Health Metrics Network and mortality data

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Introduction
The Health Metrics Network (HMN) was launched in the Pacific region in October 2006, making it the latest region to join the network. Local health practitioners may therefore still be unfamiliar with HMN and its slogans, ‘Everyone counts’ and that ‘better information equates with better decisions and better health outcomes’. This article describes the Network and its functions.

HMN is a global partnership that works to improve health and save lives through building stronger health information systems (HIS) in developing countries. The term ‘health information system’ is commonly misunderstood as referring to a hospital management system. A national health information system (HIS), however, includes data not only from health facilities and hospitals, but also from administrative sources, vital registration, surveys and censuses (see Figure 1). A good HIS should not only produce data for doctors and health workers, but should also provide information on all the inputs needed for the functioning of the health system, including health indicators, policy guidance, infrastructure, facilities and services as well as data on outputs of the health system, particularly health outcomes, disease outbreaks and population health status. The importance of having an integrated and well functioning health information system has been acknowledged by World Health Organization, and reiterated most recently in the 2000 World Health Report (World Health Organization 2000).

The HMN Framework describes the components of a HIS and discusses the standards for each component and the ways in which the components must work together to ensure a fully functioning and efficient HIS. The Framework also provides a ‘roadmap’ for countries to follow in order to strengthen their HIS (see Figure 1). This roadmap is a series of developmental phases supported by a set of methods, processes and tools. The Framework was built through consultative meetings and country visits during 2003-2005 and has been tested in a number of pilot countries. It is recognised, however, that it will evolve over time as the state-of-the-art method for each country as its HIS develops and more and better tools to assist its implementation are produced.

HMN is mainly funded by the Gates Foundation but works in partnership with other development partners, donors and foundations in a shared endeavour to assist countries to strengthen their HIS and increase the avail-

1 See HMN website <http://www.who.int/healthmetrics/about/en/>

2 The HMN Framework is a technical document which can be downloaded from <www.healthmetricsnetwork.org>
ability and use of health information at the local, national and global level for evidence-based decision making.

**Rationale for HMN**

The justification for creating HMN is the paradoxical situation in which many developing countries find themselves, of having the highest disease burdens yet the weakest health information systems to assist them in reducing their disease burdens. The need for reliable statistics is particularly acute in poor countries, where resources are limited and the price for unwise allocation of meager resources can mean the difference between survival and death for their populations.

All governments need good statistics to assist them in identifying problems and needs, tracking progress and evaluating the impact of interventions. To say that poor countries cannot afford good health information is misguided; it is because they are poor that they cannot afford to be without it. Unfortunately, little investment has gone into strengthening statistical information systems in developing countries. Rather, their HIS have been allowed to evolve in an erratic, piecemeal way, often fashioned by donor needs and external pressures. As a result, few developing countries have sufficiently strong and effective HIS to adequately measure trends in the health status of their populations, or to satisfy demand for accountability and evidence-based decision-making. Several international initiatives such as the Millennium Development Goals (MDGs), the Global Alliance for Vaccines and Immunization (GAVI), and the Global Fund to fight AIDS, TB and Malaria (GFATM), which report on targets for specific indicators to measure progress, have emphasised the weakness of developing countries’ HIS. To some extent it can be said that HMN exists because of a market failure in health information.

**How will HMN achieve its goal?**

As already mentioned, in pursuit of its goal of improving developing countries’ HIS, HMN has developed a standardised Framework for country health information systems which consists of a normative part divided into six components describing the standards and assessment criteria, and an implementation component to guide the countries and assist them with tools (see Figure 1). This is linked to a set of principles, processes and benchmarks for the implementation of the HMN Framework.

Countries which become HMN partners begin by inviting all major stakeholders to take part in a detailed assessment of the entire health information system currently in place, using a diagnostic tool developed by HMN. The tool consists of some 270 questions designed to elicit responses on strengths and weaknesses of the input, processes, outputs and outcomes of the HIS. For instance, referring specifically to mortality, the tool has about 40 questions focused mainly on data sources, the collection and dissemination process, and the indicators and standards used. Each question can be rated by multiple respondents and replies aggregated to arrive at an overall score. By bringing health and statistical constituencies together in the assessment exercise, as well as other users and producers of health information, it becomes easier to align stakeholders and reach agreement on a prioritised strategic plan that can guide the overall direction and development of a country’s HIS over the next ten years or so. Currently 65 countries from Africa, Asia, Middle East, Latin America and the Pacific have initiated or completed assessments of their HIS using the HMN tool.

**HMN’s work in the area of mortality data**

The basic building blocks of any HIS are statistics on births, deaths and causes of death. Although most countries have some legislation for collecting information on vital events, the systems used are often inoperative or generate data that are too incomplete to be used for basic health policy purposes. Table 1 illustrates the global status of death registration in 2003 by world region (World Health Organization 2005). Although 115 countries collect and report data on mortality to the World Health Organization (WHO), this does not necessarily mean that the coverage of the data is complete in all countries. Indeed, death registration is considered to be complete in only 64 of the countries reporting data, and most of these are the developed countries in Europe, North America and the Pacific (Mathers et al. 2005).
Indeed, according to WHO, coverage of death registration varies from close to 100% in developed countries to less than 10% in many countries of the African region (Mathers et al. 2005). These huge differences in completeness of death registration often occur because the vital registration system only functions in urban areas, or only in some provinces of the country, or only covers deaths which take place in hospitals. It is important to keep in mind that even in a relatively developed country, for example Thailand, 65% of deaths still occur outside hospitals, and hence may escape registration and certification (Tangcharoensathien et al. 2006).

Given the frequency of child deaths, and the focus of global health attention on child survival programs over the past decades, it is now possible to obtain reasonably reliable information about the level of child mortality through surveys such as the World Bank’s Demographic and Health Surveys (DHS), UNICEF’s Multiple Indicators Cluster Surveys (MICS), and WHO’s World Health Surveys. For adult mortality, however, only the census or a relatively complete vital registration system can provide reliable estimates of death rates by sex and age.

Registration and cause of death data
Figure 2 illustrates well how little we know about what people are dying from in countries where all deaths are not registered and/or a death certificate indicating the illness or the event that lead to the death is not issued. In many developing countries, only deaths that occur in hospitals are certified by a doctor stating the underlying cause of death. For the others who die at home, the deceased often received no medical attention, either because they lived too far from the health system, were too poor to use medical facilities, or because the establishment of the cause of death was of no interest to anyone (Faveau, 2006).

Of the 58 million deaths that occur each year globally, some 20 million (35%) are being registered with a certified cause of death. However, certification is not always done by a doctor, but instead in roughly 15% of cases an approximate cause of death is indicated by a health worker, policeman or village chief. Since the cause of death in such cases has not been medically verified, when possible, these records should be separated from those that are certified by a doctor. Mixing them, as often is done, reduces the reliability of the cause of death data. Finally, a large proportion of the deaths which are registered (10-20%) and given a death certificate are attributed to ill defined causes, either because the doctor could not determine the cause, or more likely, the non-medically qualified person attributed the death to senility or old age or some other equally useless cause for health planning.

Table 1: Global coverage of death registration by region in 2003

<table>
<thead>
<tr>
<th>Region</th>
<th>Data available</th>
<th>Data not available</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEVELOPED COUNTRIES</td>
<td>55</td>
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<td>57</td>
</tr>
<tr>
<td>SUB-SAHARAN AFRICA</td>
<td>4</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>LATIN AMERICA</td>
<td>29</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>MIDDLE EAST</td>
<td>9</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>ASIA AND PACIFIC</td>
<td>18</td>
<td>17</td>
<td>35</td>
</tr>
<tr>
<td>TOTAL</td>
<td>115</td>
<td>77</td>
<td>192</td>
</tr>
</tbody>
</table>

Table 1: Global coverage of death registration by region in 2003

3 The chart and data have been provided by Prof. A. D. Lopez, School of Population Health, University of Queensland.
Why mortality data matter

Sound statistics on the number of deaths and their causes are vital for planners to evaluate the current health situation and to be able to monitor trends in the overall burden of disease in a country. Understanding both the magnitude and distribution of deaths from various diseases is necessary to guide the allocation of resources and better address health needs and the impact of interventions on health outcomes. Many developing countries are in the process of rapid health transition, with transition patterns varying between and within societies; this needs to be closely monitored because of policy implications and the need to progressively shift resources from communicable to non-communicable diseases (Boerma et al. 2007).

Mortality statistics urgently need to be improved, and, as demonstrated in Figure 2, efforts have to be focused on improving both coverage of events and the quality of cause of death attribution. For those countries which already have a registration system, the extent of completeness of death registration should be estimated through a census or by using demographic estimation methods. If not already in existence, a strong legal framework for vital registration will have to be introduced, and most countries will need to invest efforts into improving institutional capacity to collect and compile vital registration data at the national level. Incomplete death registration implies underreporting of mortality and a likely overestimation of life expectancy at birth. At the same time, the accuracy of cause of death attribution has to be improved by training doctors and coders in the International Statistical Classification of Diseases (ICD) and reducing the proportion of deaths classified to ill-defined causes. One of the main consequences of poorly attributed causes of death is a distorted view of burden of disease patterns, which may lead to ineffective or wasteful resource allocation.

Options for improving mortality data

The HMN Framework, with its participatory assessment tool, offers countries an opportunity to evaluate their current mortality data and procedures by comparing these with global best-practice standards and identifying the weaknesses and gaps in their systems. The assessment becomes the baseline from which the improvement can begin and provides the evidence for the prioritised strategic plan which is part of the Framework’s second phase (see Figure 1). This phase calls for the drafting of a long-range strategic plan and detailed implementation plans so that funding and technical assistance can be secured for phase three.

The scores of countries that have completed the first phase show quite clearly that adult mortality and cause of death statistics are consistently weak areas of their HIS. Unfortunately, there is no single standard improvement model that can be applied to all countries. Because of differences in the development of countries’ health systems and agencies responsible for collecting the data, as well as their administrative procedures, health workforce and health infrastructures, the strategies to improve mortality data need to be repeatedly determined for each country, ensuring that multiple partners buy into the plan, including those outside the health sector, for long-term sustainability. Despite these variations, a substantial body of knowledge exists from countries that have been able to improve the reliability of their mortality data. This knowledge can be useful for others and is accessible through the HMN partnership.

Given that the choices for obtaining reliable mortality information are limited to vital registration or sample registration with verbal autopsy4, the choice of data sources on which to work are limited. Similarly, improving the quality of cause of death reporting is only likely to occur through increased training of physicians in certification according to the rules of ICD, and training of coders in the correct application of the ICD classification. Hence, as countries move into the implementation phase of their plans, they are likely to need both technical and financial assistance with the above to be able to strengthen their mortality reporting systems.

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4 Some countries (e.g., China) have successfully implemented a sample registration system, with a sample of administrative units registering death and with certification done by a doctor or specially trained person for a sub-sample of the deaths based on semi-structured interviews with the families of the deceased. This is known as ‘verbal autopsy’.
In anticipation of this need for assistance and also recognising that it will not be possible to introduce vital registration with total coverage in the short term in many countries, in 2006 HMN designated a group of mortality experts to look into ways and means countries could use to improve their mortality information. In particular, HMN would like to develop some standardised tools for countries to measure mortality levels and causes of death while their vital registration systems are still incomplete. The MoVE group (Monitoring of Vital Events) under the HMN umbrella, is currently working on ways to advance the state-of-the-art of verbal autopsy so that the instrument can produce sound cause of death statistics which are detailed enough for guiding public health planning. Several variations of the tool have already been tested in a number of countries and have proved to give reliable estimates, at least for broad causes of death.

It is expected that sample registration with verbal autopsy can be used by developing countries as they move towards a complete vital registration system with medical certification of all deaths. This is the ‘gold standard’ for mortality statistics and the goal towards which HMN and all partner countries are working.

**H MN and its partnership**

Considerable investments into strengthening of health information will be required before countries will be able to produce reliable information on mortality; on the other hand the costs of not making these investments and taking decisions based on poor or incorrect data are also going to be high, both to the countries themselves and to the international health initiatives. To build HIS in low-income countries will require long-term, sustained financial and technical commitment.

The power of HMN derives from its partnership, from the range of partners and technical and financial resources they bring to the network. Many of the needed resources are already available in the countries through the bi-and multi-lateral health assistance most developing countries receive, but it needs to be used more efficiently. Although HMN benefits from significant funding at the global level, this will only cover a fraction of the total needed by developing countries for improving their information systems. Fortunately, among donors and global health initiatives there is increasing momentum for supporting health information strengthening. By forging alliances with major consumers of health information such as the GFATM, GAVI and the President’s Initiative, HMN can ensure that countries get the coherent and consistent support they will need to develop their HIS. What HMN offers may not be perfect but it is a major advance on the poorly aligned support to individual projects and components which has characterized past efforts to improve health information.

**References**


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