Assessing the quality of vital statistics systems: lessons from national evaluations in Sri Lanka and the Philippines

Lene Mikkelsen
Acknowledgments

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Introduction

After a long period of neglect, developing countries, international organisations, as well as the global network of donors and nongovernmental organisations, now all accept that vital statistics systems need to be strengthened if gains in health and social goals are to be achieved and sustained, and if the effects of health investments are to be measured (HMN 2008). Currently vital statistics data collections in most developing countries are incomplete, inconsistent and of too poor quality to be reliably used. A major factor contributing to the stagnation of the development of civil registration systems has been the belief that alternative sources (such as surveys and censuses) adequately meet planning needs for information on vital events. The Lancet series ‘Who counts?’ (2007) clearly demonstrated the poor state of vital statistics in most developing countries and the urgent need for a global effort to support countries to improve their civil registration and vital statistics systems. The fact that there is no single United Nations (UN) agency responsible for vital statistics has meant that advocacy, as well as assistance to countries to improve their civil registration and vital statistics systems, has been piecemeal and lacked coordination and focus. More recently the World Health Organization (WHO), primarily to help countries to improve their mortality and cause-of-death data, has taken the lead by launching the Monitoring of Vital Events (MoVE) initiative and, together with the University of Queensland’s Health Information Systems Knowledge Hub, has developed a comprehensive framework and guidance tool to assist developing countries to better assess the deficiencies with their systems for birth and death information. The framework and the tool were piloted in two countries in the Asia-Pacific region, Sri Lanka and the Philippines, both of which have established (but imperfect) vital statistics systems. This paper brings together the key lessons drawn from this exercise, and from feedback received from countries who have participated in regional meetings’ where the framework and tool were presented and discussed.

1 The framework was presented to the United Nations Economic and Social Commission for Asia and the Pacific Committee on Statistics in Bangkok, 15–17 December 2008, and to the WHO Eastern Mediterranean Regional Office Inter-country meeting on Civil Registration and Vital Statistics Systems Assessment Tool in EMR Countries in Beirut, 9–12 November 2009.
Framework for assessing the functioning of civil registration systems

The WHO framework provides a comprehensive approach to systematically assess the functioning of national civil registration and vital statistics systems and evaluate the quality of the information produced. It has five main components covering inputs, processes and outputs of the system, and 16 subcomponents that assess the main functions of the civil registration and their systems according to this framework, and following the process outlined in the guidance document, vital statistics systems in countries (Table 1). By reviewing individual countries will not only be much better informed about their systems' strengths and weaknesses, but will know what the priority steps are to improve the availability, quality and use of vital statistics.

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Prior to its release, the framework went through an extensive peer review process; it was presented and discussed at various regional meetings, piloted in countries and finally subjected to a post-pilot review, where country representatives from the pilot countries and all six WHO Regional Advisors in Health Information were present. The current version of the framework (WHO 2010) was the agreed outcome of that meeting.

From the feedback received, it was clear that many countries felt it would be useful to also have a simpler tool, which could be used prior to undertaking the full assessment of their civil registration and vital statistics systems. Consequently, a much ‘lighter’ version of the tool was developed, with a scoring system that provided a summary score of the state of the civil registration and vital statistics systems. The Rapid Assessment tool was tested by a larger number of countries, to ensure that the questions, scores and results produced had content validity, and was otherwise useful in helping them to make the case for action to improve vital statistics.

Piloting the framework

The process described for reviewing the civil registration and vital statistics systems essentially follows three standard phases2: (1) leadership, coordination and review; (2) priority setting and planning; and (3) implementation of the agreed improvements. Detailed guidance is given for the first two phases in the document, while less detail is provided for Phase three, which is likely to vary for each country. The pilot experience was initiated by discussions between the WHO Regional Advisor and the ministries of health in Sri Lanka and the Philippines. Each country decided which government department would lead the exercise and selected the members of the review committee responsible for carrying out the assessment. In Sri Lanka, the Ministry of Health would be the lead agency, while in the Philippines, the National Statistical Office (NSO) chaired the committee.

Any strategy to strengthen a country’s vital statistics closely depends on how well the key units and institutions involved in the collection and processing of the data function and interact together. The first task of the committee therefore was to identify all key stakeholders and to secure their involvement and support for the review. In each country the stakeholder list differed slightly, but typically contained the following entities: the civil registration office (central and local), Vital Statistics Unit of the NSO, different departments from the ministry of health, other main users in government, municipal health officers, medical records associations, health insurance corporations, hospital associations, research institutions and universities, the local WHO office, other local international organisations (United Nations Children’s Fund, the World Bank, United Nations Population Fund, United Nations Development Programme) and selected nongovernmental organisations with an interest in vital statistics.

Government authorities in both Sri Lanka and the Philippines are sufficiently aware of the importance of good vital statistics, and permission to conduct the comprehensive review was given quickly. However, this may not be the case in all countries and it is recommended that the committee carries out the Rapid Assessment first (see previous section), and if necessary, uses the evidence to convince government of the need to strengthen the current civil registration and vital statistics systems. In all the countries where the Rapid Assessment was tested, the score obtained was very much in line with what might be expected given the maturity of their systems.

Once the stakeholders had been defined, invitations were sent out to all to participate in a launch meeting for the review. In Sri Lanka, the launch meeting was opened by the Deputy Director General of the Ministry of Health, attracted some 70 participants, and lasted two and a half days. In the Philippines, the launch meeting was opened by the Under-Secretary of Health and attended by the Head of the NSO, who gave the keynote speech. Forty-five participants took part in the two-day meeting.

The launch meeting was the opportunity to introduce the framework, explain the process to be used for the review and ensure that the review questions were relevant, clear and easily understood. The meeting was also used to complete the membership of the committee and to assign participants to the different subgroups that were to carry out the review.

In the Philippines, the committee distributed the 16 subcomponents of the framework among five subgroups, while in Sri Lanka the work was shared among six subgroups. Group members came from different government departments and institutions and had

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working knowledge and expertise in the topic(s) of the subgroup. The committee set the tasks and deadlines to be achieved, but it was left to each group to organise their work as they wanted. The number of meetings that each subgroup held, and the agenda for each, varied according to the subject matter reviewed; most groups met three to four times for a couple of hours. Each group had a chairperson and a rapporteur (in some cases both these roles were filled by a single person). The chairperson of the subgroup was often a member of the committee. The approach of having several subgroups working in parallel on different aspects of the civil and vital statistics systems meant that the review became less onerous and less time consuming. Everyone carried on their usual work functions while being part of the assessment. In Sri Lanka, the review work was carried out between 9 March and 31 May 2009, and in the Philippines, between 27 March and 15 June 2009. The two first phases of the review therefore can be completed within 12 weeks.

In the Philippines, which has a decentralised health system, the committee decided to test the review instrument both at the national level and in one of the provinces. However, the results of the pretest showed that, at the subregional level, it was difficult to find sufficient expertise to review some of the components, and many issues could therefore not be properly assessed. Since the instrument was designed to be applied at the national level, it was not surprising that it worked less well when applied at the subregional level.

After all subgroups had completed the assessment work, the second phase (priority setting and planning) began with a planning meeting, where each group presented their findings and recommendations for general discussion and debate. Since each subgroup had worked alone on a couple of subcomponents of the whole system, it was very important that the findings of each group were presented to the others and discussed in plenary. The discussion often brought out linkages or overlapping aspects that needed to be considered if the recommendations were to have the desired effect. The outcome of the second phase was a list of agreed recommendations and prioritised steps for improving the quality of the vital statistics information in both countries.

What were the lessons from the review?

A more detailed account of the experiences of Sri Lanka and the Philippines in the comprehensive review of their vital statistics can be found in the two country reports that were prepared as part of the exercise (Gamage et al 2009, Hufana et al 2009). The purpose of this paper is to synthesise some specific and general lessons that can be drawn from the two assessments, particularly concerning what the countries learned about their systems and how certain weaknesses could be solved. Other countries wanting to undertake a review of their civil registration and vital statistics systems should be able to benefit from these lessons, as well as from the findings and experiences of these two countries.

Specific lessons learned

The key specific lessons and findings that came out of the review are presented and discussed in this section under the headings of the framework components (Table 1). For more details, readers are referred to the two above mentioned country papers.

A1 National legal framework for vital statistics

- It is essential, but not sufficient, to have a law that requires that all deaths are registered. Without linking the burial or cremation permit to the death certificate it is difficult to ensure complete registration.
- Without a law that requires that all private health establishments report vital events there is no basis for enforcement.
- Personal information on birth and death certificates should be kept confidential and only be accessible by the person or by close relatives.
- Passing amendments to civil registration laws needs intensive lobbying by all stakeholders.

Most countries have laws that make reporting of births and deaths obligatory, and indicate who should report the event and by when; many also have penalties for not reporting. However, implementation of these laws is not easy when people are not aware of them and when they have no need for either a birth or death certificate.
in their daily lives. Thus, in Sri Lanka, the review of this component concluded that as long as a death certificate is not needed to be buried and cremated in rural areas, some deaths will not be registered. However, a law linking the two cannot be fully implemented until there is sufficient awareness of this requirement and before those who dispose of the bodies (eg undertakers and cemetery staff) are prepared to collaborate. Obtaining a death certificate for burial purposes is likely to be facilitated with further computerisation and automation of the registration points. This needs to be carefully planned with the concerned stakeholders, to avoid unofficial burial or cremation places.

Similarly, without strong legislation obliging private institutions to report vital events regularly, collecting information from these can become problematic. In Sri Lanka, reporting is currently done on a voluntary basis, while in the Philippines, private health establishments are mandated to report births and deaths and their licences to operate can be removed if they do not conform. With the growth of the private sector in both countries, it will become increasingly important that private institutions not only report all vital events but do so at agreed intervals.

The law in Sri Lanka was also found to be lacking with regard to confidentiality of the birth certificate, which even people unrelated to the deceased person can obtain copies of. In the Philippines, the problem was different, as the birth certificate is considered highly confidential, but the death certificate is not. The nonconfidentiality of cause-of-death information may lead to some misreporting to protect the family.

Civil registration laws in many countries have not been updated for decades, although social norms and technology have changed and there is a need for revising and clarifying many aspects of the law. This is the case in both countries, and in the Philippines there is currently (2010) a Bill waiting to be passed in congress to standardise, modernise and simplify the system, and integrate new developments in civil registration and vital statistics. The two stakeholder meetings conducted in connection with the review also turned out to be excellent platforms for the Registrar General’s Office to inform everyone of this new Bill and its consequences, and to invite other stakeholders to assist with lobbying.

A2 Registration infrastructure and resources

- In a decentralised system, insufficient budget allocated to civil registration in some local areas may affect the quality of the entire national system.
- To improve the quality of the data, the skill levels and recruitment criteria for civil registrars would need to improve.

In the Philippines, because of their decentralised system, the review revealed some surprising differences among local government areas with regard to resources allocated to civil registration. In some provinces, the civil registration budgets provided to local government authorities are clearly insufficient to enable them to carry out this function properly. This was reflected in the poor quality of the information sent to the NSO and the tardiness of delivery. Lobbying of provincial government authorities to increase the registration budgets was recommended. It was also found that general awareness among health workers of the importance of vital statistics was very low, and some orientation in this regard would be beneficial.

In Sri Lanka, the review found that an increase in the civil registration budget would be necessary to further computerise the data collection and data processing, without which the timeliness of data was unlikely to improve. It also became apparent that more resources would be essential to build a more professional system of civil registrars, where recruitment would be based on professional criteria rather than age and status in society, as currently is the case. Raising the skill levels of staff and improving the employment conditions are closely related to improving the quality of the vital statistics data.
### B1 Organisation and functioning of the vital statistics system

- An intergovernmental committee with decision-making power is needed to solve cross-cutting problems between the civil registration and vital statistics systems.
- The flow of data from periphery to central level should go in both directions, so that districts can benefit from the data they collect for their own planning.
- For any change to the civil registration system, it is essential that an information campaign is budgeted and planned from the beginning, in order to increase its effectiveness.

Although the civil registration and vital statistics systems in Sri Lanka and the Philippines function reasonably well, several problems were identified that were cross-cutting and only solvable through a committee that had representation from all responsible ministries and institutions. Specifically, in both countries it was found that the roles and responsibilities of staff needed to be more clearly defined at the district or local level, in order to create a more timely flow of data. Also, the fact that data usually only flowed in one direction—from district to central level—should be rectified. The data, once tabulated for the district, should be sent back to the office that collected them to promote their use at the local level. In the Philippines, local compilation and use of data has improved since the introduction in 2008 of a computerised Civil Registration Information System (CRIS) by the NSO. However, the system is not yet universally used, partly because of differences in resources for civil registration between the local areas and partly because of the limited information campaign promoting the system.

In a decentralised system like the Philippines, it is more likely that there are wide differences in practice between the local civil registration offices. For example, many charge an administrative fee for registering births and deaths, although first-time registration should be free. The new civil registration Bill will give more guidance to local government units about their duties and responsibilities. However, local government staff and users need to be made aware of the content of the Bill and hence it was recommended that an information campaign and some lobbying to improve civil registration practices should be undertaken.

### B2 Review of forms used for birth and death registration

- Forms should not be reviewed without consultation with the main users of the data.
- Inexpensive changes to registration forms can have substantial effect on the quality of the data reported.

In the Philippines, the death certificate form used by doctors to certify death and cause of death was recently improved by the NSO without consulting the Department of Health. Given that the latter is a main user of the data and that the collaboration of doctors is crucial to get good cause-of-death data, their input should be sought whenever forms or manuals are being prepared or altered by the Registrar General’s Office or the NSO.

Sri Lanka does not currently use the International Form of Medical Certificate of Cause of Death. Instead, two different forms are used: one for hospitals (B33) and one for registrars (B2). The latter has only one line where the registrar notes down the presumed cause of death. But even the hospital form, which has three lines, has notable deficiencies; for instance, the certifier is not directed to report the conditions in a proper sequence and there is no space allocated to record the time interval between the onset of the disease and the time of death. It was therefore recommended that Sri Lanka introduces, as soon as possible, the standard International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) form and eventually use it throughout the system. The addition of a pregnancy box, to be ticked on the death certificate, is another example of a simple measure that can improve the undercounting of maternal deaths. Finally, when and if a country is considering introducing verbal autopsy for deaths that cannot be medically certified, there is no need to spend resources on developing and testing new forms. The WHO standard verbal autopsy tool (WHO 2008) is well tested and ICD-10 compliant, and contains forms that can easily be adapted to suit different countries. As a result of the review, Sri Lanka is currently looking into exchanging their non-ICD-10 compliant verbal autopsy form for the WHO standard.
B3 Coverage and completeness of registration

- If there are strongly divergent views about the completeness of birth and death registration, demographic techniques, including a ‘capture-recapture’ study should be applied.
- If it is suspected that there are strong regional variations in registration completeness, levels should be assessed subnationally.
- Public awareness campaigns focused on marginalised populations are essential to increase registration.

The discussion about completeness levels of registration, which took place as part of the review, revealed some divergent views among stakeholders as to whether completeness of death registration was increasing, decreasing or stable. In this case, it is important to undertake a more detailed demographic study to determine the extent of registration completeness and increase confidence in the registration data. In Sri Lanka it was also suggested that it would be worthwhile to insert a question in the 2011 census about household deaths, in order to get a better idea about how many deaths escape the registration system, as well as who they are. In the Philippines, registration completeness is suspected to vary substantially by province and hence it was recommended that the level of birth and death registration should also be assessed subnationally.

The most common reason put forward in both countries for not registering birth and death events was lack of awareness in certain populations of this requirement. Even in countries with relatively high levels of registration coverage, it is often necessary to conduct public awareness campaigns specifically targeting marginalised sectors of society, including economically depressed areas. The Muslim population, for whom both countries have adopted different registration rules, is an example of a subgroup that needs special attention.

B4 Data storage and transmission

- The introduction of new systems needs to be accompanied by an information campaign among managers and local users, to stress their benefits. If this is not done there may be little motivation to use the new systems.

Apart from scanning of the death certificate forms, in Sri Lanka the data transmission system is still largely paper based. However, computerisation is planned to be progressively introduced outside the central office. In the Philippines, the lessons from introducing the first version of the CRIS to local governments in 2008 were to stress more the benefits of the new system to local mayors, hospitals and local government users. Hence, to increase acceptance of the revised CRIS, now called PhilCRIS, which is being rolled out in 2010, it is being accompanied by a promotion campaign for its use.

C1 ICD-10–compliant practices for death certification

- Awareness training in the important public health use of mortality data should be offered to all health staff and doctors.
- Mixing medically certified deaths with non–medically certified deaths in cause-of-death tabulations dilutes the reliability of the information and should be avoided.
- Even in countries which have used the International Classification of Diseases for many years, it cannot be assumed that doctors know how to certify according to these rules.

The assessment revealed that in both countries, health personnel, including doctors, were not sufficiently aware of the important public health use of the information provided on the death certificate. It was therefore recommended that some awareness training in the use of mortality data for public health planning should be incorporated into the medical curriculum and in the training offered to health officers, nurses and medical records staff.

In Sri Lanka, only about 50 per cent of deaths have the cause of death certified by a medical practitioner; for the remainder the cause is determined by the local registrar or some other lay official, after a short interview with the
family. Despite the lower reliability of the lay-assigned cause-of-death data, the two datasets are merged. It was therefore recommended, as a first step towards improving the utility of the data, that the two datasets be compiled separately.

In the Philippines, according to the law, all deaths must be certified by a doctor. Deaths occurring at home in rural areas may, in the first instance, be assigned a cause by the local mayor or headman, but subsequently the cause of death will be confirmed or changed by a municipal health officer who is a medically trained person.

Both countries found that their medical establishments needed to be better trained in ICD-10 practices and in filling in death certificate forms correctly, and hence recommended that a booklet to guide doctors be prepared.

**C2 Hospital death certification**

- A validation study of the quality of cause-of-death certification should be undertaken and serve as input for a focused training course for doctors.

Without having carried out a validation study of the quality of hospital certification, it is difficult to determine what improvement measures would be appropriate. Since neither country has ever validated its certification practices, it was recommended that this should be done with priority. Based on the results of these studies, a focused short training course for doctors could be devised and implemented as part of their studies or internships.

**C3 Deaths occurring outside hospital**

- Countries that have a high proportion of people who die outside hospitals ought to introduce proper verbal autopsy procedures to diagnose the presumed cause of death.

In Sri Lanka, a verbal autopsy for all natural home deaths is conducted and a uniform national form is used throughout the country. However, there are no provisions for having a doctor assign the cause of death based on the information reported on the form. Instead, the civil registrar interprets the information, decides on the cause of death and fills in the form. The review helped bring out the importance of having a doctor select the cause of death from the verbal autopsy reports and of using a more detailed verbal autopsy form, in line with the recommended WHO standard.

In the Philippines, there is no special form used for verbal autopsy. Each municipal health officer conducts an interview with the family of the deceased and from that determines the cause of death. Lack of standard questions and procedures, however, will necessarily affect the comparability of the data.

**C4 Practices affecting the quality of cause-of-death data**

- Reliable and complete medical record information is crucial for good certification, and nurses and health record staff should periodically be offered training courses.

The discussion in both countries, which took place around how current data could be improved, revealed that the quality of the medical record documentation is likely to influence the quality of cause-of-death certification. To correctly complete the death certificate according to ICD-10 rules, doctors have to indicate not only the immediate cause of death, but to trace back the underlying cause that initiated the sequence of conditions leading to death. To reliably do this, medical records are invaluable and most doctors would normally consult these to establish the sequence of diseases or morbid conditions. It is therefore important to ensure that some minimum standards are respected for preparing and maintaining medical records, and that nurses and medical records staff are well trained in these standards.
D1 Mortality coding practices

- The quality of cause-of-death coding is closely related to the quality of the cause-of-death certification and hence there should be a mechanism allowing coders to query information provided by the certifier.

Coding is done centrally in Sri Lanka at the Vital Statistics Unit and coders are generally well trained. Coders have access to the original scanned death certificate form and all the causes are coded using the ICD-10. More recently, the coders have been trained in using the decision tables of the Medical Mortality Data System (MMDS). However, the review revealed that when there are errors or uncertainties on the death certificate, there is no mechanism by which doctors can be queried for further information. This leads to many cases being assigned to ill-defined or unspecified causes by coders.

In the Philippines, mortality coding according to ICD-10 is done at several places (hospitals, local civil registration offices, provincial statistical offices), but only the underlying cause of death is coded. All forms are eventually sent to the NSO, where they are verified and corrected by trained coders. Forms are sometimes returned to the provincial statistical office to seek further information, but not uniformly.

D2 Mortality coder qualification and training

- Coding quality is dependent not only on coders being trained but also on the use of a standard curriculum.

Sri Lanka does not seem to have any problem with training mortality coders. They are locally trained by a well-respected teaching institution according to a standard curriculum. However, the review found that their workload was too heavy and hence there was a constant backlog of death certificates waiting to be coded. The only way to improve that seemed to be to hire more coders.

In the Philippines, the training of coders is done by different institutions and there is one standard curriculum or exam that they all have to pass. Several recommendations were therefore made, which specifically referred to improving the skills of coders, standardising the training and increasing the frequency of the ICD-10 courses.

D3 Quality of mortality coding

- Introduction of the MMDS decision tables for mortality coding had positively influenced the quality of coding, by standardising the way the underlying cause of death is selected.

- A standard list of medical terminology abbreviations used locally should be prepared.

- Coding audits should periodically be carried out to assess the quality of cause-of-death coding.

In Sri Lanka, the introduction in 2008 of the decision tables of the MMDS, had resulted in greater uniformity in the selection of the underlying cause of death, but had not helped to speed up the coding since it requires coding of all causes mentioned.

Neither Sri Lanka nor the Philippines have a national language version of the ICD-10, but use the English language version. However, sometimes coders lose much time and effort trying to decipher local abbreviations of medical terminology. The preparation of a booklet with a standard list of abbreviations, as used in either country, would be a worthwhile investment and save time for coders.

Apart from some occasional checking by a supervisor, neither country had yet carried out any validation study of coding quality. In the Philippines, this would clearly be much more complicated given that mortality coding is done in many places, but the NSO could do a national sample which would be essential if the quality of coding practices is to be known.

E1 Data quality and plausibility checks

- Before releasing or publishing data, levels of mortality and fertility, as well as patterns of causes of deaths, need to be checked for consistency and plausibility.

The review also called attention to the need for more consistency and plausibility checks on the data before releasing them. Although both countries carry out checking routines on their data, it was clear that these were not consistently checked against other sources (surveys, census and administration). Performing such checks on the levels of mortality and fertility implied from the vital statistics, compared with levels calculated
from censuses and surveys, would be very useful and
does not demand sophisticated methods.

In both countries, however, the biggest problem by far
is the quality of the cause-of-death data. In Sri Lanka,
the large number of deaths classified to ill-defined
categories (above 20 per cent) is the main limitation
in understanding the true disease distribution. In the
Philippines, all deaths in principle are medically certified,
and the proportion of ill-defined deaths is only around
5 per cent. However, only about 35 per cent of deaths
are certified by the attending physician. As mentioned
earlier, people who die at home are certified by the
municipal health officer, who is a medical doctor.

However, the review revealed a number of oddities in the
Philippine death distribution that seemed to suggest that
not all doctors certify the underlying cause well
(eg septicaemia was among the leading causes), or then
use ‘convenience’ codes (eg where suicides are recorded
as accidental deaths or to some undefined cardiovascular
category), which reduces the reliability of the mortality
data. It was therefore suggested that basic disease-
specific tabulations and studies should be carried out, to
better understand the extent of misclassification of cause
of death in the vital statistics data.

**E2 Data tabulation**

- Tabulating the data in different ways is important
  as a data check, but also should be done to suit
different users’ needs.

Policy-makers and researchers do not have the same
need for granularity in the data. For policy purposes,
a breakdown into major disease groups and leading
causes of deaths may be sufficient, while researchers
and epidemiologists should be consulted about what
level of detail would be useful to them and could be
provided, given confidentiality requirements. In both
countries, there seemed to be considerable scope for
improving both the published data and the data available
electronically.

**E3 Data access and dissemination**

- Timeliness is one of the data characteristics most
  appreciated by users. The later the data are made
  available, the less useful they are for planning.

- A cost-effective way to improve timeliness is to
  make the data available in electronic format.

It was clear from the two country studies that the vital
statistics produced were not being used as much as they
should. Part of this was due to their tardiness in release.
In both countries, at the time of the 2009 assessment,
the latest report of vital statistics included data from
2004 or 2005. In Sri Lanka, the 2004 tsunami created
a tremendous workload for the vital statistics unit
responsible for compiling and publishing the data, and
although special measures were applied, the 2004 and
2005 data were only recently (2009) released. In the
Philippines, the most common reason for the publishing
delays is that national figures cannot be compiled until
all the local areas have submitted their data to the
provincial statistical office.

In Sri Lanka, it was suggested that a working group
with representation from the Vital Statistics Unit (the
producer) and a number of main users should be formed
and serve as a platform for deciding on priority data and
make suggestions about how to solve some of the delays.

In the Philippines, those local government units that
have begun using the computerised CRIS also receive a
data compilation software from the NSO, which allows
them to generate preliminary vital statistics reports at
the municipality level. Providing such tabulation software
is a very good way to increase use of the data. Even
preliminary data on causes of death are much more
useful for planning than out-of-date final figures.
For each problem or issue identified by the review, the subgroup concerned was expected to propose a recommended solution. As a result, each country developed a set of recommendations, which clearly needed to be prioritised in some way. Part of the inertia in improving vital statistics systems has arisen from a failure to identify a manageable and feasible set of priority actions that would be likely to have significant impact on data quality, use and/or timeliness. To assist countries to arrive at an agreed and prioritised list of recommendation, a simple prioritisation process was followed as outlined below. This process was tested in two countries as an integral part of the assessment exercise and slightly modified afterwards. In each case, the exercise was completed collectively by all stakeholders at the final results meeting (ie the group of people who had done the assessment work), who were able to agree on a preliminary action plan.

Firstly, at the results meeting, each of the subgroups assessed their own recommendations according to four criteria: urgency, feasibility, cost, and timeline, defined as follows:

- **Urgency**: the extent to which the recommendation needs to be implemented immediately.
- **Feasibility**: the ease with which the recommendation could be implemented, given departmental roles and responsibilities in government, or cultural traditions.
- **Cost**: the expected cost associated with implementing the recommendation and the likelihood of obtaining funding from different sources.
- **Timeline**: the period required for the full implementation of the recommendation.

Four scenarios were provided for each of the four criteria as shown in Table 2. Scenarios were scored from 1 to 4 by the subgroups depending on the perceived urgency, feasibility, cost, and time needed, with the optimal score being 4 and the least desirable score being 1. Scores across the four criteria were then summed, giving a summary score for each recommendation. The higher the score, the higher priority should be given to implementing the recommendation. These four criteria were chosen to reflect the critical dimensions of any deliberative process countries might follow to decide upon the relative priority of recommendations. This scoring system is clearly very basic and could be modified by countries as required.

One potential danger of this process is that recommendations could score highly on the four criteria, but their implementation might result in little change to quality of the vital statistics, their timeliness or use made of them. All scored recommendations were therefore entered into a spreadsheet, and the entire stakeholder group collectively reconsidered the scores in the light of the potential impact that each recommendation would have on improving the vital statistics system. Expected impact was graded as high, medium and low. When all recommendations had been evaluated for the impact factor and scored, they were finally ranked in decreasing order in each of the three impact bands. In case of too many recommendations, countries might want to reduce these by only considering, in the first stage, those with scores above a certain cut-off point.

In this way, the planning meeting produced in each country an agreed and prioritised list of actions to guide the review committee in developing a final, strategic plan for improving their civil registration and vital statistics systems. In both countries, efforts to improve their systems have already begun, with action on some of the specific recommendations. For instance, in Sri Lanka an evaluation study of the quality of medical certification in hospitals in the Colombo District has been carried out (Gamage 2009); discussions have commenced with the medical school to introduce a short training course on how to correctly certify deaths according to ICD-10 rules; and revision of the existing death declaration form has begun. A working group to oversee the implementation of priority recommendations, with representation from the ministry of health, the vital statistics units and the Registrar General’s Department, has also been formed.

In the Philippines, the review committee has met four times to work on the final strategic plan and discuss budgets. The NSO has begun to implement measures to speed up the release of the vital statistics data and plans to release data this year for the period 2006–2008.

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3 Both the prioritised list and the scores given to each recommendation have been included in the Sri Lanka and Philippine country reports of the assessment and can be consulted on the Health Information Systems Knowledge Hub website; see also Documentation Note 1 and Documentation Note 2.
<table>
<thead>
<tr>
<th>Criteria for prioritisation</th>
<th>Urgency</th>
<th>Feasibility</th>
<th>Cost</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4. Must start immediately</td>
<td>4. Necessary action can be decided at the departmental level</td>
<td>4. No cost implications</td>
<td>Action could be completed within:</td>
</tr>
<tr>
<td></td>
<td>3. Could be delayed for up to 6 months</td>
<td>3. Requires interdepartmental agreement</td>
<td>3. Can be funded within current budget</td>
<td>4. 3 months</td>
</tr>
<tr>
<td></td>
<td>2. Could be delayed for up to 2 years</td>
<td>2. Requires legislation change</td>
<td>2. Need to apply for government funding</td>
<td>3. 3 months to a year</td>
</tr>
<tr>
<td></td>
<td>1. Could be delayed until able to be done</td>
<td>1. Requires change in tradition, culture and policy</td>
<td>1. Need to find external resources</td>
<td>2. 1–5 years</td>
</tr>
<tr>
<td></td>
<td>4. No cost implications</td>
<td>3. Can be funded within current budget</td>
<td>2. Need to apply for government funding</td>
<td>1. More than 5 years</td>
</tr>
</tbody>
</table>
General lessons learned from the comprehensive review

While the lessons and findings pertaining directly to the civil registration and vital statistics systems are the focus of this paper, there were a number of more general ‘value-added’ lessons that emerged from the review. Several of these have relevance beyond the review objectives and are worth briefly mentioning here. These lessons include:

- the importance of convening stakeholders and collectively brainstorming (e.g., ownership and network building)
- the need for systems thinking when dealing with systems that span many stakeholders
- greatly improved knowledge about global statistical and public health standards through applying the tool, and a better understanding about where to access technical resources
- much increased awareness about the public health aspects of vital statistics
- the need for critical thinking when using vital statistics in order to improve quality
- a documented resource and a comprehensive understanding of the weaknesses and strengths of their civil registration and vital statistics systems.

In many countries there is little or no tradition for working across departmental boundaries, and often little knowledge exists of what other institutions are doing in related areas. Problems are mostly solved or partially solved internally or, if that is not possible, left unresolved. The positive meeting dynamic observed among stakeholders in both Sri Lanka and the Philippines was a clear demonstration of how ‘brainstorming’ together can be effective and lead to a sense of ownership in the final product. Although both countries previously had vital statistics coordination mechanisms, membership had been limited to staff from the Civil Registration Office and the Ministry of Health (Sri Lanka), or to collaboration between the Civil Registration Office and the NSO (Philippines).

Analysing the civil registration and vital statistics systems from the viewpoint of all key stakeholders promoted a much broader understanding and appreciation of the two systems and their interrelationships. For many of the problems that were discussed, this led to ‘systems thinking’, where the implications of an intervention was followed through all the systems and evaluated by all concerned. The principal advantage of systems thinking, when applied to problem solving that spans across different stakeholder groups and decision-making arenas, is that all effects are conceptualised and considered. One key lesson to emerge was that sometimes what seemed like a good solution for one part of the system could have potentially undesirable effects in another part. Systems thinking can only be done if all key stakeholders involved are present: ‘Every intervention, from the simplest to the most complex, has an effect on the overall system, and the overall system has an effect on every intervention’ (WHO 2009).

Civil registration systems often follow national standards, in part because countries are not aware that there are global standards which have been developed to allow countries to derive maximum benefit from their data collections. The UN and WHO have tried to promote these global standards for years but have only recently begun to coordinate their approach. The WHO tool promotes a standards-based review, and countries undertaking it will be exposed to the most recent global standards and tools and made more aware of the advantages of using them. Both Sri Lanka and the Philippines have implemented ICD-10, but both countries still need to improve their cause-of-death data. This is not only because a relatively high proportion of people who die are not medically certified (Sri Lanka) or are not certified by the attending doctor (Philippines), but also because doctors do not always bother, or have not been trained, to certify carefully or fill in the death certificate correctly. In neither country is much known about the quality of cause-of-death certification or mortality coding, since no validation studies of either have been undertaken.

All participants who attended the two meetings were made fully aware of the uses of vital statistics and their essential role in proper planning and policy development by different government departments and local authorities. It is often not understood that vital statistics derived from civil registration are the only population-based source of cause-of-death information and the only source that can give information for local areas. Hence, any effort to improve health or to control specific diseases in smaller geographical areas is highly dependent on reliable cause-of-death statistics. When doctors diagnose and certify the underlying cause that led to death, they are rarely thinking of the many important public health uses that their diagnoses are going to serve. The same is true of midwives who attend
Conclusions

Piloting the WHO framework in two countries provided empirical evidence that the framework is applicable and useful. Based on these country applications, the framework was subsequently revised so that other countries using it will benefit even more. Fortunately, as reported in this paper, the countries that tested the framework and did the assessment also gained a lot from the exercise. Making these lessons more widely accessible in the hope that other countries in the region may benefit from the knowledge gained was the principal objective of this paper.

There is little doubt that undertaking the review has helped build awareness in both countries about the importance of vital statistics and their public health utility. Despite the fact that both Sri Lanka and the Philippines have mature and functioning systems, the review showed that many aspects could function better and need to be strengthened. A large number of the proposed improvement recommendations would need the collaboration of several stakeholders to be carried out and be sustainable. It is therefore particularly important that functional mechanisms for collaboration (ie interdepartmental working groups with decision powers) are established. Some of the proposed changes are likely to require substantial resources, but a surprising number could actually be carried out immediately, or within a short period of time, at hardly any cost (eg introduction of a communication mechanism, installation of a checking procedure, revision of a form). It has been heartening to see that since the review took place some of these actions have already been carried out, or are currently under serious consideration, in the two countries.

Now that the framework has been published by WHO and the University of Queensland, and has been empirically tested and proven to be of value to countries, it is important that regional organisations make their membership aware of the tool, by including it in the agendas of the subregional and regional expert meetings they convene around vital statistics. Tools and classifications produced by WHO or the UN need to be effectively and carefully marketed to potential users, and countries trained in their use, in order for them to have the impact intended. This process has already begun with a meeting organised by the WHO Regional Office for the Eastern Mediterranean in November 2009 in Beirut, where some 20 countries of the region were introduced to the tool.

births and report the weight and other characteristics of the newborn.

Through the methods and exercises proposed in the latter sections of the guidance tool, participants in both countries were introduced to the type of critical thinking and analysis necessary to challenge the validity of official data and improve data quality. In particular, countries are urged to routinely compare estimated levels of fertility and mortality indicators derived from their vital statistics with levels of these indicators obtained from censuses and surveys. Participants were also introduced to several routine data checks for cause-of-death distributions and had the opportunity to apply these to their national data and evaluate the results. Application of this kind of routine data checking can soon lead to improvements in the quality of the published vital statistics, provided they are carried out rigorously and critically.

A key outcome of the review is a substantial increase in the amount of specific and documented knowledge about the functioning of the civil registration and vital statistics systems. For each of the framework’s 16 subcomponents, a detailed assessment was completed by those with an intimate working knowledge of the particular subject matter. These reports are in themselves a valuable resource that should form the building blocks from which the national review committees can develop strategic and long-term improvement plans for their systems.
The vital statistics system does not exist in a vacuum. It is a major and integral part of the health information system and its products are key to improving the performance of the health system (Frenk 2010). Information on births and deaths as well as causes of death are used as denominators and numerators for a large number of health indicators. If those who determine health and social policy in countries are to have confidence in the basic data, and are to make greater use of them in monitoring the impact of health programs and policies, urgent measures are required to improve the functioning of the systems and quality of the vital statistics they provide. As a priority, countries should focus on getting their completeness level up over 90 per cent, and working closely with their medical establishments to improve the certification of causes of death.


The Knowledge Hubs for Health Initiative

The Health Information Systems Knowledge Hub is one of four hubs established by AusAID in 2008 as part of the Australian Government’s commitment to meeting the Millennium Development Goals and improving health in the Asia and Pacific regions. All four hubs share the common goal of expanding the expertise and knowledge base to help inform and guide health policy.

The Knowledge Hubs are funded by AusAID’s Strategic Partnership for Health Initiative.

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Health Information Systems Knowledge Hub

*The University of Queensland*

Aims to facilitate the development and integration of health information systems into the broader health system strengthening agenda, and increase local capacity to ensure that cost-effective, timely, reliable and relevant information is available. The Health Information Systems Knowledge Hub also aims to better inform health information systems policies across Asia and the Pacific.  


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Human Resource for Health Knowledge Hub

*The University of New South Wales*

Aims to contribute to the quality and effectiveness of Australia’s engagement in the health sector in the Asia–Pacific region by developing innovative policy options for strengthening human resource for health systems. The hub supports regional, national and international partners to develop effective evidence-informed national policy-making in the field of human resources for health.  

[www.hrhhub.unsw.edu.au](http://www.hrhhub.unsw.edu.au)

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Health Finance and Health Policy Knowledge Hub

*The Nossal Institute for Global Health (University of Melbourne)*

Aims to support regional, national and international partners to develop effective evidence-informed national policy-making, particularly in the field of health finance and health systems. Key thematic areas for this hub include comparative analysis of health finance interventions and health system outcomes; the role of non-state providers of health care; and health policy development in the Pacific.  

[www.ni.unimelb.edu.au](http://www.ni.unimelb.edu.au)

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Compass: Women’s and Children’s Health Knowledge Hub

*Compass is a partnership between the Centre for International Child Health, The University of Melbourne, Menzies School of Health Research and Burnet Institute’s Centre for International Health.*

Aims to enhance the quality and effectiveness of women and children’s health interventions and focuses on supporting the Millennium Development Goals 4 and 5—improved maternal and child health and universal access to reproductive health. Key thematic areas for this hub include regional strategies for child survival; strengthening health systems for maternal and newborn health; adolescent reproductive health; and nutrition.  

A strategic partnerships initiative funded by the Australian Agency for International Development

HUMAN RESOURCES FOR HEALTH KNOWLEDGE HUB

The Nossal Institute for Global Health

Theme: Strengthening vital statistics and cause-of-death data