PART I

Principles of performance measurement

1.1 *Introduction*

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Introduction

Information plays a central role in a health system's ability to secure improved health for its population. Its many and diverse uses include tracking public health; determining and implementing appropriate treatment paths for patients; supporting clinical improvement; monitoring the safety of the health-care system; assuring managerial control; and promoting health system accountability to citizens. However, underlying all of these efforts is the role that information plays in enhancing decision-making by various stakeholders (patients, clinicians, managers, governments, citizens) seeking to steer a health system towards the achievement of better outcomes.

Records of performance measurement efforts in health systems can be traced back at least 250 years (Loeb 2004; McIntyre et al. 2001). More formal arguments for the collection and publication of performance information were developed over 100 years ago. Pioneers in the field campaigned for its widespread use in health care but were impeded by professional, practical and political barriers (Spiegelhalter 1999). For example, Florence Nightingale and Ernest Codman's efforts were frustrated by professional resistance and until recently information systems have failed to deliver their promised benefits in the form of timely, accurate and useful information.

Nevertheless, over the past twenty-five years there has been a dramatic growth in health system performance measurement and reporting. Many factors have contributed to this growth. On the demand side health systems have come under intense cost-containment pressures; patients expect to make more informed decisions about their treatment choices; and there has been growing demand for increased oversight and accountability in health professions and health service institutions (Power 1999; Smith 2005). On the supply side great advances in information technology (IT) have made it much cheaper and easier to collect, process and disseminate data.

The IT revolution has transformed our ability to capture vast quantities of data on the inputs and activities of the health system and (in principle) offers a major resource for performance measurement and improvement. Often, the immediate stimulus for providing information has been the desire to improve the delivery of health care by securing appropriate treatment and good outcomes for patients. When a clinician lacks access to reliable and timely information on a patient's medical history, health status and personal circumstances this may often lead to an inability to provide optimal care; wasteful duplication and delay; and problems in the continuity and coordination of health care. Similarly, patients often lack useful information to make choices about treatment and provider in line with their individual preferences and values.

Information is more generally a key resource for securing managerial, political and democratic control of the health system, in short – improving governance. Over the last twenty-five years there have been astonishing developments in the scope, nature and timeliness of performance data made publicly available in most developed health systems. The publication of those data has had a number of objectives, some of which are poorly articulated. However, the overarching theme has been a desire to enhance the accountability of the health system to patients, taxpayers and their representatives, thereby stimulating efforts to improve performance.

Notwithstanding the vastly increased potential for deploying performance measurement tools in modern health systems, and the large number of experiments under way, there remain many unresolved debates about how best to deploy performance data. Health systems are still in the early days of performance measurement and there remains an enormous agenda for improving its effectiveness. The policy questions of whether, and what, to collect are rapidly being augmented by questions concerning how best to summarize and report such data and how to integrate them into an effective system of governance.

This book summarizes some of the principal themes emerging in the performance measurement debate. The aim is to examine experience to date and to offer guidance on future policy priorities, with the following main objectives:

- to present a coherent framework within which to discuss the opportunities and challenges associated with performance measurement.

- to examine the various dimensions and levels of health system performance;
- to identify the measurement instruments and analytical tools needed to implement successful performance measurement;
- to explore the implications for the design and implementation of performance measurement systems;
- to examine the implications of performance measurement for policy-makers, politicians, regulators and others charged with the governance of the health system.

In this first chapter we set the scene by offering a general discussion on what is meant by health system performance and why we should seek to measure it. We also discuss the various potential users of such information and how they might respond to its availability. The remainder of the chapter summarizes the contents of the book that fall into four main sections: (i) measurement of the various dimensions of performance; (ii) statistical tools for analysing and summarizing performance measures; (iii) examples of performance measurement in some especially challenging domains; and (iv) how policy instruments can be attached to performance measurement.

What is performance measurement for?

Health systems are complex entities with many different stakeholders including patients, various types of health-care providers, payers, purchaser organizations, regulators, government and the broader citizenry. These stakeholders are linked by a series of accountability relationships. Accountability has two broad elements: the rendering of an account (provision of information) and the consequent holding to account (sanctions or rewards for the accountable party). Whatever the precise design of the health system, the fundamental role of performance measurement is to help hold the various agents to account by enabling stakeholders to make informed decisions. It is therefore noteworthy that, if accountability relationships are to function properly, no system of performance information should be viewed in isolation from the broader system design within which the measurement is embedded.

Each of the accountability relationships has different information needs in terms of the nature of information, its detail and time-

liness; validity of the data; and the level of aggregation required. For example, a patient choosing which provider to use may need detailed comparative data on health outcomes. In contrast, a citizen may need highly aggregate summaries and trends when holding a government to account and deciding for whom to vote. Many intermediate needs arise. A purchaser (for example, social insurer) may require both broad, more aggregate information (for example, readmission rates) and detailed assurance on safety aspects when deciding whether providers are performing adequately. Performance measurement faces the fundamental challenge of designing information systems that are able to serve these diverse needs. Table 1.1.1 summarizes some of the information needs of different stakeholders.

Table 1.1.1 ***Information requirements for stakeholders in health-care systems***

Stakeholder	Examples of needs	Data requirements
Government	• Monitoring population health • Setting health policy goals and priorities • Assurance that regulatory procedures are working properly • Assurance that government finances are used as intended • Ensuring appropriate information and research functions are undertaken • Monitoring regulatory effectiveness and efficiency	• Information on performance at national and international levels • Information on access to and equity of care • Information on utilization of services and waiting times • Population health data
Regulators	• To protect patients' safety and welfare • To assure broader consumer protection • To ensure the market is functioning efficiently	• Timely, reliable and continuous information on health system performance at aggregate and provider levels • Information on probity and efficiency of financial flows

Table 1.1.1 ***cont'd***

Stakeholder	Examples of needs	Data requirements
Payers (taxpayers and members of insurance funds)	• To ensure money is being spent effectively and in line with expectations	• Aggregate, comparative performance measures • Information on productivity and cost-effectiveness • Information on access and equity of care
Purchaser organizations	• To ensure that the contracted providers deliver appropriate and cost-effective health services	• Information on health needs and unmet needs • Information on patient experiences and patient satisfaction • Information on provider performance • Information on the cost-effectiveness of treatments • Information on health outcomes
Provider organizations	• To monitor and improve existing services • To assess local needs	• Aggregate clinical performance data • Information on patient experiences and patient satisfaction • Information on access and equity of care • Information on utilization of services and waiting times
Physicians	• To provide high-quality patient care • To maintain and improve knowledge and skills	• Information on individual clinical performance • State-of-the-art medical knowledge • Benchmarking performance information
Patients	• Ability to make a choice of provider when in need • Information on alternative treatments	• Information on health-care services available • Information on treatment options • Information on health outcomes
Citizens	• Assurance that appropriate services will be available when needed • Holding government and other elected officials to account	• Broad trends in, and comparisons of, system performance at national and local levels across multiple domains of performance: access, effectiveness, safety and responsiveness

In practice the development of performance measurement has rarely been pursued with a clear picture of what specific information is needed by the multiple users. Instead, performance measurement systems typically present a wide range of data, often chosen because of relative convenience and accessibility, in the hope that some of the information will be useful to a variety of users. Yet, given the diverse information needs of the different stakeholders in health systems, it is unlikely that a single method of performance reporting will be useful for everybody. Moreover, some sort of prioritization is needed as an unfeasibly large set of data may result from seeking to satisfy all information needs. One of the key issues addressed in the following chapters is how data sources can be designed and exploited to satisfy the demands of different users (often using data from the same sources in different forms) within health systems' limited capacity to provide and analyse data.

Defining and measuring performance

Performance measurement seeks to monitor, evaluate and communicate the extent to which various aspects of the health system meet key objectives. There is a fair degree of consensus that those objectives can be summarized under a limited number of headings, such as:

- health conferred on citizens by the health system
- responsiveness to individual needs and preferences of patients
- financial protection offered by the health system
- productivity of utilization of health resources.

'Health' relates to both the health outcomes secured after treatment and the broader health status of the population. 'Responsiveness' captures dimensions of health system behaviour not directly related to health outcomes, such as dignity, communications, autonomy, prompt services, access to social support during care, quality of basic services and choice of provider. Financial protection from catastrophic expenditure associated with illness is a fundamental goal of most health systems, addressed with very different levels of success across the world. 'Productivity' refers to the extent to which the resources used by the health system are used efficiently in the pursuit of its goals. Furthermore, as well as a concern with the overall attainment in each of these domains, *The world health report 2000* (WHO 2000)

highlighted the importance of distributional (or equity) issues, expressed in terms of inequity in health outcomes, in responsiveness and in payment. Part 2 of the book summarizes progress in these dimensions of health performance measurement.

The fundamental goal of health systems is to improve the health of patients and the general public. Many measurement instruments have therefore focused mainly on the health of the populations under scrutiny. Nolte and colleagues (2009) (Chapter 2.1) summarize progress to date. Population health has traditionally been captured in broad measures such as standardized mortality rates, life expectancy and years of life lost, sometimes adjusted for rates of disability in the form of disability-adjusted life years (DALYs). Such measures are frequently used as a basis for international and regional comparison. However, whilst undoubtedly informative and assembled relatively easily in many health systems, they have a number of drawbacks. Most notably, it is often difficult to assess the extent to which variations in health outcome can be attributed to the health system. This has led to the development of the concept of avoidable mortality and disability. Nolte, Bain and McKee assess the current state of the art of population health measurement and its role in securing a better understanding of the reasons for variations.

Health care is a field in which the contribution of the health system can be captured most reliably, using measures of the clinical outcomes for patients. Traditionally, this has been examined using post-treatment mortality but this is a blunt instrument and interest is focusing increasingly on more general measures of improvements in patient health status, often in the form of patient-reported outcome measures (PROMs). These can take the form of detailed condition-specific questionnaires or broad-brush generic measures and numerous instruments have been developed, often in the context of clinical trials. Fitzpatrick (2009) (Chapter 2.2) assesses progress to date and seeks to understand why implementation for routine performance assessment has been piecemeal and slow.

Clinical outcome measures are the gold standard for measuring effectiveness in health care. However, there are numerous reasons why an outcome-oriented approach to managing performance may not always be appropriate. It may be extremely difficult or costly to collect the agreed outcome measure and outcomes may become evident only after a long period of time has elapsed (when it is too late to act on

the data). Measures of clinical process then become important signals of future success (Donabedian 1966). Process measures are based on actions or structures known from research evidence to be associated with health system outcomes. Examples of useful process measures include appropriate prescribing, regular blood pressure monitoring for hypertension or glucose monitoring for diabetics (Naylor et al. 2002). McGlynn (2009) (Chapter 2.3) assesses the state of the art in clinical process measurement, describes a number of schemes now in operation and assesses the circumstances in which it is most appropriate.

Most health systems have a fundamental goal to protect citizens from impoverishment arising from health-care expenditure. To that end, many countries have implemented extensive systems of health insurance. However, much of the world's population remains vulnerable to catastrophic health-care costs, particularly in low-income countries. Even where insurance arrangements are in place, often they offer only partial financial protection. Furthermore, there is considerable variation in the arrangements for making financial contributions to insurance pools, ranging from experience rating (dependent on previous health-care utilization) to premiums or taxation based on, say, personal income, unrelated to any history of health-care utilization. Wagstaff (2009) (Chapter 2.4) shows that the measurement of financial protection is challenging as in principle it seeks to capture the extent to which payments for health care affect people's savings and their ability to purchase other important things in life. He examines the concepts underlying financial protection related to health care and current efforts at measuring health system performance in this domain.

The world health report 2000 highlights the major role of the concept of responsiveness in determining levels of satisfaction with the health system amongst patients, carers and the general public (WHO 2000). Responsiveness can embrace concepts as diverse as timeliness and convenience of access to health care; treatment with consideration for respect and dignity; and attention to individual preferences and values. Generally, although certainly not always, it is assumed that responsiveness reflects health system characteristics that are independent of the health outcomes achieved. Valentine and colleagues (2009) (Chapter 2.5) explain the concept of responsiveness as developed by the World Health Organization (WHO) and discuss it in relation to closely related concepts such as patient satisfaction. They explain the

various concepts of health system responsiveness, examine current approaches to their measurement (most notably in the form of the World Health Survey (WHS)) and assess measurement challenges in this domain.

The pursuit of some concept of equity or fairness is a central objective of many health systems and indicates a concern with the distribution of the burden of ill health across the population. The prime focus is often on equity of access to health care or equity of financing of health care but there may also be concern with equity in eventual health outcomes. The formulation and measurement of concepts of equity are far from straightforward. They require quite advanced analytical techniques to be applied to population surveys that measure individuals' health status, use of health care, expenditure on health care and personal characteristics. Furthermore, it is often necessary to replicate measurement within and across countries in order to secure meaningful benchmarks. Allin and colleagues (2009) (Chapter 2.6) explain the various concepts of equity applied to health systems and the methods used to measure them. They examine the strengths and limitations of these methods, illustrate with some examples and discuss how policy-makers should interpret and use measures of equity.

Productivity is perhaps the most challenging measurement area of all as it seeks to offer a comprehensive framework that links the resources used to the measures of effectiveness described above. The need to develop reliable productivity measures is obvious, given the policy problem of ensuring that the funders of the health system (taxpayers, insurees, employers, patients) get good value for the money they spend. Measurement of productivity is a fundamental requirement for securing providers' accountability to their payers and for ensuring that health system resources are spent wisely. However, the criticisms directed at *The world health report 2000* illustrate the difficulty of making an operational measurement of productivity, even at the broad health system level (WHO 2000). Also, the accounting challenges of identifying the resources consumed become progressively more acute as the levels of detail become finer, for example, for the meso-level (provider organizations), clinical department, practitioner or – most challenging of all – individual patient or citizen. Street and Häkkinen (2009) (Chapter 2.7) examine the principles of productivity and efficiency measurement in health and describe some existing efforts to measure the productivity of organizations and