” is used for addressing the needs of low- and middle-income countries, and “health services research” is used by the community of researchers focusing on developed countries. Given that the term “health services research” indicates a more narrow focus on services and delivery, we would argue that the term “health systems research” better describes the field as a whole.

Figure 5: Health Systems Research as a Multidisciplinary Field of Health Research



Within the health service delivery area there are also various sub-domains including implementation science, quality improvement science, delivery science, operations research and management science (see Figure 5). These five sub-fields of research all aim to improve the delivery of services and are overlapping to a large degree, but utilize somewhat different approaches. Research on implementation issues is of course relevant both when conducting policy analysis or studying health system interventions, such as those addressing financing or the health workforce. Many use this broader

concept of implementation research.¹⁷ However, implementation science has been defined more narrowly as research to promote the uptake and successful implementation of evidence-informed clinical interventions,¹⁸ and this field of study often has an external or top-down perspective by examining interventions which facilitate implementation into the system. Implementation science defined this way is closely related to and partly overlaps with knowledge translation research. Quality improvement science usually has a more internal (or bottom up) perspective addressing what kind of approaches actors within the system themselves can utilize to improve quality of care.¹⁹ Operations research is an older term which generally is a discipline that applies analytical methods for making better decisions (i.e., decision science), but has been used more broadly within health to denote on-the-ground timely knowledge generation relevant for continuously improving performance of health programs.²⁰ More recently the term “health care delivery science” has been introduced and can be seen to encompass all three of these approaches.²¹ In the United Kingdom, the term “service delivery research” has also been used within the Service Delivery and Organization program which recently merged into the Health Services and Delivery Research program.²² Management science applied to health care is in general having an organizational and leader-driven focus, but there are no clear definitions, and academic departments on health management cover a diverse program of research.²³

It is interesting to note that several of these sub-fields of health services and health systems research have been named by using the term “science” instead of “research”. We interpret this as being a way of signaling to other fields of research that this area is equally scientific and a true science. There may also be a tendency that new names are used to brand the work of different research communities or institutions. However, overall, there is much overlap between these sub-fields. Instead of doing work on clarifying the scope of these five different sub-fields of health services research, it may be more useful to more clearly understand what research questions they examine and where there are gaps in the knowledge base. These issues will eventually need to be resolved for better clarity in understanding and communicating what constitutes the knowledge base for health systems. Given the existential centrality

¹⁷ Implementation Research Platform. Available at <http://www.who.int/alliance-hpsr/projects/implementationresearch/en/>.

¹⁸ Implementation research has been defined as the scientific study of methods to promote the systematic uptake of clinical research findings and other evidence-based practices into routine practice, and hence to improve the quality and effectiveness of health care. It includes the study of influences on healthcare professional and organizational behaviour. (Available at www.implementationscience.com/info/about/.)

¹⁹ The concept of improvement science recently emerged to provide a framework for research focused on healthcare improvement. The primary goal of this scientific field is to determine which improvement strategies work as we strive to assure effective and safe patient care. (Improvement Science Research Network. 2012. Available at http://www.improvementscienceresearch.net/about/improvement_science.asp.)

²⁰ Operations research has been defined as a field that “aims to develop solutions to current operational problems of specific health programmes or specific service delivery components of the health system, e.g., a health district or a hospital. It is characterized by a strong problem-solving focus and an urgency to find solutions. Its demand-driven nature and close association with health care delivery and routine health care operations ensure operational relevance of the research activities and rapid uptake and local utilization of research findings.” (Remme JHF, Adam T, Becerra-Posada F, D’Arcangues C, Devlin M, et al. (2010) Defining Research to Improve Health Systems. *PLoS Med* 7(11): e1001000. doi:10.1371/journal.pmed.1001000).

²¹ Health Care Delivery Science has been defined as “how we bring best practices of care to every patient, every time.” (Available at <http://www.dartmouth.edu/~tdc/overview-step.html>.)

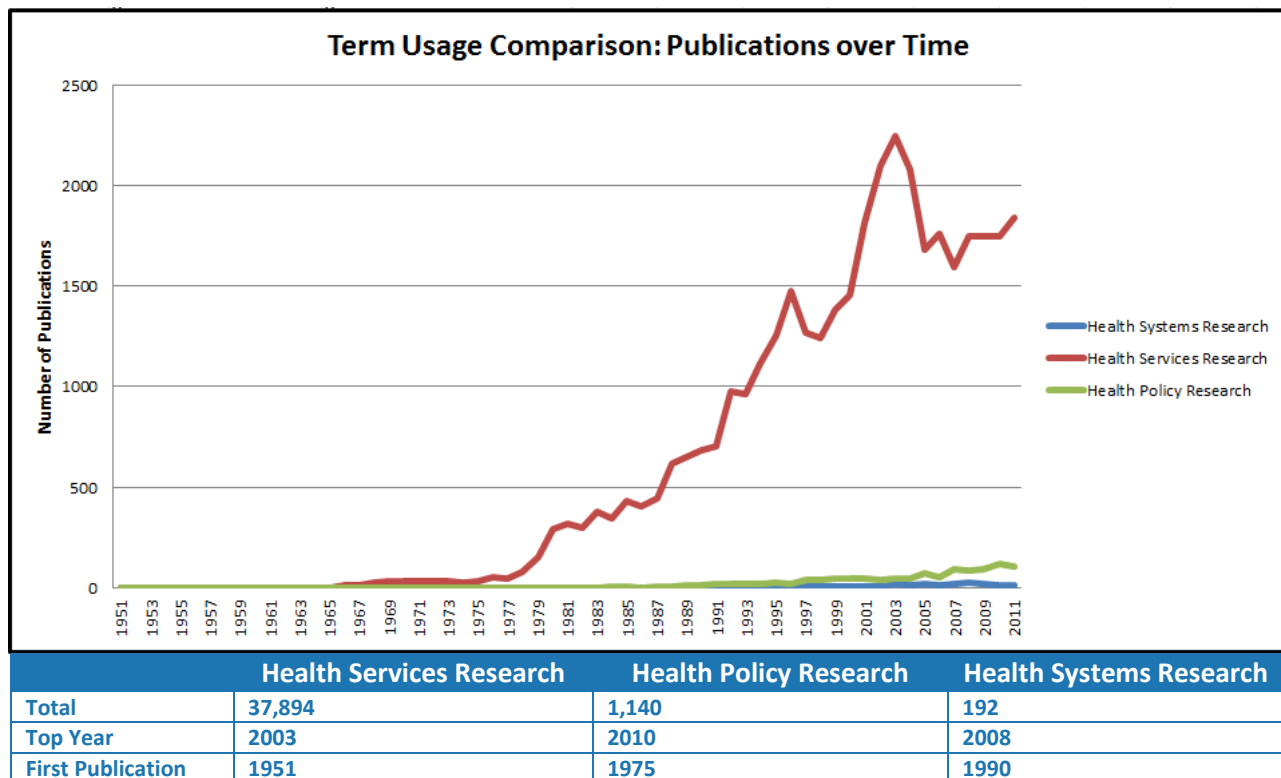
²² The HS&DR programme aims to produce rigorous and relevant evidence on the quality, access and organisation of health services, including costs and outcomes. The programme will enhance the strategic focus on research that matters to the NHS including research on implementation and a range of knowledge mobilisation initiatives. (Available at <http://www.netscc.ac.uk/hsdr/index.html>.)

²³ “Health management comprises activity around the development and implementation of policy and the organization of services aimed at improving health. The focus is on delivery and effecting change in organizations concerned with improving population health.” (Hunter DJ, Brown J. 2007. A review of health management research. *European Journal of Public Health* 17(suppl 1): 33-37. doi: 10.1093/eurpub/ckm061.)

of service delivery to health systems, it makes sense to include all these sub-fields within the domain of health systems research. This would also include research on the delivery of services related to specific conditions or diseases so long as the research question is related to delivery and not purely a clinical issue.

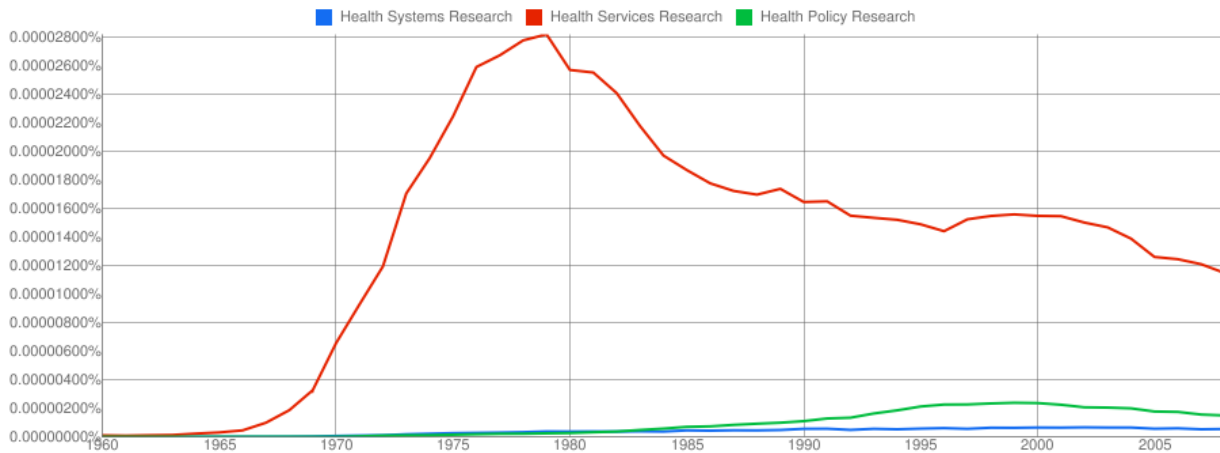
While these boundaries for health systems research are likely most defensible from academic and theoretical perspectives, health systems research leaders must acknowledge the reality that the term used for their field is still not widely adopted as indicated when measured in number of researchers, papers produced or investments. For example, the term “health systems research” only appears in MEDLINE records 192 times (nearly half of which had corresponding authors based in Canada) whereas the term “health services research” appears 37,894 times (with just over half of these corresponding authors in either the United States or United Kingdom) (see Figure 6). The term “health services research” also appears far more frequently in books than the term “health systems research” (see Figure 7). Finally, “health systems research” is so rarely used as a Google search term and so rarely appears in news reports that Google Trends did not even have enough data to compare it to the much more popular “health services research” and “health policy research” terms (see Figure 8).

Figure 6: Use of the Term “Health Systems Research” in MEDLINE Records



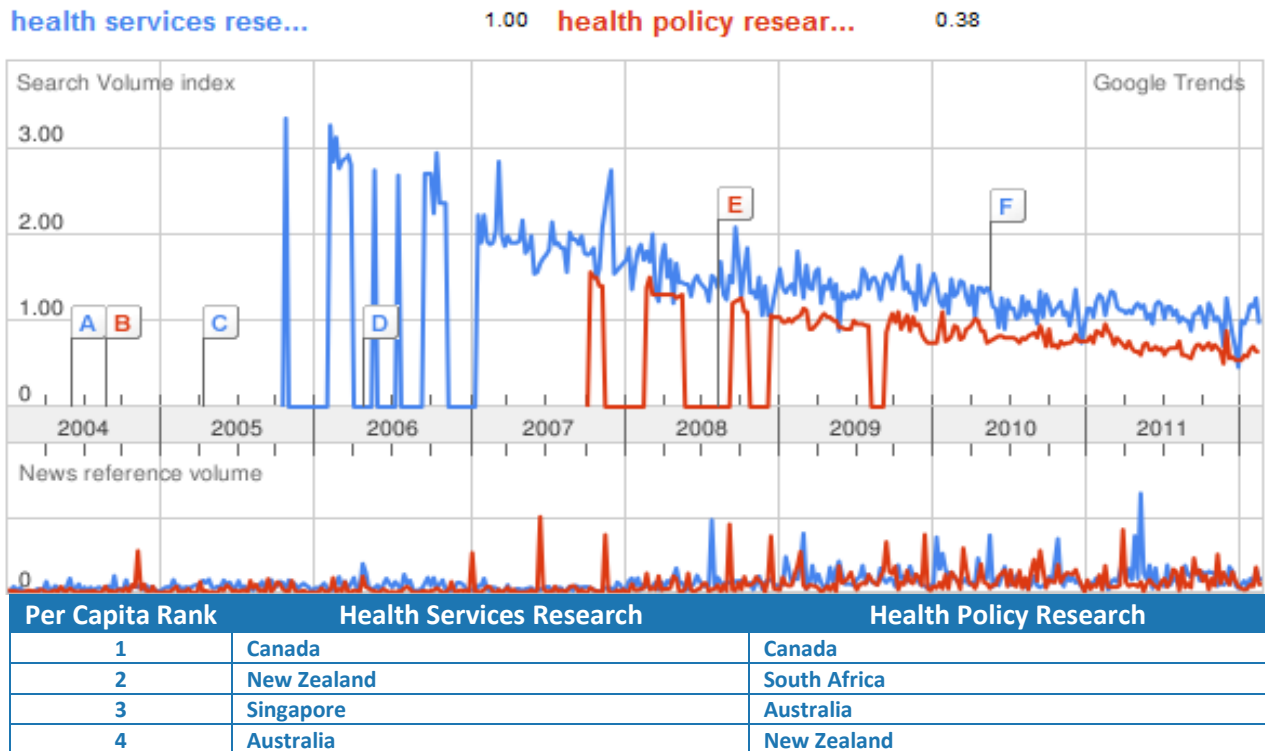
Source: GoPubMed, which reports the frequency that terms appear in MEDLINE indexes for publications, which include titles, abstracts, journal names and corresponding author’s affiliation. Results are largely driven by the presence of these terms in the corresponding author’s affiliation, such as the Health Systems Research & Consulting Unit of Canada’s Centre for Addition & Mental Health, the Health Systems Research Unit of South Africa’s Medical Research Council, and the Health Systems Research Center of Mexico’s National Institute of Public Health. This data was obtained on 25 February 2012.

Figure 7: Use of the Term “Health Systems Research” in Books



Source: Google Books Ngram Viewer, which compares terms based on the frequency in which they are found in the millions of books that they have scanned. This data was obtained on 25 February 2012.

Figure 8: Too Few Searches and News Reports on “Health Systems Research” for Google Trends to Compare to “Health Services Research” and “Health Policy Research”



Source: Google Trends, which compares the frequency in which people input terms into the Google search engine and the frequency in which these terms appear in news articles. There were too few Google searches and new reports on “health systems research” for Google Trends to compare it to “health services research” and “health policy research.” The five countries that most frequently searched these terms on a per capita basis are listed. This data was obtained on 25 February 2012.

The fact that health services research and health systems research have evolved to become synonyms and describe the same field of research suggests that there is a need to decide on the name of the field. The suggestion of using “health systems research” as the term based on a conceptual analysis instead of the more popular “health services research” term is clearly imperialistic, but we believe it is justified by the promise of future benefits including conceptual clarity, greater coherence, and new opportunities for collaboration. The alternative would be to combine both terms into one, such as “health services and systems research”. However, that communicates the wrong message of two separate fields. We would propose engaging with influential institutions, organizations and leaders within the health services research community to discuss these issues with the aim of coming to a common way of understanding.

3.3 Defining Health Systems Research

A review of existing definitions for “health systems research”, “health services research” and “health policy research” – and permutations of them – highlighted the existence of overlapping terms, great ambiguity and lots of confusion (see Appendix 4 for a quiz to test your knowledge of health systems research definitions). Based on the research conducted for this paper and consultation with many leaders in the field, we propose a new definition that describes the field, its main foci, and much more clearly delineates boundaries:

**Health systems research studies
governance, financial and delivery arrangements
for health care and population health services
and the broader context in which they are
negotiated, implemented and reformed.**

Following this definition, the purpose of health systems research is to improve the understanding and performance of health systems. Health systems research includes all of health services research, most health policy research, and some clinical and population health research, but does not include any biomedical research. The broad range of issues addressed in health systems research when using this definition can be explored through the Health Systems Evidence database [www.healthsystemsevidence.org] – the world’s most comprehensive, free access point for synthesized health systems research – and the taxonomy it uses to categorizes its thousands of records (see Appendix 5 for the database’s taxonomy).

3.4 Study Designs and Methods Used in Health Systems Research

Health systems research features a broad range of study designs and methods. The Methodological Reader recently published by the Alliance for Health Policy & Systems Research in 2012 classifies research strategies into two main areas: *fixed designs* that are established before data collection, and *flexible designs* that evolve during the study process.

Fixed strategies typically use more positivist approaches to study design; data is generally quantitative and investigators primarily seek to measure the impact of a phenomenon under specified and controlled conditions. Experimental designs and modeling are typically coupled with statistical analysis. Common data collection techniques include surveys, structured and semi-structured interviews,

and routine record reviews.²⁴ Examples include the evaluation of the effectiveness of interventions at the service- or system-level. Increasingly, quantitative researchers and health system decision-makers²⁵ are concerned to evaluate interventions under real world conditions, rather than under the highly specified conditions that previously characterised most efficacy trials.^{26 27} Overarching designs for evaluating impact include a range of controlled comparative studies, e.g. randomized trials, time series studies, with greater ability to eliminate bias in their estimation of impact.

Flexible designs, on the other hand, are more interpretivist in nature and deal primarily with qualitative data. Overarching designs include case study, grounded theory, ethnographic, life histories and phenomenological research. Qualitative interviews, focus group discussions, observation and document review serve as primary means of data collection. Data is analyzed in iterative and interpretive processes. An example includes understanding how a policy or an intervention is perceived to operate, by participants, recipients or other stakeholders. In program evaluation studies, the concern is often to understand why the intervention worked or failed to work by particularly examining factors in the context and in the subtleties of the intervention in different settings.

Building on this fixed-flexible dichotomy, the Methodological Reader outlines seven research strategies that capture the breadth of health systems research. Impact evaluation and cross-national analyses are two types of fixed strategies involving rigorous, large-scale quantitative procedures. Flexible strategies include single and multiple case study, ethnographic study and action research designs that involve in-depth qualitative analysis of an exploratory nature. Finally, cross-sectional approaches and studies tracing policy and system change over time fall into both fixed and flexible design types, often employing structured quantitative analysis and detailed qualitative techniques like process tracing.²⁸ This is an example of mixed methods research which is a useful approach when studying and improving real world settings.²⁹

4. Conceptual Barriers for Health Systems Research to Improve Health Outcomes

The challenge in defining health systems research, its characteristics, boundaries and methods is demonstrative of the many barriers that prevent its production, reproduction, translation and implementation for improving health systems. These barriers stem from the complexity of health systems and from the complexity of the health systems research field.

Health systems are extraordinarily complex social structures. Like all complex systems, they are multi-layered, nonlinear and highly sophisticated. Despite embracing rapid technological innovation and

²⁴ Gilson L, ed. 2012. *Health Policy and Systems Research: A Methodological Reader*. Geneva: Alliance for Health Policy & Systems Research. Available at http://www.who.int/alliance-hpsr/resources/alliancehpsr_reader.pdf.

²⁵ Tunis SR, Benner J, McClellan M. Comparative effectiveness research: Policy context, methods development and research infrastructure. *Stat Med*. 2010 30;29(19):1963-76.

²⁶ Schwartz D, Lellouch J. Explanatory and pragmatic attitudes in therapeutical trials. *J Clin Epidemiol*. 2009; 62(5):499-505.

²⁷ Thorpe KE, Zwarenstein M, Oxman AD, Treweek S, Furberg CD, Altman DG, Tunis S, Bergel E, Harvey I, Magid DJ, Chalkidou K. A pragmatic-explanatory continuum indicator summary (PRECIS): a tool to help trial designers. *CMAJ*. 2009 12;180(10):E47-57. Epub 2009 Apr 16.

²⁸ Gilson L, ed. 2012. *Health Policy and Systems Research: A Methodological Reader*. Geneva: Alliance for Health Policy & Systems Research. Available at http://www.who.int/alliance-hpsr/resources/alliancehpsr_reader.pdf.

²⁹ Robson C (2011). *Real world research: a resource for social scientists and practitioner-researchers*, 3rd ed. Oxford, Blackwell Publishing.

constant reorganization, health systems are strongly resistant to planned change, if only as a consequence of the sheer number of independent players, established policies, zealously guarded interests, entrenched professional silos and divergent cultures that together help characterize its complexity. This web of elements – and the unpredictable interactions among them – often limit the usefulness of mechanistic “cause-and-effect” approaches, including in the study of health systems and evaluation of changes to them. Research questions often cannot be answered with methods like randomization and control groups which are commonly used in biomedical and clinical research, and researchers must often conduct their work in difficult political environments and in contexts that are constantly evolving.

The complexity of health systems leads to three challenges facing researchers who study health systems: generalizability, comparativity, and applicability and transferability. A fourth challenge relates to the complexity of health systems research and resulting community differences.

4.1 Epistemology Challenge

First, health system researchers often come from different epistemological traditions such that they disagree on the nature of knowledge and how it is discovered or co-created. This challenge is perhaps most clear when considering how research findings often depend on the particular context in which studies were conducted. Each epistemological tradition has different approaches to context and generalizability, rooted very much in how they see the world and the nature or possibility of knowing.

Researchers categorized as positivists, for example, tend to focus on making sure their findings can be statistically generalized beyond the specific study population and setting, as can be done in randomized control trials due to strong internal validity and reliability. Case study researchers, on the other hand, use analytic or theoretical generalizability, where they extract broad insights from one or more cases and thoroughly examine and thoughtfully analyze the context and processes that produced their findings in each setting.³⁰ Comparativists abstract the specifics of one case to ideas and theories that accurately describe multiples cases.³¹ All of these methods for grappling with context, enhancing external validity and promoting generalizability are scrutinized by each epistemological faction of researchers.

4.2 Applicability Challenge

Second, the context specificity of health systems research means that studies conducted in one jurisdiction may not be applicable to another jurisdiction. Applicability is the likelihood and extent to which research findings are relevant to new specific contexts.³² This barrier is opposite to the generalizability challenge, which is the likelihood and extent to which research findings can be generalized to a broader context.³³

³⁰ Robson C. 2002. *Real World Research: A Resource for Social Scientists and Practitioner-Researchers*, 2nd ed. Oxford: Blackwell Publishing.

³¹ Gilson L, ed. 2012. *Health Policy and Systems Research: A Methodological Reader*. Geneva: Alliance for Health Policy & Systems Research. Available at http://www.who.int/alliance-hpsr/resources/alliancehpsr_reader.pdf.

³² Wang S, Moss JR, Hiller JE. 2006. Applicability and transferability of interventions in evidence-based public health. *Health Promotion International* 21:76-83.

³³ Burchett H, Umoquit M, Dobrow M. 2011. How do we know when research from one setting can be useful in another? A review of external validity, applicability and transferability frameworks. *Journal of Health Services Research and Policy* 16(4): 238-244.

The challenge of applying health systems research from one context to another means that research users often have to undertake the difficult task of trying to assess and adapt research from foreign jurisdictions to their own local context. Translating health systems research into practice is already a difficult task, given the political nature of health systems decision-making, multiplicity of stakeholders, and the importance of other inputs such as public opinion and ethical considerations. This challenge only makes knowledge translation efforts even more important.

This applicability challenge, however, also means that researchers have to expend great efforts to learn about the environment in which they are working and may need to repeat experiments in different contexts. They do have help: a recent review found 25 external validity, applicability and transferability frameworks to aid in this effort, but none of them had been validated or assessed for their effectiveness or reliability.³⁴ Unfortunately few researchers, policymakers or funders are trying to push beyond current recognition that “context matters,” and few people are trying to figure out how to actually increase the global applicability of studies (rather than just assessing their applicability) and actually increase the adaptability of research evidence to different contexts. The importance of such cross-jurisdictional learning is exponentially compounded by how there is limited capacity in many countries to produce health systems research of their own. Overcoming this challenge will also be essential for bridging the communities of researchers who focus on health systems in high-income countries and in low- and middle-income countries – who currently are often split into different departments, attend different conferences and publish in different journals.

4.3 Diversity Challenge

In addition to health system complexity, the field of health systems research is also itself complex. As previously noted, there is a lack of definitional agreement on key terms, a multitude of conceptual frameworks and paradigms, and disagreements on how different methods fit together and the circumstances in which they may be useful in answering different types of questions. Compared to fields like clinical medicine, there are also relatively few common standards by which all health systems research can be reported, compared and evaluated. While this comparison to clinical medicine may not be fair given the diversity of approaches brought to bear on health systems issues, the health systems research community could do a better job of evaluating research based on the standards of authors’ own paradigms, traditions or disciplines and to further develop such standards.

Further complicating this challenge, however, is that in many respects the health systems research community is actually not really a community. As a field of inquiry that is devoted to strengthening health systems and understanding the context in which they function – in addition to advancing particular theoretical debates and developing particular methods – health system researchers come from different places, were trained in different disciplines, hold different traditions, speak different languages, prefer different methods and focus on different questions. Other than the common goal of strengthening health systems, understanding the context in which they function, and improving health outcomes on a population-scale, there is little that binds health systems researchers together and much that pulls them apart. It is currently a disparate field rather than a cohesive community.

³⁴ Burchett H, Umoquit M, Dobrow M. 2011. How do we know when research from one setting can be useful in another? A review of external validity, applicability and transferability frameworks. *Journal of Health Services Research and Policy* 16(4): 238-244.

4.4 Comparativity Challenge

Fourth, it is often difficult to compare health systems or conduct large-scale cross-system studies. Unlike other areas of inquiry, health systems researchers have relatively few opportunities to learn about their objects of study. There are only around 200 national health systems in the world and they are very rarely reformed on a large scale (although, admittedly, they are constantly experiencing small changes). This low sample size problem means that certain empirical methods like cross-sectional analyses can be less powerful than if larger samples were possible. It also means that it is particularly important to seize every opportunity to study health system reform when it does occur. This goal, however, is difficult to achieve given the different timelines of the health system leaders who make changes to their systems and the health services researchers who would evaluate them. Reforms are also not usually rolled-out in ways that are amendable to rigorous study, with Oregon's health insurance lottery and Mexico's Seguro Popular segmented regional implementation representing notable exceptions.³⁵

Unfortunately there are far too few examples of actually embedding research into the process of health system reform or otherwise studying health system changes as they happen. There are even fewer that do so using common designs across systems, which would otherwise facilitate drawing cross-national lessons. These few opportunities for natural and quasi-experiments are also especially important given how difficult it is to isolate the effect of changes through other means, such as randomization and systematic experimentation.

4.5 Priority-Setting Challenge

Finally, the health systems research community also lacks widely agreed-upon processes for dynamically setting priorities for the type of research that should be conducted and funded. Whereas the clinical and population health research communities can set priorities based on the global burden of disease, risk factors or ethical imperatives, each health system is run differently, serves different functions, achieves different goals, and has different opportunities for improvement. Given the context-specificity of health systems research, this challenge is compounded by the limited transferability of priority-setting processes from one jurisdiction to another and thus requires national capacity for prioritization in addition to global priority-setting. Timelines are also much shorter and less predictable in the health systems research field – with decision-makers often unsure of exactly what evidence they want except for that they needed it yesterday.

5. Strengthening the Contributions of Health Systems Research

Fortunately, the challenges presented by these conceptual barriers point to opportunities for strengthening the contributions of health systems research. Indeed, in addition to numerous options for mitigating any negative effects, aspects of these conceptual barriers may actually serve as the field's greatest strengths.

³⁵ Finkelstein A, Finkelstein A, Taubman S, Wright B, Bernstein M, Gruber J, Newhouse JP, Allen H, Baicker K, Oregon Health Study Group. 2011. *The Oregon Health Insurance Experiment: Evidence from the First Year*. NBER Working Paper No. 17190. Available at <http://www.nber.org/papers/w17190>; King G, Gakidou E, Imai K, Lakin J, Moore RT, Nall C, Ravishankar N, Vargas M, Téllez-Rojo MM, Eugenio J, Ávila H, Ávila MH, Llamas HH. 2009. Public policy for the poor? A randomised assessment of the Mexican universal health insurance programme. *The Lancet* 373(9673): 1447-1454.

5.1 Supporting Health Systems Research as a Field of Scientific Endeavour

The different backgrounds, disciplines, methods and questions of health systems research, and the perceived lack of community among health systems researchers, suggests the need to build health systems research as an important and coherent field of scientific endeavour. Such marked differences, when viewed as diversity, can actually be the field's greatest strength and the basis on which its participants can make substantial contributions to improving health around the world. Such unity amidst diversity can be nurtured through collaborative forums and by directly addressing the many legitimate methodological and disciplinary issues that need to be problematized.

5.1.1 Need for a Common Language

But the advantages of diversity and interdisciplinarity require a platform on which to build. First, the field could be supported in developing a common language for health systems researchers to use and authoritative textbooks from which students and experts alike can draw. This can be facilitated through deliberation and consensus on the scope, boundaries and definitions related to health systems research, as well as further theory development and conceptual understandings. Such a development may be supported by the use of clear taxonomies of both health systems and of health systems research like the International Classification of Diseases or the UKCRC Health Research Classification System.³⁶ A common language may also be facilitated by increasing efforts to synthesize health systems research evidence in a systematic collaborative way and make this available in a repository like Health Systems Evidence for informing policy processes.

5.1.2 Need for Cross-Disciplinary and Cross-Jurisdictional Learning

Second, the field would benefit from mechanisms that help it take advantage of the best that each traditional academic discipline has to offer and then promote additional cross-disciplinary learning. This could include acknowledging the value of different research methodologies, developing standards within different research paradigms, promoting mixed-methods research, facilitating opportunities for health systems researchers to come together, and evaluating rigor based on available alternatives. Also important is greater attention to strengthening the cross-jurisdictional applicability of health systems research which requires having clearer frameworks for assessing transferability and enhanced research methods that lead to more generalizable findings. Journals could assist by publishing richer descriptions of both methodology and context, and education institutions can offer graduate and postgraduate training programs – in addition to the current short course offerings that are typically offered.

5.1.3 Need for Leadership

Third, the health systems research field needs leadership. As was recommended at the First Global Symposium on Health Systems Research (2010), an International Society for Health Systems Research could be created to start developing the institutions, bells and whistles typical of any other discipline, track the state of the field, and nurture it into a cohesive yet diverse whole. This would be an important milestone for the field's development which has largely advanced through individual papers and efforts rather than through any systematic or collective initiatives. Such a professional association could also help bridge developing and developed country perspectives into a single community of

³⁶ International Classification of Diseases (ICD). Available at <http://www.who.int/classifications/icd/en>; UKCRC Health Research Classification system. Available at <http://www.hrcsonline.net>.

practice, which are currently two separate fields artificially fragmented along countries of focus. It could also help encourage the uptake of its participants' efforts by developing methodological standards, supporting guidelines development, and establishing classification schemes as is common among clinical specialities.

The benefits of supporting health systems research as a field of scientific endeavour include the emergence of a common corpus of health systems knowledge, cross-jurisdictional learning, avoiding duplication, and the bridging of different disciplines and cultures of each sub-group to allow for more rigorous and helpful research outputs. Achieving these benefits, however, will require systematic, collective and coordinated approaches, not simply one-off collaborative efforts.

5.2 Building National Capacity for Health Systems Research

The context-specificity of health systems research emphasizes the need to build capacity for it in every jurisdiction, particularly in the low- and middle-income countries that currently have the least capacity. Capacity-building is one of the five main strategies of the WHO Strategy on Research for Health and was the focus of a flagship report by the Alliance for Health Policy & Systems Research in 2007.³⁷ This report emphasized that multiple actors, including researchers, policymakers, health providers and civil society organizations play an important role in the production, assessment and application of research findings, and that an effective environment for health systems research needs to build capacity – albeit different types of capacity – among multiple actors and their networks.

Capacity frameworks frequently distinguish between individual, organizational and system level capacities.³⁸ This organizing framework is used to reflect on priority areas for capacity development in health systems research with the aim of building sufficient capacity for health systems research across low- and middle-income countries so as to facilitate context-specific and generalizable health systems research.

5.2.1 Individual-Level Capacities

The fact that individuals engaged in health systems research, either as research producers or users, are disparate with diverse backgrounds and training requires a tailored approach to capacity development. Some individuals may aspire to become truly interdisciplinary health systems researchers, familiar with a broad range of the common methods used in health systems research. Such individuals will most likely need Masters or Doctoral training programs with a primary focus on health systems research. Others may come to health systems research with strong disciplinary backgrounds, but require exposure to the particular challenges of health systems, and need to acquire fluency in engaging with researchers from different traditions. Health professionals, program managers, and policy advisors may become important health systems researchers in their own right, and/or facilitators of health systems research, providing guidance on key systems questions, enabling access to settings where research needs to be conducted, and helping translate findings into health system reforms. At a minimum they

³⁷ World Health Organization. 2010. WHO's Role and Responsibilities in Health Research: Draft WHO Strategy on Research for Health. Sixty-Third World Health Assembly. A63/22. Geneva: World Health Organization. Available at http://apps.who.int/gb/ebwha/pdf_files/WHA63/A63_22-en.pdf; Green A, Bennett S, eds. 2007. *Sound Choices: Enhancing Capacity for Evidence-Informed Health Policy*. Geneva: World Health Organization. Available at http://www.who.int/alliance-hpsr/resources/Alliance_BR.pdf.

³⁸ Bennett S, Agyepong IA, Sheikh K, Hanson K, Ssengooba F, Gilson L. 2011. Building the Field of Health Policy and Systems Research: An Agenda for Action. *PLoS Medicine* 8(8): e1001081. doi:10.1371/journal.pmed.1001081.

will require training and support to build the necessary skills to acquire, assess, adapt and apply health systems research.³⁹

For the dedicated health systems researcher, individual skills and expertise will probably best be addressed through the systematic development of primary training courses and curricula, not through ad-hoc short courses. Many of the measures described above to build the field will also be critical to the development of appropriate training curricula. While many post-graduate training programs have run courses on health systems for some years, it appears that the development of courses on health systems research applicable to LMICs is a much more recent phenomena, and there is substantial scope for sharing of curricula, teaching materials and even faculty so as to facilitate the rapid development of capacity for health systems research across the world.

5.2.2 Organization-Level Capacities

Organizational homes for researchers reflect the heterogeneity of the field. Many health systems researchers are found throughout academic institutions, including schools of public health, medical schools, business schools, law schools, and a variety of disciplinary departments such as anthropology, economics, geography, history, political science and sociology. But many health systems researchers work outside of an academic setting in policy analysis institutes or think-tanks that have the mission of informing government policy and decision-making.

A balance is needed between allowing diversity to flourish, and building recognized institutional homes for health systems research. In order to develop a critical mass of researchers, as well as establish health systems research as a legitimate field of scientific endeavor, there is a need for departments or units within academic and policy analysis institutions that are dedicated to health systems research. Such organizational settings may be effective in both developing the profile of the field and for efficient organization of the production, reproduction, translation and implementation of health systems knowledge.⁴⁰

5.2.3 System-Level Capacities

Several systems interface with health systems research, including national research systems (that prioritize, fund and ethically review health and other research), health systems (which are often the subject of study but also where primary users of health systems research reside), and systems of higher education. Each raise particular challenges: how can national research systems be adequately funded and have sufficient capacity to effectively identify and support critical health systems research? How can health systems utilize research and knowledge management functions so that actors have access to appropriate evidence in a timely fashion? And finally, with respect to systems for higher education, how can career paths for health systems researchers be developed and how can adequate funding for postgraduate health systems research training be secured?

While the primary goal of such capacity development is to build capacity for health systems research at the local and national level, global-level actions are important to support the achievement of this goal. The proposed International Society for Health Systems Research could establish a sub-committee for training and methods, with a mandate to better document standards for health systems

³⁹ Canada Health Services Research Foundation. 2001. *Is Research Working for You? A Self-Assessment Tool for Health Service and Policy Organizations*. Ottawa: Canada Health Services Research Foundation.

⁴⁰ Frenk J. 1993. The new public health. *Annual Review of Public Health* 14: 469-490.

research. For example, this group could identify which types of research methods are best designed to address different types of research questions, and what is best practice in terms of employing such methods. There is also substantial scope for the coordinated development and sharing of high-quality teaching curricula, readers on research methods, and online learning resources about widely used research designs. While to some extent this is already occurring informally, a more coordinated and less fragmented approach – as seen in other more established fields – could make a substantial impact on meeting the capacity development challenge.

5.3 Embedding Health Systems Research as a Core Function of Health Systems

Given there are relatively few health systems in the world, even fewer large-scale reform efforts each year and complex processes unfolding at every turn, it would be helpful if every effort was made to study health systems when opportunities present themselves. One of the most promising ways to achieve this goal is to embed health systems research as a core part of every health system and simply make research a necessary function like financing, service provision, stewardship and resource generation.

There are at least three mechanisms required for this goal of embeddedness to be achieved. Health system leaders and their trusted advisors must: 1) learn to acquire, assess, adapt and apply health systems research in their decision-making processes; 2) request the preparation of evidence syntheses to inform their decisions; and 3) mandate rigorous monitoring and evaluation of health system performance and reforms to aid future learning. Health system leaders could also require health impact assessments to inform changes before they are made and impact evaluations to assess any changes after they are implemented.

Opportunities to embed research within health systems are numerous. For example, Ministries of Health can establish internal technical departments staffed by researchers or they can collaborate with researchers based at universities or think-tanks, especially those that already have strong ties with government. Government managers can be trained in using research and data and managing evaluations of their programs. In fact, every mission of technical assistance by an international agency or a non-governmental organization can be turned into an opportunity for fostering embeddedness if such technical assistance is integrated into government and local organizations rather than offered without local collaboration.

But ultimately, embedding health systems research as a core health systems function is about trust. For the successful translation of research to action, policymakers must trust the findings of researchers, and in turn, researchers must trust that policymakers will not misuse (or abuse) their work. The benefits of such trust in developing, prioritizing and embedding health systems research also extend beyond health systems: such actions can be a key component of reform agendas promoting efficiency, good governance and accountability.

6. Conclusion

Health systems research is widely recognized as essential for strengthening health systems, getting cost-effective treatments to those who need them, and achieving better health status around the world. However, there is significant ambiguity and confusion in this field's characteristics, boundaries, definition and methods. Adding to this ambiguity are major conceptual barriers to the production,

reproduction, translation and implementation of health systems research relating to both the complexity of health systems and research involving them. These include challenges with epistemology, applicability, diversity, comparativity and priority-setting. Three promising opportunities exist to mitigate these barriers and strengthen the important contributions of health systems research. First, health systems research can be supported as a field of scientific endeavour, with a shared language, rigorous interdisciplinary approaches, cross-jurisdictional learning and an international society. Second, national capacity for health systems research can be strengthened at the individual, organizational and system levels. Third, health systems research can be embedded as a core function of every health system. Addressing these conceptual barriers and supporting the field of health systems research promises to both strengthen health systems around the world and improve global health outcomes.

Appendix 1: Tabular Comparison of 41 Health System Frameworks

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
<p><i>*Descriptive framework</i> <i>†Interactive framework</i></p>	<p><i>E.g. Performance evaluation, comparative framework for analysis</i></p>	<p><i>E.g. Leadership, Governance, Financing, Resources, Service delivery</i></p>	<p><i>E.g. levels, blocks, web, tiers, actors, systems, across or between elements</i></p>
<p>1. Feldstein, et al., Harvard University, 1972* <i>A sub-framework comparing the distributional impact of national health insurance options in the USA</i></p>	<p>To assess the distributional impact of alternative national health insurance options using a simulation model. The model assists in calculating the actuarial value of benefits of different insurance coverage and different price elasticities of demand</p>	<p>Structure of insurance coverage (deductibles, coinsurance rates, etc.), income and family composition, mix of revenue sources (income-related premiums, payroll tax, general tax revenue, etc.)</p>	<p>A model simulating the distribution of health expenses with different insurance coverage and price elasticity is developed. The model is applied across a large sample of expenditures to derive distributions for families of different composition</p>
<p>2. Yett, et al., University of Southern California, 1972† <i>A sub-framework for understanding how manpower is distributed across health systems</i></p>	<p>Two econometric models to study health manpower policies are presented: a macro-econometric model using aggregate data to investigate comprehensive health planning at the national, state, and sub-state levels, and a micro-simulation model treating the interactions of individuals, health manpower personnel, health service institutions, and educational institutions in the analysis of health manpower policies for a nation</p>	<p>Health service institutions: voluntary/proprietary short-term hospitals; governmental hospitals; skilled nursing homes; outpatient clinics of non-federal hospitals; private sector offices of medical and surgical specialists. Health manpower: medical specialists and general practitioners in private practice; surgical specialists in private practice; physicians employed by hospitals; hospital interns and residents; registered nurses; allied health professionals and technicians; non-medical personnel</p>	<p>Follows flows of demand and supply between providers, consumers and available health manpower; consumers, providers, and manpower are linked through services and labor market</p>
<p>3. Feldstein & Friedman, Department of Health, Education and Welfare, 1976* <i>A sub-framework comparing the effects of alternative national health insurance (NHI) plans</i></p>	<p>An operational method combining stochastic micro-simulation models of household demand with aggregate supply and price determination equations is used to calculate equilibrium quantities and prices for two proposed NHI options</p>	<p>Equations representing annual health care expenditures of a group of families with the same demographic composition, income, and insurance coverage; formulas for expenditure distribution, net out-of-pocket expenses, etc.; quantities and prices of hospital and medical care</p>	<p>Follows the impact of two NHI plans on total expenditure at baseline values against changing demand elasticities.</p>

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
<p>4. Evans, University of British Columbia, 1981 (“Actors Framework”)* <i>A framework for understanding five key groups of actors in the health care market.</i></p>	<p>To highlight the resource allocation and administrative organization of the health care sector as distinct from typical “market” mechanisms and how that health systems possess unique patterns of incomplete vertical integration</p>	<p>Five classes of transactors: consumer-patients (who utilize care), first-line providers (contacted directly by consumers), second-line providers (whose output is either used by consumers under the direction of first-line providers or supplied as intermediate products to first-line or other second-line providers), insurers and governments (exercise or dele-gate regulatory authority)</p>	<p>Traces degrees of government regulation and the pervasiveness public and private insurance in modifying market structures between transactors</p>
<p>5. Hurst, OECD, 1992 (“Fund Flows and Payment Framework”)* <i>A supra-framework for comparing health system reforms in seven Western European countries</i></p>	<p>To determine optimal health system payment schemes that protect consumers from financial risk while minimizing cost; helps compare government spending on health services to gross domestic product (GDP) and helps assess adequacy, equitable access, income protection and cost containment in health systems performance</p>	<p>Health expenditure of GDP, consultations with general practitioners and specialists, medicines prescribed per capita, acute hospital admissions, perinatal mortality</p>	<p>Based on flow of funds from central government to health care providers</p>
<p>6. Roemer, University of California, 1991 (“Basic Interactions Framework”)* <i>A framework for understanding how four elements of health systems contribute to the delivery of services</i></p>	<p>To study a health system as “the combination of resources, organization, financing and management that culminate in the delivery of health services to the population”</p>	<p>Five components of any health system: resources (human resources, facilities, commodities and knowledge), organization (principal authority of government, other governmental agencies with health functions, voluntary health agencies, enterprises, private health care market), management (health planning, administration, regulation and legislation), economic support (governmental tax revenues, social insurance, voluntary insurance, charity and personal households) and delivery of services (primary health care, secondary care and tertiary care)</p>	<p>Management and economic inputs produce resources that can be organized into health programs to be delivered to populations; management and financial support is required in organizing and delivering programs</p>

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
7. Frenk, Mexican Health Foundation, 1994 ("Reform Framework") † <i>A framework informing change that outlines the fundamental features of health system reform</i>	To outline the relational perspective between providers and populations by specifying principal actors, their exchanges and the basis of interrelationships	Exchanges between providers, the population, the state (as collective mediator), organizations that generate resources and other sectors that produce services with health effects at systemic (institutional arrangements), programmatic (setting priorities), organizational (production of services) and instrumental (intelligence generating) levels constitute reform processes	Demonstrates how governments serve as collective mediators interacting with providers, resource generators and other sectors to provide services to populations
8. Cassels, 1995† <i>A supra-framework for comparing and informing change for health sector reform in developing countries</i>	To clarify what constitutes health sector reform and consider the context-specific nature of institutional reforms for health in less developed countries; frame health sector reform as a process that evaluates how existing policies, institutions, structures and systems manage issues of efficiency, access, cost-containment and responsiveness to demand	Six key institutional components: the state, service providers, resource institutions, institutional purchasers, other sector agencies that produce health benefits indirectly and populations.	Political decisions determine reforms in six main programmes: improving the civil service, decentralization, strengthening national health ministries, broadening financing, managed competition and engagement with the private sector
9. Londoño & Frenk, Inter-American Development Bank & Mexican Health Foundation, 1997† <i>A framework informing change in Latin American health care reform</i>	To promote a framework of structured pluralism for increased equity, quality and efficiency in health that organizes the health system by functions rather than social groups.	Four basic functions: financing, delivery, modulation (setting transparent and fair rules of the game) and articulation (managing and organizing transactions between groups).	Modulation is the central mission of the ministry of health, Financing is the main function of social security institutes, articulation is managed via the establishment of "organizations for health services articulation" and delivery is open to pluralism adapted to differential needs of urban and rural populations

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
<p>10. Hsiao & Heller, International Monetary Fund, 1997[†] <i>A supra-framework for understanding how health status affects the macro-economy</i></p>	<p>To demonstrate how fluctuations in population health influence the macro-economy</p>	<p>Health status of population, microeconomic variables (labour productivity, poverty rates, demand for medical care), macroeconomic variables (inflation rate, wage and exchanges rates), demands on health care system, government policies</p>	<p>Population health has a direct effect on demand for health services and is influenced by government policy and the provision of public goods; population health has consequences for microeconomic variables (e.g. labour productivity) which have larger implications for macroeconomic activity</p>
<p>11. Aday, et al., University of Texas, 1998 (“Behavioural Healthcare Framework”)* <i>A framework for evaluating health systems that lists clinical and social determinants of mental health outcomes along a continuum of behavioural health programs</i></p>	<p>To define a prevention- and outcomes-oriented continuum of healthcare integrating health services research methods and policy analysis for assessing healthcare system performance</p>	<p>Based on type and extent of affected groups’ participation in formulating and implementing policies and programs, availability and utilization of services and flows of payment; measures effectiveness (how structure, process or both contribute to outcomes of healthcare at the community, system, institution or patient level), equity (participation and freedom of choice) and efficiency (the combination of goods and services with the highest attainable total value be produced given limited resources and technology) are identified within the health system</p>	<p>Identifies a tripartite continuum of program evaluation based on structure (the availability, organization, and financing of behavioral healthcare programs), processes (transactions between patients and providers in the course of care delivery) and outcomes (ultimate outcomes of health care services to enhance the health of individuals)</p>
<p>12. Sicotte, et al., University of Montreal, 1998 (“Integrated Performance Framework”)[†] <i>A framework informing change in the performance management of health care organizations</i></p>	<p>To develop a comprehensive framework grounded in Parsons' social system action theory to overcome the current fragmented approach to health care organizations’ performance management</p>	<p>Four functional dimensions of action: two internal functions (maintaining values and stabilizing production) and two external functions (adapting to the environment to acquire the necessary resources and attaining the valued goals of the system)</p>	<p>Organizational performance is determined by the dynamic equilibrium resulting from the continuous exchange and interaction between the four functions</p>

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
13. Anell & Willis, Swedish Institute for Health Economics, 2000* <i>A supra-framework comparing health care resource profiles across multiple national health systems</i>	To derive a simple framework for comparing data underlying health care systems by analyzing health care resource profiles for Denmark, France, Germany, Sweden, the United Kingdom, and the USA	Measured health expenditures: percent GDP, expenditures per capita, drug expenditures per capita, MRI units per capita, CT scanners per capita, number of hospital beds per capita, health care employment per capita, number of physicians per capita, number of nurses per capita, and health care employment as percentage of total employment	Traces and compares domestic health spending per capita across select measured expenditures
14. WHO, 2000 (“Health Systems Performance Framework”)* <i>A framework for understanding the key functions and inputs that drive health system performance</i>	To outline key functions of health systems that influence how inputs are transformed into health system outcomes	Four key functions: resource generation, financing, service provision and stewardship; three central goals: health, responsiveness and financial protection	Four key functions serve as inputs that synergistically promote positive health outcomes, responsiveness and financial protection
15. Mills & Ranson, London School of Hygiene and Tropical Medicine, 2001* <i>A framework informing change in health systems reform for low- and middle-income countries</i>	To examine previous conceptual frameworks for health to understand how health systems work and how they can be changed in low- and middle-income countries	Key players: governments, populations, financing agents and providers; key areas for reform: regulation, financing, resource allocation and the provision of services	Focus on increasing the role of the state and regulation, increasing public control over financing, greater decentralization of management and greater involvement of the private sector in service provision
16. Hurst & Jee-Hughes, OECD, 2001* <i>A supra-framework comparing methods for performance measurement and management across OECD countries</i>	To compare key indicators of health system performance arrangements adopted by WHO, OECD, Australia, Canada, UK and USA in hopes of conceptualizing performance measurement	Three goals: health improvement and outcomes; responsiveness and access; and financial contributions and health expenditure; each goal has two components of assessment: the average level and the distribution of each goal	Focuses on the rate of development for indicators of performance in health outcomes, equity, efficiency and responsiveness across countries

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
17. Kutzin, WHO Regional Office for Europe, 2001† <i>A sub-framework for understanding the insurance function of health systems</i>	To clarify the policy levers that are available to enhance the insurance function for the population as efficiently as possible given the 'starting point' of a country's existing institutional and organizational arrangements	Four key functions: revenue collection, pooling of funds, purchasing of services and the provision of services	Follows funding and benefit flows between individuals and the funding and collection of health services
18. Docteur & Oxley, OECD, 2003* <i>A supra-framework comparing health system reforms across OECD countries</i>	To give policymakers a better understanding of the state of reforms across OECD countries and to inform them of policy orientations that may potentially have greater payoffs	Policy goals: ensuring access to needed health-care services; improving the quality of health care and its outcomes; allocating an "appropriate" level of public sector and economy-wide resources to health care (macroeconomic efficiency); and ensuring that services are provided in a cost-efficient and cost-effective manner (microeconomic efficiency)	Focuses on the degree to which policy goals have been achieved through health system reforms in OECD countries
19. Roberts, et al., Harvard University, 2003 ("Control Knobs")* <i>A framework evaluating changes in health systems that enables policymakers to focus on the relationship between structural components and goals</i>	To provide a framework for policymakers to use when striving to achieve health system goals	Institutional drivers underpinning the control knobs: financing, payment, regulation, organization and behaviour; intermediate performance measures: efficiency, quality and access; and goals: health status, customer satisfaction and risk protection	"A set of relationships where the structural components (means) and their interactions are associated and connected to the goals the system desires to achieve (ends)"
20. Khaleghian & Das Gupta, World Bank, 2004† <i>A framework for understanding how reforms in public management impact health systems</i>	To evaluate the impact of new public management strategies for public health (e.g. decentralized, contract-based delivery of services) on essential public health functions (EPHFs) across industrialized and developing countries.	EPHFs include disease surveillance, health education, monitoring and evaluation, workforce development, enforcement of public health laws and regulations, public health research, and health policy development.	Follows health system capacity in light of true market reforms (those involving user charges and provider competition), pseudo-market reforms (e.g., purchaser-provider splits, contracting and other market-simulating reforms), decentralization and other reforms to health management

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
<p>21. Anand & Bärnighausen, University of Oxford and Harvard University, 2004*</p> <p><i>A supra-framework comparing the impact of health worker density on health outcomes across multiple countries</i></p>	To investigate the link between human resources for health and health outcomes	Dependent variables: maternal mortality rate, infant mortality rate, and under-five mortality rate; independent variables across sets: aggregate density of human resources for health; doctor and nurse densities separately; controlled variables: income, female adult literacy, and absolute income poverty	Traces the effect of variation in human resources for health density across rates of maternal mortality, infant mortality and under-five mortality across countries
<p>22. Population Health and Wellness, British Columbia Ministry of Health Services, 2005*</p> <p><i>A framework informing change in British Columbia's public health renewal efforts</i></p>	To identify key public health services that health authorities can provide to strengthen the link between public health, primary care, and chronic disease management	Core programs: long-term programs representing the minimum level of services provided, public health strategies: strategies to implement core programs, lenses: population and inequality lenses to ensure health needs for all are met, system capacity: information systems, staff training, quality assessment, etc.	Core programs are implemented across a series of programs that build health system capacity while being monitored for equitable access and quality
<p>23. Mills, et al., World Bank, 2006[†]</p> <p><i>A sub-framework for understanding how health services can be strengthened in less developed countries</i></p>	To examine disease-specific and health system responses to common constraints experienced in less developed countries to deliver services more effectively, efficiently and equitably	Seven key constraints: financial, physical inaccessibility, poorly skilled staff, poorly motivated staff, weak planning and management, lack of intersectoral action/partnership, poor quality care in private sector	Traces disease-specific and health system responses to each of seven key constraints to foster capacity-building in developing countries
<p>24. Nixon & Ulmann, University of York, 2006[†]</p> <p><i>A sub-framework comparing the relationship between health spending and health outcomes in 15 EU countries</i></p>	To determine whether increased expenditure on health is causally linked to improved health outcomes	Inputs: lifestyle, environmental and occupational factors; outputs: life expectancy and infant mortality Analysis considers health spending and outcomes in 15 European Union countries between 1980 and 1995	Econometric analyses using a fixed effects model are conducted on a panel data set tracing the effect of variation in health spending on infant mortality and life expectancy
<p>25. Arah, et al., University of Amsterdam, 2006*</p> <p><i>A supra-framework evaluating health systems that assists in comparably measuring quality of health care across countries</i></p>	To develop a set of indicators that can be used to investigate quality of health care across countries using comparable data	Four tiers: health, non-health care determinants of health, health care system performance, health system design/context; core quality dimensions: effectiveness, safety and responsiveness/patient-centeredness	Places quality of care within larger performance framework; consists of four interconnected tiers arranged by potential causality

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
26. The Commonwealth Fund, 2006* <i>A framework informing change for performance improvement by meeting high quality health priorities</i>	To achieve system goals by meeting high quality performance improvement priorities	Goal of system: to deliver effective, safe, well-coordinated, patient-centred care for long, healthy and productive lives of the population	Suggests that high quality, efficient care coupled with equitable access and system-wide innovation and improvement will support system goals
27. WHO, 2007 (“Building Blocks”)* <i>A framework for understanding how health systems “building blocks” converge for system-wide strengthening</i>	To practically organize health systems into six operational “building blocks” for health systems strengthening	Six building blocks: service delivery, health workforce, information, medical products, vaccines and technologies, financing, stewardship; system goals: improved health, responsiveness, social and financial risk protection, improved efficiency	The six building blocks converge to provide highly accessible, safe, quality care with great coverage to populations ultimately achieving system goals
28. World Bank, 2007 (“Healthy Development”)+ <i>A supra-framework informing change in the World Bank’s strategic approach to Health, Nutrition and Population</i>	To outline a new strategic vision for the World Bank in improving its capacity to respond to complex health issues globally and with a country focus	Four goals: improve system performance, financial protection from poverty, financial sustainability, governance and accountability; five directions: renew focus, support client-country efforts to strengthen health systems, balance systems strengthening with priority-disease interventions and foster strategic engagement.	Presents a plan of action and internal functional adjustments for implementation to improve the impact of Bank interventions
29. Ramagem & Raules, Pan American Health Organization, 2008* <i>A framework evaluating health systems performance using 11 essential public health functions</i>	To create a common performance measurement tool that respects the organizational structure of each country’s health system	Eleven Essential Public Health Functions (EPHF): indispensable set of actions, under the primary responsibility of the state that are fundamental to achieving public health; three goals: strengthen public health practice, improve capacity of the national health authority to execute the EPHF and develop public health infrastructure	Countries continuously move from performance measurement to action through the framework, developing interventions that effectively deliver EPHFs and meet system goals

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
30. WHO, 2008 (“Primary Healthcare”)* <i>A sub-framework informing change in primary health care service delivery</i>	To structure primary health care (PHC) reforms that converge on what is needed for an effective response to the health challenges of today’s world, the values of equity, solidarity and social justice that drive the PHC movement and the growing expectations of the population in modernizing societies	Four broad policy areas for essential changes: moving towards universal coverage, putting people at the centre of service delivery, integrating health into public policies across sectors and providing inclusive leadership for health governance	Four reform policy areas work synergistically and converge around improved health for all
31. International Health Partnership, 2008† <i>A framework evaluating changes in health systems through increased monitoring and evaluation of scale-up efforts in health system reforms</i>	To help monitor and evaluate scale-up efforts for better health to ensure that accountability and results from single donors and joint initiatives are translated into well-coordinated efforts to monitor performance and evaluate progress and results in country	Six guiding principles: collective action, alignment with country processes, balance between country participation and independence, harmonized approaches to performance assessment, capacity building and health information system strengthening, adequate funding	To reduce duplication and fragmentation of data collection, management and reporting and to maximize country benefits and the quality of evaluation; five goals with proposed actions and principal actors are presented
32. Atun & Menabde, Imperial College, 2008 (“Systems Thinking Framework”)† <i>A supra-framework for understanding health systems in a broader social context that applies “systems thinking”</i>	To take into account the context within which the health system functions, namely, the demographic, economic, political, legal and regulatory, epidemiological, socio-demographic and technological contexts (“DEPLESET”)	Four levers available to policy-makers managing the health system: stewardship and organizational arrangements, financing, resource allocation and provider payment systems and service provision; intermediate goals: equity, efficiency (technical and allocative efficiency), effectiveness and choice; system goals: health, financial risk protection and consumer satisfaction	Proposes “health system behaviour” focused on complex interactions between health systems elements and contextual factors; “systems thinking” perceives interrelationships and repeated events, seeing patterns of change rather than static “snapshots”
33. The Global Fund, 2008* <i>A framework for understanding the key components of well-functioning health systems</i>	To derive a list of key components within effective health systems based on the Global Fund’s experience in health systems strengthening	Components that are key to building a well-functioning health system: effective healthcare delivery system, health workforce, health information system, equitable access, financing system and leadership and governance	Key functions operate independently to support effective health systems

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
<p>34. Siddiqi, et al., WHO Regional Office for the Eastern Mediterranean, 2009*</p> <p><i>A supra-framework comparing ten principles for health systems governance assessment across countries in the Eastern Mediterranean region</i></p>	<p>To assess health systems governance (HSG) at the national and sub-national levels using common parameters in the Eastern Mediterranean; considers role of the state vs. the market, role of the ministries of health vs. other state ministries, role of actors in governance, static vs. dynamic health systems and health reform vs. human rights-based approaches to health</p>	<p>Ten principles for HSG: strategic vision, participation and consensus orientation, rule of law, transparency, responsiveness, equity and inclusiveness, effectiveness and efficiency, accountability, intelligence and information and ethics</p>	<p>Ten principles of HSG are assessed at the national and sub-national level as indicators of effective governance in health</p>
<p>35. Mikkelsen-Lopez, et al., Geneva Health Forum, 2010⁺</p> <p><i>A framework for understanding how governance parameters exist at all levels of the WHO Building Blocks model</i></p>	<p>To address governance issues from a broader systems perspective across all levels of the health system</p>	<p>Builds on the WHO Building Blocks approach, adding governance dimensions to each block. Governance inputs (participation, strategic vision, consensus orientation), attributes (control of corruption, accountability, transparency) and outcomes (responsiveness, equity, efficiency) are presented</p>	<p>Traces governance throughout the WHO Building Blocks framework, applying checks and balances at the level of inputs, intermediary functions and outcomes</p>
<p>36. Savel, et al., Centers for Disease Control and Prevention, 2010⁺</p> <p><i>A sub-framework informing change in health communications technology through a grid-based health information network</i></p>	<p>To present the public health community a robust technology infrastructure for secure and timely data, information, and knowledge exchange, not only within the public health domain, but between public health and the overall health care system</p>	<p>Interconnects public health departments, regional health information organizations, providers and federal agencies; fosters an open collaborative effort involving the public health information network community, clinical partners, academia and industry to provide scientific and public health rigor, collaborative (and well-defined) governance/oversight and long term return on investment</p>	<p>Smaller discs represent “nodes” which are connection (access) points to resources (services) which are maintained (controlled) by that local entity; each node is essentially a technology connection point that is installed within an organization or partner site to share their resources and/or services with appropriate and authorized members of the PHGrid</p>

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
37. Van Olmen, et al., Institute of Tropical Medicine Antwerp, 2010[†] <i>A framework informing change at national and sub-national levels for health systems strengthening</i>	To assist in the description and analysis of any health system at national, intermediate or local levels for purposes of health systems strengthening	Ten elements: goals and outcomes, values and principles, service delivery, the population, the context, leadership and governance and the organisation of resources (finances, human resources, infrastructure and supplies, and knowledge and information	Relations between the elements are reciprocal and interconnected (including feedback loops, emergent, generative and nonlinear processes, dynamic equilibriums between operating forces); context encircles the system and the population touches on all elements of the system, indicating its omnipresence
38. Rechel, et al., European Observatory on Health Systems and Policies, 2010 (“HiT Template”)* <i>A framework for comparing health system performance across countries</i>	To provide detailed guidelines and specific questions, definitions, suggestions for data sources, and examples needed to compile HiTs	Template consists of nine chapters: introduction, organization and governance, financing, physical and human resources, provision of services, principal health reforms, assessment of health system, conclusions and appendices	Traces health system performance at the country level across nine factors
39. Shakarishvili, et al., The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2011* <i>A supra-framework evaluating national health systems by tracing the impact of donors’ health systems strengthening (HSS) expenditures</i>	To comparatively analyse donors’ contributions to strengthening specific aspects of countries’ health systems in multi-donor supported funding environments	Four pre-requisite factors: harmonization of conceptual and operational understanding of what constitutes HSS, development of a common set of criteria to define health expenditures as contributors to HSS, development of a common HSS classification system and harmonization of HSS programmatic and financial data for inter-agency comparative analyses	Traces each donor’s financial contribution to strengthening individual elements and components of country’s health system
40. Veillard, et al., Canadian Institute for Health Information, 2011* <i>A supra-framework for understanding the concept of stewardship and its applications to the health sector</i>	To propose an operational approach scoping out different health system stewardship functions and relating them in practice to national contexts and various health system goals	Six stewardship functions: define the vision and strategy for better health, exert influence across all sectors for better health, govern health systems in a way that is consistent with prevailing values, ensure system design is aligned with health system goals, leverage available legal and regulatory instruments and compile, disseminate and apply intelligence	Applies the six functions of stewardship to the health sector in the context of national values and socioeconomic constraints within which the stewardship role of national health ministries takes place

Framework Name	Overview, Goals & Main Functions	Health System Components	Health System Interactions
41. Ergo, et al., USAID, 2011† <i>A sub-framework evaluating health systems approaches to maternal, neonatal and child health as it relates to the broader health system</i>	To offer a structure that organizes information and assesses how various health systems strengthening initiatives might cause changes that result in improved maternal, neonatal and child health (MNCH)	Three essential components: the health care sector (governance and service delivery), the community (physical and social environments) and households (household characteristics and individual factors); four control knobs represent the types of 'tools' available to address weaknesses in the system: financing, organization, regulation and communication	The interactions within and between components, sub-components, constitutive elements and MNCH interventions will determine the coverage and quality of MNCH; four control knobs analyze how health systems strengthening initiatives trigger changes in the health system, and what the impact is on MNCH morbidity and mortality

¹ Feldstein M, Friedman B, Luft H. 1972. Distributional aspects of national health insurance benefits and finance. *National Tax Journal*;497-510.

² Yett DE, Drabek L, Intriligator MD, Kimbell LJ. 1972. Health manpower planning: an economic approach. *Health Services Research*;134-147.

³ Feldstein M, Friedman B. 1976. The Effect of National Health Insurance on the Price and Quantity of Medical Care. [Monograph] In: Rosett RN, ed. *The Role of Health Insurance in the Health Services Sector*:505-541. New York: National Bureau of Economic Research.

⁴ Evans RG. 1981. Incomplete vertical integration: the distinctive structure of the health-care industry. In: van der Gaag J and Perlman M, eds. *Health, economics, and health economics*. North Holland.

⁵ Hurst JW. 1991. Reforming health care in seven European nations. *Health Affairs*;10(3):7-21.

⁶ Roemer MI. 1991. National health systems of the world. Vol 1: The countries. Oxford: Oxford University Press.; Roemer MI. 1993. National health systems throughout the world: lessons for health system reform in the United States. *American Behavioral Scientist*;36(6):694-708.

⁷ Frenk J. 1994. Dimensions of health system reform. *Health Policy*;27:19-34.

⁸ Cassels A. 1995. Health Sector reform: some key issues in less developed countries. *Journal of International Development*;7(3):329-348.

⁹ Londoño JL, Frenk J. 1997. Structured pluralism: towards an innovative model for health system reform in Latin America. *Health Policy*;41:1-36.

¹⁰ Hsiao WC, Heller PS. 1997. *What Should Macroeconomists Know about Health Care Policy?* IMF Working Paper:WP.07.13. International Monetary Fund.

¹¹ Aday LA, Begley CE, Lairson DR, Slater CH, Richard AJ, et al. 1998. A framework for assessing the effectiveness, efficiency, and equity of behavioral healthcare. *American Journal of Managed Care*;5:25-44.

¹² Sicotte C, Champagne F, Contandriopoulos AP, et al. 1998. A conceptual framework for the analysis of health care organizations performance. *Health Services Management Research*;11:24-48.

¹³ Anell A, Willis M. 2000. International comparison of health care systems using resource profiles. *Bulletin of the World Health Organization*;78(6):770-778.

¹⁴ World Health Organization. 2000. *World health report 2000—health systems: improving performance*. Geneva: World Health Organization.

¹⁵ Mills AJ, Ranson MK. 2001. The Design of Health Systems (Chapter 3). In: Merson M, Black R, Mills A. (Eds.) *International Public Health, Diseases, Programs, Systems and Policies*. Gaithersburg MD: Aspen Publications.; Mills AJ, Ranson MK. 2006. The Design of Health Systems (Chapter 11). In: Merson M, Robert E. Black, Anne J. Mills. (Eds.) *International Public Health: Diseases, Programs, Systems and Policies* (2nd ed.), Sudbury MA: Jones and Bartlett Publishers.

¹⁶ Hurst J, Jee-Hughes M. 2001. *Performance measurement and performance management in OECD health systems*. OECD Labour Market and Social Policy Occasional Papers. No.47. OECD Publishing.

¹⁷ Kutzin J. 2001. A descriptive framework for country-level analysis of health care financing arrangements. *Health Policy*;56:171-204.

¹⁸ Docteur E, Oxley H. 2003. *Health-Care Systems: Lessons from the Reform Experience*. OECD Health Working Paper: DELSA/ELSA/WD/HEA(2003)9. Paris: Organization for Economic Co-operation and Development Publications.

¹⁹ Roberts MJ, Hsiao WC, Berman P, Reich MR. 2003. *Getting Health Reform Right*. New York: Oxford University Press.

²⁰ Khaleghian P, Das Gupta M. 2004. *Public Management and the Essential Public Health Functions*. World Bank Policy Research Working Paper 3220. World Bank.

- ²¹ Anand S, Bärnighausen T. 2004. Human resources and health outcomes: cross-country econometric study. *The Lancet*;364:1603–09.
- ²² Population Health and Wellness. 2005. *A Framework for Core Functions in Public Health*. Resource Document. British Columbia: Ministry of Health Services.
- ²³ Mills A, Rasheed F, Tollman S. 2006. Strengthening health systems. In: Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, et al. (Eds.) *Disease Control Priorities in Developing Countries*. Washington DC: World Bank.
- ²⁴ Nixon J, Ulmann P. 2006. Relationship between health expenditure and health outcomes: evidence and caveats for a causal link. *European Journal of Health Economics* 7:7-18.
- ²⁵ Arah O, Westert G, Hurst J, Klazinga N. 2006. A conceptual framework for the OECD health care quality indicators project. *International Journal for Quality in Health Care*;5–13.
- ²⁶ The Commonwealth Fund Commission on a High Performance Health System. 2006. *Framework for a High Performance Health System for the United States*.
- ²⁷ World Health Organization. 2007. *Strengthening health systems to improve health outcomes*. Geneva: World Health Organization.
- ²⁸ World Bank. 2007. *Healthy development: the World Bank strategy for health, nutrition and population results*. Washington DC: The World Bank.
- ²⁹ Ramagem C, Raules J. 2008. *The Essential Public Health Functions as a Strategy for Improving Overall Health Systems Performance: Trends and Challenges since the Public Health in the Americas Initiative, 2000-2007*. Washington DC: Area of Health Systems and Services, Pan American Health Organization.
- ³⁰ World Health Organization. 2008. *The World Health Report 2008: Primary Health Care – Now More Than Ever*. Geneva: World Health Organization.
- ³¹ International Health Partnership (IHP). 2008. *A common framework for monitoring performance and evaluation of the scale-up for better health*. Briefing Note for H8.
- ³² Atun R, Menabde N. 2008. Health systems and systems thinking. In: Cocker R, Atun R, McKee M. (Eds.) *Health Systems and the Challenge of Communicable Disease*. Open University Press.
- ³³ The Global Fund. 2008. *The Global Fund's Strategic Approach to Health System Strengthening*. Background Note 4.
- ³⁴ Siddiqi S, Masud TI, Nishtar S, Peters DH, Sabri B, Bile KM, Jama MA. 2009. Framework for assessing governance of the health system in developing countries: Gateway to good governance. *Health Policy*;90(1):13-25.
- ³⁵ Mikkelsen-Lopez I, Baez-Camargo C, Wyss K, de Savigny D. 2010. *Towards a new approach for assessing health systems governance*. Geneva: Geneva Health Forum.
- ³⁶ Savel T, Hall K, Lee B, McMullin V, Miles M, et al. 2010. A public health grid (PHGrid): architecture and value proposition for 21st century public health. *International Journal of Medical Informatics*;79(7):523-529.
- ³⁷ Van Olmen J, Criel B, Van Damme W, Marchal B, Van Belle S, Van Dormael M, et al. 2010. Analyzing health systems to make them stronger. In: *Studies in Health Services Organisation and Policy*. Antwerp: ITGpress.
- ³⁸ Rechel B, Thomson S, van Ginneken E. 2010. *Health systems in transition: Template for authors*. United Kingdom: European Observatory on Health Systems and Policies.
- ³⁹ Shakarishvili G, Lansang MA, Mitta V, Bornemisza O, Blakley M, et al. 2011. Health systems strengthening: a common classification and framework for investment analysis. *Health Policy and Planning*;26:316–326.
- ⁴⁰ Veillard J, Brown A, Baris E, Permanand G, Klazinga N. 2011. National health ministries in the WHO European region: concepts, functions and assessment framework. *Health Policy*;103:191–199.
- ⁴¹ Ergo A, Eichler R, Koblinsky M, Shah N. 2011. *Strengthening Health Systems to Improve Maternal, Neonatal and Child Health Outcomes: A Framework*. Washington DC: United States Agency for International Development (USAID).

Appendix 2: Brief Summaries of 41 Health System Frameworks⁴¹

1. Feldstein, *et al.*, Harvard University, 1972

Source: Feldstein M, Friedman B, Luft H. 1972. Distributional aspects of national health insurance benefits and finance. *National Tax Journal*;497—510.

The authors develop a framework to assess the distributional impact of alternative national health insurance options. The framework considers the probabilistic character of health expenditures and the joint importance of income and family characteristics. Authors employ a simulation method to calculate the actuarial value of the benefits of various insurance coverage plans and different price elasticities of demand. The framework is used to generate distributions for families of various compositions. These distributions are combined with an analysis of the incidence of alternative financing plans.

2. Yett, *et al.*, University of Southern California, 1972

Source: Yett DE, Drabek L, Intriligator MD, Kimbell LJ. 1972. Health manpower planning: an economic approach. *Health Services Research*;134-147.

Yett *et al.* present macro-econometric and the micro-simulation models to evaluate policies' ability to efficiently allocate health manpower and related resources. The macro-economic model is oriented toward comprehensive health planning in regional and sub-regional areas and deals with aggregate behaviour while the micro-simulation model focuses on the individual and emphasizes health manpower and health professions education at the national level.



Fig. 1. General structure of the macroeconomic model.

Consumers, providers and manpower are linked through services, *s*, and labor markets, *m* (diamonds). Lettered arrows represent groups of equations for demand (right-pointing) and supply (left-pointing). Variables consist of quantities (*Q*) and prices (*P*) of services and manpower.

⁴¹ Health system frameworks were identified through an extensive purposive search of the research literature conducted between October and December 2011 in electronic databases including Google Scholar, Science Direct, PubMed and Web of Science. Key search terms included "health system framework," "health system model," "health system + definition," "health system + function," "health system + processes" and "health system + components." Roughly half of the frameworks included in our research were frequently cited in papers by others, suggesting their importance to the field. Key informants and experts on health systems research were consulted to find additional frameworks that were not found in the search.

Frameworks marked with (*) have descriptions adapted from Shakarishvili G, Atun R, Berman P, Hsiao W, Burgess C, et al. 2009. *Building on Health Systems Frameworks for Developing a Common Approach to Health Systems Strengthening*. Prepared for the World Bank, Global Fund and the GAVI Alliance Technical Workshop on Health Systems Strengthening: Washington DC.

Frameworks marked with (**) have descriptions adapted from Papanicolas I, Smith P. 2010. *EuroREACH Framework for Health System Performance Assessment*. Draft Report: EuroREACH Project.

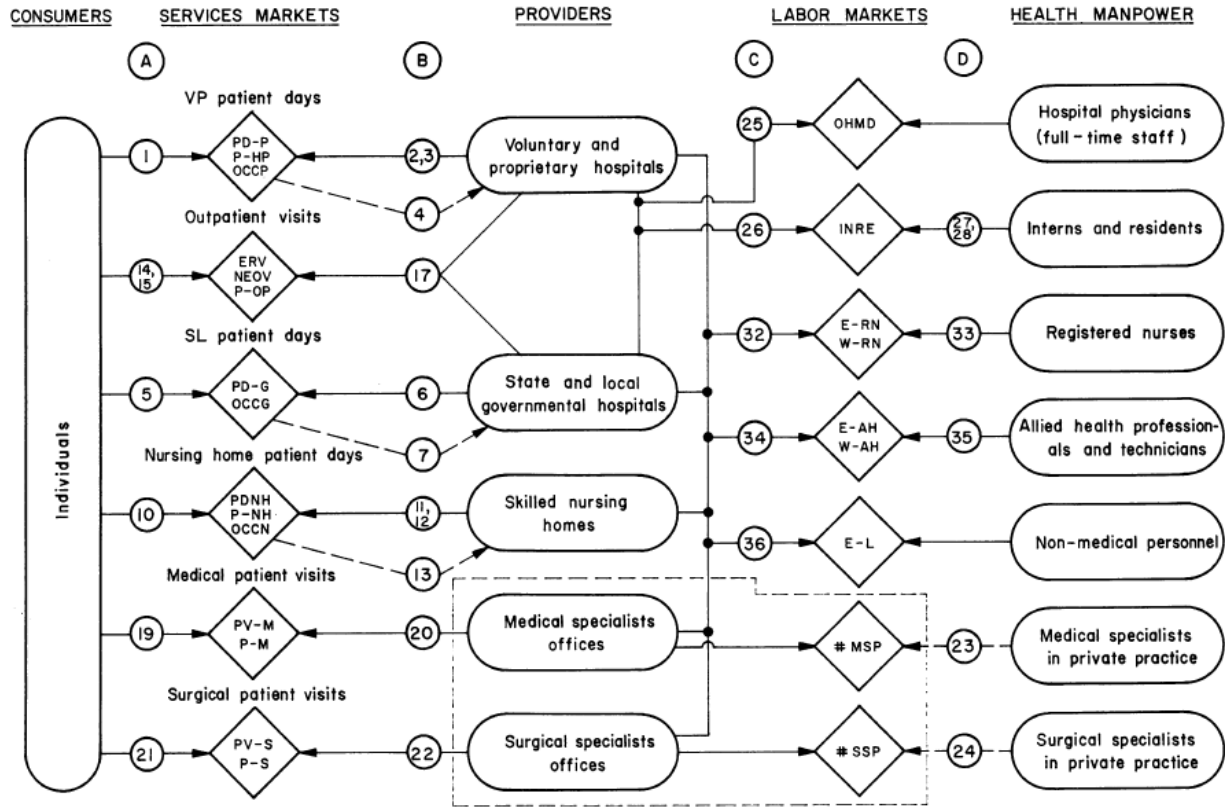


Fig. 2. Flow diagram of macroeconomic model for regional health planning.

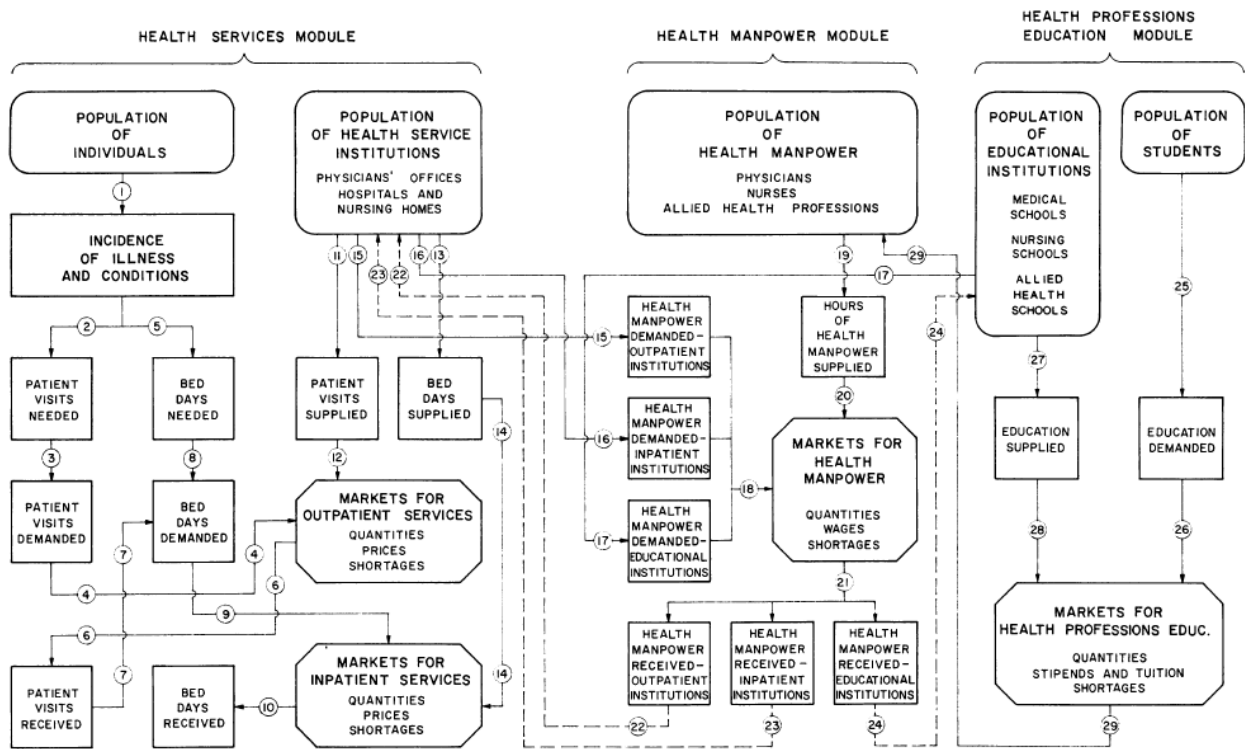


Fig. 3. Microsimulation model for health manpower demand planning.

3. Feldstein & Friedman, Department of Health, Education, and Welfare, 1976

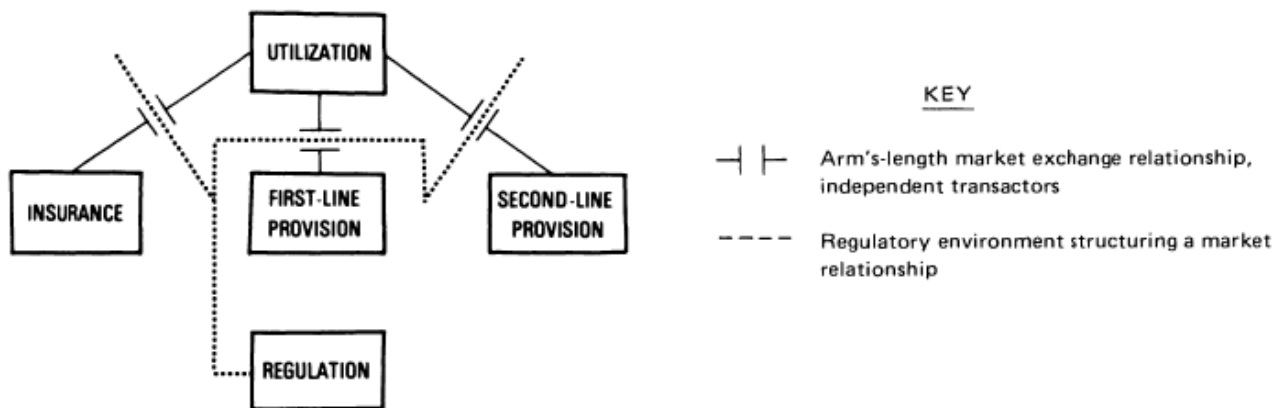
Source: Feldstein M, Friedman B. 1976. The Effect of National Health Insurance on the Price and Quantity of Medical Care. [Monograph] In: Rosett RN, ed. *The Role of Health Insurance in the Health Services Sector*:505-541. New York: National Bureau of Economic Research.

Feldstein and Friedman use a micro-simulation model of the supply and price response in the markets for hospital care and physicians' services as to estimate the effects of alternative national health insurance policies in the United States. The authors show that an aggregate model of supply and price response can be combined with a micro-simulation model of demand. The model emphasizes that any analysis of the effects of alternative national health insurance plans should consider the effect of insurance on the prices and supply of health services. The authors use an operational method to combine stochastic micro-simulation models of household demand with aggregate supply and price determination equations.

4. Evans, University of British Columbia, 1981 ("Actors Framework")

Source: Evans RG. 1981. Incomplete vertical integration: the distinctive structure of the health-care industry. In: van der Gaag J and Perlman M, eds. *Health, economics, and health economics*. North Holland.

Evans interprets health systems as possessing different patterns of incomplete vertical integration among five classes of transactors: consumer-patients (who utilize care), first-line providers (contacted directly by consumers), second-line providers (whose output is either used by consumers under the direction of first-line providers or supplied as intermediate products to first-line or other second-line providers), insurers and governments (exercise or delegate regulatory authority). Evans sketches the more common forms of linkages among transactors in the health care market, showing how the observed or alleged patterns of industry performance in different systems can be traced to differences in structure.



5. Hurst, OECD, 1991 (“Fund Flows and Payment Framework”)

Source: Hurst JW. 1991. Reforming health care in seven European nations. *Health Affairs*;10(3):7-21.*

Hurst and colleagues defined health systems in terms of fund flows and payment methods between population groups and institutions. They identified seven major subsystems of financing and delivery of health care, namely three voluntary insurance systems (private reimbursement, contract and integrated models), three compulsory insurance- or tax-funded models (public reimbursement model, contract and integrated models) and the direct, voluntary out-of-pocket payment model.

The following common objectives can be discerned across health systems:

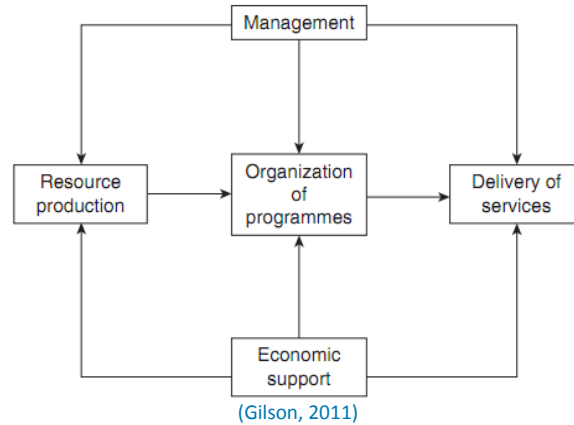
1. Adequacy and equity in access: All citizens should have access to at least a basic minimum of health care, and there should be equal treatment for equal need where services are financed publicly.
2. Income protection: Patients should be protected from payments for health care that represent catastrophic threats to their income or wealth, and the payment for such protection should be related to individuals’ ability to pay. This will involve at least three types of transfer: insurance (the need for care is unpredictable); saving (the elderly use more services than the young); and income redistribution (the sick are often the poor).
3. Macroeconomic efficiency: Health expenditure should consume an appropriate fraction of gross domestic product (GDP);
4. Microeconomic efficiency: Health outcome and consumer satisfaction should be as high as possible for the available share of GDP spent on health services. This implies that costs should also be minimized for the appropriate mix of health care activities.
5. Freedom of choice for consumers: Consumers should be free to choose their doctors under both public and private insurance, and, with the advice of their doctors, they should be able to exercise some choice over subsequent treatments and referrals to other providers.
6. Appropriate autonomy for providers: Doctors and other providers should be given the maximum freedom compatible with the attainment of the above objectives, especially in matters of medical and organizational innovation.

6. Roemer, University of California, 1991 (“Basic Interactions Framework”)

Source: Roemer MI. 1991. National health systems of the world. Vol 1: The countries. Oxford: Oxford University Press.* Roemer MI. 1993. National health systems throughout the world: lessons for health system reform in the United States. *American Behavioral Scientist*;36(6):694-708.

Some national level systems can also be viewed through a basic descriptive model. A classic example is one defined by Roemer who described a health system as, “the combination of resources, organization, financing and management that culminate in the delivery of health services to the population”. There are five principal components to any health system:

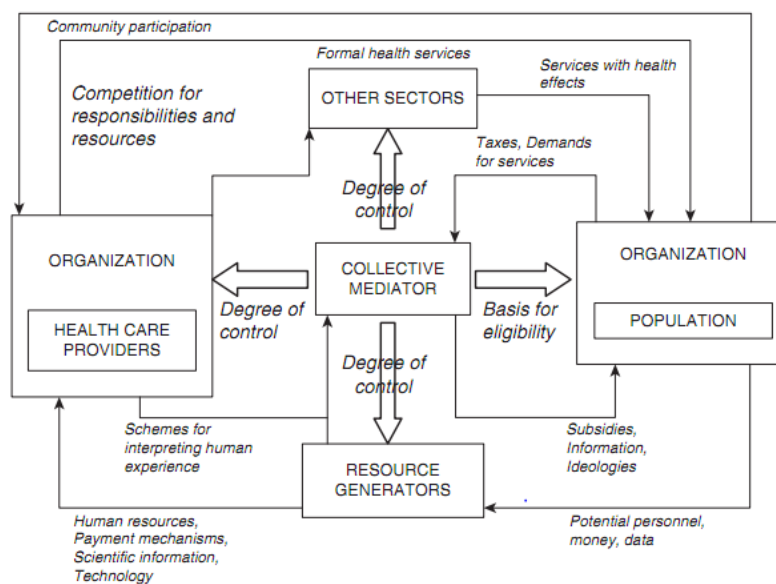
1. Resources: Human resources (personnel), facilities (hospitals, health centres), commodities (drugs, equipment) and knowledge.
2. Organization: One principal authority of government (at several levels), other governmental agencies with health functions, voluntary health agencies, enterprises and a private health care market.
3. Management: Health planning, administration (supervision, coordination), regulation and legislation.
4. Economic Support: Governmental tax revenues (at different levels), social insurance (statutory), voluntary insurance, charity and personal households. Foreign aid may apply in less developed countries.
5. Delivery of Services: Primary health care (preventative and curative), secondary care and tertiary care.



7. Frenk, Mexican Health Foundation, 1994 (“Reform Framework”)

Source: Frenk J. 1994. Dimensions of health system reform. *Health Policy*;27:19–34.

Abstract: This paper presents the health system as a set of relationships among five major groups of actors: the health care providers, the population, the state as a collective mediator, the organizations that generate resources, and the other sectors that produce services with health effects. The relationships among providers, population, and the state form the basis for a typology of health care modalities. The type and number of modalities present in a country make it possible to characterize its health system. In the last part, the paper proposes that health system reform operates at four policy levels: systemic, which deals with the institutional arrangements for regulation, financing, and delivery of services; programmatic, which specifies the priorities of the system, by defining a universal package of health care interventions; organizational, which is concerned with the actual production of services by focusing on issues of quality assurance and technical efficiency; and instrumental, which generates the institutional intelligence for improving system performance through information, research, technological innovation, and human resource development.



8. Cassels, 1995

Source: Cassels A. 1995. Health Sector reform: some key issues in less developed countries. *Journal of International Development*;7(3):329–348.

Key institutional components of health system:

1. **The state:** Government institutions responsible for the financing, regulation, purchasing and provision of health care.
2. **Service providers:** In the public, private, NGO and traditional sector. Most work in some kind of institutional setting such as a hospital, health centre or GP practice. Services include clinical care as well as support services.
3. **Resource institutions:** Produce the human and material resources for health care-concerned with basic and in-service training of health personnel and health-related research and development (these will include universities, medical schools, schools of public health, R & D departments of private companies, foundations etc).
4. **Institutional purchasers:** Organizations such as insurance funds, district health authorities or health maintenance organisations which define health needs for discrete populations and purchase clinical and support services from providers using a variety of contractual mechanisms
5. **Other sectoral agencies:** Produce health benefits indirectly as result of the goods or services they provide (e.g. agriculture, education, housing, employment, communications, water supply).
6. **Populations:** People acting individually or as households can produce health benefits through individual or collective action, lifestyle or behaviour; they are recipients of health care; they can purchase health care, and can be employed to provide services. Individuals form or join a variety of different organisations which aim to influence the form, content, cost or quality of services (e.g.: trade unions, political parties, user groups, village health committees, community health councils and so forth).

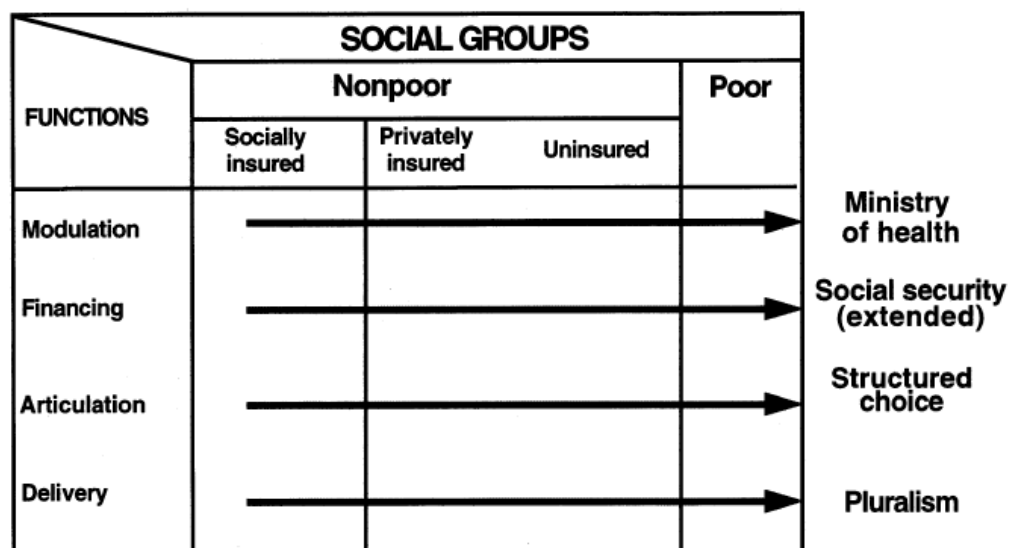
Areas of health sector reform programmes:

1. **Improving the performance of the civil service:** Reducing staff numbers, new pay and grading schemes (including performance related incentives and salary decompression), better job descriptions and appraisal systems, improved financial disbursement and accounting, establishing executive agencies.
2. **Decentralization:** Decentralizing responsibility for the management and/or provision of health care to local government or to agencies within the health sector. Establishing self-governing hospitals or autonomous district boards.
3. **Improving the functioning of national ministries of health:** Through organizational restructuring, improving human and financial resource management, strengthening policy and planning functions, setting standards for health care provision and developing systems for monitoring performance, defining national disease priorities and cost-effective clinical and public health interventions.
4. **Broadening health financing options:** Through the introduction of user fees, community finance, voucher systems, social insurance schemes and private insurance.
5. **Introducing managed competition:** Promoting competition between providers of clinical care and/or support services through single or multiple purchasers.
6. **Working with the private sector:** Establishing systems for regulating, contracting with or franchising providers in the private sector including NGOs and for-profit organizations.

9. Londoño & Frenk, Inter-American Development Bank & Mexican Health Foundation, 1997

Source: Londoño JL, Frenk J. 1997. Structured pluralism: towards an innovative model for health system reform in Latin America. *Health Policy*;41:1-36.

Londono and Frenk offer an innovative model to promote equity, quality, and efficiency. They conceptualize health systems in terms of the relations between populations and institutions. Health systems must perform four basic functions: financing, delivery, modulation (setting transparent and fair rules of the game) and articulation (managing and organizing transactions between groups). They propose a model of structured pluralism that organizes the health system by functions rather than social groups. Modulation is the central mission of the ministry of health (rather than the direct provision of personal health services). Financing is the main function of social security institutes, which is gradually extended to protect the entire population. The articulation function would be made through the establishment of “organizations for health services articulation,” which would perform a series of crucial activities, including the competitive enrollment of populations into health plans in exchange for a risk-adjusted capitation, the specification of explicit packages of benefits or interventions, the organization of networks of providers so as to structure consumer choices, the design and implementation of incentives to providers through payment mechanisms, and the management of quality of care. Finally, the delivery function would be open to pluralism that would be adapted to differential needs of urban and rural populations.

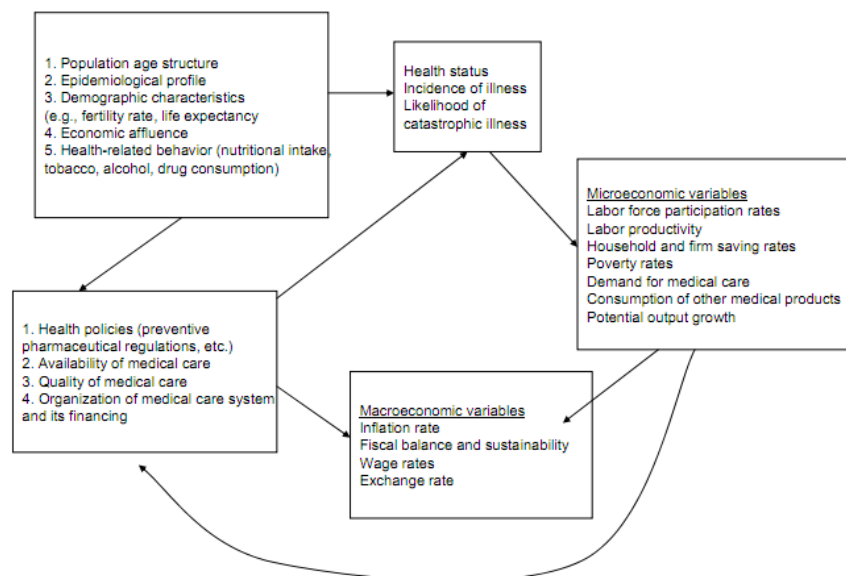


10. Hsiao & Heller, International Monetary Fund, 1997

Source: Hsiao WC, Heller PS. 1997. *What Should Macroeconomists Know about Health Care Policy?* IMF Working Paper:WP.07.13. International Monetary Fund.

From report: The report focuses on how issues of health influence the macro-economy. One starts with the basic recognition that the health status of a population is fundamentally influenced by its age structure, its exposure to various epidemiological vectors (in part due to geographic factors), its degree of affluence, its behavior (concerning nutrition and exposure to adverse epidemiological factors), and its

demographic characteristics (e.g., high or low fertility). This basic starting point will obviously influence the demands placed on a country's health care system. The health status of a population is also influenced in part by the nature of the health policies pursued by a government—the provision of public goods (such as immunizations and vaccinations); the quality of the regulatory policies with respect to pharmaceuticals; and the extent of activism in the control of public “bads” (such as antidrug or tobacco policies)—and by the quality and quantity of the medical services available to the population (whether from the public or private sectors). How a society organizes itself in terms of the implementation of its health policies and in the financing of the provision of health care is also likely to have a direct and independent impact on macroeconomic variables, recognizing that the extent of impact will differ across countries (depending on the size and relative importance of the health care sector).

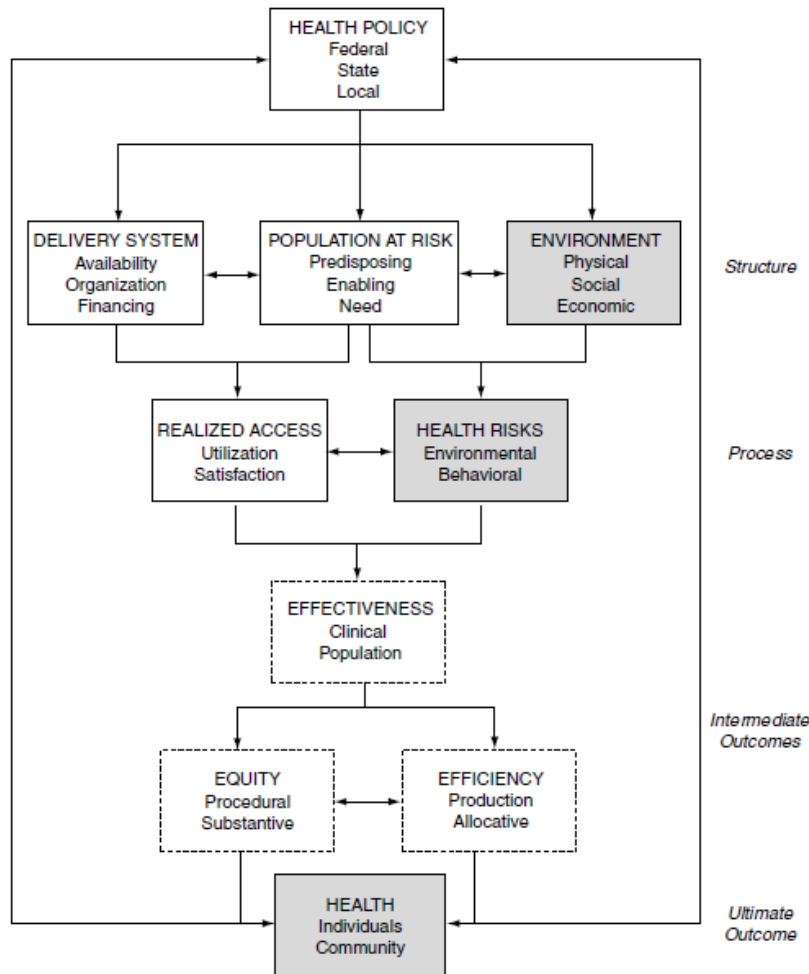


11. Aday, et al., University of Texas, 1998 (“Behavioural Healthcare Framework”)

Source: Aday LA, Begley CE, Lairson DR, Slater CH, Richard AJ, et al. 1998. A framework for assessing the effectiveness, efficiency, and equity of behavioral healthcare. *American Journal of Managed Care*;5:25-44.**

The Behavioural Healthcare Framework is organized in terms of the structure, process and outcomes of the healthcare system. Where:

- Structure refers to the availability, organization, and financing of behavioural healthcare programs; the characteristics of the populations to be served by them; and the physical, social and economic environment to which they are exposed
- Process refers to the transactions between patients and providers in the course of actual care delivery, as well as the environmental and behavioural transactions exacerbating behavioural health risks
- Outcomes consist of the ultimate outcome of health care services is to enhance the health of individuals and communities, however this goal is conceptualized as an ongoing process what can be evaluated through the intermediate outcomes of effectiveness, efficiency and equity.



12. Sicotte, et al., University of Montreal, 1998 (“Integrated Performance Framework”)

Source: Sicotte C, Champagne F, Contandriopoulos AP, Barnsley J, Béland F, Leggat SG, Denis JL, Bilodeau H, Langley A, Brémond M, Baker GR. 1998. A conceptual framework for the analysis of health care organizations performance. *Health Services Management Research*;11:24-48.**

The Integrated Performance Model for the Health Care System considers the goals and functions of the health system in addition to other external and internal factors (e.g. socio-economic determinants and the culture of the health system itself). The framework conceptualises health systems as organized systems of action with four functional dimensions of action:

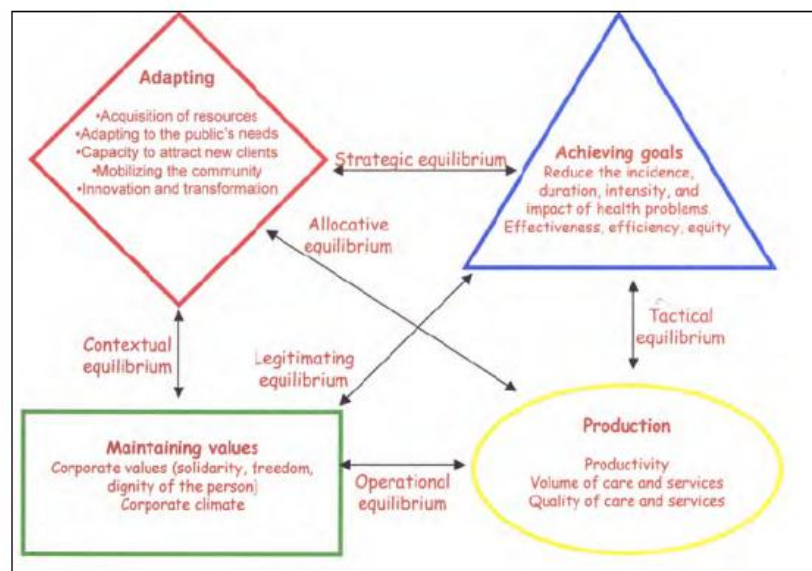
Two Internal Functions:

- Maintaining values: Maintaining values and producing meaning
- Production: Integrating and stabilising processes for production

Two External Functions:

- Adapting: Interacting with the environment to acquire the necessary resources and adapting
- Achieving goals: Attaining the valued goals of the system.

The goal attainment function refers to the ultimate goals which the system aims to achieve; these are health status, responsiveness, financial fairness and efficiency. The production function represents the processes which are undertaken in order to achieve the system goals: these are often represented through the dimensions of accessibility, quality and technical efficiency. These two functions are present in most existing frameworks. The adaptation function considers external influences on the system, and how the health system adapts to these influences in order to best serve the system's needs. Finally, the value maintenance function considers the motivation the actors in the system have in order to maintain and improve the health system. This includes the organizational culture, worker satisfaction etc. These four functions can be studied independently but their interactions and trade-offs must also be considered, allowing for a more dynamic representation of the system.



13. Anell & Willis, Swedish Institute for Health Economics, 2000

Source: Anell A, Willis M. 2000. International comparison of health care systems using resource profiles. *Bulletin of the World Health Organization*;78(6):770-778.

A simple framework for comparing data underlying health care systems is presented in this article. It distinguishes measures of real resources, for example human resources, medicines and medical equipment, from measures of financial resources such as expenditures. Measures of real resources are further subdivided according to whether their factor prices are determined primarily in national or global markets. The approach is illustrated using a simple analysis of health care resource profiles for Denmark, France, Germany, Sweden, the United Kingdom, and the USA. Comparisons based on measures of both real resources and expenditures can be more useful than conventional comparisons of expenditures alone and can lead to important insights for the future management of health care systems.

Measured health expenditures:

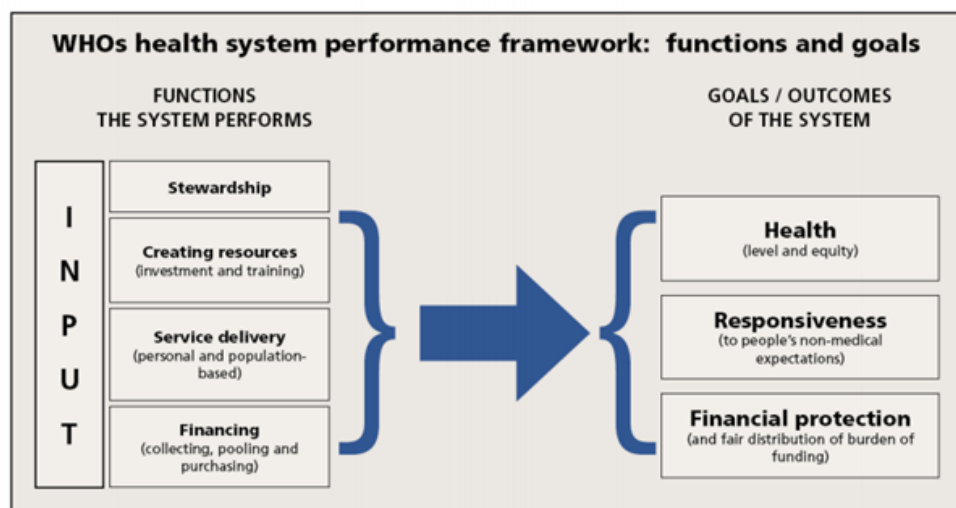
- % GDP = % gross domestic product;
- Exp/cap = expenditures per capita;
- Drugs/cap = drug expenditures per capita;
- MRIs = MRI units per capita;

- CT Scanners = CT scanners per capita;
- Beds/cap = no. of hospital beds per capita;
- Emp/cap = health care employment per capita;
- Phys/cap = No. of physicians per capita;
- Nurses/cap = no. of nurses per capita;
- % Emp = health care employment as % of total employment

14. WHO, 2000 (“Health System Performance Framework”)

Source: World Health Organization. 2000. *World health report 2000—health systems: improving performance*. Geneva: World Health Organization.*

The Report defined a health system as one that includes all actors, institutions and resources whose primary intent is to improve population health in ways that are responsive to the populations served, and seeks to ensure a more equitable distribution of wealth across populations. It outlined four key functions of a health system which drive the way that inputs are transformed into health system outcomes: resource generation, financing, service provision and stewardship.



15. Mills & Ranson, London School of Hygiene and Tropical Medicine, 2001

Source: Mills AJ, Ranson MK. 2001. *The Design of Health Systems* (Chapter 3). In: Merson M, Black R, Mills A. (Eds.) *International Public Health, Diseases, Programs, Systems and Policies*. Gaithersburg MD: Aspen Publications. Mills AJ, Ranson MK. 2006. *The Design of Health Systems* (Chapter 11). In: Merson M, Robert E. Black, Anne J. Mills. (Eds.) *International Public Health: Diseases, Programs, Systems and Policies* (2nd ed.), Sudbury MA: Jones and Bartlett Publishers.

Mills and Ranson examine previous conceptual frameworks for health to understand how health systems work and how they can be changed in low- and middle-income countries. Governments, populations, financing agents and providers are identified as key players in each system. The authors examine regulation, financing, resource allocation and the provision of services when considering key areas for health sector reform in low- and middle-income countries. Going forward, the authors propose that reformers focus on increasing the role of the state and regulation, increasing public control over

financing, greater decentralization of management and greater involvement of the private sector in service provision.

Table 11-8	The Main Areas of Health Sector Reform
Regulation	
Liberalizing laws regarding the private health sector and introducing incentives for improved efficiency and equity	
Updating regulatory structures	
Financing	
User fees, exemptions, and targeting	
Community financing, including community-based insurance	
Social health insurance	
Resource Allocation	
Creation of purchasing agencies	
Introduction of contractual relationships and management agreements	
Reforming payment systems	
Specification of essential packages	
Provision	
Decentralization of health services and hospital management	
Encouraging competition and diversity of ownership	
Strengthening primary care	
Evidence-based health care	
Quality improvement measures	
Improved accountability to service users and population	

16. Hurst & Jee-Hughes, OECD, 2001

Source: Hurst J, Jee-Hughes M. 2001. *Performance measurement and performance management in OECD health systems*. OECD Labour Market and Social Policy Occasional Papers. No.47. OECD Publishing.**

The OCED adopts a narrower definition of health system boundaries than that used by the WHO. Their definition is limited to include only the boundaries to the performance of the health care system, not encompassing public health activities or other wider issues. The set of objectives defined in the OECD framework are based upon the WHO's 2000 framework, but include some modifications. When defining the health system objectives, the OECD argues that access should be a component of responsiveness, unlike the WHO, which considers access to be a determinant of responsiveness. This allows the OCED framework to consider questions of equity of access in its framework. The OECD framework also adds the level of health expenditure as an objective, allowing them to the issue of desirable health spending. This makes the three goals of the OCED framework are: health improvement and outcomes; responsiveness and access; and financial contributions and health expenditure. For each of these goals, there are 'two components of assessment', the average level and the distribution of each goal.

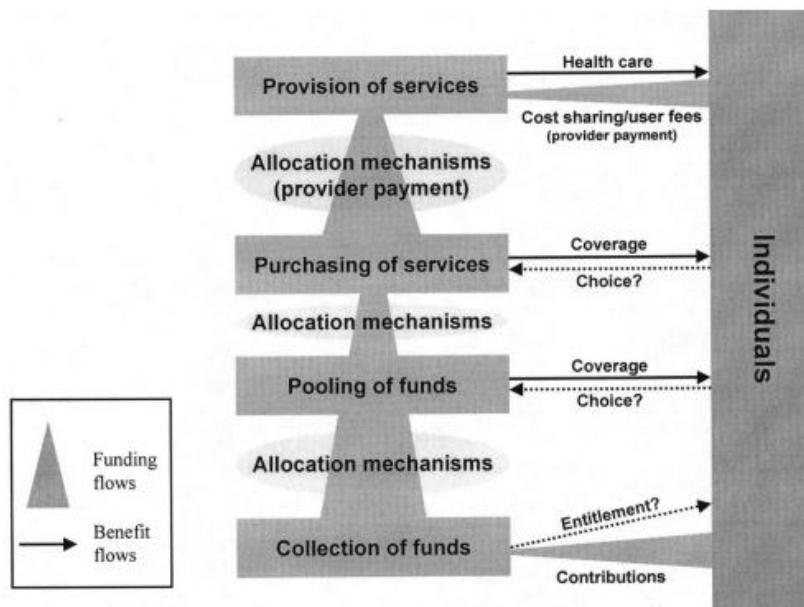
In order to relate health system architecture to performance, the OECD framework also includes a dimension of efficiency in its measurement, and similarly to the WHO 2000 framework this dimension is not an intrinsic goal as such but reflected in the attainment of the goals. However, the OECD separates efficiency in its framework into microeconomic efficiency and macroeconomic efficiency. The microeconomic efficiency dimension is very similar to the WHO's efficiency concept and involves

comparing the measured productivity of a health system to its maximum attainable productivity. Productivity is defined as the ratio of outputs to inputs (health outcome and responsiveness per dollar), a measure of technical efficiency. Macroeconomic efficiency relates to total spending on health, involving an examination of the benefit of health spending relative to other goods and services, a concept of allocative efficiency. The OECD framework does not envisage rankings of health systems, and does not require any weighting or combination of the goals.

17. Kutzin, WHO Regional Office for Europe, 2001

Source: Kutzin J. 2001. A descriptive framework for country-level analysis of health care financing arrangements. *Health Policy*;56:171–204.

Abstract: Health financing policies are marked by confusion between policy tools and policy objectives, especially in low and middle income countries. This paper attempts to address this problem by providing a conceptual framework that is driven by the normative objective of enhancing the ‘insurance function’ (access to needed care without financial impoverishment) of health care systems. The framework is proposed as a tool for descriptive analysis of the key functions, policies, and interactions within an existing health care system, and equally as a tool to assist the identification and preliminary assessment of policy options. The aim is to help to clarify the policy levers that are available to enhance the insurance function for the population as efficiently as possible, given the ‘starting point’ of a country’s existing institutional and organizational arrangements. Analysis of health care financing systems using this framework highlights the interactions of various policies and the need for a coherent package of coordinated reforms, rather than a focus on particular organizational forms of ‘health insurance’. The content of each main health care system function (revenue collection, pooling of funds, purchasing of services, provision of services) and the market structure with which the implementation of each is organized are found to be particularly important, as are policies with respect to the benefit package and user fees.



18. Docteur & Oxley, OECD, 2003

Source: Docteur E, Oxley H. 2003. *Health-Care Systems: Lessons from the Reform Experience*. OECD Health Working Paper: DELSA/ELSA/WD/HEA(2003)9. Paris: Organization for Economic Co-operation and Development Publications.

The report aims to give policymakers a better understanding of the state of reforms across OECD countries and to inform them of policy orientations that may potentially have greater payoffs. Reforms are assessed according to their impact on the following policy goals in OECD countries: ensuring access to needed health-care services; improving the quality of health care and its outcomes; allocating an “appropriate” level of public sector and economy-wide resources to health care (macroeconomic efficiency); and ensuring that services are provided in a cost-efficient and cost-effective manner (microeconomic efficiency). To improve access to care and health outcomes, Docteur and Oxley offer recommendations such as:

- Assuring universal and comprehensive health insurance coverage
- Ensuring adequate and equitable access to needed health services
- Increasing the effectiveness of health systems by initiating focused public health programmes, establishing new health-care delivery arrangements and supporting public reporting of information on health-care quality

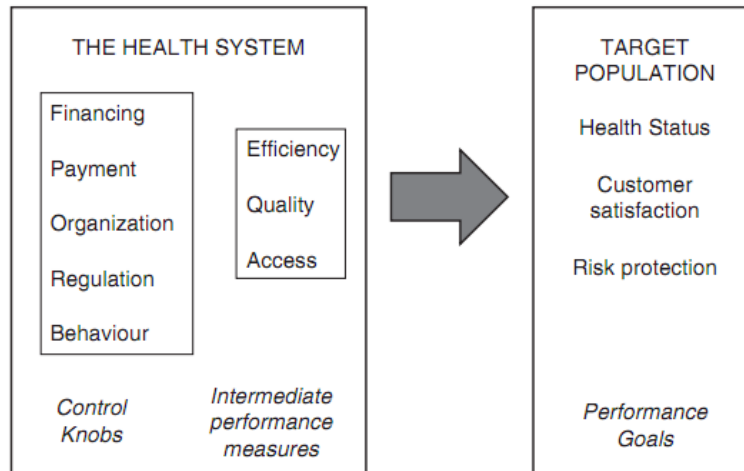
19. Roberts, *et al.*, Harvard University, 2003 (“Control Knobs Framework”)

Source: Roberts MJ, Hsiao WC, Berman P, Reich MR. 2003. *Getting Health Reform Right*. New York: Oxford University Press.*

Roberts, Hsiao, Berman, and Reich (2003) conceptualized a health system as “a set of relationships where the structural components (means) and their interactions are associated and connected to the goals the system desires to achieve (ends)”. The framework identifies five major “control knobs” of a health system which policymakers can use to achieve health system goals: financing, macro-organization, payment, regulation and education/persuasion. This framework has been used as the basis for the World Bank Institutes Flagship Program on Health Sector Reform and Sustainable Financing, now renamed Health System Strengthening.

The institutional drivers underpinning the control knobs framework:

1. **Financing:** Who pays and who benefits from health care, as well as generating funding for the system as a whole;
2. **Payment:** The ways in which money is transferred to health care providers, creating financial incentives influencing how they behave;
3. **Regulation:** The use of state coercion to control the behaviour of other actors within the system;
4. **Organization:** The incentives for the organization; and the incentives, authority, skills and attitudes of both managers and workers; and
5. **Behaviour:** Information provision and marketing, incentives and coercion shaping how patients and providers act in relation to health and health care (addressing treatment seeking behaviours, health professional behaviours, and patient compliance, lifestyle and prevention behaviours).



(Gilson, 2011)

20. Khaleghian & Das Gupta, World Bank, 2004

Source: Khaleghian P, Das Gupta M. 2004. *Public Management and the Essential Public Health Functions*. World Bank Policy Research Working Paper 3220. World Bank.

The authors provide an overview of how different approaches to improving public sector management relate to so-called core or essential public health functions (EPHFs) such as disease surveillance, health education, monitoring and evaluation, workforce development, enforcement of public health laws and regulations, public health research, and health policy development. Key lessons from their examination propose the following considerations for health sector reform:

- User fees are not an option for the EPHFs because of their public goods characteristics
- Promoting competition among agencies responsible for public health functions does not improve efficiency; on the contrary, it impedes collaboration and technical assistance and can therefore compromise the effectiveness of activities such as surveillance and health promotion
- Managerial autonomy is important for the EPHFs as a way of promoting adaptation and innovation
- Decentralizing the EPHFs is a risky strategy, since local governments have little incentive to invest in public goods and systematically neglect them.
- Public sector norms and rules (the institutional environment) that impede effective administration should be changed where possible
- Strengthening hierarchical accountability within the public health system is essential to strengthening the EPHFs

21. Anand & Bärnighausen, University of Oxford and Harvard University, 2004

Source: Anand S, Bärnighausen T. 2004. Human resources and health outcomes: cross-country econometric study. *The Lancet*;364:1603–09.

The authors investigate the link between human resources for health and health outcomes by conducting a cross-country multiple regression analyses with maternal mortality rate, infant mortality rate, and under-five mortality rate as dependent variables. Aggregate density of human resources for health was an independent variable in one set of regressions; doctor and nurse densities separately were used in another set. Authors controlled for the effects of income, female adult literacy, and absolute income poverty. Anand and Bärnighausen conclude that the density of human resources for

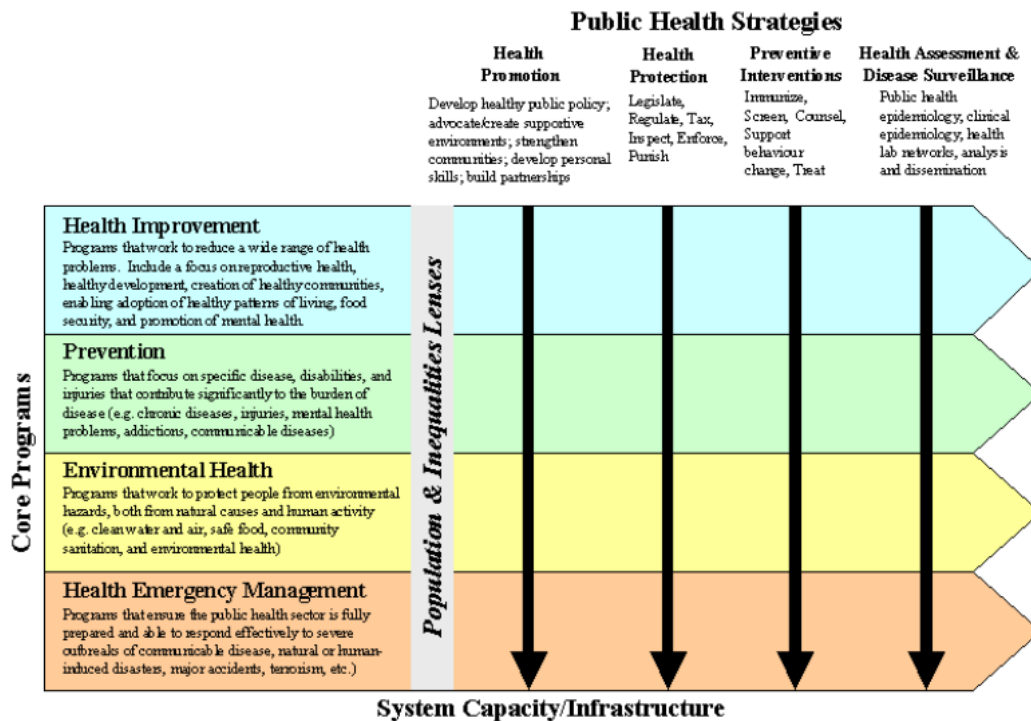
health is important in accounting for the variation in rates of maternal mortality, infant mortality, and under-five mortality across countries.

22. Population Health and Wellness, British Columbia Ministry of Health Services, 2005

Source: Population Health and Wellness. 2005. *A Framework for Core Functions in Public Health*. Resource Document. British Columbia: Ministry of Health Services.

From Report: A Framework for Core Functions in Public Health is part of this public health renewal. This document provides a framework to help strengthen public health and improve population health in British Columbia. It is the intent of the Ministry of Health Services that Core Functions in Public Health (Core Functions) will identify the key set of public health services that health authorities will provide and will strengthen the link between public health, primary care, and chronic disease management.

- **Core programs:** Long-term programs, representing the minimum level of public health services that health authorities would provide in a renewed and modern public health system. Core programs are organized to improve health; they can be assessed ultimately in terms of improved health and well-being and/or reductions in disease, disability, and injury.
- **Public health strategies:** strategies by which core programs are implemented, no matter what the intended health outcome, e.g. health promotion.
- **Lenses:** the Population Lens and the Inequalities Lens are in place to ensure the health needs of specific populations are addressed.
- **System capacity:** The health information systems, quality management, research and knowledge development, and staff training and development capacity needed to apply public health strategies and implement core programs.



23. Mills, *et al.*, World Bank, 2006

Source: Mills A, Rasheed F, Tollman S. 2006. Strengthening health systems. In: Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, et al. (Eds.) *Disease Control Priorities in Developing Countries*. Washington DC: World Bank.

The authors review how health systems can be strengthened in differing country contexts to deliver interventions effectively, efficiently, and equitably. The chapter is mainly concerned with strengthening health services and looks to disease-specific and health system responses to common constraints experienced in less developed countries. Six key points can be identified in relation to improving health systems:

1. Health systems are the basis for the long-term future of sustained health improvements. The health of the system must be carefully considered whenever major programs are put in place.
2. If capacity constraints are such that a focused disease- or program-specific effort is desirable to address an urgent problem, the effort should be designed to contribute to the long-term system strengthening, rather than detracting from it. Countries must avoid having multiple vertical programs competing for limited human resources and managerial capacity.
3. Reforms affecting organizational structures and human resource management are likely to play an important role in improved performance. However, emerging evidence suggests in most settings that changes are most likely to be successfully implemented if they are incremental and gradual rather than "big bang" reforms.
4. Linking financial incentives to performance, whether through contracts with health care providers or through performance-related pay, may bring rewards if careful monitoring is possible; however, evidence on the sustainability of such arrangements is lacking, and effective monitoring may require long-term external involvement.
5. Organizational reforms must keep the goal of improved health outcomes, equity, and responsiveness in sight. Special attention to users' demands, to primary care and first-level hospitals, to quality of care, and to technical backup for disease control programs is required.
6. Capacity-strengthening efforts in most settings must encompass action at all levels, from increasing leadership of the ministry of health at the national level through strengthening support for peripheral levels.

Constraint	Disease-specific response	Health system response
Financial inaccessibility: inability to pay, informal fees	Allowing exemptions or reducing prices for focal diseases	Developing risk-pooling strategies
Physical inaccessibility: distance to facility	Providing outreach for focal diseases	Reconsidering long-term plans for capital investment and siting of facilities
Inappropriately skilled staff	Organizing in-service training workshops to develop skills in focal diseases	Reviewing basic medical and nursing curricula to ensure that basic training includes appropriate skills
Poorly motivated staff	Offering financial incentives for the delivery of particular priority services	Instituting performance review systems, creating greater clarity about roles and expectations, reviewing salary structures and promotion procedures
Weak planning and management	Providing ongoing education and training workshops to develop planning and management skills	Restructuring ministries of health, recruiting developing a cadre of dedicated managers
Lack of intersectoral action and partnership	Creating disease-focused, cross-sectoral committees and task forces at the national level	Building systems of local government that incorporate representatives from health, education, and agriculture, promoting the accountability of local governance structures to the people
Poor-quality care among private sector providers	Offering training for private sector providers	Developing accreditation and regulation systems

24. Nixon & Ulmann, University of York, 2006

Source: Nixon J, Ulmann P. 2006. The relationship between health expenditure and health outcomes: evidence and caveats for a causal link. *European Journal of Health Economics*;7:7-18.

Abstract: The relationship between health care expenditure and health outcomes is of interest to policymakers in light of steady increases in health care spending for most industrialized countries. This study reviews key findings and methodological approaches in this field and reports the results of our own empirical study of countries of the European Union. Our analysis examines life expectancy and infant mortality as the 'output' of the health care system, and various life-style, environmental and occupational factors as 'inputs'. Econometric analyses using a fixed effects model are conducted on a panel data set for 15 members of the European Union over the period 1980–1995. The findings show that increases in health care expenditure are significantly associated with large improvements in infant mortality but only marginally in relation to life expectancy.

25. Arah, et al., University of Amsterdam, 2006

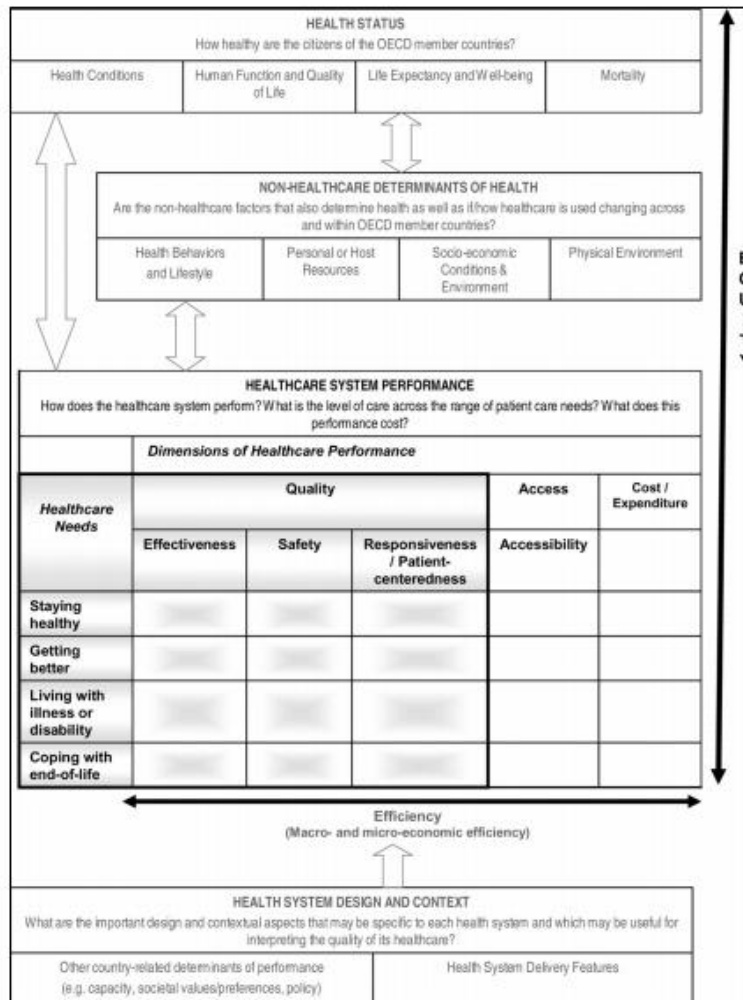
Source: Arah O, Westert G, Hurst J, Klazinga N. 2006. A conceptual framework for the OECD health care quality indicators project. *International Journal for Quality in Health Care*;5–13.**

The HCQI project was initiated in 2001 with the long-term objective of developing a set of indicators that could be used to investigate quality of health care across countries using comparable data. In 2006, Arah and colleagues published the conceptual framework which defined 'quality of health care', placing it within a wider performance framework that acknowledged the key healthy policy goals adopted by the OECD and its member states. The authors adhere to the WHO definition of a health system in terms of health actions, and define 'health care' as the combined functioning of public health and personal health care services.

Their 'health system' framework, thus considers not only health care but the other activities that have a primary purpose of promoting, restoring or maintaining health. This framework has four interconnected tiers (connected in a fashion that denotes potential causal pathways) representing:

1. Health: this tier denotes society's broader health as influenced by health care and non-health care factors;
2. Non-health care determinants of health: This tier denotes the mostly society-wide, non-health care factors that also influence health;
3. Health care system performance: The tier denotes the processes, inputs, and outcome of the health care system as well as its efficiency and equity, recognizing that these may sometimes influence health care determinants. Note that the link between the third tier and the second is captured by primary care/prevention and health promotion;
4. Health system design and context: This denotes pertinent country and health system policy and delivery characteristics, which will influence the health system in terms of its costs, expenditure and utilization patterns that must be considered in order to contextualise the findings of the health performance tier.

Within this health system framework, a certain section of the health care system performance tier denotes the core quality dimensions to be measured in the HCQI project, effectiveness, safety and responsiveness/patient-centeredness.



26. Commonwealth Fund, 2006

Source: Commonwealth Fund Commission on a High Performance Health System. 2006. *Framework for a High Performance Health System for the United States*. New York: Commonwealth Fund.

Four Goals of a High Performance Health Care System High Quality Safe Care:

1. Patients get health care that is known to be effective – as needed for treatment, prevention or palliation.
2. Health care provided is safe, delivered in a manner that achieves higher reliability in care processes and minimizes medical errors
3. Health care is coordinated over time.
4. Care is patient-centered; provided in a timely way with compassion, effective communication, and excellent services. Patients are informed and active participants of their care.

Access to care for all people:

- There is universal participation.
- Everyone has available to them a minimum level of financial protection, as well as established benefits.
- Care is affordable, from the patient’s and the nation’s perspective.
- Care is provided equitably according to medical need, regardless of race/ethnicity, insurance status, income, age, sex, or geographical location.

Efficient, high value care:

- Care delivery and insurance administration are efficient.
- Care is delivered at the right time and in the right setting
- There is a system whereby new technologies, devices, producers, laboratory testing, and pharmaceuticals can be evaluated for both effectiveness and value, including defined processes for their introduction, surveillance, retesting and re-evaluation over time.

System capacity to improve:

- There is significant investment in innovation and research.
- There is an interoperable information infrastructure that supports integration and continuity of care, transparency of information on the price and quality of care, and accountability.
- The educational system adequately prepares the next generation of health care providers and leaders, and the nation develops a stable, competent workforce committed to providing ill Americans with patient-centred, high quality care.
- The health system responds quickly, at both the individual and population levels, to major health threats and disasters.
- There is a culture of improvement and professional satisfaction among health care professionals.
- There is an appropriate balance between autonomy and accountability.



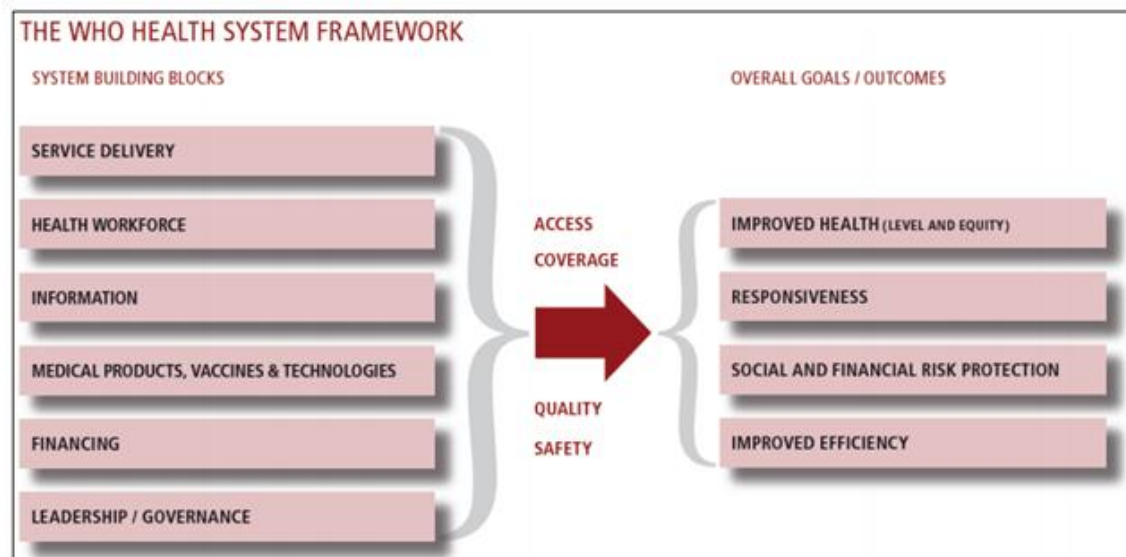
27. WHO, 2007 (“Building Blocks Framework”)

Source: World Health Organization. 2007. *Strengthening health systems to improve health outcomes*. Geneva: World Health Organization.*

Another important contribution to technical debates on health systems frameworks from WHO was the 2007 report “Everybody’s Business: Strengthening Health Systems to Improve Health Outcomes” which proposed practical ways to organize health systems into 6 operational “building blocks”: service delivery, health workforce, information, medical products and technologies, financing, and leadership and governance. The building blocks (as described by WHO):

1. **Service delivery:** Good health services deliver effective, safe, quality personal and non-personal health interventions to those who need them, when and where needed, with a minimum waste of resources.
2. **Health workforce:** A well-performing health workforce is one which works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances.
3. **Information:** A well-functioning information system is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health systems performance and health status.

4. Medical products, vaccines and technologies: A well-functioning health system ensures equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use.
5. Financing: A good health financing system raises adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them.
6. Leadership and governance (Stewardship): Leadership and governance involves ensuring strategic policy frameworks exist and are combined with effective oversight, coalition-building, the provision of appropriate regulation and incentives, attention to system design, and accountability.



28. World Bank, 2007 (“Healthy Development”)

Source: World Bank. 2007. *Healthy development: the World Bank strategy for health, nutrition and population results*. Washington DC: The World Bank.*

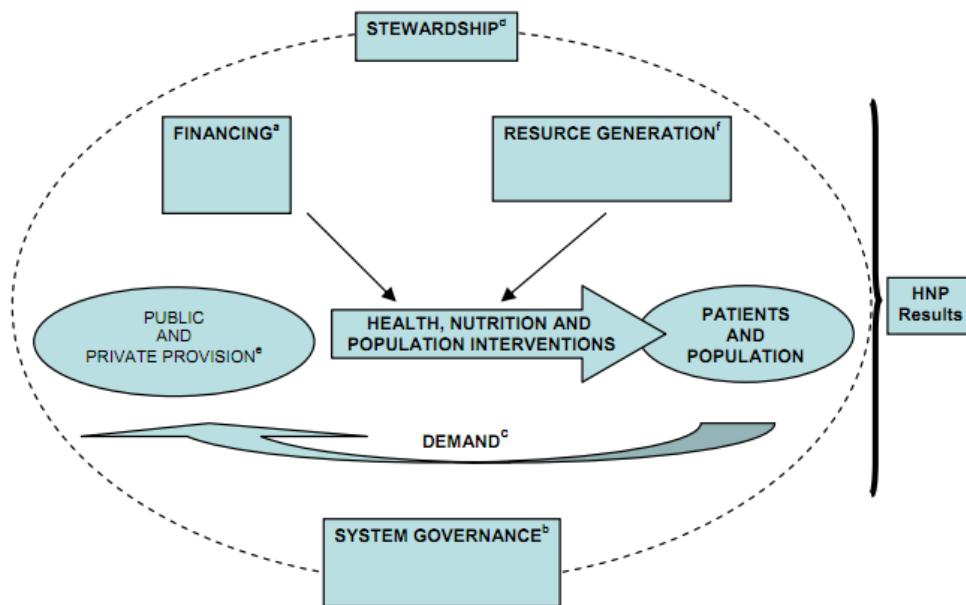
The World Bank Strategy for Health, Nutrition, and Population (HNP) Results defined health systems in terms of functionality. To contribute to improving life and health conditions of the poor and the vulnerable, the Bank will focus on client-country efforts to achieve results in four areas or Bank Strategic Objectives for HNP functionality:

1. Improve the level and distribution of key HNP outcomes, outputs, and system performance at country and global levels in order to improve living conditions, particularly for the poor and the vulnerable.
2. Prevent poverty due to illness (by improving financial protection).
3. Improve financial sustainability in the HNP sector and its contribution to sound macroeconomic and fiscal policy and to country competitiveness (revenue collection, risk pooling, and strategic purchasing).
4. Improve governance, accountability, and transparency in the health sector (oversight).

The Bank’s concept of stewardship resembles that of the WHO, in that it involves establishing the policy framework to govern the entire health system; the institutional framework in which the many actors in health must interact; coordination with non-health sectors; and the generation of data for decision-making.

Five new Strategic Directions are specified to improve Bank capacity to assist client countries in achieving the HNP Strategic Objectives in the coming decade:

1. Renew Bank focus on HNP results.
2. Increase the Bank contribution to client-country efforts to strengthen and realize well-organized and sustainable health systems for HNP results.
3. Ensure synergy between health system strengthening and priority-disease interventions, particularly in LICs.
4. Strengthen Bank capacity to advise client countries on an intersectoral approach to HNP results.
5. Increase selectivity, improve strategic engagement, and reach agreement with global partners on collaborative division of labor for the benefit of client countries.



Source: Based on the *World Health Report, 2000*, WHO.

a. Includes funding (public, out-of-pocket, and DAH), contributions, pooling, and payment mechanisms.

b. Includes financial management and procurement and “other” systems.

c. Influenced by preferences, beliefs and behaviors.

d. Oversight.

e. Service delivery.

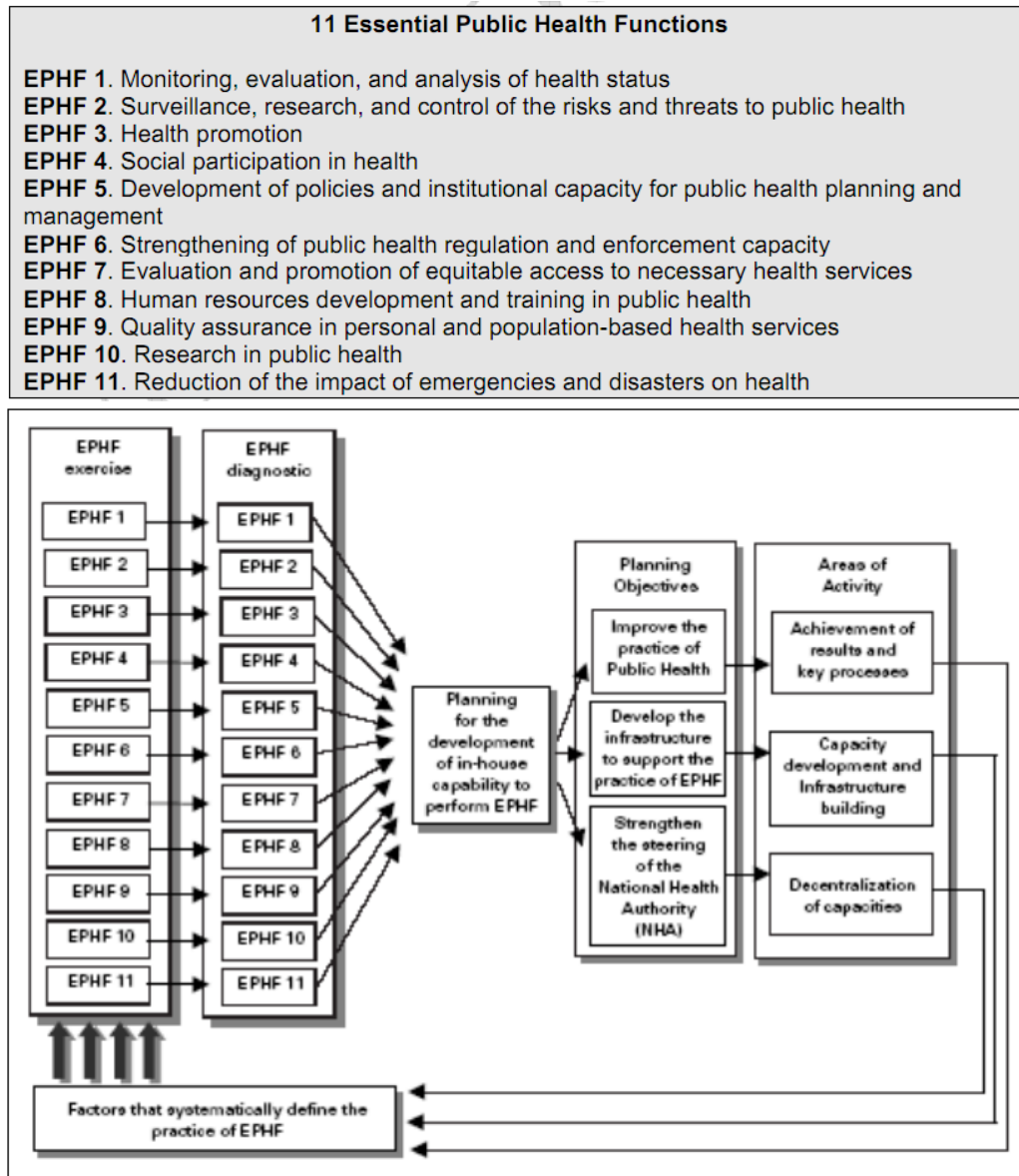
f. Includes human resources, pharmaceuticals, and medical equipment.

29. Ramagem & Raules, Pan American Health Organization, 2008

Source: Ramagem C, Raules J. 2008. *The Essential Public Health Functions as a Strategy for Improving Overall Health Systems Performance: Trends and Challenges since the Public Health in the Americas Initiative, 2000-2007*. Washington DC: Area of Health Systems and Services, Pan American Health Organization.

From Report: The Pan American Health Organization/World Health Organization (PAHO/WHO) defines the Essential Public Health Functions (EPHF) as the indispensable set of actions, under the primary responsibility of the state, that are fundamental for achieving the goal of public health which is to improve, promote, protect, and restore the health of the population through collective action. The EPHF performance measurement instrument offers a common framework for measuring EPHF performance while respecting the organizational structure of each country’s health system. Countries are encouraged to go from measurement to action through the development of interventions with the goal of: (i) strengthening public health practice; (ii) improving the steering role capacity of the national health

authority to execute the EPHF; and (iii) developing public health infrastructure. The framework shows the relationship between the EPHF measurement, the objectives to be pursued and the intervention areas.



30. WHO, 2008 (“Primary Healthcare Framework”)

Source: World Health Organization. 2008. *The World Health Report 2008: Primary Health Care – Now More Than Ever*. Geneva: World Health Organization.*

Identified four broad policy areas for essential changes:

1. Dealing with health inequalities by moving towards universal coverage,
2. Putting people at the centre of service delivery,
3. Integrating health into public policies across sectors, and
4. Providing inclusive leadership for health governance.

From Report: This report structures the PHC reforms in four groups that reflect the convergence between the evidence on what is needed for an effective response to the health challenges of today's world, the values of equity, solidarity and social justice that drive the PHC movement, and the growing expectations of the population in modernizing societies.

- Reforms that ensure that health systems contribute to health equity, social justice and the end of exclusion, primarily by moving towards universal access and social health protection – universal coverage reforms;
- Reforms that reorganize health services as primary care, i.e. around people's needs and expectations, so as to make them more socially relevant and more responsive to the changing world while producing better outcomes – service delivery reforms;
- Reforms that secure healthier communities, by integrating public health actions with primary care and by pursuing healthy public policies across sectors – public policy reforms;
- Reforms that replace disproportionate reliance on command and control on one hand, and laissez-faire disengagement of the state on the other, by the inclusive, participatory, negotiation-based leadership required by the complexity of contemporary health systems—leadership reforms.

Figure 1 The PHC reforms necessary to refocus health systems towards health for all



31. International Health Partnership, 2008

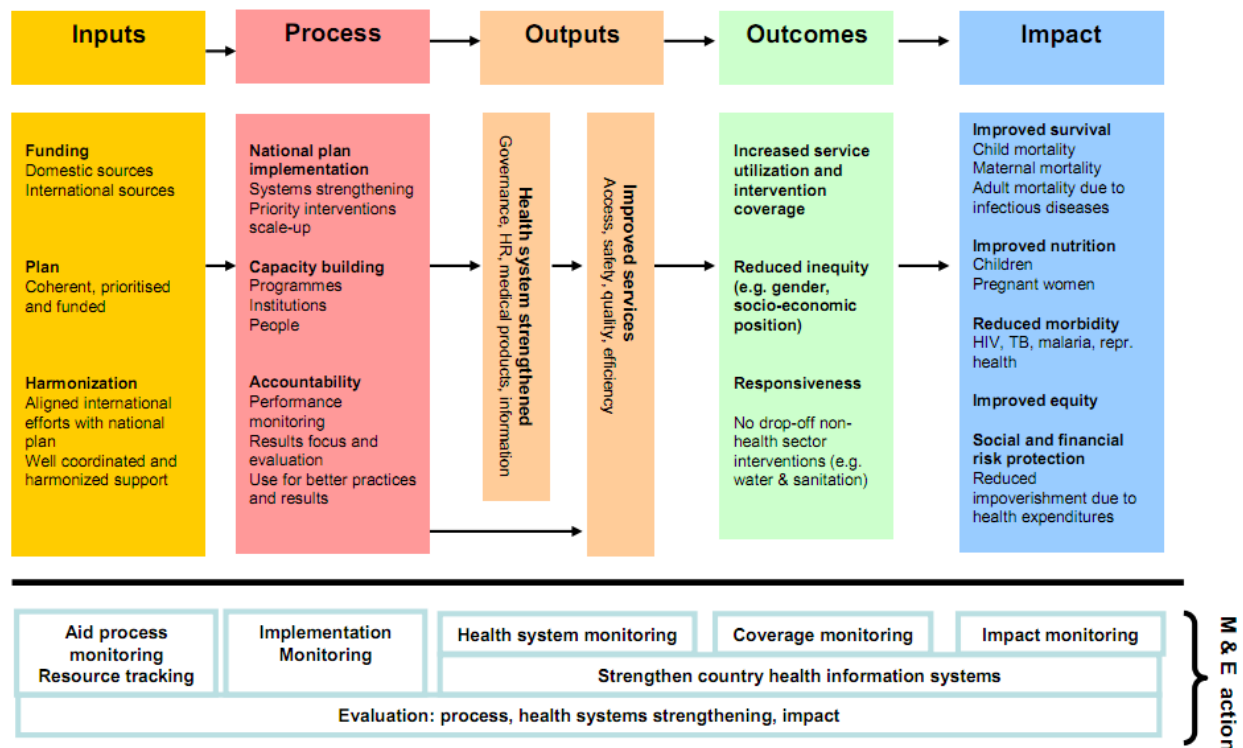
Source: International Health Partnership (IHP). 2008. *A common framework for monitoring performance and evaluation of the scale-up for better health*. Briefing Note for H8.

To help monitor and evaluate scale-up efforts for better health to ensure that accountability and results from single donors and joint initiatives are translated into well-coordinated efforts to monitor performance and evaluate progress and results in country. The framework for evaluation of the scale-up in the spirit of the Paris declaration can be translated into the following six principles:

1. **Collective action:** The primary focus should be on the contribution of the collective efforts to scale-up the health sector response in countries.
2. **Alignment with country processes:** Monitoring performance and evaluation should build upon national processes that countries have established to evaluate and review progress in the implementation of national health sector plans.
3. **Balance between country participation and independence:** Evaluation processes should be driven by country needs but conducted in a manner which maintains their independence.
4. **Harmonised approaches to performance assessment:** Evaluations of the scale-up should use common protocols and standardized outcome indicators and measurement tools, with appropriate country adaptations and leadership, minimizing the separate evaluation efforts of individual initiatives, grants and programmes.

5. Capacity building and health information system strengthening: Systematic involvement of country institutions in performance monitoring and evaluation is necessary to strengthen health information systems and promote local capacity for analysis and application of information and evidence.
6. Adequate funding: As a general guide between 5% and 10% of the overall scale-up funds need to be set aside for monitoring performance, evaluation, operational research and strengthening health information system

The IHP's emphasis is on how to map the monitoring and evaluation actions to the framework, rather than to define the boundaries, functions, goals or domains. To implement the framework in 2008 several key issues need to be addressed, to reduce duplication and fragmentation of data collection, management and reporting and to maximize country benefits and the quality of evaluation. This requires coordination and collaboration among the major partners, both at global and country levels.

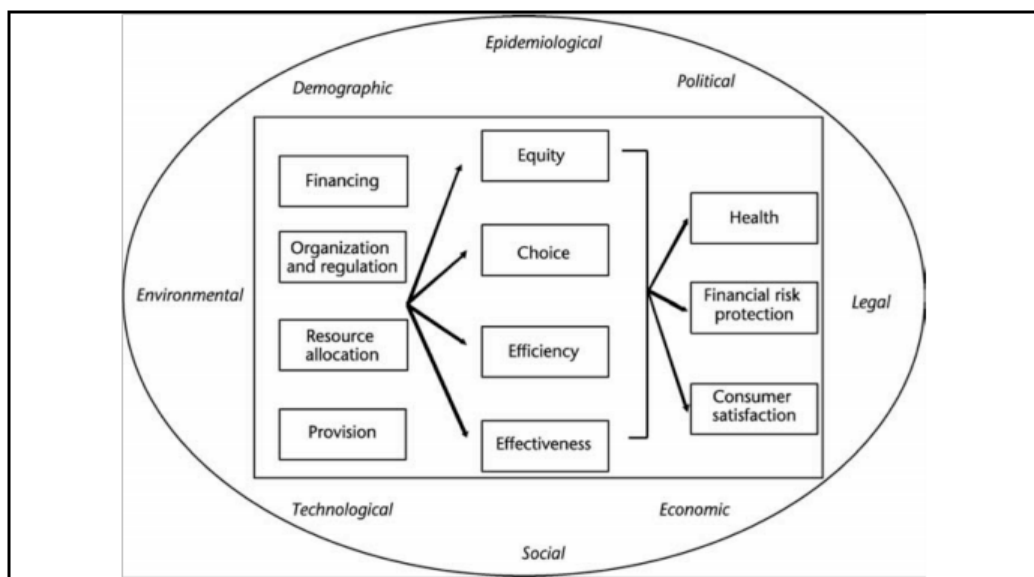


32. Atun & Menabde, Imperial College, 2008 (“Systems Thinking Framework”)

Source: Atun R & Menabde N. 2008. Health systems and systems thinking. In: Cocker R, Atun R, McKee M. (Eds.) *Health Systems and the Challenge of Communicable Disease*. Open University Press. **

In the “systems thinking” approach to health systems analysis, Atun (2008) further expanded other health system frameworks to take into account the context within which the health system functions, namely, the demographic, economic, political, legal and regulatory, epidemiological, socio-demographic and technological contexts (“DEPLESET”). He also introduced the concept of “health system behaviour” and focused on complex interactions between health systems elements and between these and contextual factors. He proposed “systems thinking for seeing the whole” - a framework for seeing interrelationships and repeated events rather than things, for seeing patterns of change rather than static “snapshots”. The systems framework identified four levers available to policy-makers when managing the health system: stewardship and organizational arrangements, financing, resource

allocation & provider payment systems, and service provision. The intermediate goals identified in the framework (equity, efficiency (technical and allocative efficiency), effectiveness and choice) are frequently cited in other frameworks, sometimes as end goals in themselves. The Systems framework has been extended to develop a Systemic Rapid Assessment (SYSRA) toolkit which allows simultaneous and systematic examination of the broad context, the health care system and the features of health programs (such as communicable disease control programs).



33. Global Fund, 2008

Source: Global Fund. 2008. *The Global Fund's Strategic Approach to Health System Strengthening*. Background Note 4.

The Global Fund's experience in supporting health systems strengthening and recent independent research highlighted several components that are key to building a well-functioning health system capable to effectively address priority health objectives. These include, but are not limited to:

- An effective healthcare delivery system, capable to efficiently deliver high quality personal and public health services to those who need them;
- Easy access to a skilled, motivated and supported health workforce that is responsive, fair and efficient in achieving the best health outcomes possible, given available resources and circumstances;
- A well-functioning health information system that ensures the production, analysis, dissemination and use of reliable and timely information on critical health determinants, health systems performance and health status;
- A well-functioning procurement, supply chain management and logistics system for providing equitable access to quality medical products and technologies;
- A strong health financing system to raise and equitably distribute adequate funds for health, and to ensure populations' protection from health-related financial risks;
- An effective leadership and governance system to ensure that strategic policy frameworks exist which enable and support effective oversight, coalition-building, identification of areas of responsibility and development of appropriate regulations, incentives and accountability mechanisms.

34. Siddiqi, *et al.*, WHO Regional Office for the Eastern Mediterranean, 2009

Source: Siddiqi S, Masud TI, Nishtar S, Peters DH, Sabri B, Bile KM, Jama MA. 2009. Framework for assessing governance of the health system in developing countries: Gateway to good governance. *Health Policy*;90(1):13-25.

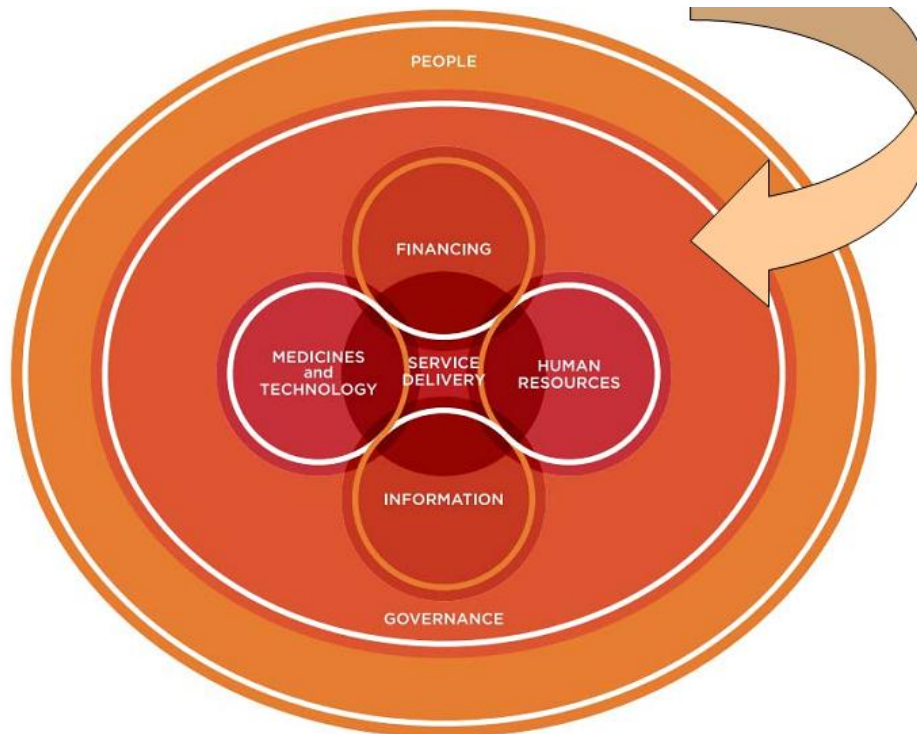
Governance of the health system is the least well-understood aspect of health systems. A framework for assessing health system governance (HSG) at national and sub-national levels is presented, which has been applied in countries of the Eastern Mediterranean. In developing the HSG framework key issues considered included the role of the state vs. the market; role of the ministries of health vs. other state ministries; role of actors in governance; static vs. dynamic health systems; and health reform vs. human rights-based approach to health. Four existing frameworks were considered: World Health Organization's (WHO) domains of stewardship; Pan American Health Organization's (PAHO) essential public health functions; World Bank's six basic aspects of governance; and United Nations Development Programme (UNDP) principles of good governance. The proposed HSG assessment framework includes the following 10 principles:

1. Strategic vision: Leaders have a broad and long-term perspective on health and human development, along with a sense of strategic directions for such development. There is also an understanding of the historical, cultural and social complexities in which that perspective is grounded
2. Participation and consensus orientation: All men and women should have a voice in decision-making for health, either directly or through legitimate intermediate institutions that represent their interests. Such broad participation is built on freedom of association and speech, as well as capacities to participate constructively. Good governance of the health system mediates differing interests to reach a broad consensus on what is in the best interests of the group and, where possible, on health policies and procedures
3. Rule of law: Legal frameworks pertaining to health should be fair and enforced impartially, particularly the laws on human rights related to health
4. Transparency: Transparency is built on the free flow of information for all health matters. Processes, institutions and information should be directly accessible to those concerned with them, and enough information is provided to understand and monitor health matters
5. Responsiveness: Institutions and processes should try to serve all stakeholders to ensure that the policies and programs are responsive to the health and non-health needs of its users
6. Equity and inclusiveness: All men and women should have opportunities to improve or maintain their health and well-being.
7. Effectiveness and efficiency: Processes and institutions should produce results that meet population needs and influence health outcomes while making the best use of resources
8. Accountability: Decision-makers in government, the private sector and civil society organizations involved in health are accountable to the public, as well as to institutional stakeholders. This accountability differs depending on the organization and whether the decision is internal or external to an organization
9. Intelligence and information: Intelligence and information are essential for a good understanding of health system, without which it is not possible to provide evidence for informed decisions that influences the behaviour of different interest groups that support, or at least do not conflict with, the strategic vision for health
10. Ethics: The commonly accepted principles of health care ethics include respect for autonomy, non-maleficence, beneficence and justice. Health care ethics, which includes ethics in health research, is important to safeguard the interest and the rights of the patients

35. Mikkelson-Lopez, *et al.*, Geneva Health Forum, 2010

Source: Mikkelson-Lopez I, Baez-Camargo C, Wyss K, de Savigny D. 2010. *Towards a new approach for assessing health systems governance*. Geneva: Geneva Health Forum.

There is a need to address governance from a broader systems perspective across all levels of the system. Starting with the WHO Building Blocks framework, the authors observe that governance is broadly applicable to all building blocks.



1. Savel, *et al.*, Centers for Disease Control and Prevention, 2010

Source: Savel T, Hall K, Lee B, McMullin V, Miles M, et al. 2010. A public health grid (PHGrid): architecture and value proposition for 21st century public health. *International Journal of Medical Informatics*;79(7):523-529.

Abstract:

Purpose: This manuscript describes the value of and proposal for a high-level architectural framework for a Public Health Grid (PHGrid), which the authors feel has the capability to afford the public health community a robust technology infrastructure for secure and timely data, information, and knowledge exchange, not only within the public health domain, but between public health and the overall health care system.

Methods: The CDC facilitated multiple Proof-of-Concept (PoC) projects, leveraging an open-source-based software development methodology, to test four hypotheses with regard to this high-level framework. The outcomes of the four PoCs in combination with the use of the Federal Enterprise Architecture Framework (FEAF) and the newly emerging Federal Segment Architecture Methodology (FSAM) was used to develop and refine a high-level architectural framework for a Public Health Grid infrastructure.

Results: The authors were successful in documenting a robust high-level architectural framework for a PHGrid. The documentation generated provided a level of granularity needed to validate the proposal, and included examples of both information standards and services to be implemented. Both the results of the PoCs as well as feedback from selected public health partners were used to develop the granular documentation.

Conclusions: A robust high-level cohesive architectural framework for a Public Health Grid (PHGrid) has been successfully articulated, with its feasibility demonstrated via multiple PoCs. In order to successfully implement this framework for a Public Health Grid, the authors recommend moving forward with a three-pronged approach focusing on interoperability and standards, streamlining the PHGrid infrastructure, and developing robust and high-impact public health services.

2. Van Olmen, et al., Institute of Tropical Medicine Antwerp, 2010

Source: Van Olmen J, Criel B, Van Damme W, Marchal B, Van Belle S, Van Dormael M, et al. 2010. *Analyzing health systems to make them stronger*. In: *Studies in Health Services Organisation and Policy*. Antwerp: ITGpress.

The framework presented is developed for the analysis of any health system at national, intermediate or local levels. Furthermore, it can be loaded with specific values and principles so that it becomes normative. As such, it can contribute to the development of strategies for action. Ten elements or functions are identified as essential and constitutive of any health system: 1) goals & outcomes; 2) values & principles; 3) service delivery; 4) the population; 5) the context 6) leadership & governance; and 7-10) the organisation of resources (finances, human resources, infrastructure & supplies, knowledge & information). The arrows in the framework indicate that the relations between the elements are reciprocal and interconnected. The context encircles the HS, able to influence whatever part of the HS. And the population touches on all elements of the system, indicating its omnipresence. Indeed, HSs are complex adaptive systems. This implies interdependence and interaction between its elements, including feedback loops, emergent, generative and nonlinear processes, leading to dynamic equilibriums between operating forces and to sometimes or partly unpredictable results.

3. Rechel, et al., European Observatory on Health Systems and Policies, 2010 (“Health in Transition (HiT) Template”)

Source: Rechel B, Thomson S, van Ginneken E. 2010. *Health systems in transition: Template for authors*. United Kingdom: European Observatory on Health Systems and Policies.

The Health Systems in Transition (HiT) profiles are produced by country experts in collaboration with the Observatory’s research directors and staff. The profiles are based on a template that, revised periodically, provides detailed guidelines and specific questions, definitions, suggestions for data sources, and examples needed to compile HiTs. The HiT template was revised in 2010 and consists of 9 chapters:

1. **Introduction:** Outlines the broader context of the health system, including geography and socio-demography, economic and political context, and population health.
2. **Organization and governance:** Provides an overview of how the health system in the country is organized and outlines the main actors and their decision-making powers; discusses the historical background for the system; regulation; and describes the level of patient

empowerment in the areas of information, rights, choice, complaints procedures, safety and involvement.

3. Financing: Provides information on the level of expenditure, who is covered, what benefits are covered, the sources of health care finance, how resources are pooled and allocated, the main areas of expenditure, and how providers are paid.
4. Physical and human resources: Deals with the planning and distribution of infrastructure and capital stock; the context in which IT systems operate; and human resource input into the health system, including information on registration, training, trends and career paths.
5. Provision of services: Concentrates on patient flows, organization and delivery of services, addressing public health, primary and secondary health care, emergency and day care, rehabilitation, pharmaceutical care, long-term care, services for informal carers, palliative care, mental health care, dental care, complementary and alternative medicine, and health care for specific populations.
6. Principal health reforms: Reviews reforms, policies and organizational changes that have had a substantial impact on health care, as well as future developments.
7. Assessment of the health system: Provides an assessment based on the stated objectives of the health system, financial protection and equity in financing; user experience and equity of access to health care; health outcomes, health service outcomes and quality of care; health system efficiency; and transparency and accountability.
8. Conclusions: Highlights the lessons learned from health system changes; summarizes remaining challenges and future prospects.
9. Appendices: Includes references, further reading and useful web sites.

4. Shakarishvili, *et al.*, The Global Fund to Fight AIDS, Tuberculosis and Malaria, 2011

Source: Shakarishvili G, Lansang MA, Mitta V, Bornemisza O, Blakley M, Kley N, Burgess C, Atun R. 2011. Health systems strengthening: a common classification and framework for investment analysis. *Health Policy and Planning*;26:316–326.

Significant scale-up of donors' investments in health systems strengthening (HSS), and the increased application of harmonization mechanisms for jointly channelling donor resources in countries, necessitate the development of a common framework for tracking donors' HSS expenditures. Such a framework would make it possible to comparatively analyse donors' contributions to strengthening specific aspects of countries' health systems in multi-donor supported HSS environments. Four pre-requisite factors are required for developing such a framework: (i) harmonization of conceptual and operational understanding of what constitutes HSS; (ii) development of a common set of criteria to define health expenditures as contributors to HSS; (iii) development of a common HSS classification system; and (iv) harmonization of HSS programmatic and financial data to allow for inter-agency comparative analyses. Building on the analysis of these aspects, the paper proposes a framework for tracking donors' investments in HSS, as a departure point for further discussions aimed at developing a commonly agreed approach.

5. Veillard, *et al.*, Canadian Institute for Health Information, 2011

Source: Veillard J, Brown A, Baris E, Permanand G, Klazing N. 2011. National health ministries in the WHO European region: concepts, functions and assessment framework. *Health Policy*;103:191–199.

The operational framework relates six functions of stewardship with national contexts, values and ultimate goals pursued by health systems: to define the vision for health and strategy to achieve better health; to exert influence across all sectors for better health; to govern the health system in a way that is consistent with prevailing values; to ensure that system design is aligned with health system goals; to better leverage available legal and regulatory instruments; and to compile, disseminate and apply intelligence. The framework aims to clarify the scope of functions that can be exercised by national health ministries to achieve health system ultimate goals within the boundaries of stewardship. The extent of use of these functions will depend on both context and goals such as stated in the national strategies and policies. Furthermore, the framework proposes strategies to evaluate the completeness and consistency of the stewardship of national health ministries, in relation to the goals set and within the context the steward operates; and health system performance assessment as a tool to measure the achievement of health system ultimate goals.

6. Ergo, *et al.*, USAID, 2011

Source: Ergo A, Eichler R, Koblinsky M, Shah N. 2011. *Strengthening Health Systems to Improve Maternal, Neonatal and Child Health Outcomes: A Framework*. Washington DC: United States Agency for International Development (USAID).

Ergo *et al.*'s framework is based on three essential components (shown as boxes in their framework) of any health system:

1. The health care sector, comprising two sub-components: enabling environment and governance; and service delivery
2. The community, with the sub-components physical environment and social environment
3. The households, which consists of household characteristics and individual factors

Each of these components and sub-components comprises various interconnected elements of the health system. The sub-component enabling environment and governance under the health care sector component, for example, includes the following health system elements: leadership; policies and regulations; financing; and provider payment. MNCH interventions are implemented within the health system. Even though some of the efforts may focus on only a limited number of elements within the health system, it is ultimately the system as a whole—i.e., the combination of the different components and subcomponents, and all the interactions within and between them—that will determine the coverage and quality of MNCH interventions, and therefore the impact on maternal, neonatal and child mortality and morbidity. This is shown at the bottom of the framework.

Finally, the four control knobs at the top of the framework allow breaking down HSS initiatives and analyzing how these initiatives trigger changes in the health system, whether and how these changes affect the coverage and quality of MNCH interventions, and what the impact is on MNCH morbidity and mortality. The control knobs represent the types of 'tools' available to the different actors—including but not limited to the policymakers—to address weaknesses in the system. These are: financing, organization, regulation and communication. Note that an HSS initiative could very well consist of a combination of several of these tools.

Appendix 3: Institutional Partners of the Alliance for Health Policy & Systems Research

Africa Region (AFRO)

Research Center for Applied Economics for Development, Algeria
UER de Santé au Travail et Environnement, Benin
Action pour L'Enfance et la Santé, Burkina Faso
Centre de Recherche en Santé de Nouna, Burkina Faso
Centre MURAZ, Burkina Faso
Institut de Recherche en Sciences de la Santé (IRSS), Biomedical and Public Health, Burkina Faso
Institut National de Santé Publique, Burundi
Ministère de la Santé Publique, Burundi
Ministry of Health, Burundi
University of Burundi, Burundi
OCEAC, Cameroon
Université des Montagnes-Bangangte, Cameroon
Leadership for Environment and Development (LEAD), Côte d'Ivoire
Egyptian Alliance for Health System Support, Egypt
Salem for Health Research Consultants, Egypt
African Medical and Research Foundation (AMREF), Ethiopia
Ethiopian Health & Nutrition Research Institute, Ethiopia
Africa Health Research Organization, Ghana
Centre for the development of People (CEDEP), Ghana
Health Foundation of Ghana, Ghana
Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Ghana
National Catholic Secretariat, Ghana
School of Medicine and Health Sciences, Ghana
Wuni Zaligu Development Association (WUZDA), Ghana
Ministère de la Santé Publique, Guinea
AMREF Kenya, Kenya
Egerton University, Kenya
Helps Foundation Kenya, Kenya
Kenya Cardiac Society, Kenya
Kenya NGO Alliance against Malaria (KeNAAM), Kenya
University of Nairobi, Kenya
J & F Consulting, Malawi
Malawi Health Equity Network, Malawi
Mauritius Institute of Health, Mauritius
Jhpiego, Mozambique
Action Group on Adolescent Health, Nigeria
African Council for Sustainable Health Development (ACOSHED), Nigeria
Afrihealth Information Projects/Afrihealth Optonet Association, Nigeria
Care Net Nigeria, Nigeria
Centre for Health and Development, Nigeria
Centre for Health Policy and Strategic Studies, Nigeria
Centre for Hospital and Health Services Improvement, Nigeria
Common Heritage Foundation, Nigeria
Contemporary Tasks Solutions, Nigeria
Cooper & Williams Consulting, Nigeria
Department of Community Medicine, University College Hospital, Nigeria
Family Health International, Nigeria
Health Reform Foundation of Nigeria, Nigeria
HIV/AIDS and TB Division, Ministry of Health, Nigeria

StatsXperts International Consulting, Nigeria
Susan Ohio Foundation, Nigeria
University of Ibadan, Nigeria
University of Nigeria, Nigeria
University of Uyo Teaching Hospital, Nigeria
AfHea, Senegal
RESEAO, Senegal
Rescue International, Sierra Leone
Centre for Health Systems Research & Development University of the Free State, South Africa
Doso Institute for Health Policy, South Africa
Health and Development Africa, South Africa
University of Kwa-Zulu Natal, South Africa
University of the Western Cape, School of Public Health, South Africa
University of the Witwatersrand School of Public Health, South Africa
Faculty of Medicine, University of Khartoum, Sudan
General Directorate of Pharmacy, Sudan
Health Policy Directorate, National Ministry of Health, Sudan
Khartoum State Ministry of Health, Sudan
Sudan Medical Heritage Foundation, Sudan
Tropical Medicine Research Institute, Sudan
University of Medical Sciences & Technology, Sudan
Amuru District Local Government, Anaka Hospital, Uganda
Centre for Socio-economic Research and Training (CSRT), Uganda
Gulu Regional Referral Hospital, Uganda
Health Care Management Unit, Lviv Medical University, Uganda
HealthNet Consulting, Uganda
Joint Clinical Research Centre, Uganda
Kabano Research and Development Centre, Uganda
Makerere University, Uganda
Mbarara University of Science and Technology, Uganda
Ifakara Health Institute, United Republic of Tanzania
Tanzania Food and Drugs Authority, United Republic of Tanzania
Ministry of Health, Zambia
University of Zambia, School of Humanities and Social Sciences, Zambia
Zambia Forum for Health Research (ZAMFOHR), Zambia
University of Zimbabwe Clinical Research Centre, Zimbabwe
University of Zimbabwe, Zimbabwe
Zimbabwe Grace Trust, Zimbabwe
Zimbabwe National Family Planning Council, Zimbabwe

Americas Region (PAHO/AMRO)

Center for the Implementation of Public Policies promoting Equity and Growth (CIPPEC), Argentina
Centro de Estudios de Población y Desarrollo (CEPyD), Argentina
Centro de Estudios Distributivos, Laborales y Sociales (CEDLAS), Argentina
Fundación de Investigaciones Económicas Latinoamericanas (FIEL), Argentina
Fundación de Medicina Familiar y Preventiva, Hospital Italiano de Buenos Aires, Argentina
Maestría en Epidemiología, Gestión y Políticas de Salud, Argentina
Univeridad Nacional del Nordeste, Argentina
Ministry of Health, Belize
Centro De Estudos de Cultura Contemporânea (CEDEC), Brazil
Escola Brasileira de Administração Pública, Brazil
Fiocruz, Brazil

National School of Public Health, Ministry of Health, Brazil
Network for Health Systems and Services Research in the Southern Cone of Latin America, Brazil
British Columbia Centre for Disease Control, Canada
Canadian Public Health Association, Canada
Canadian Society for International Health, Canada
Edifice Saint Urbain, University of Montreal, Canada
Healthy Child Uganda, Canada
Sprinkles Global Health Initiative, Canada
University of British Columbia, Canada
Universidad Catolica de Chile, Chile
Asociación Centro de Gestión Hospitalaria, Colombia
Colombian Health Association (ASSALUD), Colombia
Fundacion Santa Fe de Bogota, Colombia
Pontificia Universidad Javeriana, Colombia
Santafe de Bogota Foundation, Health studies and research center (CEIS), Colombia
Universidad CES, Colombia
Universidad de Antioquia, Colombia
Universidad de Caldas, Facultad de Ciencias para la Salud, Colombia
Universidad Nacional de Colombia, Colombia
CONEDSA, Costa Rica
International Health Central American Institute Foundation, Costa Rica
Escuela Nacional de Salud Pública, Cuba
Instituto Nacional de Higiene, Epidemiología y Microbiología, Cuba
Intstituto Pedrokouri, Cuba
Fundacion Plenitud, Dominican Republic
Public Health Institute at the Pontifical Catholic University of Ecuador, Ecuador
Veeduría del Buen Vivir, Ecuador
Universidad de El Salvador, El Salvador
Instituto de Salud Incluyente, Guatemala
Instituto Nacional de salud Pública/Centro de Investigación en Sistemas de Salud, Mexico
Red de Investigación en Políticas, Sistemas y Servicios de Salud Nodo Paraguay, Paraguay
Facultad de Salud Publica y Administracion, Universidad Peruana Cayetano Heredia, Peru
Gerente de Proyectos y Captación de Recursos, Peru
Instituto de Investigacion Nutricional, Peru
Universidad peruana Cayetano Heredia, Peru
US Naval Medical Research Center Detachment (NMRCD), Peru
Sir Arthur Lewis Institute of Social and Economic Studies, Trinidad and Tobago
Department of International Health, School of Public Health, Boston University, United States of America
Family Health International, United States of America
Johns Hopkins University, United States of America
Population Council, United States of America
Tufts University School of Medicine, United States of America
UCLA School of Public Health, United States of America
University of Alabama at Birmingham, United States of America
University of New Mexico, United States of America
Yale University School of Public Health, United States of America
Centro de Informaciones y Estudios del Uruguay, Uruguay
GEOPS, Uruguay
Universidad de la República, Uruguay
Pan American Health Organization, Venezuela

South-East Asia Region (SEARO)

Bangladesh Institute of Development Studies (BIDS), Bangladesh
Bangladesh Research Initiatives of Environment Society (BRIES), Bangladesh
Bangladesh Women's Health Coalition (BWHC), Bangladesh
BIRPERHT, Bangladesh
Ibrahim Medical College, Bangladesh
ICDDR, Bangladesh
Institute of Allergy and Clinical Immunology of Bangladesh, Bangladesh
State University of Bangladesh, Bangladesh
ADRA India, India
Aga Khan Health Service, India
Anusandhan Trust (SATHI), India
Centre for Health and Social Justice, India
Centre for Management of Health Services, Indian Institute of Management, India
Centre for Operations Research and Training, India
Chettinad hospitals and Research Institute, India
Foundation for Research in Health Systems, India
Gokhale Institute of Politics and Economics, India
Government Medical College, India
Gram Bharati samiti (GBS), India
Health Vision and Research, India
Indian Institute of Public Health-Hyderabad, India
Indian Institute of Technology (Madras), India
Institute of Health Systems, India
International Institute of Health Management Research (IIHMR), India
Maharashtra Association of Anthropological Sciences, India
Mahatma Gandhi Institute of Medical Sciences, India
National Council of Applied Economic Research, India
National Institute of Epidemiology, India
Prarthana Charitable Trust, India
Public Health Foundation of India, India
Sadhana Institute for sustainable Development, India
School of Public Health, Postgraduate Institute of Medical Education and Research, India
Seva Mandir India
South Asian Institute of Health Promotion (SAIHP), India
Surat University Campus, India
Tata Institute of Social Sciences, India
The Maharashtra Association of Anthropological Sciences, India
UNICEF India Country Office, India
Urban Health Resource Centre, India
Voluntary Health Association of India, India
Demographic Institute Faculty of Economics University of Indonesia, Indonesia
Gadjah Mada Medical School, Indonesia
Ministry of Health, Indonesia
Asian People's Alliance for Combating HIV & AIDS, Nepal
BP Koirala Institute of Health Sciences, Nepal
CANVAS, Nepal
Forum for Human Rights and Public Health (Friendship Nepal), Nepal
Health Research and Social Development Forum, Nepal
INRUD Nepal, Nepal
Nepal Health Research Council, Nepal
Resource Centre for Primary Health Care, Nepal

School of Public Health and Community Medicine, Nepal
South Asian Institute for Policy Analysis and Leadership (SAIPAL), Nepal
Department of Sociology, University of Peradeniya, Sri Lanka
Faculty of Medicine and Allied Sciences, Sri Lanka
Health Policy Research Associates, Sri Lanka
Joint Alliance of Supplementary Medical Professionals, Sri Lanka
Marga Institute, Sri Lanka
Faculty of Medicine, Chiang Mai University, Thailand
Faculty of Nursing, Chiang Mai University, Thailand
Faculty of Public Health, Thammasat University, Thailand
Health Intervention and Technology Assessment Program, Thailand
Mahidol University, Faculty of Social Sciences & Humanities, Thailand
Naresuan University, Thailand
Prince of Songkla University, Faculty of Medicine, Thailand
Prince of Songkla University, Thailand
Thammasat University, Thailand

European Region (EURO)

Karl Landsteiner Institute Quality Assurance and Patient Safety (IQMS), Austria
Call for Health Public Alliance, Azerbaijan
Free University of Brussels, Belgium
Ghent University, Belgium
Institute of Tropical Medicine Antwerp, Belgium
Medical University, Bulgaria
National Center of Health Informatics, Bulgaria
University of Copenhagen, Denmark
University of Tampere, Finland
Centre d'Etudes et de Recherches sur le Développement International (CERDI), France
Curatio International Consulting, Georgia
Curatio International Foundation, Georgia
Welfare Foundation, Georgia
HealthMonitor Research and Consultancy Non-profit Public Purpose Ltd. (EgeszsegMonitor), Hungary
Semmelweis University Budapest, Hungary
UNICEF Israel, Israel
Istituto Superiore de Sanita, Italy
Healthcare Development Institution, Kazakhstan
Institute of Public Health, Kazakhstan
National Research Center of Maternal and Child Care, Kazakhstan
Public Foundation, Health Policy Analysis Center, Kyrgyzstan
Institute for Biomedical Research, Kaunans University of Medicine, Lithuania
Lithuanian University of Health Sciences, Lithuania
European Forum for Primary Care, Netherlands
Norwegian Knowledge Centre for the Health Services, Norway
University of Bergen, Norway
National Scientific and Applied Center for Preventive Medicine, Republic of Moldova
Associacion Comunitaria de Salut Sexual del Camp de Tarragona, Spain
Sabirmedical S.L., Spain
Department of Public Health and Clinical Medicine, Umeå University, Sweden
International Health Systems Research, Sweden
Umeå Center for Global Health Research, Sweden
International Council on Alcohol and Addictions (ICAA), Switzerland
Swiss Tropical Institute, Switzerland

Centre for Regional Policy Research Cooperation (Studiorum), Former Yugoslav Republic of Macedonia
Ventio Organisation Ltd., Turkey
AMREF UK, United Kingdom
Brunel University, United Kingdom
Centre for Healthcare Modelling and Informatics, United Kingdom
Centre for Innovation in Health Management, United Kingdom
Imperial College London, United Kingdom
Institute for International Health and Development, Queen Margaret University College, United Kingdom
Institute of Development Studies, United Kingdom
International HIV AIDS Alliance, United Kingdom
London International Development Centre (University of London), United Kingdom
London School of Hygiene and Tropical Medicine, United Kingdom
National Institute for Health and Clinical Excellence, United Kingdom
Public Health and Policy, London School of Hygiene and Tropical Medicine, United Kingdom
University of Aberdeen, United Kingdom
School of Public Health, Tashkent Medical Academy, Uzbekistan

Eastern Mediterranean Region (EMRO)

The Cochrane Collaboration Bahrain Branch, Bahrain
Health Ministry of Iran, Iran
Hormozgan University of Medical Sciences, Iran
Mashhad University of Medical Sciences, Iran
Ministry of Health and Medical Education, Undersecretary for Coordination, Iran
National Public Health Management Center, Iran
Otolaryngology, Head & Neck Surgery Research Center, Iran
Shahid Beheshti University of Medical Sciences, Iran
Vice Chancellor of Food and Drug, Medical University of Isfahan, Iran
American University of Beirut, Lebanon
Faculty of Health Sciences, Lebanon
Ministry of Health, Morocco
Aga Khan University, Pakistan
Centre for Health & Population Studies, Pakistan
Provincial Health Services Academy, Government of NWFP, Pakistan
Center for Strategic Health Studies, Syrian Arab Republic
Faculty of Medicine, Damascus University, Syrian Arab Republic
Tamar University, Yemen

Western Pacific Region (WPRO)

Anton Breinl Centre for Public Health and Tropical Medicine, James Cook University, Australia
Center for Health Policy and Management, Australia
Curtin University, Australia
Deakin University, Australia
Nossal Institute for Global Health, Australia
School of Population Health, University of Queensland, Australia
University of New South Wales, Australia
MoPoTsyo Patient Information Centre, Cambodia
National Institute of Public Health (NIPH), Cambodia
Beijing Municipal Centers for Disease Prevention and Control, China
Centre of Health Management and Policy Research, Shandong University, China
China Health Economics Institute, Peking University of MOH, China
Harbin Medical University, China
Health Human Resources Development Center (HHRDC), Ministry of Health, China

Nanjing Medical University, China
Ningxia Medical University, China
Peking University China Center for Health Development, China
Peking University Health Science Center, China
School of Public Health, Peking University, China
Shanghai Health Development and Research Center, China
Shanghai Second Medical University, China
The Chinese University of Hong Kong, China
The Hong Kong Institute of Health Economics, China
The Second Clinic Department of Peking University Third Hospital, China
Weri Fan Medical College, China
WHO Collaborating Centre for Urban Health Development, China
Centre for Health Information, Policy, and Systems Research, Fiji
Health Research Council of the Pacific (HRCF), Fiji
GQ1 Management Group, Malaysia
University of Malaya, Malaysia
University Sains Malaysia, Malaysia
National Centre for Health Development, Mongolia
NMDHB, New Zealand
University of Auckland, New Zealand
Divine Word University, Papua New Guinea
World Health Organization, Papua New Guinea
Department of Health, Center for Health Development, Eastern Visayas, Philippines
Institute of Philippine Culture, Ateneo de Manila University, Philippines
Medical Action Group, Philippines
Philippine Health Social Science Association, Western Visayas, Philippines
Philippine Nurses Association Cebu Chapter Inc., Philippines
Social Health Insurance, Networking and Empowerment (SHINE), Philippines
University of the Philippines, College of Public Health, Philippines
Xavier University, Philippines
Center for Health System Research, Hanoi Medical University, Vietnam
Center for Reproductive and Family Health (RaFH), Vietnam
Central Institute for Medical Science Information (CIMS), Vietnam
Hanoi Medical University, Vietnam
Hanoi School of Public Health, Vietnam
Ministry of Health, Vietnam

Appendix 4: Do You Know Your Health Systems Definitions?

We invite you to try to match the definitions to the term each one is supposed to define. Our experience shows this is more difficult than it probably should be. Correct answers are below.

<p>“... addresses questions that are not disease-specific but concern systems problems that have repercussions on the performance of the health system as a whole. It addresses a wide range of questions, from health financing, governance, and policy to problems with structuring, planning, management, human resources, service delivery, referral, and quality of care in the public and private sector.”^A</p>	◇	◇	<p>health systems research</p>
<p>“...all research that underpins improvements in the way health services are financed, organised, planned and delivered, and includes health technology assessments and health policy research.”^B</p>	◇	◇	<p>health services research</p>
<p>“... a problem-oriented field into which people enter from a wide range of disciplinary backgrounds to work together to find ways that health care can best be organized, financed, and delivered.”^C</p>	◇	◇	<p>health services and policy research</p>
<p>“... multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations.”^D</p>	◇	◇	<p>health services research</p>
<p>“... purposeful generation of knowledge that enables societies to organize themselves to improve health outcomes and health services.”^E</p>	◇	◇	<p>health systems research</p>
<p>“... scientific study of the organized social response to health and disease conditions in populations.”^F</p>	◇	◇	<p>health systems research</p>
<p>“... a field that seeks to understand and improve how societies organize themselves in achieving collective health goals, and how different actors interact in the policy and implementation processes to contribute to policy outcomes. By nature, it is inter-disciplinary, a blend of economics, sociology, anthropology, political science, public health and epidemiology that together draw a comprehensive picture of how health systems respond and adapt to health policies, and how health policies can shape – and be shaped by – health systems and the broader determinants of health.”^G</p>	◇	◇	<p>health policy and systems research</p>
<p>“... multidisciplinary field of inquiry, both basic and applied, that examines access to, and the use, costs, quality, delivery, organization, financing, and outcomes of health care services to produce new knowledge about the structure, processes, and effects of health services for individuals and populations.”^H</p>	◇	◇	<p>health services research</p>

Answers: The correct terms are directly horizontally across from the definitions. Sources: (A) Remme JHF, Adam T, Becerra-Posada F, D’Arcangues C, Devlin M, et al. (2010) Defining Research to Improve Health Systems. *PLoS Med* 7(11): e1001000; (B) Health Services Research Network. 2012. Available at <http://www.nhsconfed.org/Networks/HealthServiceResearchNetwork/Pages/AboutHSRN.aspx>; (C) Canadian Association for Health Services and Policy Research. “What is ‘HSPR’?” 2011. Available from <https://cahspr.ca/en/resources>; (D) Lohr, K. N. & Steinwachs, D. M. Health services research: an evolving definition of the field. *Health Services Research* 2002;37(1):7-9; (E) First Global Symposium on Health Systems Research. 2010. Symposium background; (F) Frenk, J. (1992). *The New Public Health, in National Institute of Public Health of Mexico, The First Five Years, 1987 - 1991*. National Institute of Public Health. First Printing, pp. 15-33. Cuernavaca, Mexico; (G) Alliance for Health Policy and Systems Research. 2011; (H) Health Services Research: Opportunities for an Expanding Field of Inquiry - An Interim Statement. Committee on Health Services Research: Training and Work Force Issues, Division of Health Care Services, Institute of Medicine. National Academy Press: Washington.

Appendix 5: Taxonomy of the Health Systems Evidence Database

Governance arrangement (161)

- Policy authority (43)
 - Centralization/decentralization of policy authority (16)
 - Accountability of the state sector's role in financing & delivery (1)
 - Stewardship of non-state sector in financing & delivery (24)
 - Decision-making authority about coverage and available care (10)
 - Corruption Protections (1)
- Organizational authority (58)
 - Ownership (18)
 - Management approaches (7)
 - Accreditation (13)
 - Networks/multi-institutional arrangements (30)
- Commercial authority (30)
 - Licensure & registration requirements (10)
 - Patents & profits (3)
 - Pricing & purchasing (11)
 - Marketing (10)
 - Sales & dispensing (13)
 - Commercial liability (2)
- Professional authority (42)
 - Training and licensure requirements (22)
 - Scope of practice (9)
 - Setting of practice (2)
 - Continuing competence (7)
 - Quality & safety (10)
 - Professional liability (3)
- Consumer & stakeholder involvement (53)
 - Consumer participation in policy & organizational decisions (16)
 - Consumer participation in system monitoring (1)
 - Consumer participation in service delivery (33)
 - Consumer complaints management (3)
 - Stakeholder participation in decisions (or monitoring) (19)

Financial arrangement (168)

- Financing systems (61)
 - Taxation (9)
 - Social health insurance (18)
 - Community-based health insurance (9)
 - Community loan funds (1)
 - Private insurance (14)
 - Health savings accounts (Individually financed) (1)
 - User fees (30)
 - Donor contributions (11)
- Funding organizations (34)
 - Fee-for-service (Funding) (3)
 - Capitation (Funding) (4)
 - Global budget (8)
 - Prospective payment (Funding) (3)
 - Indicative budgets (Funding) (2)
 - Targeted payments/penalties (Funding) (21)
- Remunerating providers (75)
 - Fee-for-service (Remuneration) (15)
 - Capitation (Remuneration) (13)
 - Salary (11)
 - Prospective payment (Remuneration) (6)
 - Fundholding (1)
 - Indicative budgets (Remuneration) (3)
 - Targeted payments/penalties (Remuneration) (63)
- Purchasing products & services (33)
 - Scope & nature of insurance plans (7)
 - Lists of covered/reimbursed providers, services & products (17)
 - Restrictions in coverage/reimbursement rates (9)
 - Caps on coverage/reimbursement (7)
 - Prior approval requirements for coverage/reimbursement (4)
 - Lists of substitutable services & products (6)
- Incentivizing consumers (44)
 - Premium (level & features) (2)
 - Cost-sharing (1)

- Health savings accounts (Third party contributions) (2)
- Targeted payments/penalties (Incentivizing consumers) (24)

Delivery arrangement (1517)

- How care is designed to meet consumers' needs (475)
 - Availability of care (17)
 - Timely access to care (42)
 - Culturally appropriate care (52)
 - Case management (87)
 - Package of care/care pathways/disease management (349)
 - Group care (3)
- By whom care is provided (742)
 - System - Need, demand & supply (13)
 - System - Recruitment, retention & transitions (25)
 - System - Performance management (33)
 - Workplace conditions - Provider satisfaction (22)
 - Workplace conditions - Health & safety (21)
 - Skill mix - Role performance (61)
 - Skill mix - Role expansion or extension (131)
 - Skill mix - Substitution (113)
 - Skill mix - Multidisciplinary teams (227)
 - Skill mix - Volunteers (1)
 - Skill mix - Communication & discussion for distant providers (19)
 - Staff - Training (18)
 - Staff - Support (28)
 - Staff - Workload/workflow/intensity (47)
 - Staff - Continuity of care (35)
 - Staff/self - Shared decision-making (56)
 - Self-management (191)
- Where care is provided (422)
 - Site of service delivery (310)
 - Physical structure, facilities & equipment (44)
 - Organizational scale (11)
 - Integration of services (55)
 - Continuity of care (36)
 - Outreach (3)
- With what supports is care provided (415)
 - Health record systems (27)
 - Electronic health record (42)
 - Other ICT that support individuals who provide care (192)
 - ICT that support individuals who receive care (240)
 - Quality monitoring and improvement systems (58)
 - Safety monitoring and improvement systems (33)

Implementation strategy (675)

- Consumer-targeted strategy (448)
 - Information or education provision (357)
 - Behaviour change support (209)
 - Skills and competencies development (75)
 - (Personal) Support (129)
 - Communication and decision-making facilitation (40)
 - System participation (18)
- Provider-targeted strategy (290)
 - Educational material (154)
 - Educational meeting (154)
 - Educational outreach visit (55)
 - Local opinion leader (10)
 - Local consensus process (7)
 - Peer review (9)
 - Audit and feedback (80)
 - Reminders and prompts (105)
 - Tailored intervention (8)
 - Patient-mediated intervention (20)
 - Multi-faceted intervention (105)
- Organization-targeted strategy (34)

Brackets indicate the number of synthesized research products available on each topic as of 21 December 2011 at www.healthsystemsevidence.org

A Review of Conceptual Barriers and Opportunities
Facing Health Systems Research to Inform a
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Final version submitted on 1 June 2012 to the
Alliance for Health Policy & Systems Research
World Health Organization