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DEVELOPING STRATEGIES FOR IMPROVING HEALTH CARE DELIVERY

Guide to Concepts, Determinants, Measurement, and Intervention Design

Elizabeth H. Bradley, Sarah Pallas, Chhitij Bashyal, Peter Berman and Leslie Curry

June 2010



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Health, Nutrition and Population (HNP) Discussion Paper

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Health, Nutrition and Population (HNP) Discussion Paper

Developing Strategies for Improving Health Care Delivery: *A User's Guide to Concepts, Determinants, Measurement, and Intervention Design*

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Abstract: This report is a user's guide for defining, measuring, and improving the performance of health service delivery organizations. We define six core performance domains: quality, efficiency, utilization, access, learning, and sustainability and provide a compendium of metrics that have been used to measure organizational performance in each of these six domains. The compendium, which includes 116 distinct categories of metrics, is based on a detailed literature review of peer-reviewed empirical studies of health care organizational performance in World Bank client countries. We include a bibliography of studies that have used these measures.

Based on our reading of the literature, we define seven major strategy areas potentially useful for improving performance among health care organizations: 1) standards and guidelines, 2) organizational design, 3) education and training, 4) process improvement and technology and tool development, 5) incentives, 6) organizational culture, and 7) leadership and management. We provide illustrations of facility-level interventions within each of the strategy areas and highlight the conditions under which certain strategies may be more effective than others. We propose that the choice of strategy targeted at organizational level to improve performance should be informed by the identified root causes of the problem, the implementation capabilities of the organization, and the environmental conditions faced by the organization.

Measuring and improving organizational performance is complex because organizations are diverse and dynamic. Users of this guide should take away a toolkit of concepts and methods that can help them identify which questions to ask and how to answer them in the context of defining, measuring, and improving performance of health service delivery organizations. Having this broad set of tools with which to understand and enhance organizational performance can contribute to improving health service delivery and ultimately health outcomes.

Keywords: health care delivery, user guide, quality improvement, organizational performance, strategic development

Disclaimer: The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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Table of Contents

FOREWORD	VII
HOW TO USE THIS GUIDE	VII
ACKNOWLEDGEMENTS	IX
I. MEASURING ORGANIZATIONAL PERFORMANCE IN HEALTH CARE DELIVERY: SIX OUTCOMES	1
<i>Quality</i>	3
<i>Efficiency</i>	3
<i>Utilization</i>	4
<i>Access</i>	4
<i>Learning</i>	5
<i>Sustainability</i>	5
<i>Empirical Measures of Performance Domains in World Bank Client Countries</i>	5
II. DETERMINANTS OF ORGANIZATIONAL PERFORMANCE: THEORETICAL FRAMEWORKS	7
II.A. BRIEF HISTORY OF ORGANIZATIONAL BEHAVIOR AND ORGANIZATIONAL THEORY	7
II.B. COMPARING OB/OT WITH ECONOMICS, PSYCHOLOGY, AND SOCIOLOGY.....	10
<i>Economics</i>	10
<i>Psychology</i>	11
<i>Sociology</i>	12
II.C CONCEPTUAL FRAMEWORKS OF ORGANIZATIONAL PERFORMANCE WITHIN HEALTH SYSTEMS	14
II D. DETERMINANTS OF HEALTH SERVICE DELIVERY ORGANIZATION PERFORMANCE.....	17
II.E. CREATING ENABLING ENVIRONMENTAL CONDITIONS.....	18
III. STRATEGIES FOR IMPROVING ORGANIZATIONAL PERFORMANCE: A CLASSIFICATION SYSTEM	19
IV. IDENTIFYING AREAS FOR PERFORMANCE IMPROVEMENT PROGRAMS: METHODS	24
IV.A. SELECTING MEASURES FOR ASSESSING ORGANIZATIONAL PERFORMANCE	24
<i>Principle 1: Include Performance Metrics from Each Intermediate Outcome Domain</i>	24
<i>Principle 2: Use Existing Data Sources Where Possible</i>	25
<i>Principle 3: Test Reliability and Validity of Metrics in the Context of Interest</i>	25
<i>Principle 4: Weigh Costs and Benefits of Internal and External Data Collection</i>	25
<i>Principle 5: Engage Stakeholders in Assessment Process</i>	26
<i>Principle 6: Estimate Resources Required for Data Collection</i>	26
<i>Principle 7: Align Data Collection Methods to Fit with Domain</i>	26
IV.B. IDENTIFYING PERFORMANCE GAPS USING DIAGNOSTIC ASSESSMENT RESULTS	27
<i>Within-Country Comparison</i>	27
<i>Cross-Country Comparison</i>	27
<i>Comparison with Domestic or International Standards</i>	28
IV.C. ASSESSING ROOT CAUSES OF PERFORMANCE GAPS	28
<i>Multidisciplinary Teams</i>	28

<i>Qualitative and Mixed Methods</i>	29
<i>Root Cause Analysis</i>	29
IV.D. SELECTING STRATEGIES	29
<i>Assessing Environmental Conditions</i>	30
<i>Assessing Implementation Capability</i>	30
<i>Assessing Extent of Strategies Already in Progress</i>	31
<i>Identifying Positive Deviants and Proven Strategies</i>	34
<i>Criteria for Selecting Strategies</i>	34
IV.E. MONITORING PROGRESS IN PERFORMANCE IMPROVEMENT INTERVENTIONS.....	35
V. CONCLUSION: USING THEORY TO INFORM PRACTICE.....	37
APPENDIX 1: EMPIRICAL LITERATURE REVIEW	39
METHODOLOGY	39
RESULTS.....	40
<i>Studies by Performance Intermediate Outcome Domain and Dimension</i>	41
<i>Studies by Measurement Method</i>	42
<i>Studies by Geographic Region of World Bank Client Countries</i>	43
<i>Studies by Type of Health Service, Health Facility Unit, and Cross-Cutting Themes</i>	43
<i>Instructions for Looking Up Article References</i>	44
APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE	45
APPENDIX 3: ARTICLE REFERENCES BY MEASUREMENT METHOD	51
APPENDIX 4: ARTICLE REFERENCES BY WORLD BANK GEOGRAPHIC REGION... 52	52
APPENDIX 5: ARTICLE REFERENCES BY TYPE OF HEALTH SERVICE	53
APPENDIX 6: ARTICLE REFERENCES BY HEALTH FACILITY DEPARTMENT / UNIT	54
APPENDIX 7: ARTICLE REFERENCES BY CROSS-CUTTING THEME	55
APPENDIX 8: BIBLIOGRAPHIC INFORMATION FOR ARTICLE REFERENCES.....	56
APPENDIX 9: REFERENCES FOR ASSESSING METRIC RELIABILITY AND VALIDITY	73
APPENDIX 10: REFERENCES FOR USE OF QUALITATIVE AND MIXED METHODS 74	74
WORKS CITED	75

FOREWORD

This report is a guide to defining, measuring, and improving performance of health service delivery organizations. Its scope is limited to frontline health service delivery organizations that interface directly with patients, such as hospitals, clinics, and pharmacies. References in this report to organizations and organization-level interventions should therefore be interpreted in terms of these frontline health service delivery facilities.

The objective of this report is to identify determinants of organizational performance in health services and to provide examples of interventions that can be undertaken at the organization level to improve performance. These organizations are part of broader health systems at the sub-national and national levels and are both influenced by and reciprocally influence these broader health systems. However, different organizations within the same health system can vary substantially in their performance. Although this report focuses on organization-level performance factors, it also comments on ways in which an organization's broader environment can enable or inhibit performance, and the contextual conditions under which performance improvement strategies will be most effective.

The report is organized as follows. In Section I, we propose a taxonomy of six intermediate outcomes that constitute domains of organizational performance, sub-classified by dimensions within each domain. We also provide examples of measures within each domain. In Section II, we review theoretical frameworks and models that provide insight into the determinants of organizational performance with attention to alternative disciplinary perspectives. In Section III, we propose a classification system of strategies shown to be effective in improving performance of health care organizations, and suggest conditions under which various strategies may be more or less effective. In Section IV, we provide guidance for performance assessment methods, including selecting which metrics to include in a diagnostic assessment and how to use assessment results to identify performance gaps. We also discuss common methods for selecting performance improvement strategies and evaluating the impact of interventions. We conclude in Section V with a brief discussion of principles for using the theoretical material to inform practice. The Appendix includes results from a systematic review of more than 2,000 academic articles regarding metrics for the six organizational performance domains, as applied in the World Bank's client countries.

HOW TO USE THIS GUIDE

This guide provides an orientation to the theoretical and empirical literature on organizational performance and recommends principles and methods for applying this literature in the field. It can be used to inform and support training, client country needs assessment, project planning, and project monitoring. Table 1 offers several examples of how the guide could be used to answer questions about organizational performance; these examples are illustrative of the guide's potential but not exhaustive.

Table 1: Examples of How to Use this Guide to Define, Measure, and Improve Performance

Illustrative Questions	How to Use this Guide
What elements should I include in my assessment of health care facility performance in the country?	<ul style="list-style-type: none"> • See Section I for a taxonomy of performance domains. • See Section IV.A for principles on selecting measures to include in assessment. • See Appendices 1-8 for examples of performance measures used in empirical studies from World Bank client countries.
What standard should I use for judging how well health care facilities in the country are performing?	<ul style="list-style-type: none"> • See Section IV.B for guidance on several comparison methods for identifying performance gaps.
What metrics have been used to measure the quality of health care facility management?	<ul style="list-style-type: none"> • See Appendix 2 to look up “Quality” under Domain and “Managerial quality” under Dimension for a list of empirical studies with relevant metrics. • See Appendix 8 for bibliographic references. Read original studies for details on measurement methods and metrics.
What factors might be causing low performance in health care facilities?	<ul style="list-style-type: none"> • See Section II for summaries of different disciplinary approaches to explaining organizational performance.
What strategies might be successful in addressing nurses’ lack of motivation in government-run health care facilities?	<ul style="list-style-type: none"> • See Section III for summary tables matching strategies to root causes and conditions for effectiveness. • See Sections IV.C and IV.D for recommended methods to determine root causes and select suitable strategies.
How can I know if the performance improvement strategy we are implementing is working?	<ul style="list-style-type: none"> • See Section IV.E for suggestions on study designs, data infrastructure, and other prerequisites for effective monitoring of implementation progress and impact.

This guide does not provide a universal instrument for performance measurement; instead it presents a process that can be applied in diverse country contexts to tailor performance assessment and interventions to local conditions. The right assessment tool and improvement strategy will depend on the organization’s local context. This guide should be used to help health sector project managers and decision makers systematically consider the different explanations for health service organizations’ performance and the different options for intervention.

ACKNOWLEDGEMENTS

The authors would also like to acknowledge helpful comments received from the participants at the Expert Consultation on Organization and Service Delivery in Health Care in Low Income Settings in Berkeley, California, on April 16-17, 2010, and especially the helpful inputs from Professor Stephen Shortell, Professor of Health Policy and Management and Dean at the University of California at Berkeley School of Public Health. As usual, we remain responsible for any errors.

The authors are grateful to the World Bank for publishing this report as an HNP Discussion Paper.

I. MEASURING ORGANIZATIONAL PERFORMANCE IN HEALTH CARE DELIVERY: SIX OUTCOMES

We propose six intermediate outcomes at the organizational level that contribute to the final outcomes of improved health status and risk protection at the health system level. These six intermediate outcomes are quality, efficiency, utilization, access, learning, and sustainability. A taxonomy of intermediate outcomes, or organizational performance domains, further identifies key dimensions of each domain and provides examples of measures within each domain (Table 2). Four of the six intermediate outcomes (quality, efficiency, utilization, and access) are consistent with previous health system frameworks (IOM 2001; Roberts *et al.* 2004; De Savigny and Adam 2009). Learning and sustainability have been added based on evidence from the health services literature that they contribute to the desired outcomes of improved health status and risk protection (for example, Tucker and Edmondson 2003; Pluye *et al.* 2004; Gruen *et al.* 2008). Organizational learning is necessary to keep pace with evolving disease threats and changing environmental conditions. Because improved health status is not a static outcome, organizations must be able to acquire and utilize new knowledge to achieve this goal. Sustainability, long a guiding principle for development assistance, contributes to improved health status and risk protection by ensuring that needed health services are predictably accessible. The epidemiological transition from acute to chronic disease makes sustainability in health services even more important for continuity of care and effective disease management over time.

Table 2: A Taxonomy of Organizational Performance Domains, Dimensions, and Illustrative Measures

Intermediate Outcome Domains	Dimensions	Examples of Measures
QUALITY	<ul style="list-style-type: none"> • Clinical quality • Management quality • Patient experience 	<ul style="list-style-type: none"> • Adherence to clinical guidelines • Avoidance of medical errors • Availability of medical supplies • Functional medical records system functional • Patient satisfaction
EFFICIENCY	<ul style="list-style-type: none"> • Cost-to-service ratios • Staff-to-service ratios • Patient or procedure volume 	<ul style="list-style-type: none"> • Nurses or health workers per bed • Inpatient or outpatient visits per day, per bed, or per health worker
UTILIZATION	<ul style="list-style-type: none"> • Patient or procedure volume relative to capacity • Patient or procedure volume relative to population health characteristics 	<ul style="list-style-type: none"> • Percent occupancy • Outpatient visits per provider • Percentage of pregnant women receiving antenatal care
ACCESS	<ul style="list-style-type: none"> • Physical access • Financial access • Linguistic access • Information access • Service availability / allocation • Non-discriminatory service provision (equitable treatment regardless of age, gender, race, ethnicity, religion, class, etc.) 	<ul style="list-style-type: none"> • Geographic distance to facility • Availability of transport to facility • Hours of operation of facility • Absenteeism of health care workers from facility • Affordability of services • Availability of culturally and linguistically appropriate services
LEARNING	<ul style="list-style-type: none"> • Data audit and feedback processes • Innovation adoption • Training/continuing education for healthcare workforce 	<ul style="list-style-type: none"> • Use of balanced scorecard for organizational performance • Presence of patient suggestion box • System exists for nurses to report errors to hospital management • Quality improvement methods used
SUSTAINABILITY	<ul style="list-style-type: none"> • Political support • Community and patient support • Financial support • Human resource supply • Staff commitment • Strategic planning 	<ul style="list-style-type: none"> • Involvement of community leaders in facility planning and monitoring • Use of strategic management process to promote organizational fit with environmental conditions • Timely, useable, and monitored data on facility financial status • Robust connection with health workforce educational pipeline

Together, these six intermediate outcomes offer a model for what a high performing health service organization should deliver. High performing organizations should deliver high quality, efficient, accessible, and utilized services. Furthermore, high performing organizations should enable learning (and hence continuous improvement) and have strategies for securing support necessary for sustainability. These six organizational outcomes capture both historical and contemporary foci of organizational performance research in the health services sector. Because this report is designed as a guide to this vast literature, it takes a panoramic view that includes the multiple dimensions that have been used for each intermediate outcome.¹

Quality

Historically, much of the research on health care delivery has focused on clinical quality, investigating whether the care provided to a patient was safe and medically appropriate (Donabedian 1980; Schuster *et al.* 1998; IOM 2001). Clinical quality refers to whether the provider's care conformed to best clinical practice for those who use the services of the organization; it does not refer to outcome measures of population health, such as vaccination or antenatal care coverage, in which the denominator is the population. Ensuring clinical quality remains a major objective of health service delivery organizations in both high-and low-income countries. We also include managerial quality and patient experience within the quality intermediate outcome domain. Managerial quality refers to the degree to which administrative systems such as procurement, human resources, and data management support the delivery of high-quality clinical care (Moss and Garside 1995; Egger *et al.* 2005). Administrative systems also influence other organizational intermediate outcomes like efficiency, access, and learning; the contribution of a given managerial process to organizational performance must therefore be assessed according to multiple intermediate outcome criteria. Patient experience is included within quality because of the importance of patient-centered service delivery, for which patient experience is an often used as a measure and a counterpoint to the technical standards of clinical and managerial quality (Aharony and Strasser 1993; Ford *et al.* 1997; Reinhardt 1998; Safran 2003; Safran *et al.* 2006).

Efficiency

In the context of individual organizations and their performance, the term efficiency refers to what economists call technical, rather than allocative, efficiency (Hollingsworth 2008; Rosko and Mutter 2010). Hence, efficiency in this context is a relative measure that compares inputs used (e.g., human, technological, financial) to outputs attained (number and level of services) (Hollingsworth 2008). Efficiency has received substantial research attention in health services delivery as health care costs have increased in high-income countries due to shifts in technology, market structure, and demographic profiles (Sherman 1984; Fishman *et al.* 2004; Negrini *et al.*

¹ From the perspective of health systems research, there is broad consensus around quality, efficiency, and utilization as intermediate outcomes for system performance (Roberts *et al.* 2004). There is debate in the literature over the definition of access as an intermediate outcome; some frameworks include only realized access as measured by utilization while other frameworks use the term to refer to potential access or a right to access health care (cf. Roberts *et al.* 2004; de Savigny and Adam 2009). We have therefore included utilization and access as separate performance domains to reflect both sides of this debate. In this guide we adopt a facility-based perspective informed by organizational behavior and theory; from this perspective, learning and sustainability are equally important intermediate outcomes for organizational performance and are thus included in our taxonomy.

2004; Rosko and Mutter 2008, 2010). We include efficiency (cost-per-output) rather than total cost because efficiency allows for greater comparability across countries and communities with diverse economic profiles. Even when a total cost measure has been standardized for comparability across countries (e.g., percent of GDP spent on health care), this is often done with reference to some other organizational intermediate outcome like quality or to an outcome like population health status, which essentially transforms the total cost measure to one of efficiency (for example, Peterson 1993; Kissick 1994). We also include under efficiency the literature that addresses value creation in health care, as value is essentially another form of output-to-input ratio that captures an organization's ability to produce a given quality of service for a lesser price or a greater quality of service for the same price (Burns 2002; Shortell 2004; Porter and Teisberg 2006).

Utilization

Utilization is the volume of services delivered or of clients served. While straightforward to measure as an intermediate outcome, setting standards for the 'right' level of utilization can be difficult due to the influence of diverse and variable client demand patterns (Green and Nguyen 2001). In our taxonomy, we consider utilization as an organizational performance intermediate outcome relative to organizational capacity or population health characteristics. From this perspective, an organization with chronically underutilized capacity would be considered a lower performing organization. Some excess capacity may be desirable, as such slack can facilitate organizational learning and long-run sustainability (Zinn and Flood 2009). However, too much excess capacity can constitute a cost to the organization without adequate compensatory benefits (Pauly and Wilson 1986; Keeler and Ying 1996). Similarly, utilization significantly below or above what would be expected given the health characteristics of its client population could also be a signal of poorly performing organizations (Wennberg *et al.* 1987; Fisher *et al.* 2000). Benchmarking utilization across organizations serving similar populations is therefore an important method for assessing this intermediate outcome (Murphy and Noetscher 1999).

Access

Access refers to the potential ability of an organization's potential clients to obtain its services. When this potential ability is realized, it results in observable utilization, which is why studies often use utilization as a proxy variable for access; conversely, lack of utilization can signal the existence of barriers to access (for example, Hall 1998; O'Mahony *et al.* 2008). However, access and utilization are conceptually distinct intermediate outcomes, as an individual may have access to an organization but choose not to utilize services there (Fiedler 1981).

Consistent with the literature, we use access to refer to the availability, accessibility, accommodation, affordability, and acceptability of health services (Penchansky and Thomas 1981; Peters *et al.* 2008). In these definitions, acceptability refers to both the patient's experience with the services provided and the provider's non-discriminatory acceptance of the patient as a client. However, we categorize patient experience under quality rather than as a measure of access because patient experience is conditional on accessing care. While a negative care experience could deter a patient from accessing health services in the future, we focus here on those elements of access that are not conditional on receiving care.

Access is sometimes discussed in terms of equity or geographical or financial coverage of health services, but these latter terms tend to apply more to health system perspectives on service delivery rather than organization-level models (Aday and Andersen 1981; Gold 1998; IOM 2001; Victora *et al.* 2003). Although enabling physical and financial access for geographically dispersed populations or providing discretionary health care services are typically beyond organizations' jurisdiction, other aspects of access are nonetheless influenced by organizational action and are therefore included as organization-level intermediate outcomes. Hence, we retain access, but exclude equity or coverage, as the organizational performance intermediate outcomes in our taxonomy.

Learning

Learning refers to the process by which an organization acquires new knowledge and translates this knowledge into organizational practices. This performance intermediate outcome is not only learning by individuals within the organization but “the assimilation of individual knowledge into new work structures, routines, and norms” that can outlast any individual staff member (Davies and Nutley 2000, p. 998). Thus, organizational learning generates both changes in knowledge as well as changes in observable processes and organizational culture (Levitt and March 1988; Senge 1990; March 1991). Given the knowledge-centric nature of health services delivery and the importance of learning from adverse events, organizational learning in health services delivery has received increasing attention from academic researchers and endorsement from expert panels like the U.S. Institute of Medicine (for example, Berta *et al.* 2005; Chuang *et al.* 2007; Nembhard 2009; IOM 2001).

Sustainability

Sustainability is the organization's ability to continue delivering needed and valued services. Dimensions of sustainability include sustained political support from government officials, sustained community and patient support, and predictable access to needed inputs (e.g., financing, trained human resources) (Olsen 1998). As an organizational performance intermediate outcome, sustainability is measured in terms of both the organization's existing support and its strategies and efforts to secure future support (Gruen *et al.* 2008). We focus in this guide on the sustainability of needed and valued health services delivered by the organization; we do not examine the important but separate stream of literature regarding how to sustain health services and their benefits beyond the organization through community adoption of preventive behaviors or transition from external funding to local funding (for example, Shediak-Rizkallah and Bone 1998; Sarriot *et al.* 2004).

Empirical Measures of Performance Domains in World Bank Client Countries

We conducted a structured review of the academic literature in order to identify metrics and methods used to measure the six performance intermediate outcomes, as defined above, in countries eligible for World Bank support. Although many measures from high-income countries are equally applicable in middle- and low-income countries, some metrics refer to infrastructure or services that may not be generally available among health care organizations in low-income settings. In our literature review, we sought to address this applicability question by

including only studies that had been conducted in countries eligible as of 2009 for World Bank support (World Bank 2009).

Our initial search retrieved 2,371 articles, which were systematically reviewed to yield a final sample of 181 articles for analysis. The articles contained hundreds of indicators for measuring the six performance domains, which were grouped into 116 unique sub-dimensions or conceptually distinct sets of metrics. Among the articles in the final sample, quality was by far the most commonly measured domain of organizational performance (83% of articles). Access was measured in 20% of the sample, utilization in 17%, learning and efficiency in 10% each, and sustainability in 9% of articles (percentages add to more than 100% as some articles measured multiple performance domains). The methodology and full results from this literature review are presented in **Appendices 1-8**. Results include summary tables of the final sample articles by World Bank region, by measurement method, by health service area, by health facility unit/department, and by cross-cutting theme (e.g. safety, information technology). **Appendix 1** gives instructions for identifying those studies in the sample with relevant metrics in each of these categories. Bibliographic references for the studies are found in **Appendix 8**.

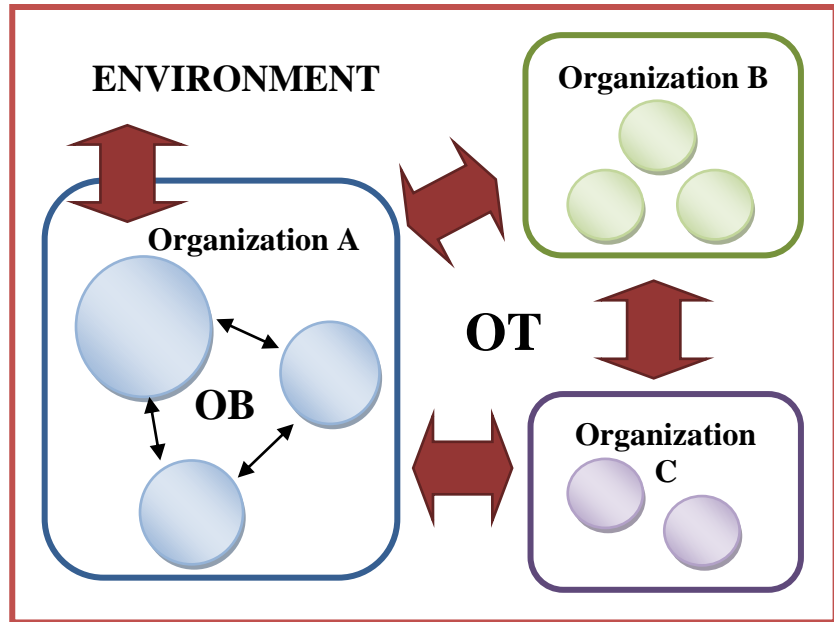
Together, these six intermediate outcomes offer a model for what a high performing health service organization should deliver. High performing organizations should deliver high quality, efficient, accessible, and utilized services. Furthermore, high performing organizations should enable learning (and hence continuous improvement) and have strategies for securing support necessary for sustainability. These six organizational outcomes capture both historical and contemporary foci of organizational performance research in the health services sector. Because this report is designed as a guide to this vast literature, it takes a panoramic view that includes the multiple dimensions that have been used for each intermediate outcome.²

² From the perspective of health systems research, there is broad consensus around quality, efficiency, and utilization as intermediate outcomes for system performance (Roberts *et al.* 2004). There is debate in the literature over the definition of access as an intermediate outcome; some frameworks include only realized access as measured by utilization while other frameworks use the term to refer to potential access or a right to access health care (cf. Roberts *et al.* 2004; de Savigny and Adam 2009). We have therefore included utilization and access as separate performance domains to reflect both sides of this debate. In this guide we adopt a facility-based perspective informed by organizational behavior and theory; from this perspective, learning and sustainability are equally important intermediate outcomes for organizational performance and are thus included in our taxonomy.

II. DETERMINANTS OF ORGANIZATIONAL PERFORMANCE: THEORETICAL FRAMEWORKS

Diverse disciplinary perspectives have been applied to explain the performance of organizations in general and of health service delivery organizations in particular. This section provides a brief history of approaches from organizational behavior and organizational theory and compares these with approaches from economics, psychology, and sociology. It reviews several leading models of organizational performance within the health system and key strategies by which organizational performance can be improved.

Figure 1: OB and OT Levels of Analysis



II.A. BRIEF HISTORY OF ORGANIZATIONAL BEHAVIOR AND ORGANIZATIONAL THEORY

Organizational behavior (OB) and organizational theory (OT) are two major complementary subfields in the academic study of organizations. OB focuses on the *micro*-level dynamics within an individual organization, such as interactions among staff and internal resource flows whereas OT addresses the *macro*-level dynamics of the organization as a whole in its interactions with other organizations and its environment (Figure 1). The unit of analysis in OB studies is usually the individual or a team of individuals within the organization. The unit of analysis in OT is the organization, or sometimes a system of organizations such as an industry within a given geography. Today OB and OT tend to be associated with management and business administration, although their development has been influenced by economics, psychology, and sociology. Both OB and OT have addressed the performance of health service delivery organizations.

Some questions about organizational dynamics span both OB and OT. For example, the role of leadership has been studied as a factor in internal staff team performance (OB) as well as in external organizational strategy (OT) (Yukl 1989; Klein *et al.* 2006; Gilmartin and D'Aunno 2007). Organizations' quality improvement efforts have been explained using models of staff incentives and education (OB) as well as models of market competition and regulatory pressures (OT) (Flood and Fennell 1995). Interventions to improve organizational performance are possible at multiple levels, and successful interventions will typically require both OB and OT perspectives.

The historical development of OB/OT studies over the past century can be understood in broad terms as an evolution from closed to open system theories. Closed systems theories are those that conceptualize the organization as an isolated entity whose dynamics are independent of other organizations or its environment (Scott 1961; Kast and Rosenzweig 1972). Closed systems theories seek to explain the behavior of individuals within the organization in terms of factors internal to the organization (such as working conditions, reporting hierarchies, staff relationships, and monetary or non-monetary incentives) (for example, Taylor 1916; Fayol 1916; Gantt 1919; Gulick and Urwick 1937; Mooney 1947). The creators of these theories did not themselves use the term ‘closed systems’; this was coined later by open systems theorists who were contrasting their new approaches with historical understandings of organizational performance (Scott 1961; Katz and Kahn 1966; Ashmos and Huber 1987). Closed system theories predominated through the 1950s but came under increasing criticism thereafter for inadequate attention to the influence of environmental factors on organizational behavior and performance (Scott 1961; Scott 2004). From the 1950s onwards, organizational theorists instead borrowed paradigms from the natural sciences to conceptualize organizations as social organisms, which led to open systems theories (Katz and Kahn 1966; Kast and Rosenzweig 1972).

Open systems theories view the organization as embedded in an environment, and thus part of a system that includes other organizations as well as political, economic, social, and cultural institutions (Scott 2004). The organization itself is also conceptualized as a system, composed not just of individual workers but also of formal and informal groups of individuals and of processes for exchanging resources with the environment (Katz and Kahn 1966). Open systems theories seek to explain the behavior of individuals within the organization in terms of influences from the environment (such as professional socialization, gender and ethnic identities, exchanges with other organizations, or technological innovation) (Flood and Fennell 1995). From an open systems perspective, the behavior of the organization as a whole is explained by its efforts to manage its relationship with its environment, including other organizations (Katz and Kahn 1966; Lawrence and Lorsch 1967; Pfeffer and Salancik 1978). Such efforts might include strategic alliances, public relations initiatives, vertical or horizontal integration (or differentiation), collaborative learning networks, or mimetic isomorphism (i.e., imitation of similar organizations) (Lawrence and Lorsch 1967; Meyer and Rowan 1977; Pfeffer and Salancik 1978; DiMaggio and Powell 1983). Activities that span the boundary between an organization and its environment merit special attention in open systems theories (Scott 2004). A key feature of open systems theories is that the interventions required to improve organizational performance are contextual, i.e., dependent on the specific constellation of environmental factors and internal group dynamics of the selected organization (Drazin and Van de Ven 1985).

In addition to the evolution from closed to open systems theories, OB/OT has moved between so-called “rational” and “natural” system theories over time. Rational system theories assume that individual, group, and organization behaviors result from calculated evaluations of (monetary and non-monetary) costs and benefits in pursuit of knowable objectives (Scott and Davis 2006). By contrast, natural system theories posit that rational calculation is impossible, imperfect, or infrequently used to guide individual, group, and organization behaviors; instead, behaviors are determined by emotions, norms, and beliefs (Scott and Davis 2006; Cohen *et al.* 1972; March 1978). The debate between rational and natural system theories is ongoing, with empirical evidence offering some support for each.

Contemporary organizational management practices draw on lessons from open, closed, rational, and natural system theories. Each of these categories includes theories that have been advanced, at one time or another, as general explanations of organizational dynamics (Table 3).

Table 3: Summary of Key OB/OT Theories

	RATIONAL SYSTEM THEORIES	NATURAL SYSTEM THEORIES
CLOSED SYSTEM THEORIES	Scientific management (1910s-1920s)	Human relations school (1930s) Administrative behavior theory (1950s)
OPEN SYSTEM THEORIES	Transaction economics (1970s-1980s) Resource dependency (1980s-1990s) Population ecology (1990s)	Social psychology of organizations (1970s) Contingency theory (1970s) Institutional theory (1980s) Network theory (2000s)

With the benefit of hindsight, it is clear that none of these approaches alone explains or predicts behavior in every organization. Instead, they highlight the need for researchers and practitioners to consider multiple possible explanations for a given organization’s performance, including factors internal and external to the organization, the potential for competing objectives among organization members, and the use of both objective and subjective decision-making processes. Understanding this theoretical history offers organizational managers a way to protect against “blind spots” as they diagnose and address performance problems. Illustrative questions drawn from closed, open, rational, and natural system theories that policy makers and managers might consider in assessing organizational performance and designing interventions to improve performance are reflected in Table 4.

Table 4: Sample Diagnostic Questions about Organizational Performance based on OB/OT

	RATIONAL SYSTEM THEORIES	NATURAL SYSTEM THEORIES
CLOSED SYSTEM THEORIES (OB)	<ul style="list-style-type: none"> • Are performance incentives in place? • Is a system of performance monitoring functioning? • Are tasks divided and allocated efficiently? • Are employee tasks well-defined? • Are employees appropriately trained for their assigned tasks? • Are measures for continuous quality improvement in place? 	<ul style="list-style-type: none"> • What informal social groups exist among employees? What norms govern behavior in these groups? Are these norms compatible with organization objectives? • Are employee needs and aspirations expressed, understood, and addressed? • Have standard operating procedures or decision making guidance been provided to employees?
OPEN SYSTEM	<ul style="list-style-type: none"> • What resources are necessary for the organization’s survival? 	<ul style="list-style-type: none"> • What constitutes social legitimacy for this organization?

THEORIES (OB and OT)	<ul style="list-style-type: none"> • What processes does the organization use for obtaining needed resources? • How is the organization supported (materially and administratively) and monitored by the government? • How efficiently does the organization transact with its environment? • How well does the organization's structure fit with its environment? 	<ul style="list-style-type: none"> • Is the organization respected by its clients, collaborators, and competitors? • Are there laws or regulations that constrain or enable the organization's behavior? • Is the organization explicitly trying to imitate and learn from other organizations in its field?
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II.B. COMPARING OB/OT WITH ECONOMICS, PSYCHOLOGY, AND SOCIOLOGY

The disciplines of economics, psychology, and sociology have also been used to explain how organizations and the individuals within them perform, and thus share many features with OB/OT. OB is closest to individual-level approaches from psychology and behavioral economics while OT is more similar to organization-level approaches in sociology and neoclassical microeconomics. As discussed above, OB/OT includes both rational and natural system theories; rational system theories accord with the key assumptions in neoclassical microeconomics of optimizing behavior by individuals and firms, while natural system theories share assumptions with psychology, behavioral economics and sociology about the importance of emotions, norms, and social relationships. However, important distinctions remain between these disciplinary approaches to explaining organizational dynamics.

Economics

Economic models of organizational performance are distinguished from OB/OT and other disciplinary approaches by their assumption of utility-maximizing choices (for individuals) or profit-maximizing choices (for firms or organizations) subject to various constraints and technical production functions (Varian 1992; Pindyck and Rubinfeld 2000). Individuals' or organizations' chosen actions are taken as a reliable indication of their preferences, given the constraints and technological realities that they face (Varian 1992; Pindyck and Rubinfeld 2000). Constraints can include limited time, financial resources, technology, or information. Strategic interaction among individuals or firms is accommodated in game theory economic models. Economic research on health service delivery organizations has mainly focused at the micro-level on provider payment arrangements, and at the macro-level on questions of market regulation and competition, technology adoption, insurance incentives, ownership structure, service pricing, and production efficiency. At both levels, prices and opportunity costs (monetary and non-monetary cost) play an important role in determining behavior.

By contrast, OB and OT more commonly include non-price considerations in models of the behavior of organizations and their members and subsequent organizational performance. For example, OB explanations of physician behavior may incorporate factors beyond payment arrangements such as technical expertise, professional norms, intra-organization group conflicts, personal ethics, legal requirements, patient relationships, and historical hierarchy. In theory, all of these factors can be accommodated in economic models; however, because these non-price decision inputs are less easily quantified, they are less amenable to econometric analysis and

hence appear less frequently in empirical economic studies. At the macro-level, OT differs from economics in terms of its understanding of the organization's interactions with its environment. In economic theory, the organization's environment is conceptualized in terms of the markets in which it operates. An organization's interactions with its environment focus on obtaining the inputs it needs and selling the outputs it produces under the prevailing regulations and prices (Caves 1998). OT considers how an organization's reputation and legitimacy affect its ability to obtain resources, produce outputs, and retain political and social legitimacy; OT also recognizes that organizations pursue goals other than profit maximization (Scott 1961; Weber 1925). While goals other than profit-maximization are modeled in some economic literature on non-profit health care delivery organizations, it is usually presented as inefficient and sub-optimal performance (Newhouse 1970; Folland *et al.* 2006).

Psychology

Models of organizational behavior from psychology emphasize the role of individuals and the perspectives and historical experience that influence individual behavior within organizations. Psychological models, which accept the influence of the unconscious on behavior, claim that individuals cannot always choose how they behave, or consciously know why they are behaving as they are. Such models often conflict with economic theories that assume behavior is produced by conscious choice and hence subject to individuals' calculated actions. Several subfields of psychology have relevance for organizational dynamics. Behavioral psychology focuses on individuals' externally observable behaviors in response to environmental stimuli; through conditioning (rewards and punishment), behavioral psychology suggests that individuals can be taught to behave in particular ways in response to specific stimuli (Skinner 1953). Cognitive psychology, on the other hand, focuses on the mind's less observable perception and cognition processes, including how individuals unconsciously acquire information and make decisions (Freud 1923). Organizational psychology looks at both individual and group behaviors, modeling group dynamics on the basis of the individuals in those groups and the (unconscious and conscious) memories and experiences that those individuals bring to group settings (Munsterberg 1913; Lewin 1935, 1936; Landsberger 1958).

Although there are competing schools within psychology, most are compatible with OB theories of micro-level organizational dynamics and with some elements of OT. OT shares some concepts with organizational psychology in terms of group dynamics that transcend individual organizations and are influenced by the environment. OT is also influenced by the implications of behavior guided by the unconscious, because this individual-level phenomenon can help explain organization-level behavior that seems to deviate from "rational" organizational objectives of survival and from the "optimal" means of achieving organizational objectives, particularly in the area of group relations and power and their influence on organizational behavior (French and Raven 1959; Pfeffer 1981; Mintzberg 1985; Smith and Berg 1987). In terms of research on health service delivery organizations, psychology research has typically focused on patient-provider relationships, human resource management, leadership, and employee motivation. This research underscores the non-medical determinants of patient outcomes as well as the non-financial determinants of provider performance, offering a different set of potential policy levers for improving health services.

Sociology

Sociological models of organization behavior are distinguished from psychology, economics, and OB/OT by the primacy they accord to social and community structures to explain individual and organizational behaviors. Sociological approaches emphasize how individuals' behaviors are shaped by gender, race, ethnicity, age, religion, social class, and the attendant socially constructed meanings of these categories (Weick 1976; March 1991; Anderson 1999; Axelrod and Cohen 2000). This emphasis on social groups and structures has helped explain why organizations with similar material resources, trained personnel, management practices, and patient profiles may perform differently when their employees' social backgrounds are different or when they operate within different social environments. At the macro level, sociological models routinely situate organizations in their environment, looking at how organizations are affected by their social environment and how they in turn affect their environments (for example, by creating new forms of wealth, social capital, or social disparity) (Weber 1925). In the health services sector, sociological studies have focused on the non-medical determinants of health (such as poverty, social class, and stigma), barriers to accessing existing health services, socially constructed roles of sickness, and the experiences of different sub-groups in seeking and providing health care (Parsons 1951; Waitzkin 2000, 2001). OB and OT are both influenced by sociology but view social structures as only one factor shaping the organization's internal and external environments. Historically, OB research has focused on individuals' organizational roles (e.g., manager) rather than the socially defined attributes of the individual in that role (e.g., gender, race/ethnicity), and OT research has examined the organization's interactions with other organizations in its environment rather than with the community or social structures. However, network theory research is one area of OB/OT that integrates analysis of both social and organizational structures to detect patterns of behavior, power, and information flow (Nohria 1998; Shortell and Rundall 2003).

Organizational dynamics are complex and require multidisciplinary approaches. Understanding some of the unique strengths and paradigms of economics, psychology, sociology, and OB/OT as applied to the study of organizations can help managers, policy makers, and researchers consider a wider range of potential determinants of organizational performance and design more effective interventions to improve performance. We offer an example (Table 6) of how these different disciplines might view a common challenge in health care to highlight potential divergences and synergies among disciplinary paradigms; it is suggestive rather than definitive of how experts in these fields might respond. This hypothetical example illustrates the challenges in determining the root causes of poor performance. Multiple causes may underlie an individual's observed performance, and similar performance levels across individuals may have differing causes. Without a full understanding of root causes and possible capacities, it is not possible to say which intervention will be effective in addressing a hypothetical situation, although considering multiple disciplinary perspectives can help to identify a broader range of likely causes and solutions.

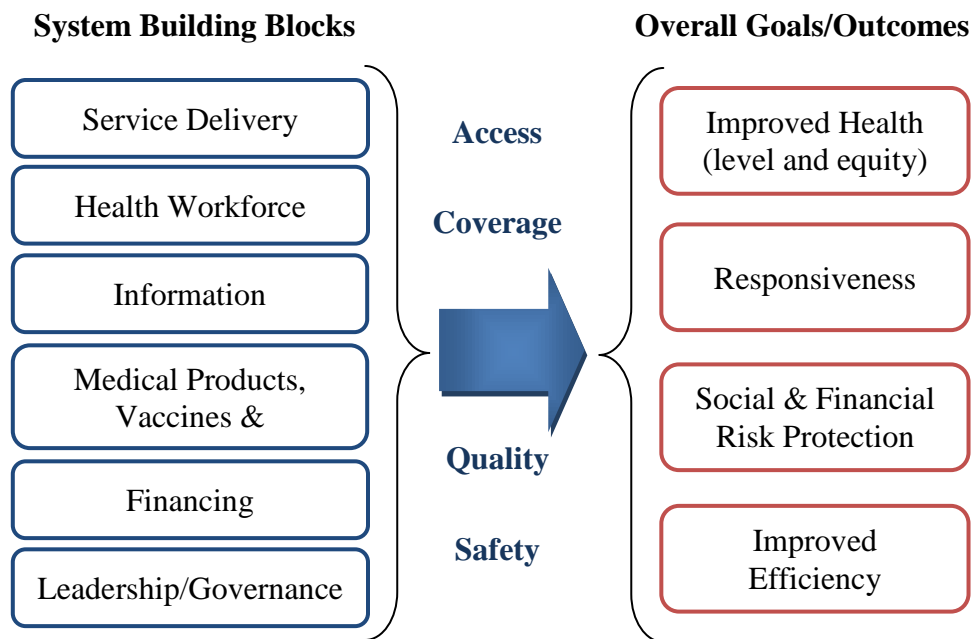
Table 5: An Example of Different Disciplinary Approaches to Improving Performance of Health Services Delivery Organizations

<p>Organizational Behavior: A government nurse running a primary health clinic in a rural village charges some patients extra fees above the official government price, secretly retaining the surplus for himself.</p>		
<p>Organizational Intermediate Outcomes Affected: Quality, Efficiency, Utilization, Access, Learning, Sustainability</p>		
Disciplinary Approach	Possible Explanations of the Behavior	Possible Interventions to Alter Behavior
Economics	<ul style="list-style-type: none"> (1) Nurse’s salary is too low or too infrequently paid, and punishment for corruption is too lax. (2) Government prices are set too low; some clients are willing to pay more. (3) Nurse is a de facto monopolist of officially sanctioned health services delivery in the village, allowing him to price discriminate among clients. 	<ul style="list-style-type: none"> (1) Increase nurse’s salary, pay it regularly, and increase monitoring of and punishment for corrupt practices. (2) Increase official prices and provide targeted subsidies to those who cannot afford them. (3) Permit and incentivize competition from other accredited (private) providers in that village/region.
Psychology	<ul style="list-style-type: none"> (1) Nurse has developed a positive psychological association with having power, or dominating other people. (2) Nurse has learned a behavior in response to historical environmental stimuli. He grew up in conditions of financial insecurity; he takes extra fees to feel more secure. 	<ul style="list-style-type: none"> (1) Provide individualized therapy to develop alternative positive associations. Promote professional and community norms of shame around corruption and exploitation of others. (2) Provide group or individualized therapy to alter response to stimuli of felt insecurity. Institute and apply systematic punishment for corruption.
Sociology	<ul style="list-style-type: none"> (1) Nurse’s behavior is consistent with social norms and hierarchical class structure in which he, as an educated professional, is not accountable to the poorer, less educated village residents. (2) Nurse is from the ethnic group that holds political power, while many village residents are of an ethnic group associated with the opposition party. Nurse’s behavior is a local manifestation of national political dynamics. 	<ul style="list-style-type: none"> (1) Promote anti-corruption social norms among civil servants and during professional training of nurses. Educate and empower village residents to assert their rights. (2) Highlight to leaders of the ethnic group in power the political risks of corrupt public service provision, which can fuel opposition mobilization. Encourage multi-party oversight of social services.
OB/OT	<ul style="list-style-type: none"> (1) Nurse’s professional peers also charge extra fees to their patients; they see it as their right because the government does not pay them as they deserve. Discussing this common grievance and practice allows the nurses in the district to feel solidarity with each other. (2) Nurse does not feel ownership of the clinic’s mission. (3) Nurse knows that transfer to an urban post is reserved for those with high-level political connections. Because good performance will not enable him to advance in the system, he tries to make the best of his current situation. 	<ul style="list-style-type: none"> (1) Identify ‘positive deviants’ (nurses who do not charge extra fees). Promote their strategies and the conditions that enable them to resist peer pressure. Engage third party to mediate dialogue between nurses and government. Create alternative shared experiences to generate solidarity among nurses. (2) Understand the needs of the nurse that the clinic can accommodate. Improve the working environment and culture so that the nurse wants to support the clinic’s mission and feels a part of the organization, rather than an individual. (3) Create a transparent, merit-based system of promotions.

II.C CONCEPTUAL FRAMEWORKS OF ORGANIZATIONAL PERFORMANCE WITHIN HEALTH SYSTEMS

Many conceptual frameworks of health systems recognize that organizational performance plays a critical role in health system performance; however, most frameworks are relatively high-level in their description of organizational dynamics and their influence on health system performance. For instance, the six building blocks of the WHO Health System Framework (Figure 2, De Savigny and Adam 2009, p. 31) include several components that are relevant for organizational performance such as service delivery, health workforce, information, and leadership/governance. Nevertheless, these are not a comprehensive set of organizational levers that may determine health services performance, nor does the model discuss how these building blocks may explain variation in organizational intermediate outcomes. The WHO framework’s ‘systems thinking’ approach is compatible with organizational theory but it does not address organizational dynamics directly.

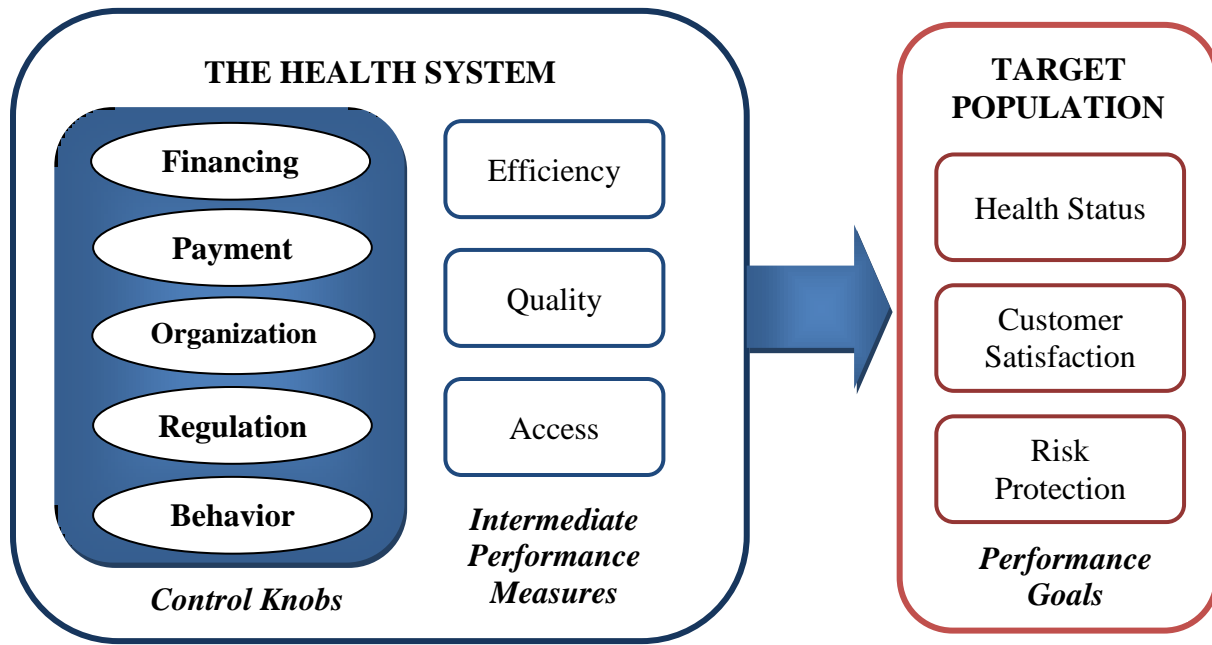
Figure 2: WHO Health System Framework



Organizational dynamics are given greater prominence in other health system models, such as the five “control knobs” for health sector reform defined by Roberts, Hsiao, Berman, and Reich (2004). As shown in Figure 3, organization is one of these knobs, encompassing “the overall structure of the health-care system” as well as “the individual institutions that provide health-care services” (Roberts *et al.* 2004, p. 212). In their model, organization-level interventions are explicitly connected to health system performance. Proposed interventions include changing organizations’ ownership, scope, or scale; increasing competition or contracting; and improving internal management practices. All of these interventions are congruent with recommendations from either organizational theory or organizational behavior; however, OB/OT offers greater depth in understanding each of these interventions, particularly management practices, and suggests additional strategies for organizational change beyond those discussed in the control

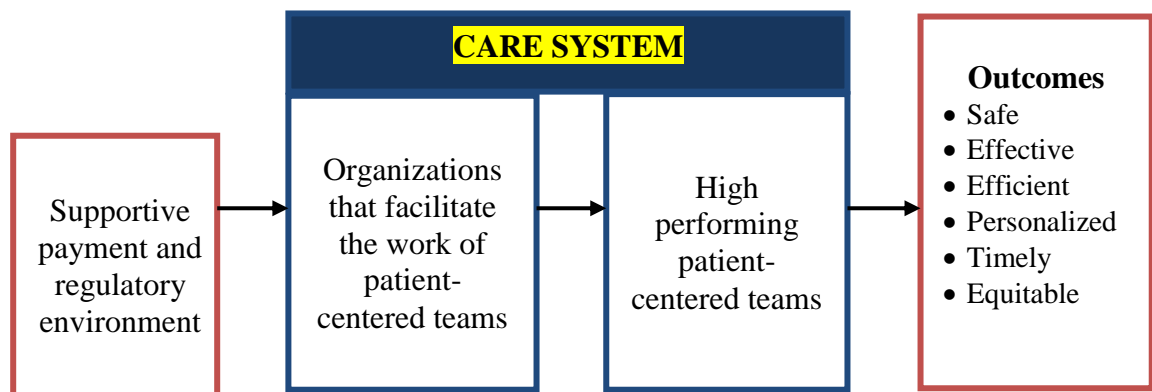
knobs model. The control knob model views organizations as important in influencing health system performance but focuses on only a few dimensions for influencing organizational performance.

Figure 3: Control Knobs Health System Framework



The U.S. Institute of Medicine (IOM) offers a third framework for how organizations impact health care delivery systems (IOM 2001, p. 118). As shown in Figure 4, in the IOM framework organizations are impacted by environmental factors like regulation and payment mechanisms, and in turn impact the performance of care teams within the organization. In contrast to the WHO and control knob health system frameworks, the IOM framework focuses more narrowly on the care delivery system; however, it is helpful in drawing attention to the linkages between factors external and internal to the organization.

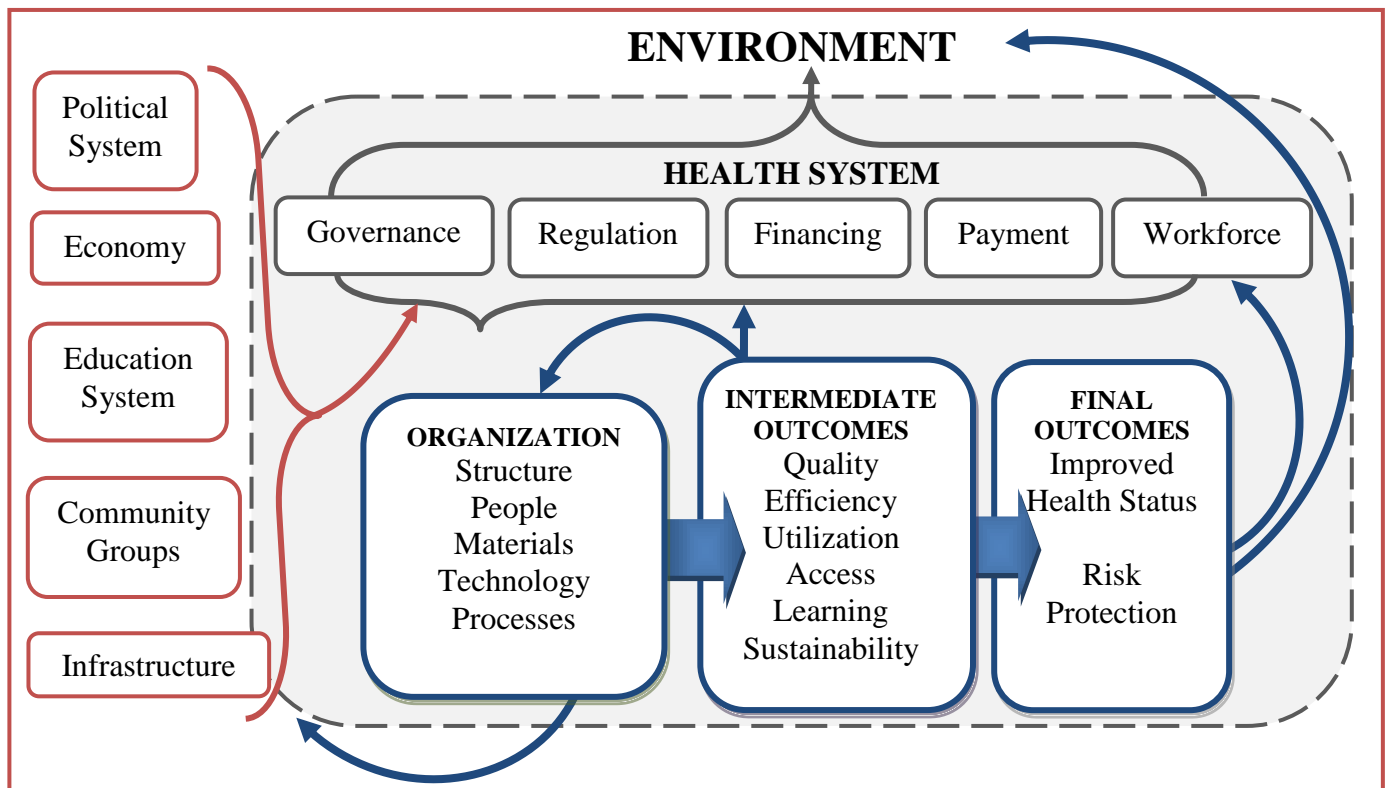
Figure 4: Institute of Medicine Care System Framework



Drawbacks of these frameworks are the lack of feedback effects among the inputs, intermediate outcomes, and final outcomes, and the lack of attention to the environment beyond the health system. From an OB/OT open systems perspective, environmental conditions are neither static nor independent of organizational actions; changes in health service organizational performance intermediate outcomes can change conditions in the health system and broader social environment. Using the health service delivery organization and the six performance intermediate outcomes defined above, we see the relationship between the organization and the health system as being more appropriately represented as in Figure 5. Although this open systems framework is complex, it incorporates the reciprocal relationships between the environment, health system, and organization, as well as the feedback effects of organizational intermediate outcomes and health system outcomes on these different levels.

These health system models generally take a macro perspective; however, improving organizational performance requires both micro and macro perspectives. To use the metaphor from the WHO’s Systems Thinking report, understanding organizational dynamics requires both system-level “forest thinking” and organization-level “tree-by-tree thinking” (De Savigny and Adam 2009, p. 43). The next section describes some of the relationships between these two levels of thinking in terms of the determinants of organizational performance.

Figure 5: An Illustrative OB/OT Perspective on the Organization in the Health System



II D. DETERMINANTS OF HEALTH SERVICE DELIVERY ORGANIZATION PERFORMANCE

Improving organizational performance requires an alignment among environmental conditions, implementation capability, and choice of strategy targeting organizational performance (Figure). The framework in Figure intentionally does not indicate causality or directionality among the elements. Typically the strategy will be the ‘choice variable’ with environmental conditions and implementation capabilities taken as ‘givens’ but interventions are possible in each of these three areas. Policy makers and organizational managers can create environmental conditions that are more (or less) conducive to organizational performance, build the capability of individual organizations to implement chosen strategies, or select strategies that can work given the organization’s environment and capabilities. However, if a particular strategy is desired or already in place, it may be necessary to intervene at the level of the environment or of the implementation capability of the organization to enable the selected strategy to succeed. Any of the three dimensions have the potential to be held fixed or to be designated as the point of intervention in a given performance improvement program; however, compared with strategies and implementation capabilities, the organizational environment is generally more difficult for organizational managers to change.

Figure 6: Aligning Determinants of Organizational Performance



The need for alignment along these three dimensions has several implications for designing performance improvement programs. One implication is that organizations in the same environment may need to use different strategies to enhance performance based on their differing levels of implementation capability (or conversely, implementation capabilities need to be made uniform if all organizations are expected to implement an identical strategy in a similar environment). A second implication is that the set of initial conditions is not deterministic of the choice of performance improvement strategies or set of interventions. Among two organizations with identical environmental conditions, one might choose to start executing a strategy with its existing capabilities while another might choose to first enhance its implementation capability in order to execute a more challenging strategy. It is likely that the environment may be relatively fixed over the period of many performance improvement programs; however, interventions at the level of the environment (e.g., regulatory or payment reform) are possible and should be

considered especially when altering implementation capability or strategy is likely to be difficult without such environmental alterations. A third implication of the importance of alignment is that performance improvement strategies cannot be designed in a vacuum as ‘ideal types’; rather, they must be selected with consideration for the specific organization’s environment and implementation capacity. A final implication is the need for flexibility in the implementation of performance improvement programs. Although two of the three dimensions are held ‘fixed’ for purposes of designing a performance improvement program, in reality all three are moving targets. As a result, performance-enhancing interventions will need to be aligned and then periodically realigned as conditions evolve.

II.E. CREATING ENABLING ENVIRONMENTAL CONDITIONS

The organization’s environment can either facilitate or inhibit performance. As discussed above, the environment includes not only the elements of the health system but also the broader political, economic, and socio-cultural systems in which the organization operates. Interventions at the environment level to enhance the success of organizational performance strategies could include the creation of licensing standards, safety regulations, and institutional accreditation; decentralization of decision making to facility level; investment in workforce development and the health professional educational pipeline; deployment of data collection infrastructure and health management information systems; improvement of procurement and supply chain management processes; use of performance-based funding/contracting; or privatization of state-owned health facilities. Although these are not the focus of this report, substantial literature exists to guide the design, implementation, and evaluation of such environmental interventions at the macro-level of the health system (for example, Roberts *et al.* 2004; De Savigny and Adam 2009; Joumard *et al.* 2010). For our purposes, the critical insight is that some environmental conditions are malleable, especially over the medium- to long-term, and therefore strategies to improve organizational performance should also consider interventions to create an enabling environment.

III. STRATEGIES FOR IMPROVING ORGANIZATIONAL PERFORMANCE: A CLASSIFICATION SYSTEM

Based on our reading of the literature, we identify seven broad categories of potential strategies for improving organizational performance. We define strategies as a set of activities or interventions that together are designed to achieve a pre-specified objective. The seven categories are each associated with a certain mindset, or mental model, drawn from particular academic disciplines; each strategy will be optimally effective under particular conditions (Table 6). Underlying each strategy are assumptions about both the drivers of human behavior and the root causes of poor organizational performance. Although each strategy targets a primary root cause, a given strategy may be able to address multiple root causes and a given root cause may be amenable to several strategic responses (Table 7). Furthermore, the strategies are not mutually exclusive; several strategies may be used together depending on environmental conditions and implementation capability.

Although this report focuses on the micro-level of the health care facility, these strategies can also be applied at broader levels of the health system. For instance, at the meso-level, a sub-national district health system might develop a strategy for multiple facilities in its jurisdiction that are facing similar root causes of low performance. At the macro-level, a Ministry of Health might initiate a national strategy to improve certain elements of performance in health facilities across the country. A major challenge in moving from micro- to meso- and macro-levels is maintaining alignment of the strategies selected with the relevant environmental conditions and implementation capabilities of the targeted level of organization. To ensure alignment, decision makers at the meso- and macro-levels should have valid facility-level data infrastructure and participation from facility-level staff to develop and implement effective strategies for improving organizational performance.

These strategies can also be used to improve the performance of organizations operating at the meso- or macro-levels of a country's health system. A district health agency or national Ministry of Health represent meso- and macro-level organizations whose performance is determined by many of the same factors as hospitals or clinics. For example, low levels of staff motivation can be a root cause of poor performance within a single hospital or within the district or the national health agency. The strategy areas that map to this root cause (Table 7) are equally applicable at any of the three levels. However, the substantive domains and metrics of performance for meso- or macro-level administrative organizations will differ to some extent from those defined in **Section I** for micro-level care facilities.

Table 6: Typology of Strategies for Improving Organizational Performance

STRATEGY AREA	DISCIPLINARY MINDSET	KEY ELEMENTS	CONDITIONS FOR EFFECTIVENESS	EXAMPLES OF INTERVENTIONS
Standards and guidelines	Law, science, and ethics	<ul style="list-style-type: none"> • Identify processes that can be standardized • Develop standard operating procedures • Train staff on standards and guidelines • Incorporate adherence to guidelines into staff and institutional performance criteria 	<ul style="list-style-type: none"> • Processes can be standardized • Adherence to guidelines can be assessed and monitored • Moral rationale exists for regulating behavior 	<ul style="list-style-type: none"> • Clinical pathways • Standard operating procedures, e.g., admissions, warehousing, waste disposal, patient records
Organizational design	OB/OT, management	<ul style="list-style-type: none"> • Select functional or cross-functional structure • Determine lines of reporting for staff and the effective span of control for managers • Align responsibility and authority in each role 	<ul style="list-style-type: none"> • Cross-functional collaboration is important for implementation • Organization is large and production/service delivery processes are complex 	<ul style="list-style-type: none"> • Integrated care teams within hospitals for specific diseases, with dedicated management and administrative support
Education and training	Education and public health	<ul style="list-style-type: none"> • Provide high-quality pre-service training linked to competencies and socialization into norms of professionalism • Implement system to identify knowledge and skills gaps and to fill through in-service training • Facilitate staff access to new technical knowledge through information resources and learning events 	<ul style="list-style-type: none"> • Skills and/or knowledge gap is root cause of implementation problem • Staff can be educated and are already interested/motivated 	<ul style="list-style-type: none"> • In-service training for doctors, nurses, midwives • Provision of learning materials / access to new technical knowledge resources for clinical staff • In-country training programs

Table 6: Typology of Strategies for Improving Organizational Performance (continued)

STRATEGY AREA	DISCIPLINARY MINDSET	KEY ELEMENTS	CONDITIONS FOR EFFECTIVENESS	EXAMPLES OF INTERVENTIONS
<p>Process improvement and technology and tool development</p>	<p>Engineering, management</p>	<ul style="list-style-type: none"> • Implement measurement of process indicators • Identify opportunities for process improvement • Identify and obtain needed tools, equipment, and materials • Develop and test new processes and technologies (consider borrowing solutions from other organizations) 	<ul style="list-style-type: none"> • Human-proof/clever systems can be designed and implemented cost-effectively 	<ul style="list-style-type: none"> • Data capture and feedback mechanisms • Cell phone/PDA disease surveillance • Reminder systems • Plan-Do-Study-Act (PDSA) cycles
<p>Incentives (monetary or non-monetary)</p>	<p>Economics, behavioral psychology</p>	<ul style="list-style-type: none"> • Define performance objective • Identify relevant incentives related to objective based on input from staff • Design incentive scheme and align staff authority with level required for target behavior • Implement incentive scheme and monitor performance 	<ul style="list-style-type: none"> • Incentivized behavior is aligned with objective • Incentivized staff has control over outcome • Outcome is reliably measured • Gaming is limited • Incentives are affordable 	<ul style="list-style-type: none"> • Payment conditional on achievement of targets, e.g., immunization, prenatal visits, assisted deliveries • Private wings in public hospitals to keep physicians from leaving hospitals for private practice • Creation of reliable monitoring systems for organizational outputs

Table 6: Typology of Strategies for Improving Organizational Performance (continued)

STRATEGY AREA	DISCIPLINARY MINDSET	KEY ELEMENTS	CONDITIONS FOR EFFECTIVENESS	EXAMPLES OF INTERVENTIONS
Organizational culture	OB/OT, sociology, anthropology, psychology	<ul style="list-style-type: none"> • Survey staff and management attitudes towards and beliefs about the organization and its work • Identify formal and informal structures, processes, group dynamics, and communication patterns that contribute to staff attitudes and beliefs • Develop (with input from all staff) a vision for the organization’s objectives and the organizational culture that would facilitate achievement of those objectives • Determine changes needed to structures, processes, groups, and communication to create the desired culture 	<ul style="list-style-type: none"> • Reference groups can be identified and engaged • Team-based work is required • Leadership 	<ul style="list-style-type: none"> • Enhance supportive supervision and accountability • Strengthen teamwork • Embed quality improvement principles and practices
Leadership and management	OB/OT, management	<ul style="list-style-type: none"> • Establish leadership/management roles in health facilities including revised lines of responsibility and authority • Equip leaders and managers with necessary autonomy and authority to develop and achieve organizational mission • Develop problem solving skills at facility levels 	<ul style="list-style-type: none"> • Government must be willing to devolve management responsibility and authority • Monitoring systems for accountability must be credible • Legal systems in place to ensure accountability and recourse 	<ul style="list-style-type: none"> • Develop and support executive role at facilities (e.g., hospital CEOs) • Create community management committees for local health facilities • Training, mentoring, and coaching programs

Table 7: The Relationships between Root Causes and Strategy Choices

STRATEGY AREA	ROOT CAUSE OF PERFORMANCE GAP						
	Evidence about best practice does not exist or has not been disseminated	Authority and accountability for action is not formally aligned with staff responsibilities	Staff do not have required skills and knowledge for assigned tasks	Tools and technology that allow staff to perform at standard are lacking	Staff are not motivated to perform assigned tasks	Organization does not support staff in performing assigned tasks	Staff lack guidance and vision for their work
Standards and guidelines	X						
Organizational design		X					
Education and training	X	X	X		X		
Process improvement and technology and tool development				X	X		
Incentives					X	X	
Organizational culture					X	X	X
Leadership and management	X	X	X	X	X	X	X

IV. IDENTIFYING AREAS FOR PERFORMANCE IMPROVEMENT PROGRAMS: METHODS

This section summarizes methodological approaches that can be used to determine the root causes of performance gaps, select an appropriate performance improvement strategy, and assess the progress and effects of those strategies over time. The preceding sections of this report have identified the key organizational intermediate outcomes to be measured and the determinants of organizational performance as viewed from different conceptual and disciplinary perspectives. This section presents a way of bridging between determinants and intermediate outcomes through the use of tailored methodologies in each stage of the performance improvement process. First, decision makers at both the organization and health system levels first need to understand why organizations are performing well or poorly. Second, decision makers need to design feasible strategies that address the underlying reasons for performance gaps. Finally, systems must be in place to measure implementation progress, to judge if the selected strategy is producing its intended effects, and to facilitate learning and adaptation. These steps and their associated methods create the foundation for effective performance improvement programs in health service delivery organizations.

IV.A. SELECTING MEASURES FOR ASSESSING ORGANIZATIONAL PERFORMANCE

Many choices for metrics exist in each of the six organizational performance domains. Different metrics may be more or less appropriate or feasible in different country and organizational contexts. We do not restrict our analysis to metrics that had proven cross-country reliability and validity; instead, we report results from a broader set of articles, some of which may only be applicable in contexts very similar to those in a given study. This approach is intended to facilitate selection of metrics that are best suited to a given country and organizational context rather than to identify a universally valid set of indicators. We recommend several principles below as guidance for selecting metrics for inclusion in assessments of organizational performance.

Principle 1: Include Performance Metrics from Each Intermediate Outcome Domain

Considering performance metrics in each of the six domains is important for guiding the process of identifying performance gaps and improvement priorities. Including metrics from each domain can reveal performance issues not previously apparent or potential synergies for intervention in multiple domains. Where feasible, multiple metrics from each domain should be included. This is particularly important for understanding organizational performance comprehensively, as investing resources in one area (for example, improving access) may limit resources spent in another intermediate outcome area (for example, improving quality). There may also be linkages among the different performance domains such that underperformance in one domain may contribute to low performance in other domains. For example, inefficiency may impair the organization's sustainability, poor quality could reduce utilization, and low utilization could limit the organization's opportunities for learning. The strength and directionality of these linkages will vary by organizational context. Understanding the whole of organizational performance requires attention to all six domains.

Principle 2: Use Existing Data Sources Where Possible

When possible, existing data sources should be used to reduce the time and resources required for organizational assessment. Often data will be generated in the process of health service delivery so the act of producing organizational outputs can also provide the data needed to assess performance. However, existing data must be complete, accurate, and timely to be adequate for the intended purpose. If existing data do not meet these conditions, different metrics or data collection processes and/or additional investment in data infrastructure will be needed. As building data infrastructure can be a long-term process, organizations may need an intermediate plan for collecting data while the human and technological capacity for more permanent and sophisticated infrastructure is developed.

Principle 3: Test Reliability and Validity of Metrics in the Context of Interest

When adapting or applying a metric from one context to another, it is critical to test the metric's reliability and validity in the new context. This can be accomplished by using the metric in a pilot assessment with a smaller group of respondents or facilities. Reliability refers to the consistency of a measure when used in repeated applications while validity is "the degree to which a measure assesses what it purports to measure" (Fink 2005 p. 147). **Appendix 9** provides a list of sources that can guide users through the theory and practice of testing the reliability and validity of candidate metrics. If measures have not been used previously in a specific population, it is also important to test for cultural equivalence and relevance of the concepts and language used in the metric. Qualitative methods are especially valuable for determining whether the constructs underlying an assessment are salient and acceptable in a given cultural context, and whether these constructs are expressed in a format and language that is appropriate to the intended audience (Curry *et al.* 2009). Evaluating existing instruments using cognitive interviewing methods (Schwarz and Sudman 1996; Sudman *et al.* 1996) is also a useful tool for assessing cultural equivalence or relevance and uncovering limitations in survey constructs or item construction.

Principle 4: Weigh Costs and Benefits of Internal and External Data Collection

One consideration is whether data should be collected by individuals internal to the health service delivery facility or by an external party. There are benefits and costs to each approach. Data collection by health facility staff has the advantage of involving staff in the discovery of performance gaps and improvement progress, which may have positive spillover effects in terms of staff motivation and ownership of organizational change initiatives. Integrating data collection into existing care processes may also be less costly if it can leverage existing information management infrastructure. In addition, if the selected metrics require specialized skills to be able to measure (for example, in the case of clinical quality) it may be difficult to find qualified external assessors. Relying on internal data collectors can also develop measuring and monitoring capacity in the country.

However, some metrics may not be reliably reported by health facilities themselves, especially in cases where health facilities face performance incentives that deter them from reporting negative results. In such cases assessment by an external party is important. If the external party conducts the same assessment in multiple facilities, he or she may also acquire a cross-facility

perspective that can be valuable in analyzing trends or identifying best practices. The drawbacks of external data collection include its cost and the potential disconnect between data collection and performance improvement efforts. External assessors may also suffer from a lack of local or historical knowledge of the organizational context that impairs their ability to detect underlying causes of performance differences.

Principle 5: Engage Stakeholders in Assessment Process

Using participatory methods for design and execution of the assessment can increase stakeholders' ownership of the assessment results and commitment to improving performance (Fink 2005). Although difficult to involve all stakeholders in the selection of metrics, a variety of methods exist to solicit input and feedback from representative groups of stakeholders on the assessment process (Minkler and Wallerstein 2003; Israel *et al.* 2005). Involving stakeholders in the early stages of metric selection and assessment processes can also create networks that facilitate subsequent diffusion of best practices and performance improvement interventions (Bradley *et al.* 2009). When involving stakeholders in metric selection, conflicts of interest are always possible; stakeholders may select metrics that suit their own interests rather than those that rigorously assess organizational performance. Ensuring representation from multiple stakeholder groups may be one way to offset such tendencies; embedding the assessment in discussion of a shared vision for health service delivery organization performance may also be effective. Piloting or incorporating multiple metrics for the same performance dimension may also be helpful to verify that the results do not differ dramatically when an alternative metric is used (Vitikainen *et al.* 2009).

Principle 6: Estimate Resources Required for Data Collection

As the methods used to collect data on different metrics are of variable time- and resource-intensity, anticipating the resource implications of different metrics is an important step in the process of developing any assessment of organizational performance. Estimates of resources for adequate performance assessment should be developed not only for the short-term investment of current assessment but for the longer-term process of ongoing performance improvement. Putting in place appropriate data infrastructure could include investments in new staff or staff training, new technology, new forms, and/or new processes of data collection. Organizations should also consider the resources required to integrate their performance assessment data collection efforts with their national Health Management Information Systems over the long run.

Principle 7: Align Data Collection Methods to Fit with Domain

Multiple data collection methods are possible for each domain although certain methods may be more suitable than others for selected contexts. For example, efficiency and utilization rely on quantitative data about the volume of services provided; these quantitative data typically can be collected from primary or secondary sources at the facility or a government agency. Primary and secondary quantitative data may also play a role in measuring quality, access, learning, or sustainability depending on the metric chosen; however, these latter four performance intermediate outcomes will typically involve some degree of qualitative data. For example, measuring quality via patient experience could require observing patients' interactions with health facility staff in addition to quantitative assessment via surveys. Measuring access in terms

of the availability of services might include speaking with focus groups of community members about their care-seeking experiences as well as observing staff absences at the facility. In short, the data collection methods must fit the metric, and the necessary human and technical capacity must exist to be able to apply the appropriate methods. Considering appropriate data collection methods as part of the process of selecting metrics can also help identify synergies where the same process can be used to gather data on multiple metrics.

IV.B. IDENTIFYING PERFORMANCE GAPS USING DIAGNOSTIC ASSESSMENT RESULTS

Once a diagnostic assessment has been conducted, the results must be compared against some standard to determine if there are performance gaps. There are three general comparison strategies for identifying performance gaps: within-country comparison, cross-country comparison, and comparison against domestic or international technical standards.

Within-Country Comparison

Within-country comparison looks at results across health service delivery organizations in a given country, using the top-performing organization or the average performance level among organizations as the standard of comparison. In each of the six performance domains, organizations would be compared against a frontier performance level or production function. This approach has been widely used to model health facility efficiency, and in some cases learning, with the frontier defined either by the organization with the best results or by the average performance level among organizations in the sample (Vitaliano and Toren 1994; Zuckerman *et al.* 1994; Pisano *et al.* 2001; Rosko and Mutter 2008; Vitikainen *et al.* 2009; Bernet *et al.* 2010). If the organizations in the sample are very different in terms of size, location, or population served, it may be necessary to group the organizations on the basis of key shared characteristics that are salient to the content of the assessment and then identify a best performer in each group, or use an analytic method that controls for these characteristics (Newhouse 1994; Rosko and Mutter 2008). Policy makers should also examine the distribution of performance levels across organizations covered by the assessment to determine if patterns exist that might point to possible determinants of performance (Rosko and Mutter 2010). The advantage of within-country comparison is that it controls for many, though not all, elements of the environment that impact organizational performance. The disadvantage of this approach is that it does not reveal whether the best performing organization is ‘good enough’ relative to technical standards of health services delivery. For example, a hospital may provide the best clinical quality in a given country but still fall short of international standards of care. This within-country comparison is therefore best suited to performance domains like efficiency, utilization, learning, and sustainability for which defined technical standards are less likely to exist.

Cross-Country Comparison

Using diagnostic assessment results to compare against organizational performance in other countries is an attractive technique when the degree of performance variability in the focus country is limited. For example, if all rural health clinics in a country perform in a narrow range of utilization, it is difficult to compare them against each other to know whether this level of performance is high or low. Comparing against a neighboring country can provide perspective on whether more could be done in this performance domain, and inspiration for performance

improvement strategies to adopt. The value of comparing diagnostic assessment results with organizational performance in other countries is enhanced when the other countries have similar population health needs, health system characteristics, and political and economic environments (Joumard *et al.* 2010). One disadvantage of this approach is that it tends to rely on aggregate or average performance scores for each country in the comparison. Such aggregation can obscure the distribution of performance among organizations in each country, which is important because the degree of variation in performance can point to environmental conditions (e.g., presence or absence of regulation) that may be influencing facility-level performance. As for within-country comparison, the cross-country approach to identifying performance gaps is best adapted to the domains of efficiency, utilization, learning, and sustainability for which universal technical standards do not exist.

Comparison with Domestic or International Standards

Where technical or legal standards exist, they offer a good benchmark against which to compare diagnostic assessment results. This approach is well-suited to performance domains like quality and access, for which such standards tend to exist. In terms of quality, there are domestic and international medical practice guidelines that set standards for the process of clinical care delivery. There are also well-established standards and laws for elements of managerial quality such as financial management and procurement. Intermediate outcomes like access may also be well-suited to this comparison approach if some level of access to health services has been legally guaranteed in a country. This approach is useful because it reveals if the best performing organization in the country is falling short of a domestic or international performance standard. It is also a transparent basis for performance rankings and target setting. However, it cannot be applied effectively to intermediate outcomes that do not have clear technical or legal standards.

IV.C. ASSESSING ROOT CAUSES OF PERFORMANCE GAPS

Identifying root causes of performance gaps can be a complex, resource intensive, and hence often overlooked, process. There are three key methodological principles that can enhance the likelihood that a systematic and accurate assessment of potential root causes will be accomplished: use of a multidisciplinary team, application of qualitative and mixed methods (i.e., an integrated use of both quantitative and qualitative methods) (Creswell and Plano Clark 2007) approaches, and use of formal scientific problem solving methods such as root cause analysis (RCA) (Latino and Latino 2006).

Multidisciplinary Teams

Multidisciplinary, diverse teams are essential to successful quality improvement efforts, such as the redesign of care processes, and implementation of new care policies and protocols (Nelson *et al.* 2002; Shortell *et al.* 2004; Lemieux-Charles and McGuire 2006; Bradley *et al.* 2006; Keroack *et al.* 2007). At the level of frontline health care delivery, ‘multidisciplinary’ is used in the health services literature to refer to different medical care specialties or occupational roles within the facility (e.g., administrators, doctors, nurses, pharmacists) (Buljac-Samardzic *et al.* 2010). The composition of teams is a key consideration; representatives should include managers, clinicians, and especially those on the front lines of care delivery who, because of their roles, have important insights into potential sources of performance gaps. Explicit managerial support

is critical to team success (Rubenstein *et al.* 2002; Mills and Weeks 2004; Lukas *et al.* 2007); teams must be authorized to fully investigate all relevant structural, procedural, and environmental factors that might contribute to identifying the root causes of performance gaps.

Qualitative and Mixed Methods

The capacity to apply qualitative and/or mixed methods approaches to uncovering root causes of performance problems is essential. Qualitative research is a form of scientific inquiry that spans different disciplines, fields, and subject matter and comprises many varied approaches (Denzin and Lincoln 2000). A qualitative approach can illuminate aspects of organizational context and healthcare delivery that influence organizational performance and quality of care (Sofaer 1999; Curry *et al.* 2009). Qualitative methods can also identify the potential causal mechanisms that are associated with a given outcome and generate hypotheses about such mechanisms. Compared with quantitative methods, qualitative methods are often better suited to measure complex aspects of health care delivery systems, such as organizational change, clinical leadership in implementing evidence-based guidelines, and patient perceptions of quality of care (Green and Britten 1998; Shortell 1999; Greenhalgh 2002; Pope *et al.* 2002; Eccles *et al.* 2003). Mixed methods, in which quantitative and qualitative methods are combined (Creswell and Piano Clark 2007), are increasingly recognized as valuable because they can capitalize on the respective strengths of each approach (Jick 1979). Common qualitative data collection methods include in-depth interviews, focus groups and participant observation. **Appendix 10** lists sources that can guide users through the principles and practices of qualitative and mixed methods.

Root Cause Analysis

RCA comprises a set of formal problem solving techniques that focus on finding and addressing the most important reasons for performance problems or events, rather than simply addressing the symptoms or manifestations of the problem because it may be more expedient or less resource intensive. RCA uses specific analytic tools such as 'fishbone' diagramming of cause and effects, flow charting work processes, and failure modes and effects analysis (Ishikawa 1990; Latino and Latino 2006). These tools prompt analysis of cause and effect systems through exploring 'why' a given event occurs at each level of investigation. As with multidisciplinary teams, groups conducting RCA must include organization leaders as well as those most familiar with the processes and systems under review.

IV.D. SELECTING STRATEGIES

Performance improvement strategies should be selected to address the root causes of performance gaps, but they also need to consider contextual factors of an organization's environment, implementation capability, and existing efforts to improve performance. Once root causes, environmental factors, implementation capability, and ongoing strategy efforts have been assessed, strategy options can be developed based if possible on the examples of high-performing organizations facing similar internal and external conditions. These strategy options should be compared and evaluated using criteria agreed upon by the stakeholders involved in the performance improvement program. Strategy selection is therefore a multi-stage process with several distinct analytical activities, each with its own associated methods.

Assessing Environmental Conditions

Each organization has a specific constellation of environmental factors that influences the applicability and likely effectiveness of a given performance improvement strategy. Systematically mapping this array of environmental factors can reveal potential pitfalls in strategies that otherwise seem well-suited to the organization's internal dynamics. Environment factors include the distribution of political power, health system governance arrangements, the prevailing economic outlook, demographic and epidemiological transitions, health care financing and reimbursement systems, and the structure of health care markets. In assessing the environment, decision makers should seek to answer such questions as:

- What changes in environmental conditions are likely in the short, medium, and long terms?
- How are other organizations responding or proactively changing?
- What factors in the environment enable or constrain performance?
- Which environmental factors, if any, are mutable?

These types of questions could be addressed via several methods. Organizations could solicit expert external advice to assist them in mapping environmental trends of which they may be unaware. Organizations can also convene internal discussions among their members or external discussions with other organizations in their industry. Identifying current and possible future trends can help decision makers avoid strategies that are likely to become rapidly obsolete.

An additional environmental factor pertains to the organization's history. Organizations may have undertaken performance improvement programs in the past that can offer a source of lessons learned as well as mistakes to avoid. The success (or lack thereof) of past performance improvement programs can also be an important contributing factor to organization members' willingness to try new strategies. Assessment of an organization's historical experience should answer such questions as:

- What performance interventions have been tried before? What were the results?
- Why did those interventions succeed or fail?
- How are conditions today similar or different than in the past?
- What lessons can be learned to apply going forward?

Answering these questions typically involves collecting data from an organization's members, either via survey, interview, focus group, or facilitated larger group discussions. One challenge in assessing historical context is that an organization's members change over time. In some cases, there will not be any members with institutional memory of prior performance improvement efforts. In these cases, it may be relevant to draw on members' past experiences in other organizations, which may provide applicable lessons for strategy design and a gauge of members' likely degree of receptivity to new performance improvement initiatives.

Assessing Implementation Capability

An organization must be able to implement the selected performance improvement strategy. Implementation capability should be evaluated prior to final strategy selection and in light of the

strategy options under consideration. The purpose of the assessment is to identify which strategies could be successfully deployed given the organization's ability and motivations. A strategy can be chosen to fit with an organization's existing implementation capability or designed with a first phase that builds the capability needed to execute the subsequent phases of the strategy. Often, an organization will have some level of slack resources that can be mobilized to facilitate improvements in performance. Slack resources are resources within the organization that are not currently committed to technical production that, if deployed, could move the organization towards its theoretical optimal production frontier (Cyert and March 1963; Liebenstein 1976). Slack resources can contribute to an organization's implementation capability. Implementation capability is related to the concept of an organization's 'readiness for change', which can be assessed with a number of qualitative or quantitative instruments (Gustafson *et al.* 2003; Hamilton *et al.* 2007; Ovretveit *et al.* 2007; Weiner *et al.* 2008; Stetler *et al.* 2009). Assessments of implementation capability should answer such questions as:

- What organizational resources (e.g., staff, technology, or expertise) would be necessary for change?
- Are the needed resources available? Are there any slack resources?
- Do staff perceive a need for change and are they motivated to change?
- Do staff perceive themselves to be capable of implementing change?
- Is there senior management and stakeholder support for the change?

Answering these questions will require both quantitative and qualitative data collection, which could be accomplished by actors who are internal or external to the organization.

Assessing Extent of Strategies Already in Progress

An organization's previous and ongoing efforts to implement performance improvement strategies should also be assessed as these experiences can influence the likely effectiveness of future strategies. This assessment has two stages: first, documenting existing performance improvement activities and second, evaluating the effectiveness of existing activities. The objective of the first stage of the assessment is to determine the extent to which key elements in each of the seven strategy areas (Table 6) have already been undertaken or are currently in progress. Questions for this first stage should enable organizational managers and external evaluators to systematically map where the organization is within each strategy area (Table 8).

In the second stage of the assessment, the objective is to determine whether those strategy elements already in progress are effective in the particular organizational context. There are multiple methods for determining if a given strategy is producing the desired effect, which are summarized in **Section IV.E**. However, presenting specific measures of effectiveness for each of the seven strategy areas is beyond the scope of this guide. Both stages of documentation and evaluation are important for assessing the extent of strategies already in progress. Once assessed, existing initiatives should inform the selection of future strategies by providing a positive foundation upon which future strategies can build or lessons learned about errors to avoid. This assessment can also reveal gaps where key elements of otherwise sound strategies have yet to be implemented; these gaps may represent 'low-hanging fruit' for improving organizational performance.

Table 8: Examples of Questions for Assessing Extent of Strategies Already in Progress

STRATEGY AREA	ILLUSTRATIVE ASSESSMENT QUESTIONS
Standards and guidelines	<ul style="list-style-type: none"> • Has a review of facility operating processes been conducted to identify those processes that can be standardized? • Have standard operating procedures been developed for those processes identified as appropriate for standardization? • Have staff been trained on existing standards and guidelines? • Is adherence to existing standards and guidelines part of staff performance criteria?
Organizational design	<ul style="list-style-type: none"> • Does the organization have a functional or cross-functional (e.g. division or matrix) structure? • Has the organization’s structure been reviewed and validated in light of the organization’s size, staff capacity, and performance objectives? • Are lines of reporting for staff clearly established and understood by both staff and managers? • Is a process in place to assess whether managers have sufficient time and capacity to effectively supervise their direct reports, and to adjust manager span of control accordingly? • Has managerial and staff authority been formally aligned with each role’s assigned responsibilities? • Is there a mechanism in place at the organization level to adjust authority or responsibility of roles when needed?
Education and training	<ul style="list-style-type: none"> • Have staff received pre-service training that equips them with required competencies for their roles? • Does staff pre-service training include explicit activities and approaches to socialize staff into norms of professionalism? • Is a system in place to identify competency-based knowledge and skills gaps of current staff, and to fill these gaps through in-service training? • Do staff have the opportunity to access new technical knowledge and skills in their field through information resources (print or electronic) and learning events?

Table 8: Examples of Questions for Assessing Extent of Strategies Already in Progress (continued)

STRATEGY AREA	ILLUSTRATIVE ASSESSMENT QUESTIONS
<p>Process improvement and technology and tool development</p>	<ul style="list-style-type: none"> • Are process indicators currently defined and measured? • Is a system in place to routinely monitor process indicators and identify areas for improvement? • Have needed tools, equipment, and materials for process improvement been obtained when needed? • Are procedures in place for testing and evaluating new processes and technologies? • Has the organization borrowed solutions from other organizations?
<p>Incentives (monetary or non-monetary)</p>	<ul style="list-style-type: none"> • Have individual or organization-level performance objectives been defined? • Has staff input been solicited and used to identify relevant incentives related to the objective? • Has staff authority been aligned with the level required for the behavior targeted by the incentive? • Is a performance monitoring system in place to track eligibility for incentive? • Is the incentive scheme operational and understood by the staff and managers involved?
<p>Organizational culture</p>	<ul style="list-style-type: none"> • Have staff and management been surveyed on their attitudes towards and beliefs about the organization and its work? • Has an assessment been conducted to identify the formal and informal structures, processes, group dynamics, and communication patterns that contribute to staff attitudes and beliefs? • Has a vision for the organization and its objectives been developed with input from all staff? • Has a participatory decision making process been conducted to determine changes that would contribute to an internal culture congruent with the organization’s vision and objectives? • Have the identified changes to structures, processes, groups, and communication patterns been implemented?
<p>Leadership and management</p>	<ul style="list-style-type: none"> • Have leadership and management roles been established within the health facility? • Have staff responsibilities and authority been aligned with these leadership and management roles? • Have leaders and managers been given the necessary autonomy and authority to develop and to achieve the organizational mission? • Are systems in place to develop problem solving skills among managers and staff at the facility level?

Identifying Positive Deviants and Proven Strategies

One important approach to identifying innovative and potentially effective strategies is known as 'positive deviance' (Marsh *et al.* 2004). 'Positive deviants' in health care are organizations that consistently demonstrate exceptionally high performance in an area of interest. The central premise of a positive deviance approach (Sternin and Choo 2000; Marsh *et al.* 2004; Bradley *et al.* 2009) is that solutions to problems that face a community often exist within that community, and that certain members possess wisdom that can be generalized to improve the performance of other members. In the case of organizational performance, the 'community' refers to a given group of health care delivery organizations. Many of the strategies used by positive deviants rely on resources that already exist in the local environment, which can increase their adoption and sustained use (Walker *et al.* 2007). The power of a positive deviance approach to improve health outcomes has been shown in complex problems globally including pregnancy outcomes (Ahrari *et al.* 2002), condom use (Positive Deviance Initiative), and childhood nutrition (Sternin *et al.* 1999; Marsh *et al.* 2002; Marsh *et al.* 2004).

Importantly, the positive deviance approach allows for the explicit integration of real-life implementation issues and organizational context because it seeks to characterize not just what processes and practices are present in top performing organizations but also the context (e.g., organizational culture, leadership support, norms of behavior) in which they are implemented. Although the replication of best practices requires sensitivity to the unique context of the adopting organization (Emery and Trist 1965; Susman 1983; Van de Ven 1995; Berta and Baker 2004; Greenhalgh *et al.* 2004; Auerbach *et al.* 2007; Yuan *et al.* 2010), the positive deviance approach characterizes important contextual factors as part of the description of how top performers achieved their success.

Criteria for Selecting Strategies

Strategy selection involves development of several strategy options followed by systematic comparison of those options using defined criteria. Strategy options should be developed to address the root causes of performance gaps; Table 7 provides a starting point by mapping strategy categories to the root causes they target. Following assessment of environmental factors and implementation capability, strategy options should be narrowed based on whether their conditions for effectiveness (Table 6) are present in the organization's internal and external environments. The remaining strategy options should be compared and ranked based on criteria developed and agreed upon by the stakeholders involved in the performance improvement effort.

A system for weighting the criteria and aggregating scores across criteria should be established before the strategies are compared and rated. Recommended criteria include: the degree of political feasibility and community support for the strategy, the strategy's cost and affordability, the time required for implementation, whether the strategy is likely to be effective based on the best empirical evidence, and whether the strategy addresses the priorities of key stakeholders. The process of rating strategy options can be formal or informal, qualitative or quantitative, written or oral, anonymous or public. The appropriate method will depend on such factors as the number of stakeholders involved, the distribution of power among stakeholder groups, the time available for the strategy selection process, and cultural norms of communication within the organization and between the organization and its stakeholders.

IV.E. MONITORING PROGRESS IN PERFORMANCE IMPROVEMENT INTERVENTIONS

In order to be able to measure effect of a given strategy on performance, several preconditions must be present: established performance targets, adequate data infrastructure and capacity, facility-level and government management support, defined intermediate indicators, and a feasible and appropriate study design.

First, specific, measurable performance targets (e.g., improving patient satisfaction ratings by 20% in 12 months) should be clearly defined at the outset. The *a priori* setting of targets can be guided by information from a range of sources, including relevant empirical literature, views of those most closely involved with the performance domain, the history and current performance status of the facility, performance of competitors. Targets should be clear, visible, and known by all in the facility.

Second, a functional data infrastructure must be in place at the inception of strategy implementation. One essential consideration is whether data elements can be integrated into existing systems or will require investment in new systems. Procedures and resources must be allocated in or to implement either approach. Another consideration is whether the data should be managed, analyzed and reported through self-monitoring by the facility or by an external third-party. Last, it is critical to determine in advance precisely how the data will be used and by whom. The particular needs of end-users must be addressed in the definition, analysis and reporting of data in order to ensure maximum relevance and utility. These needs will likely vary by constituent group (e.g., facility managers, Ministry of Health officials, and decision makers outside the health system such as the Ministry of Finance).

Third, support at the facility-level and the governmental levels for the performance improvement objectives must be fully present, and reflected in provision of necessary resources to accomplish the effort, including any requisite investment in data infrastructure. Management must also be flexible for mid-course corrections to the strategy due to changes in the environment or discovery of a misalignment between strategy choice and facility capacity and/or environmental conditions. This is often a goal of participatory models of program evaluation (Guba and Lincoln 1989; Aaker and Shumaker 1994; Freeman 1994; CDC 1999; Patton 2002), including realist models (Pawson and Tilley 1997) and is desirable as long as fidelity to and adaptation of the original intervention is documented. Management support should include valuing and facilitating feedback and learning mechanisms. This would include creating opportunities and structures at the facility level for reflection on data and learning by stakeholders involved in improvement efforts. This reflection would allow for timely assessment of what is working or not working, as well as consideration of adjustments that can be made to support achievement of the performance objective.

Fourth, data infrastructure capacity and resources must not only support assessment of endpoints, but also intermediate process indicators. Midpoint process indicators are necessary for documenting whether the strategy is being implemented and monitoring progress toward objectives. Such indicators should be specific, measurable, and aligned with the ultimate performance objective.

Last, the method chosen to determine the effects of a given strategy on performance must be carefully selected to be feasible, appropriate, and responsive to the information needs of decision makers. The spectrum of possible study designs includes pre/post or time series intervention in a single organization, pre/post intervention with a comparison organization/s, and randomized controlled trials (RCTs). Each design has strengths and limitations and the selection should be based on the type of evidence required by decision makers. The nature of evidence and types of inference generated through each of these designs varies, and can be classified as adequacy (demonstration of expected changes in behaviors, health services or health status), plausibility (demonstration that the strategy is likely effective) and probability (proof that the strategy is efficacious or effective) (Habicht *et al.* 1999; Peters *et al.* 2009). Meeting the probability level of inference requires RCTs.

Although RCTs are perceived as the gold standard for evaluating the efficacy of an intervention, the RCT design is often not suitable for studying organizational performance for several reasons. First, rigorous RCTs require holding constant all potentially influential variables. Because it is difficult if not impossible to hold constant certain organizational features (e.g., leadership, learning culture) or the broader environment (e.g., regulatory and payment systems or the political and social context), both of which can influence performance improvement strategies, observed outcomes cannot be attributed exclusively to the intervention. Second, controlling these contextual factors in order to preserve the integrity of an intervention limits understanding of the role of such factors in performance improvement and fails to provide insights into how the intervention works in the 'real world' or why the strategy may have succeeded or failed. Third, spillover effects of interventions across health care delivery organizations is commonplace, as physicians are in professional and social networks that might bring them in contact even if they are organizationally distinct. For instance, individuals in the intervention arm may share information through social networks, potentially contaminating behavior in control arm facilities and attenuating observable effects. Importantly, this method of diffusion of innovations can in fact have powerful effects on performance across the larger system, and should not be stifled for the purpose of conducting an RCT; in fact, understanding the mechanisms for such diffusion is an area in need of further study.

V. CONCLUSION: USING THEORY TO INFORM PRACTICE

This guide presents frameworks and principles for defining, measuring, and improving health service organizational performance. As the empirical results reported in **Appendix 1** illustrate, these theoretical approaches have been applied in highly diverse ways to performance measurement in the field. No single set of metrics or methods will be perfectly adapted to every organizational context. The challenge for policy makers and organizational managers is therefore to determine which performance measures and improvement strategies are appropriate to a particular context. The conceptual and methodological approaches presented in this guide offer direction for tailoring performance criteria and interventions to organization-level realities. We close with a few recommendations for using theory to inform practice.

Recommendation 1: Create interdisciplinary teams for organizational performance assessment and improvement. In health services research and interventions, interdisciplinary teams should include individuals with backgrounds in clinical medicine, public health, and diverse social sciences such as law, economics, psychology, sociology, and management. Using interdisciplinary teams can facilitate holistic evaluations of organizational performance and can stimulate consideration of a broader range of improvement strategies. Convening and effectively managing interdisciplinary teams requires particular skills; team facilitators need to invest time and effort in establishing norms of mutual respect and cross-disciplinary communication and learning within the team. However, when such teams work effectively, the benefits from applying diverse theoretical approaches to a common problem can be substantial.

Recommendation 2: Apply analytical frameworks from OB/OT and organizational psychology early in the process of designing performance improvement interventions. Organizational behavior and organizational theory are valuable in informing strategy design. Understanding the interpersonal and inter-organizational dynamics operating in a given hospital or health clinic should be a first step in any development of performance improvement programs. OB and OT frameworks provide guidance for thinking through key considerations in understanding an organization's internal and external relationships. These relationships should shape strategy content from the outset rather than entering the performance improvement process at the final stage of making the strategy function in practice.

Recommendation 3: Determine the optimal scientific method for understanding the organizational performance issue in question. Some elements of organizational performance are amenable to quantitative measurement approaches while others require qualitative data collection or mixed methods. Questions of whether the organization is performing to standard may be well answered by quantitative indicators; however, questions of why the organization is or is not performing will usually require some degree of qualitative data collection to answer. Acquiring fluency in both quantitative and qualitative methods is important for both health services researchers and decision makers; in particular, government officials and organizational managers may need coaching on how to use and evaluate the results of qualitative studies, which may be relatively less familiar.

Recommendation 4: Tailor selection of performance improvement strategies to each organization's external environment and internal implementation capabilities. There are no universal prescriptions for improving health service delivery organizational performance;

interventions must be tailored to each organization. Developing strategies at the organizational level can be challenging for many reasons, including a lack of data, the absence of managers within the facility to guide change, and insufficient capacity to execute the strategy development process at each organization. However, the primary challenge to tailoring strategies to each organizational context is often the desire of health system policy makers to create generic system-wide solutions. Such solutions can have important benefits, such as economies of scale, but they can also fail repeatedly due to inattention to the microenvironments within each health service delivery organization. Many system level interventions are valuable in creating enabling environments for organizational performance, as discussed in **Section II**. These environmental conditions should inform the choice of strategy and need to be balanced by consideration of organization-level root cause analysis and implementation capability.

In sum, measuring and improving organizational performance is complex because organizations are diverse and dynamic. Analysis and intervention should happen at the levels of the environment, health system, and health facility, using insights from multiple disciplines. Users of this guide should take away a toolkit of concepts and methods that can help them identify which questions to ask and how to answer them in the context of defining, measuring, and improving health service delivery performance. Having this broad set of tools with which to understand and enhance organizational performance can contribute to improving health service delivery and ultimately final health outcomes.

APPENDIX 1: EMPIRICAL LITERATURE REVIEW

METHODOLOGY

The literature review was conducted using PubMed, a database of medical and scientific literature maintained by the U.S. National Library of Medicine. This database was selected as it is the most comprehensive database indexing relevant medical and health services journals. We retrieved an initial set of 2,371 peer-reviewed articles using the following search parameters:

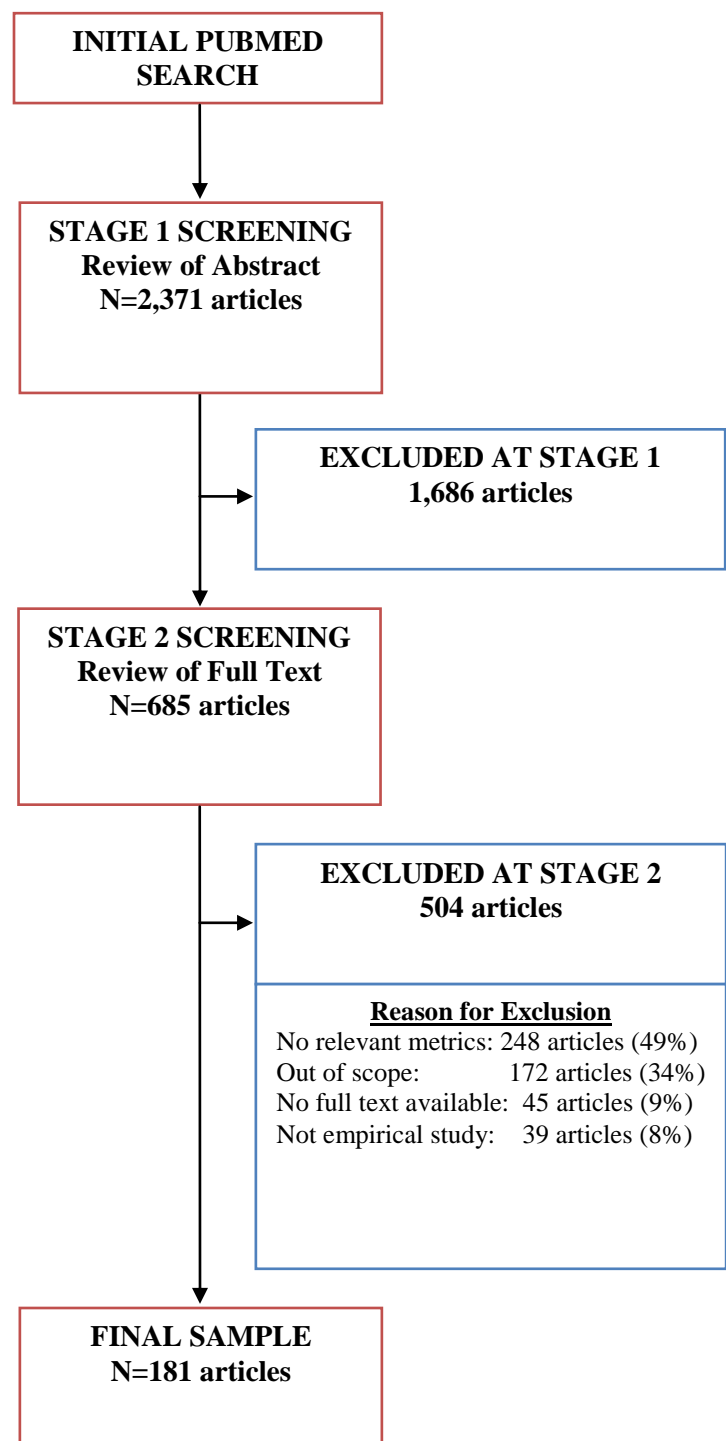
- Geography: All countries that were eligible for World Bank loans in 2009 (World Bank 2009);
- Medical Subject Headings (MeSH): Health Facilities AND (Health Services Administration OR Health Quality, Access and Evaluation); all subject headings were ‘exploded’ to capture articles categorized under subheadings;
- Publication dates: 2005-2010;
- Language: English; and
- Study type: Human.

We used a two-stage screening process to derive the final sample (**Figure A1.1**). First, we reviewed the abstracts of all 2,371 articles retrieved in the initial search. An article was excluded in Stage 1 if it:

- did not mention any of the six performance domains in our taxonomy;
- was limited to clinical research rather than the care delivery process; or
- focused on macro-level health systems rather than facility-level health services.

Second, we reviewed the full text of the 685 articles that had passed the first-stage screening. At this second stage, an article was excluded if:

Figure A1.1: Literature Review Sample Derivation



APPENDIX 1: EMPIRICAL LITERATURE REVIEW

- no specific measures were provided for any of the six intermediate outcome domains;
- Stage 1 exclusions were discovered during the full text review;
- the full text of the article was not available; or
- the article was not an original research study.

Following this two-stage screening, 181 articles were retained in the final sample for analysis.

For each article in the final sample, we identified the metrics used to measure any of the six organizational intermediate outcomes. We then catalogued the metrics used in each article by domain, dimension, and sub-dimension, and recorded the measurement methods used. Finally, we noted if the metric was related to a specific unit in the health facility (for example, laboratory or emergency room), a specific health issue (for example, HIV/AIDS, reproductive health), or a cross-cutting theme (for example, information technology or safety). We used Microsoft Office Excel (2007) to record the data and to perform relevant descriptive analysis.

RESULTS

We summarized the number and percentage of articles by:

- 1) Domains and dimensions (**Table A1.1**),
- 2) Measurement method (**Table A1.2**),
- 3) World Bank geographic region (**Table A1.3**),
- 4) Area of health service provision (**Table A1.4**),
- 5) Health facility unit (**Table A1.5**), and
- 6) Cross-cutting theme (**Table A1.6**).

These six tables are presented in **Appendices 2-7** with the corresponding article references for each category of metrics. The 181 articles in the final sample are listed by reference code in **Appendix 8**. Using **Appendices 2-8**, one can locate the subset of articles that address a particular domain, dimension, sub-dimension, measurement method, region, health service, health facility unit, or cross-cutting theme. We recommend referencing the original articles to obtain the full set of metrics used and to understand the details of the methodology as applied in the study context and reported in the article.

APPENDIX 1: EMPIRICAL LITERATURE REVIEW

Studies by Performance Intermediate Outcome Domain and Dimension

Table A1.1: Frequency Distribution of Articles by Domain and Dimension	
Domains and Dimensions	Number of Articles (Percentage of Sample)
Quality	150 (83%)
Clinical Quality	72
Management Quality	47
Patient/family Satisfaction	31
Efficiency	18 (10%)
Cost-to-service ratios	13
Patient or procedure volume per time period	1
Staff-to-service ratios	4
Utilization	31 (17%)
Patient or procedure volume – general	12
Patient or procedure volume relative to capacity	8
Patient or procedure volume relative to population	1
Patient or procedure volume relative to population health characteristics	6
Patient or procedure volume relative to the need of the patient	3
Service usage relative to income group	1
Access	36 (20%)
Financial Access	10
Information Access	4
Linguistic Access	1
Physical access	10
Service availability/allocation	11
Learning	18 (10%)
Use of data audit and feedback processes	8
Innovation adoption	2
Training and continuing education for workforce	8
Sustainability	17 (9%)
Commitment of staff	14
Community support	2
Strategic planning	1
TOTAL NUMBER OF ARTICLES	181*
*Percentages add to more than 100% as some articles had metrics in several domains or dimensions.	

APPENDIX 1: EMPIRICAL LITERATURE REVIEW

Studies by Measurement Method

The most common measurement method used in the sample was the review of hospital records (53.6%) (**Table A1.2**). Provider (16%) and patient surveys (12.2%) were the next most common methods used. Review of hospital records was used to measure performance in each of the six domains. This extensive use of records may reflect the dynamics and constraints of applied research in health facilities. Data collection via hospital records is less disruptive to providers or patients, and often less resource-intensive than primary data collection, and therefore more likely to be acceptable to health facility managers. The frequent use of records may also reflect a predominance of researchers with expertise in quantitative methods and an underdeveloped recognition of the potential contributions of qualitative methods in understanding certain dimensions of organizational performance.

Table A1.2: Frequency Distribution of Articles by Measurement Methods Used	
Measurement Method	Number of Articles (Percentage of Sample)
Hospital records review	97 (53.6%)
Provider survey	29 (16.0%)
Patient survey	22 (12.2%)
Observational assessment	15 (8.3%)
Patient exit surveys	8 (4.4%)
Patient interview	7 (3.9%)
Household survey	5 (2.8%)
Provider performance in case-simulation	5 (2.8%)
Provider interviews	4 (2.2%)
Vignettes	2 (1.1%)
Patient focus groups	2 (1.1%)
Community member interviews	1 (0.6%)
Data collection through simulated patients	1 (0.6%)
Community focus groups	1 (0.6%)
Patient exit interviews	1 (0.6%)
Provider focus group	1 (0.6%)
Review of anonymous providers' self-reports	1 (0.6%)
TOTAL NUMBER OF ARTICLES	181
*Percentages add to more than 100% as some studies used multiple measurement methods.	

APPENDIX 1: EMPIRICAL LITERATURE REVIEW

Studies by Geographic Region of World Bank Client Countries

The largest percentage (34.3%) of the articles is studies conducted in sub-Saharan Africa, which is followed by the Middle East and North Africa (18.2%) and East Asia and the Pacific (17.1%) (**Table A1.3**). Europe and Central Asia had the fewest articles in the sample (2.2%).

Region	Number of Articles (Percentage of Sample)
Sub-Saharan Africa	62 (34.3%)
Middle East and North Africa	33 (18.2%)
East Asia and Pacific	31 (17.1%)
South Asia	28 (15.5%)
Latin America and Caribbean	22 (12.2%)
Europe and Central Asia	4 (2.2%)
Multiple	1 (0.6%)
TOTAL NUMBER OF ARTICLES	181

Studies by Type of Health Service, Health Facility Unit, and Cross-Cutting Themes

Among the 43 articles that focused on a targeted health service area, 27 (62.8%) focused primarily on women’s health services, such as maternal care, delivery, and family planning services provided by the health facility (**Table A1.4**). A total of 20 articles (46.5%) that focused on services involving proper care of newborns and children. Only a small number of the articles focused on organizational services specifically for HIV/AIDS, TB or malaria.

Health Service Area	Number of Articles (Percentage of Total)
Women’s health services	27 (62.8%)
Child health services	20 (46.5%)
HIV/AIDS services	4 (9.3%)
TB services	4 (9.3%)
Malaria services	2 (4.7%)
TOTAL NUMBER OF ARTICLES	43
*Percentages add to more than 100% as some studies addressed multiple health service areas.	

Among the 56 articles that focused on a targeted unit or department in the health facility, 48.2% involved indicators for pharmacy operations and 28.6% involved indicators for laboratory services (**Table A1.5**). Articles pertaining to outpatient, emergency, intensive care unit, surgery, and registration constituted less than 10% each of the 56 articles.

APPENDIX 1: EMPIRICAL LITERATURE REVIEW

Table A1.5: Frequency Distribution of Articles by Health Facility Department / Unit	
Department / Unit	Number of Articles (Percentage of Total)
Pharmacy	27 (48.2%)
Lab	16 (28.6%)
Inpatient	11 (19.6%)
Outpatient	5 (8.9%)
Intensive Care	5 (8.9%)
Emergency	5 (8.9%)
Surgery	4 (7.1%)
Registration	3 (5.4%)
TOTAL NUMBER OF ARTICLES	56
*Percentages add to more than 100% as some studies addressed multiple health facility units.	

Among the 92 articles that focused on cross-cutting issues, 42 were directly associated with providers (health care workers and staff) (**Table A1.6**). These articles measured attributes such as providers' competence levels, satisfaction with work, and interaction with patients. Only a few articles measured performance indicators related to the community, such as community participation.

TABLE A1.6: Frequency Distribution of Articles by Cross-Cutting Theme	
Cross-Cutting Theme	Number of Articles (Percentage of Total)
Providers	42 (45.7%)
Management	29 (31.5%)
Patients	19 (20.7%)
Sanitation	18 (19.6%)
Information Systems	15 (16.3%)
Safety	15 (16.3%)
Community	3 (3.3%)
TOTAL NUMBER OF ARTICLES	92
*Percentages add to more than 100% as some studies addressed multiple themes.	

Instructions for Looking Up Article References

Each of the articles in the final sample has an identification code (Article ID) beginning with the letter 'R'. Articles are listed in order of their Article IDs in **Appendix 8**. To find a given article listed in **Appendices 2-7**, note its Article ID and then look up that identification number in **Appendix 8**.

APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE

(Domains, dimensions, and sub-dimensions are listed alphabetically. Article IDs refer to citation list in Appendix 7.)

Domain	Dimension	Sub-Dimension	Article IDs
Access	Financial access	Ability to pay for services	R15, R21, R63, R100, R104, R122, R134, R142, R168
		Opportunity cost	R121
	Information access	Knowledge about service provision	R21, R34, R79
		Pre-conceived perception of health facility	R134
	Linguistic access	Language barrier	R104
	Physical access	Geographical constraints	R15, R21, R75, R88, R100, R104, R121, R134, R168
		Healthcare seeking behavior	R39
		Availability of family members to take patient to facility	R21
		Patient's health condition prevents access	R21
	Service availability/ allocation	Clinical services provision	R168
		Conflict in timing to access health facility	R104
		Health workers availability/allocation	R32, R34, R41, R106, R112, R168
		Infrastructure availability/allocation	R106
		Medical supplies availability/allocation	R100, R106, R131, R164
		Medicines availability/allocation	R28, R100, R131
Referral pattern		R106	
Types of available services	R34		
Efficiency	Cost-to-service ratios	Cost-to-service ratios	R40, R135
		DALYs averted by service	R64, R65

APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE

Domain	Dimension	Sub-Dimension	Article IDs
		Data Envelopment Analysis	R97, R109, R146, R148
		Delivery and utilization factors compared to cost per delivery	R126
		Mathematical model	R11, R59
		TB services	R87
		Two cost scenarios method	R167
	Patient or procedure volume per time period	Procedure per time	R77
	Staff-to-service ratios	Data Envelopment Analysis	R77
Learning	Use of data audit and feedback processes	Consumers' use of hospital performance information	R89
		Error reporting	R80
		Feedback from community	R5, R125, R152
		Feedback from patients	R49, R114
		Feedback from providers	R149
	Innovation adoption	Information system utilization	R22, R93
	Training and continuing education for workforce	Learning organization scale	R86
		Provider formal training	R49, R106, R128, R150
		Provider's compliance with guidelines	R6
		Quality assurance mechanisms	R120
Staff participation in meetings		R42	
Quality	Clinical quality	Adverse drug reactions (ADRs)	R12, R19, R35, R137
		Clinical outcomes	R11, R20, R47, R54, R87, R111, R112
		Consultation and counseling quality	R13, R53, R63, R98, R123, R143, R171
		Follow-up/continuity mechanisms	R75, R83, R171

APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE

Domain	Dimension	Sub-Dimension	Article IDs
		Guidelines availability and use	R106
		Infection prevention and control and waste management	R5, R46, R51, R60, R155
		Information systems quality	R5, R55, R147
		Laboratory services quality	R1, R113, R117, R157
		Medicine prescribing quality	R10, R62, R69, R84, R103, R118, R150, R154, R156, R161
		Non-prescribing medical errors	R23
		Patient provider interaction quality	R63, R67, R122, R127, R143
		Patient/provider safety	R67, R178, R181
		Patient's flexibility to make a decision	R171
		Physical resource management - pharmaceutical supplies	R122
		Provider technical competence	R15, R25, R26, R63, R66, R74, R82, R131, R133, R136, R138, R150, R164, R171
		Provider's compliance with guidelines	R16, R85, R99, R131, R167
		Quality assurance mechanisms	R107
		Quality of intensive care unit service	R72
		Quality of laboratory services	R170
		Quality of pharmacy	R29
		Quality of reproductive health services	R116, R130, R162
		Readmissions	R11
		TB service quality	R45, R78
Quality	Management quality	Appropriate constellation of services	R171
		Clinical services provision	R164
		Environmental factors disturbing care	R102
		Financial management	R25, R67, R74
		Governance quality - leadership	R25, R49, R141

APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE

Domain	Dimension	Sub-Dimension	Article IDs
		Human resource management quality	R25, R67, R74, R141
		Infection prevention and control and waste management	R2, R7, R8, R18, R25, R38, R48, R56, R61, R74, R119, R124, R129, R141
		Information systems quality	R25, R34, R74, R141, R144, R151, R174, R175, R180
		Infrastructure availability/allocation	R47, R112, R141
		Laboratory services quality	R111
		Manager competence	R139
		Medicine dispensing quality	R9, R36, R62
		Medicines availability/allocation	R168
		Patient flow/wait time quality	R25, R27, R104, R123, R132, R143, R168
		Patient-provider interaction quality	R15, R34, R67, R75, R105, R132, R145, R150, R165
		Physical resource management - general	R47, R66, R112
		Physical resource management - non-pharmaceutical medical supplies	R112
		Physical resource management - non-pharmaceutical non-medical supplies	R66, R105, R112, R128
		Physical resource management - pharmaceutical supplies	R25, R49, R74, R106
Quality assurance mechanisms	R25, R34, R74, R141, R144, R151, R174, R175, R180		
Quality	Patient/family satisfaction	Pathophysiological factors disturbing care	R102
		Patient-provider interaction quality	R15, R45, R104, R163, R169, R171
		Satisfaction with clinical and management quality	R5, R14, R21, R33, R39, R58, R88, R91, R110, R138, R179
		Satisfaction with clinical quality	R15, R42, R49, R81, R100, R122, R134, R153,

APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE

Domain	Dimension	Sub-Dimension	Article IDs
			R168, R176
		Satisfaction with costs of service	R138
		Satisfaction with management quality	R3, R49, R123, R131, R159, R163, R168, R169
		TB service quality	R45
Sustainability	Commitment of staff	Commitment to organization	R86
		Provider satisfaction with work	R5, R33, R68, R80, R86, R92, R125, R175
		Provider's perception of safety	R80
		Staff satisfaction with work	R34
		Staff support and motivation	R45, R94
		Work climate	R50
	Community support	Community capacity building	R96
		Community participation in planning	R34
	Strategic planning	Responsiveness to environmental factors	R57
	Utilization	Patient or procedure volume - general	Admission rate
Choice of service			R17, R26, R100, R166, R177
Diagnostic imaging usage			R160
Service usage			R31, R43, R67, R172
Usage of reproductive health services			R158
Patient or procedure volume relative to capacity		Emergency department utilization	R159
		Intensive care unit utilization	R71
		Inpatient utilization	R173
		Patient volume relative to capacity	R4
		Patient-to-staff ratio	R135
		Reproductive health services use	R147
		Service usage	R156

APPENDIX 2: ARTICLE REFERENCES BY DOMAIN, DIMENSION & SUB-DIMENSION OF PERFORMANCE

Domain	Dimension	Sub-Dimension	Article IDs
	Patient or procedure volume relative to population	Referral pattern	R24
	Patient or procedure volume relative to population health characteristics	Emergency department utilization	R76
		Inpatient utilization	R73, R76
		Outpatient utilization	R73, R76
		Reproductive health services use	R30
	Patient or procedure volume relative to patient need	Appropriateness of utilization of service	R44
		Laboratory service usage	R115
		Reproductive health services usage	R90
	Service usage relative to income group	Inpatient utilization	R95

APPENDIX 3: ARTICLE REFERENCES BY MEASUREMENT METHOD

(Article reference IDs refer to citation list in Appendix 7.)

Measurement Methods	Article IDs for Studies using Method
Community member interviews	R152
Data collection through simulated patients	R143
Focus groups	R42
Focus groups with community	R122
Hospital records review	R4, R5, R6, R7, R9, R10, R11, R18, R19, R20, R21, R22, R23, R25, R26, R27, R28, R30, R31, R32, R35, R36, R38, R40, R41, R44, R46, R47, R48, R50, R51, R55, R57, R62, R64, R65, R69, R70, R71, R72, R73, R74, R75, R76, R78, R82, R83, R84, R87, R90, R95, R97, R99, R101, R103, R105, R107, R108, R109, R111, R112, R113, R115, R118, R120, R126, R128, R132, R135, R137, R140, R144, R145, R146, R147, R148, R150, R151, R155, R156, R158, R159, R160, R161, R162, R164, R167, R170, R171, R172, R173, R174, R175, R178, R179, R180, R181
Household survey	R17, R39, R43, R54, R177
In-depth interviews	R16
Observational assessment	R13, R18, R19, R24, R42, R56, R60, R61, R66, R82, R110, R129, R141, R150, R165
Patient exit interviews	R33
Patient exit surveys	R3, R5, R15, R58, R98, R123, R138, R159
Patient focus groups	R16
Patient interview	R34, R116, R121, R134, R142, R163, R171,
Patient survey	R12, R14, R45, R53, R62, R81, R88, R89, R91, R100, R102, R104, R114, R117, R124, R127, R130, R153, R154, R168, R169, R176
Provider focus group	R33
Provider interviews	R23, R67, R79, R152
Provider performance in case-simulation	R1, R2, R8, R18, R29, R33, R37, R45, R49, R52, R59, R63, R66, R68, R77, R80, R85, R86, R92, R93, R94, R133, R136, R157
Provider survey	R106, R119, R125, R128, R131, R149, R166, R175
Review of anonymous providers' self-reports	R23
Vignettes	R138, R164

APPENDIX 4: ARTICLE REFERENCES BY WORLD BANK GEOGRAPHIC REGION

(Article reference IDs refer to citation list in Appendix 7.)

Region	Article IDs for Studies Conducted in the Region
East Asia and Pacific	R10, R32, R35, R46, R64, R69, R77, R80, R85, R86, R87, R88, R89, R93, R95, R96, R101, R102, R113, R127, R129, R135, R138, R143, R146, R155, R164, R165, R178, R180, R181
Europe and Central Asia	R20, R47, R130, R140
Latin America and Caribbean	R4, R9, R11, R22, R23, R30, R36, R38, R42, R56, R58, R60, R61, R63, R90, R103, R116, R118, R121, R134, R137, R15
Middle East and North Africa	R1, R2, R5, R7, R14, R18, R19, R44, R48, R49, R50, R51, R52, R53, R54, R55, R68, R70, R75, R76, R97, R114, R119, R120, R133, R144, R150, R153, R154, R160, R169, R171, R179
Multiple	R67
South Asia	R3, R8, R12, R29, R31, R33, R39, R40, R59, R62, R81, R83, R84, R92, R136, R141, R142, R145, R151, R156, R157, R161, R162, R163, R166, R168, R170, R173
Sub-Saharan Africa	R6, R13, R15, R16, R17, R21, R24, R25, R26, R27, R28, R34, R37, R41, R43, R45, R57, R65, R66, R71, R72, R73, R74, R78, R79, R82, R91, R94, R98, R99, R100, R104, R105, R106, R107, R108, R109, R110, R111, R112, R115, R117, R122, R123, R124, R125, R126, R128, R131, R132, R139, R147, R148, R149, R152, R159, R167, R172, R174, R175, R176, R177

APPENDIX 5: ARTICLE REFERENCES BY TYPE OF HEALTH SERVICE

(Article reference IDs refer to citation list in Appendix 7.)

Women's Health	Child Health	HIV	TB	Malaria
R3	R3	R13	R45	R28
R4	R4	R40	R78	R150
R17	R17	R91	R87	
R20	R46	R110	R121	
R26	R47			
R30	R67			
R53	R98			
R54	R100			
R58	R103			
R63	R126			
R67	R131			
R75	R138			
R90	R141			
R98	R142			
R100	R147			
R112	R158			
R116	R162			
R126	R166			
R130	R171			
R134	R172			
R141				
R142				
R147				
R158				
R162				
R166				
R171				

**APPENDIX 6: ARTICLE REFERENCES BY HEALTH FACILITY
DEPARTMENT / UNIT**

(Article reference IDs refer to citation list in Appendix 7.)

Registration/ Triage	Labs	Pharmacy	Outpatient	Inpatient	Intensive Care	Surgery	Emergency
R27	R1	R9	R73	R11	R23	R60	R76
R123	R22	R12	R76	R73	R32	R64	R106
R168	R23	R13	R123	R76	R71	R111	R131
	R82	R19	R138	R95	R72	R180	R133
	R99	R21	R168	R102	R103		R159
	R111	R23		R123			
	R113	R28		R138			
	R115	R29		R153			
	R117	R31		R161			
	R123	R33		R168			
	R131	R35		R173			
	R136	R36					
	R150	R62					
	R157	R84					
	R160	R91					
	R170	R99					
		R100					
		R103					
		R118					
		R122					
		R123					
		R131					
		R150					
		R154					
		R161					
		R164					
		R168					

APPENDIX 7: ARTICLE REFERENCES BY CROSS-CUTTING THEME

(Article reference IDs refer to citation list in Appendix 7.)

Info. Systems	Sanitation	Safety	Provider	Patient	Community	Management
R25	R2	R2	R5	R3	R34	R10
R27	R5	R7	R6	R15	R96	R15
R34	R7	R8	R8	R42	R152	R25
R49	R8	R25	R14	R44		R27
R55	R14	R36	R15	R49		R28
R74	R18	R38	R25	R67		R34
R77	R25	R67	R32	R81		R36
R82	R38	R69	R33	R104		R38
R93	R48	R74	R34	R114		R49
R101	R60	R119	R37	R122		R57
R114	R61	R129	R39	R123		R66
R125	R74	R137	R41	R124		R67
R174	R80	R155	R42	R127		R74
R175	R119	R178	R49	R134		R79
R180	R124	R181	R50	R153		R104
	R129		R51	R159		R105
	R131		R52	R163		R107
	R168		R67	R176		R112
			R68	R179		R123
			R74			R126
			R80			R132
			R86			R139
			R88			R143
			R92			R144
			R100			R145
			R102			R163
			R106			R165
			R112			R167
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			R175			

APPENDIX 8: BIBLIOGRAPHIC INFORMATION FOR ARTICLE REFERENCES

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