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  34. Jessica Cohen and Pascaline Dupas, "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment" (Cambridge, MA: Poverty Action Lab, Massachusetts Institute of Technology, 2008).
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  72. In 2006, the Dutch government invested €100 million in the Health Insurance Fund to support development of private health insurance schemes in Africa (see <http://www.hifund.nl>).
  73. WHO, *World Health Report 2008: Primary Health Care Now More Than Ever*.
  74. WHO World Health Assembly Resolution 58.33—"Sustainable health financing, universal coverage and social health insurance."
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  76. International Monetary Fund, "Letter from IMF Managing Director Dominique Strauss-Kahn to the G-20 Heads of Governments and Institutions, 6 November 2008" (Washington DC: International Monetary Fund, 2008).
  77. WHO Alliance for Health Systems and Policy Research reviewed what might be done in its 2007 Biennial Review, but this initiative needs to be followed up on.

Global Action for Health System Strengthening

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## Toward Collective Action in Health Information

KENJI SHIBUYA\*

Globally, 9 percent of total gross national income is spent in the health sector. Donor agencies transfer US\$16 billion for health programs in developing countries each year.<sup>1</sup> These figures represent an unprecedented increase in funding for health, and as a result, the global health landscape is unrecognizable from a decade ago. The Millennium Development Goals (MDGs) have revitalized interest in global health issues, and the influx of new money and multiple stakeholders has opened the way to innovative structures, networks, partnerships, and alliances beyond traditional health and development models.

This attention is accompanied by greater demand for more and better information to track performance and ensure accountability. There is growing global interest in health information, particularly in metrics and evaluation, as exemplified by the MDGs and such major global health initiatives as performance-based financing. This unprecedented interest has increased the pressure on countries and agencies to generate high-quality and timely data.<sup>2</sup>

As one of the most influential entities in the global health arena, the G8 has an important role in tackling the deficiencies in the systems that are expected to generate this information. At the Toyako G8 Summit, the *Report of the G8 Health Experts Group* recognized the need for action to create appropriate

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monitoring and assessment of health systems so that policymakers could base their decisions on accurate health information.<sup>3</sup>

This chapter briefly reviews the current status of health metrics and evaluation in the context of health system strengthening and describes the role of the G8. We identify key challenges in this field and propose the development of a standard set of health metrics, accompanied by a measurement strategy, to monitor, evaluate, and facilitate the effective use of resources in global health. We conclude that collective action is required to promote the generation and use of sound health information, particularly at the country level, and to realize the G8's commitment to more accountability for the resources that are being invested in improving national health systems.

### THE CASE FOR BETTER HEALTH INFORMATION

During the past decade, health systems have become a prominent agenda item in global health, reflected in the World Health Organization's (WHO) *World Health Report 2000*; initiatives such as the International Health Partnership (UK), Women and Children First (Norway), the Catalytic Initiative to Save a Million Lives (Canada); efforts to advance social protection for health (Germany and France); and the Toyako G8 Summit and follow-up activities (Japan).<sup>4</sup>

However, without sound measurements to benchmark achievements and efficiency of resource use, debates on priorities for health and what does or does not work tend to be based more on ideology than on evidence.<sup>5</sup> The higher profile of health systems and the rapidly escalating demand for more progress and accountability in global health have exposed major gaps in the supply and use of health statistics for developing countries.

Health is one of the fundamental components of human security and development.<sup>6</sup> Effective health governance—the ability of national governments and the international development community to meet the health needs of the peoples of the world—requires laws, development, partnerships, and evidence.<sup>7</sup>

Health information contributes to all four of these functions at the global and national levels. The evidence function of health governance relies on the capacity to count, and account for, births, deaths, and causes of death. Counting everyone can also safeguard individual rights related to survival, livelihood, and dignity. While strengthening health information is essentially a national matter, the provision and accuracy of this information also has global implications insofar as it contributes to human security and development. Development

efforts in health and human security converge around the critical need for better information.

Health information can also serve other purposes: first, to sustain interest in, and funding for, global health by demonstrating positive results; second, to enhance efficiency by building a solid knowledge base of what works, thus generating a process of shared learning among countries; third, to improve the quality of decision making by providing sound evidence; fourth, to foster interdisciplinary dialogue by bringing together various areas of enquiry; and fifth, to promote the values of transparency and accountability as essential ingredients of democratic governance both nationally and globally.<sup>8</sup>

Health agencies and countries are actually generating increasing amounts of data.<sup>9</sup> Such data, however, do not necessarily provide comprehensive information for users, nor do they answer critical questions posed by the global health community. The lack of effective and efficient health monitoring and evaluation can be attributed to the following six factors.

First, the quantity and quality of data relevant for monitoring progress and assessing health systems is poor and has suffered from considerable underinvestment in the past decade.<sup>10</sup> Second, the efforts for correcting the scarcity of data have led to proliferation of indicators, inconsistent frameworks, and fragmented activities among stakeholders.<sup>11</sup> Third, work is duplicated across agencies, and these agencies compete to fill the same gaps rather than maximizing their comparative advantages.<sup>12</sup> Fourth, progress toward making data openly accessible remains slow.<sup>13</sup> As an example, at the midpoint of the efforts toward achieving the MDGs, there is no publicly accessible complete database with primary data on child mortality, the indicator for MDG 4.<sup>14</sup> Fifth, there is an obvious trade-off between country ownership, which was a core component of the Paris Declaration,<sup>15</sup> and independent evaluations. In particular, despite a growing trend toward performance-based disbursement, agencies are still vulnerable to political pressure from recipient countries.<sup>16</sup> Finally, many countries lack both the incentives and capacity to collect, share, analyze, and interpret better quality data.<sup>17</sup>

## HEALTH SYSTEM STRENGTHENING AND HEALTH INFORMATION

Global efforts to improve health conditions in poor countries have employed two distinct strategies in recent decades, one focusing on health systems and the other on specific diseases. The first strategy has emphasized

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principle-based approaches to health improvement. In the late 1970s, the world embarked on a major effort to strengthen health systems, through the primary healthcare movement. The second strategy has emphasized disease-specific approaches, exemplified by the formation of disease control programs and funding mechanisms such as the Global Alliance for Vaccines and Immunization (GAVI) and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund).

Currently, a consensus is emerging that the health problems of low- and middle-income countries can only be addressed with a more balanced approach between disease-specific and system-based solutions. While the government of Japan supported a strong vertical approach for three major communicable diseases in 2000 at the Kyusyu-Okinawa G8 Summit,<sup>18</sup> eight years later, the Toyako G8 Summit statement on health includes commitments to both achieving MDGs 4, 5, and 6 and strengthening health systems.<sup>19</sup>

The Health 8 (H8), an informal group of eight major health-related organizations (the WHO, UNICEF, the UN Population Fund, UNAIDS, the Global Fund, GAVI, the Bill & Melinda Gates Foundation, and the World Bank), is now advocating for scaling up of high-impact interventions needed to reach these goals. The International Health Partnership and Related Initiatives (IHP+), brings the H8, the African Development Bank, the Organisation for Economic Co-operation and Development, the European Commission, 14 countries, and 12 donor agencies together to advocate for strong donor coordination and country ownership, with an emphasis on meeting the health-related MDGs and on general health system strengthening.

But tension persists between the disease-specific programs and health system strengthening. In particular, there is limited evidence that disease-specific programs have contributed to strengthening health systems. Previous attempts to achieve strong donor coordination (e.g., poverty reduction strategies and sector-wide approaches) have not been shown to help improve health system performance.<sup>20</sup>

The challenge with such coordinated efforts for strengthening health systems is carefully monitoring how the country's plan is developed since no metrics have been developed to assess the impact of donor coordination. Efforts must be made to measure the extent to which donor coordination truly leads to improved health system performance.



*Health information underpins the health system*

Among the six core pillars of health systems proposed by the WHO,<sup>21</sup> health information underpins the entire health system, including health system inputs (workforce, financing), process, outputs (effective coverage), and impacts (health outcomes) (table 1). Health information also strengthens stewardship functions.<sup>22</sup>

Table 1: Indicators for assessing health system performance<sup>23</sup>

- A. Health system inputs and process measures: These refer to resources invested in the health system and activities introduced to achieve program goals. Indicators in this category track the following:
1. Human resources, such as measures of health personnel per 1,000 people, number of personnel completing training per year, new recruits, attrition rates, etc.
  2. Infrastructure and equipment, such as complete inventories of buildings and available technological and laboratory equipment
  3. Drug supply, including the types and quantities of drugs available in the area of intervention and broken down by district/sub-area (where relevant)
  4. Operational measures, including how many hours per day and how many days per week the facilities are providing services, measures of the management of the referral system, etc.
  5. Program activities, such as number and type of community outreach programs, educational materials and workshops for the population, etc.
- B. Program output measures: These are measures of the direct output of the health system; they can change in a very short period of time, and any change in them can be directly attributed to the health system. Therefore, they can be used for monitoring progress throughout the implementation of the program, identifying areas of weakness in the program, and evaluating the impact of the program.
1. Coverage: For the set of interventions that are being delivered through a program, coverage is defined as the proportion of the population receiving an intervention out of all those in need of the intervention. In other words, it measures the number of people who received an intervention (the numerator) out of the universe in need of the intervention (denominator). Coverage is measured separately for each intervention and then aggregated into a composite measure of health system coverage.
  2. Effective coverage: Effective coverage takes into consideration the quality of the intervention being delivered. Quality ranges from zero to one; if the individual receiving the intervention gets the maximum health gain from it then quality equals one. If an intervention is being delivered but it results in no health gain to an individual, then quality equals zero. Measures of

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effective coverage are important to monitor as they track both the population receiving interventions and the quality of the interventions being delivered.

C. Health outcome (impact) measures: This refers to the three main goals of a health system, namely improved health, fairness in financial contribution, and responsiveness, but the primary focus is the population health outcomes.

1. Population health outcomes: Improving the health of the target population is the defining goal of a healthcare program. Metrics for measuring population health include the following:
  - a. Child mortality: Under-1 and under-5 mortality
  - b. Adult mortality: Age- and sex-specific mortality rates, as well as a summary measure of adult mortality such as  $45q15$ , i.e. the probability of dying between the ages of 15 and 59.
  - c. Causes of death: Numbers of deaths attributable to the major causes. The list of major causes might vary slightly across countries but will likely have significant overlap. The composition of the leading causes of death for children and adults should be monitored as useful input into the epidemiologic profile of the population.
  - d. Disease-specific health outcomes and risk factors: These should be decided on separately for each program, depending on the composition of the package of services being delivered.
2. Health expenditure: This is measured in terms of catastrophic health spending and out-of-pocket expenditure. Indicators include total amount of health expenditure from all sources, amount of out-of-pocket health expenditure, and the proportion of households that spend more than 30 percent of their disposable income on health.
3. Responsiveness: Responsiveness captures the non-medical aspects of the interaction between a patient and the health system. Indicators of the responsiveness of health systems are critical to measure during the implementation of a new system of delivering health care.
  - a. Quality of care, including the cleanliness of the facilities, the quality and cleanliness of the patient beds, the availability of food during inpatient stay, patient satisfaction, etc.
  - b. Promptness of care/waiting time, such as average waiting times in facilities and average waiting times to get specialized care, when needed.
  - c. Access to social networks (mostly for inpatient care), such as whether patients are able to have their family members and other members of their social network visit during their hospital stay.
  - d. Communication between providers and patients, such as whether diagnoses are effectively communicated to the patient and whether the patient understands what they are supposed to do upon leaving the facility in terms of taking medication, follow-up visits, etc.

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Thus, any global health actions, whether vertical or horizontal, need to be matched by an increase in quality and quantity of health information

and guided by a standard set of health metrics and evaluation methods if they are to have an appreciable (and measurable) effect on health system performance. Generating this information is a great challenge for the horizontal approach as metrics for assessing health system performance require a range of health information, including the dimensions of health worker training, basic health infrastructure, procurement and distribution of reliable supplies of essential medicines, and sustainable in-country health financing and risk-pooling mechanisms.

Information on the entire health system is required to evaluate the impact of health workforce retention and task-shifting policies in sub-Saharan Africa and to test whether performance-based financing, long-term predictable funding, or a mixture of the two would have more impact on health.<sup>24</sup> Without timely and high-quality information, the global community cannot tell whether any health policies are having the intended impact. For example, without adjusted estimates from household surveys, we will not know when or if the MDG 4 target is achieved at country, regional, or global levels.<sup>25</sup>

The political and financial attention now being paid to global health has not been matched by improved information on the performance of health systems and new health programs. This shortfall in knowledge is hampering efforts to create a favorable environment for investments in health. Worst of all, the evidence gap is harming work to improve the health of the most vulnerable populations in the world, who are often identified as the intended beneficiaries of disease-specific initiatives such as GAVI and the Global Fund.<sup>26</sup>

### *Major functions in health information*

Key functions in health information are performed by various stakeholders.<sup>27</sup> Such functions—at global, national, and subnational levels, involving government, academic, and civil society actors—include 1) data collection and compilation, 2) monitoring and evaluation processes, and 3) systematic assessment of evidence on health systems and meta-analysis of health interventions (fig. 1). The latter two steps produce necessary—but not necessarily sufficient—inputs to policy formulation.

At the global level, UN technical agencies have a key role in setting norms and standards for data collection and compilation in countries. For example, the WHO produces the *International Statistical Classification of Diseases and Related Health Problems* and the *International Form of Medical Certificate of Cause of Death*.<sup>28</sup>

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At national and subnational levels, health information derives from data sources that are either population based, such as censuses, surveys, and civil registration, or facility based, such as facility censuses, health service records, and administrative records.<sup>29</sup> In many countries, a tension exists between the need to obtain valid and reliable data, often at high cost, and the need for timely local information. In practice, periodic surveys are often used to provide national measurements, whereas local decision makers have to rely on periodic or continuous collection of administrative records.

New methods are needed to improve the validity and reliability of timely local measurements at a reasonable cost, including the use of lower-cost sampling methods with larger design effects, record links between surveys and administrative systems allowing estimation of selection bias in administrative systems, and Bayesian methods for local-area estimation.<sup>30</sup>

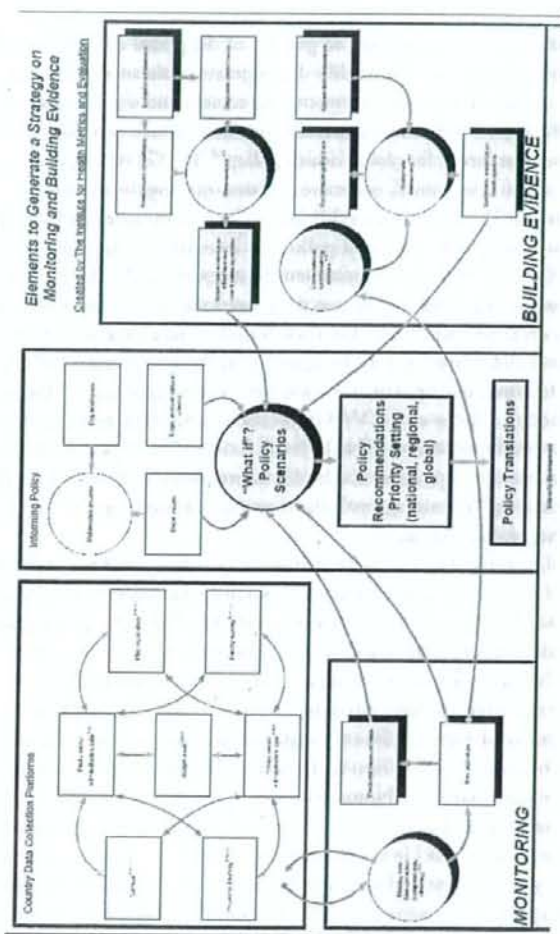
Biased data are of limited use in planning and strategic decision making, program implementation, monitoring of progress toward targets, and assessment of what works and what does not. One of the major functions in country and global health information activities is therefore to derive statistics that are corrected for known sources of bias so that figures are comparable over time and across sites or countries.<sup>31</sup>

The systematic evaluation of health systems and interventions is particularly important to health policy at the national level. Such evaluations can be done by randomized assignment of intervention and control areas or through various non-randomized study designs.<sup>32</sup> Multi-country studies of health system performance are critical to understanding why a certain policy works in one country but not in another.

An often-neglected step in the health information cycle is translating the evidence into policy dialogue and specifying the actions needed to make an impact. The health information products need to be easy to use and designed to meet the immediate and strategic needs of decision makers. This in turn will enhance the awareness of decision makers at all levels of the importance of using reliable health information in their policymaking.

The current flow of health information is often in one direction, from communities to central governments or from countries to international agencies, and there is some concern that there will be further distancing of capacities from local data producers when data gathering and compilation happen at a higher level. In fact, quite a few developing countries are using estimates generated by international agencies to track progress on the MDGs without knowing where such figures come from,<sup>33</sup> and there is a risk that they may not develop their capacities to collect and analyze better quality data. The health

Figure 1



(Source: Institute for Health Metrics and Evaluation, unpublished)

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information cycle, therefore, needs to bring the information back to countries and data collectors. The ultimate goal of the global health metrics community is to develop local capacity to collect high-quality data, monitor and evaluate health programs and systems, and inform policy.

### THE G8'S UNIQUE ROLE IN GLOBAL HEALTH

The G8 countries account for 48 percent of the global economy and provide roughly 75 percent of the world's development assistance. Although the G8 lacks a constitutive intergovernmental agreement and a secretariat, since 1996 the G8's annual summit and periodic ministerial meetings have emerged as an important forum for global health policy.<sup>34</sup> The G8 is unique in the global health arena: it is a small, collective decision-making forum, with a relatively new interest in population health in developing countries and a substantive influence on the directions and policies of international agencies.

The G8 initially made commitments to support the WHO and the broader UN system in raising the money these agencies needed but were unable to attract on their own.<sup>35</sup> The G8 then found it necessary to launch its own initiatives and started in 2001 by agreeing on the establishment of the Global Fund, followed by the Africa Action Plan (2001–2002), the Health Action Plan (2003), a focus on HIV/AIDS (2006), and most recently the Toyako Framework for Action on Global Health (2008). The Toyako Framework was the first attempt to promote the health-related MDGs through health system strengthening,<sup>36</sup> consistent with the recent directions proposed by the IHP+ and other global campaigns.

Until recently, the G8 has been silent about the need for accountability in the field of global health.<sup>37</sup> At the Toyako Summit, however, the *Report of the G8 Health Experts Group* explicitly stated the need for "appropriate monitoring and evaluation of health systems" and pointed out that policymakers need to be able "to base their decisions on accurate health information."<sup>38</sup>

G8 leaders have demonstrated their capacity to deliver an alternative to existing multilateral organizations through such initiatives as the establishment of the Global Fund.<sup>39</sup> In addition to the policy and resource commitments the G8 leaders make, their annual summits create value by establishing new principles in normative work, by highlighting new issues, and by altering public discourse on these issues.<sup>40</sup> The G8 also has an unparalleled capacity to link health with broader development and security issues. The G8 can also facilitate dialogue between public and private sectors, mobilizing intellectual, human, and financial

resources from government, business, and civil society active in global health at both the global and country levels.<sup>41</sup>

*What should the G8 do in global health information?*

In the health information arena, the G8 has the capacity to effectively catalyze action on a set of issues that the existing entities—including the I-H8, academics, civil society, individual donors, and bilateral aid agencies—cannot tackle effectively in isolation. The G8 should not replicate what a single country or agency can do but focus on the issues for which collective action works most effectively. It should define effective and efficient functions for the global health information architecture.

Several UN agencies have mandates and experience in assisting countries to develop their health information systems. Yet, in the case of the WHO at least, arguably little progress has been achieved in guiding the development of these systems over the past few decades,<sup>42</sup> and some countries have even witnessed declining coverage and completeness of vital event registration. While the WHO has established and disseminated some crucial standards for data collection, it has not effectively supported the widespread implementation of these standards by countries. Nor have the UN and its agencies been successful in building the capacity that countries require for data analysis close to the point of capture.<sup>43</sup>

The Health Metrics Network has provided small grants to 65 countries<sup>44</sup> for health information assessments but can only afford an in-depth focus for 6. While these decisions are a combination of explicit strategy and limited resources, the latter often determines a lack of flexibility among the institutions involved. Ensuring a more effective response to countries' needs for expertise and assistance with health information system development is a role that the G8 could play.

Jamison and colleagues propose a framework for defining essential functions of international organizations (See table 2). The first type of essential function transcends the sovereignty of any one nation-state and therefore makes up the core of international health cooperation. These functions address problems of the global commons, in which individual decisions based on property rights are made ineffective by the fact that use of resources cannot be contained within national boundaries.

This is the case with both global public goods, when use by any one country producing them does not preclude use by other countries, and negative

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externalities, when behavior in one country causes danger and financial cost to another. Since they cross national borders, problems of the global commons are shared by rich and poor countries alike. The two core functions to address these problems are the promotion of international public goods and the surveillance and control of negative externalities.

The second type of essential function deals with problems within individual countries that may warrant collective action at an international level owing to the shortcomings of national systems; because they supplement activities that are primarily the responsibility of nation states, these functions are supportive.

The emphasis given to these two essential functions needs to be balanced carefully. In the area of health information, initial collective action can concentrate on the first essential function by developing a global database and setting standards to improve comparability of data, followed by capacity building at country level.

The G8 is uniquely capable of arbitrating the functions and roles of the existing components of the global architecture in health information. Its convening power can be used to revamp existing mechanisms, consolidate fragmented activities, and leverage outputs. In particular, through the G8 follow-up process, governments and agencies need to be encouraged to 1) strengthen existing initiatives to conduct monitoring and evaluations efficiently, 2) generate and share rigorous evidence, 3) synthesize studies, 4) build capacity in developing countries, and 5) link researchers, policymakers, and project managers in an effective health information system for using evidence for policy.<sup>46</sup>

Table 2: Essential objectives and functions of international organizations<sup>45</sup>

Basic objectives	Core functions and examples	Rationale
Assure adequate levels of goods with benefits to all countries	Promotion of global public goods Databases Norms and standards Research and development Consensus building on health policy	Collective action is an economically rational approach to provision of public goods from which all can benefit, and international collective action responds to opportunities, benefits of which cover many nations.
Assure opportune response to global threats and control of international transfer of health risks	Intervention to deal with international externalities Threats specified under the WHO's International Health Regulations Transfer of risk factors Trade in legal and illegal harmful substances	If actions in individual countries have consequences for other countries, leaving decision making to countries will fail to include all costs or benefits.



Supplementary objectives	Supportive functions	Rationale
Support development in countries	Technical cooperation and development financing	According to special needs, some countries require targeted investments in knowledge and financial resources to enhance conditions for sustainable development.
	Capacity building	
	Capacity strengthening	
Protect health of vulnerable groups	Agency for dispossessed	Ethical imperative to protect people when their governments fail or when their human rights are violated; in self-interest of every nation/state to prevent and resolve humanitarian crises.
	The poor	
	Special groups	

## KEY CHALLENGES AND STRATEGIES IN HEALTH INFORMATION

The amount of data available from agencies and countries is rapidly increasing.<sup>47</sup> However, such data do not yet permit reliable monitoring of the trends of both communicable and noncommunicable disease burdens, evaluation of the impact of health initiatives and investments, or a comparable assessment of the performance of health systems. We do not know whether well-intentioned programs do more good than harm until sound evidence is provided.<sup>48</sup>

There are two major sources for this problem in the field of health information:

1. Existing data are neither accessible nor presented in a coherent way (a problem of technical inefficiency); and
2. Data, very often with limited utility, are collected and compiled in an uncoordinated fashion, hence at higher marginal costs (a problem of allocative inefficiency).

The correction of such inefficiencies across agencies, institutions, and countries will make global health metrics more useful and reliable and leverage the comparative advantage of each stakeholder. The biggest challenge facing the global health community is developing the local capacity needed to collect, share, and analyze the high-quality data that are required to guide the ongoing reform of health systems.

## Global Action for Health System Strengthening

### *Technical inefficiency*

Data availability is the key in monitoring progress toward targets and evaluating the performance of health systems and programs. Many consumers of statistics overlook this fact because numbers—such as those representing progress toward the health-related MDGs—continue to be published annually, and the assumption is that these represent meaningful data.<sup>49</sup> Both governmental and academic consumers of these reports are hampered in their attempts to understand or replicate such estimates because they do not have access to the data from which these were derived.

There are three prominent factors that contribute to technical inefficiency in data collection and compilation: 1) the lack of a common database, 2) the lack of standardized metrics and data quality assurance, and 3) the lack of capacity and incentives to share data.

**LACK OF A COMMON DATABASE:** As a general principle, common formats, definitions, and standards should be used to collect, compile, and store health information from countries. However, not all countries have achieved—nor are they likely to in the near future—best international practice in this area. However, there can be considerable information content and value in non-standard data sets (e.g., verbal autopsy-derived data on causes of death). Provided these data are well documented and understood, they should be made more widely available for comparative analyses and included along with more standardized compilations.

At a minimum, a common database should include all currently available data and their metadata, with detailed documentation specifying whether data are crude, adjusted, or projected statistics and including a link to the original dataset.<sup>50</sup>

For example, child mortality, the indicator for MDG 4, is one of a few health-related MDG indicators with good data available from a number of sources. These sources include complete and partial vital registration systems for some countries, Demographic and Health Surveys (DHS) and similar surveys, census questions on the number of children ever born and the number surviving, and sample registration systems. Some efforts have been made to put all data sources used for tracking child mortality in the public domain and harmonize the work of defining past trends and generating current estimates.<sup>51</sup>

Despite a major debate over the completeness of child mortality databases,<sup>52</sup> each institution still maintains an independent and incomplete dataset of child mortality. Some of these are in the public domain and others are not, and

there are quite a few data sources for child mortality that are missing from international databases.<sup>53</sup>

The WHO has two binding rules that ensure its legitimacy in collecting global health information. The first World Health Assembly in 1948 adopted nomenclature regulations for diseases and causes of death,<sup>54</sup> and the International Sanitary Regulations—adopted in 1951 and revised and consolidated as the International Health Regulations in 1969, 1973, 1981, and 2005—provide the organization with its disease surveillance mandate.<sup>55</sup>

However, data compiled by the WHO are often dependent on official reporting from countries, and it is not uncommon that the latest national data are not forwarded to the WHO.<sup>56</sup> For example, although the Register General of India has annually published its reports on medically certified causes of death since 1973, the WHO Mortality Database contains no data on India since 2001. The WHO has not received data from China since 2000. In other words, the two most populous countries in the world are not sending their latest mortality data to the WHO,<sup>57</sup> despite reports being shared with academics and other agencies through their collaborative activities. Better data on interventions' effective coverage, risk factors, and health system variables need to rely on household surveys and administrative records implemented independently by different agencies and countries.

Therefore, the global health community has not yet been able to use all existing data to assess progress toward MDG 4. If all global policy-relevant health data—particularly those related to MDGs 4, 5, and 6, and health systems—were available in a common database, independent analysis and synthesis would be possible at both the country and global levels.

As more data become available for users outside traditional health agencies through advances and investments in information technology, strategic collective action is needed in data compilation, building upon the principles of country ownership of data. Existing entities need to strengthen and clarify their functions, and a common data architecture needs to be developed.

**LACK OF A STANDARD SET OF METRICS AND DATA QUALITY ASSURANCE:** When developing health information systems, it is essential to determine what exactly to measure and how frequently and most efficiently to do so, recognizing that countries differ in their information needs and priorities. Little progress will be made if countries are advised to report on thousands of indicators. However, the set of measures needs to be sufficiently broad to capture the key information required to manage the health system (see table 1). G8 leadership to guide efforts to fill this critical knowledge gap would be most welcome.

## Global Action for Health System Strengthening

Likewise, experience with the Global Burden of Disease project and other large comparative analyses suggest that there is limited capacity in many countries to critically appraise data.<sup>58</sup> A prerequisite to improving the quality of health information is to improve the capacity of country analysts—particularly those charged with data collection—to critically appraise data for biases, errors, and general plausibility. These skills are not routinely taught in schools of public health but need to be developed if any progress is to be made with improving data quality.

At the Toyako Summit, the G8 Health Experts Group recommended that the G8 should continue “to encourage further collaboration among stakeholders with the aim of standardizing health metrics to collect, analyse and evaluate health data for policy planning and evaluation” at both the global and the country level.<sup>59</sup> In developing a standard set of metrics, there is always an issue of defining the universe of core indicators and a trade-off between the number of indicators and their quality. The health-related MDGs provide a high-profile illustration.<sup>60</sup> In fact, for the health-related MDG indicators, overall availability of any type of statistics on the official UN MDG website is only 15 percent for the interval 1990–2005.<sup>61</sup>

With thousands of indicators recommended but few measured well, the global health community needs to focus its efforts on improving measurement of a small set of priority areas, including aid effectiveness and health system inputs (resource tracking), outputs (effective coverage), and impact (mortality, causes of death, and morbidity). Priority indicators should be selected on the basis of public health significance and specific dimensions of measurability.<sup>62</sup>

The lack of a standard data exchange and quality assurance process for health metrics is also aggravating technical inefficiency. Setting such standards at the global level, specifically by the WHO, is necessary but not sufficient unless standards are developed to enhance the quality of data at the country level.

The introduction of information technology alone cannot solve the problem of interoperability. Applying a complex quality assurance framework can be impractical and even meaningless for a wide range of statistics. There is no compelling evidence that data quality assurance as advocated by the statistical community has contributed to the improvement of statistics. Independence and objectivity are important principles, but these need to be accompanied by incentives and capacity for compliance. Data exchange and quality assurance processes should aim to set a minimum standard while contributing to analytical capacity at the country level.