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**Session 4.5: Tools, methods and partnerships for improving vital statistics in the Pacific: -the role of the Health Information Systems Knowledge Hub**

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# Tools, methods and partnerships for improving vital statistics in the Pacific: -the role of the Health Information Systems Knowledge Hub

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# Purpose of paper

The purpose of this paper is to bring to the attention of participants of the Regional Meeting of Heads of Statistics and Planning the existence of a ***Health Information Systems Knowledge Hub*** in the region that provides expertise and develops tools to strengthen the evidence and knowledge base for the development of health information systems in countries. Some of the tools and products that have been recently developed or are under development in the area of vital statistics are briefly described in the paper.

# Background

Improving health in the Asia-Pacific region has been a key objective of Australia’s bilateral development assistance. The health policy outlined in the 2006 White Paper on the Australian Government’s overseas aid program shows a clear focus on strengthening health systems fundamentals and specifically mentions the health information system as one of the pillars, without which the effectiveness of policies and interventions cannot be known. As the wider development community have aligned themselves with the MDG’s, more resources have been committed to support the health sector in developing countries and external financing for health has substantially increased from both official partners and private sources. Despite this scaling up of both external and domestic resources for health, the rate of progress towards attaining the health MDGs appears not to have significantly changed, and may in fact have slowed in some of the more critical regions (Wagstaff and Claeson 2004; Hogan et al 2010; Rajaratnan et al 2010). Increasing the money alone therefore has proven to be insufficient to achieve better and more equitable health gains.

Australia’s health aid has been growing rapidly from under $200 million in 2000 to over $340 million in 2007 and is almost entirely focused on the Asia Pacific region where Australia has extensive development experience and close socioeconomic ties. Like other donors increasing effectiveness of development assistance has been a major theme also for the Australian Development Assistance Program (AusAID). The White paper signals a significant change in the way aid is to be delivered, with a shift to more emphasis on measureable outputs and a more diversified research program to provide sound guidance for aid initiatives. It also recognizes the need for striking a balance between addressing major immediate health concerns and managing the longer task of strengthening underlying health systems by building capacity for these both in countries and among those in Australia who deliver technical assistance.

# Health Information Systems Knowledge Hub

With this new commitment to expanding the quality and effectiveness of its aid program in the health sector, AusAID in 2008 established four Health Knowledge Hubs in Australia to increase the critical, conceptual and strategic analysis of key health issues relevant to the Asia Pacific region. The School of Population Health (SPH) at the University of Queensland (UQ) was selected to establish the Health Information System Knowledge Hub. The establishment of the Hubs will provide improved health knowledge and expertise to inform policy dialogue at national, regional and international levels and will provide guidance to AusAID on how to increase the effectiveness of its bi-lateral aid programs

The overall goal of HIS Knowledge Hub is to guide the establishment and/or strengthening of priority elements of national HIS in countries in the Asia Pacific region, in order to generate ***comprehensive, relevant and reliable*** evidence for national and regional health policy, service delivery and program evaluation.

This overall aim of the Hub is being accomplished through the following four key ***strategic objectives***:

1. identify and map the critical elements for health information systems development in the region; work with countries to identify gaps and priorities; and help countries to determine national health information systems development plans for the next 5 – 10 years;

2. guide the technical direction for health information systems strengthening within the Australian aid program, through regional and global knowledge partnerships;

3. build the HIS capacity of the Australian health development community and partner countries through fellowship programs, networking and short courses in key areas related to health information systems; including:

* population statistics, fertility and mortality measures;
* vital registration and causes of death;
* hospital and health services management information systems;
* surveys to measure health status, risk factor exposure, health service utilisation, and health expenditures;
* health financing, tracking health resource flows (National Health Accounts) and cost-effectiveness analyses; and
* critical appraisal and analytical skills in health information.

 4. facilitate country participation in research and training activities to build local capacity to strengthen the above areas of national health information systems.

To guide the Hub in selecting key areas for knowledge development and support, and to provide technical scrutiny and peer review of outputs of the Hub (e.g. guidelines and tools), a Technical Advisory Board (TAG) was established. The TAG members include eminent individuals that are known for their contribution to the international development of health information systems research. The TAG meets annually and has ensured that the knowledge products the Hub has produced are likely to be relevant to country needs and are of the highest academic standard.

The TAG has also facilitated the Hub’s network building activities which are essential to ensure that the research carried out is informed by the best available evidence and experts in the field, and to provide channels to influence thinking, policies and strategies. Globally the Hub has very close links to key development partners such as WHO, HMN, and the World Bank, and regionally to UNESCAP, WPRO, SPC, FSMed, and nationally to AIHW, ABS, DOHA as well as to the Universities which host the other three Hubs. The Hub also enjoys extensive collaborative links with leading universities, particularly in the United States and the United Kingdom.

# Vital Statistics Assessment Tool

The Health Metrics Network, in its Framework *and Standards for Country Health Information System* lays out theglobal standards for health information. The tools and products developed by the HIS Hub build on the HMN Framework, and findings are fed back and shared with countries and development partners. Many countries that did the HMN assessment of their HIS found that their vital statistics from civil registration systems were particularly weak. Given the importance of having reliable information on the number and composition of births, deaths and causes of deaths for policy and planning, as well as resource allocation, vital statistics have been a major focus of the HIS Hub’s work.

In close collaboration with WHO the Hub has developed a new tool and Framework that can assist countries who want to improve the quality of their birth, death and cause of death information: *Improving the quality and use of birth, death and cause-of-death information: guidance for a standards-based review of country practices*. A large number of public health experts from developed and developing countries contributed to, and peer reviewed the draft tool which was piloted in three countries, two of which are in the Asia-Pacific Region. The tool was published by WHO in July 2010 and can be downloaded from the HIS Hub website [www.uq.edu.au/hishub](http://www.uq.edu.au/hishub)

The experiences of the two countries, Sri Lanka and the Philippines, who applied the tool, have also been carefully documented as well as the lessons learnt from its application. Three papers[[1]](#footnote-1) have been published by the Hub which reflect this learning and can be found and downloaded from the same website.

The tool provides comprehensive guidance on how to systematically evaluate the quality and functioning of civil registration and vital statistics systems. It consists of two components: a *detailed assessment tool*, plus a *rapid assessment tool* available as text or as a spreadsheet. The aim is to help responsible authorities obtain a clear and comprehensive understanding of the strengths and weaknesses of their civil registration and vital statistics systems, and generate the evidence base for corrective action.

The Framework (see Box 1)ensures that the operation of all the main aspects of the civil registration and vital statistics systems are thoroughly reviewed, including the legal and regulatory aspects, registration practices, certification and coding of data, transfer, compilation, tabulation, dissemination and use of the resulting data. The tool outlines a roadmap and a process to be followed for the review as well as who should be part of the assessment and how to obtain the best results. Advice is also given of how to use the evidence to formulate a strategic improvement plan, how to implement this and how to monitor progress.

The approach described in this guidance tool is largely directed to those countries where civil registration is established but incomplete and where the data quality is inadequate. The tool emphasizes the importance of critically evaluating data quality by undertaking consistency and plausibility checks by comparing outputs of the systems with data from other sources on mortality and fertility levels and patterns.

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| Box 1 |
| The WHO Framework |
| Inputs |
| A | Legal basis and resources for civil registration **A1** National legal framework for vital statistics**A2** Registration infrastructure and resources |
| Processes |
| B | Registration practices, coverage and completeness**B1** Organisation and functioning of the vital statistics system**B2** Review of forms used for birth and death registration **B3** Coverage and completeness of registration **B4** Data storage and transmission |
| C | Death certification and cause of death**C1** ICD- compliant practices for death certification **C2** Hospital death certification **C3** Deaths occurring outside hospital**C4** Practices affecting the quality of cause-of-death data |
| D | ICD mortality coding practices**D1** Mortality coding practices**D2** Mortality coder qualification and training**D3** Quality of mortality coding |
| Outputs |
| E | Data access, use and quality checks**E1** Data quality and plausibly checks**E2** Data tabulation**E3** Data access and dissemination |

Countries in doubt as to whether they need to undertake the comprehensive assessment are recommended to carry out the Rapid Assessment first to roughly assess the functioning of their current system. Only countries that score 85% or higher are deemed to be having civil registration and vital statistics systems that produce data of sufficient quality to adequately cover the needs of policy for health sector reforms, and for monitoring the impact of interventions and development programmes. Of the 27 countries in the Asia-Pacific region that undertook the Rapid Assessment in preparation for a UNESCAP meeting (June 2010), two-thirds had weak or inadequate systems that would strongly benefit from a development plan based on the findings of a comprehensive assessment.

Apart from obtaining clear evidence about the weaknesses in their data and where and why these exist, countries using the guidance tool will themselves be able to define what corrective actions they need and where outside assistance, if needed, can be found. Guidance on standards and good practice derived from the extensive experience of WHO and other UN agencies is given wherever relevant and valuable lessons learnt from applied research in many developing countries are incorporated. Use of the comprehensive tool and assessment method is also likely to provide valuable learning for staff involved. Indeed, one of the benefits of the whole review process is that it engages all key stakeholders and builds consensus among them as to what needs to be improved, how, and with what priority.

Among the many lessons learnt in conducting the pilot assessment were:

* It is essential that the whole system is reviewed not just one part, e.g. the collecting side or the output side. The two are interlinked in a complex national network and “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” (2010, Savigny et al.).
* All key stakeholders have to be involved and take an active role;
* The assessment has to be country-led and carried out by local staff who actually do the work of registration or compiling of the data;
* Facilitators from outside can be useful for the launch of the process and for helping draw conclusions from the results and findings – but are not essential
* A prioritization tool is crucial for arriving at an agreed prioritized list of actions for improvement (such a tool is described in HIS Hub Working Paper 8).

Countries wanting to improve their civil registration and vital statistics systems are well advised to carry out the comprehensive assessment, particularly if they think that outside assistance and resources may be needed. The Rapid Assessment will only indicate how good or bad the overall system is; it will ***not*** point to the specific faults or bottlenecks and will ***not*** provide solutions to the problems identified. As the HIS Hub is not an implementing agency, countries in the Asia-Pacific region needing assistance with evaluating their vital statistics systems and data outputs should turn to agencies such as WPRO, ESCAP and SPC, who are key partners with the Hub in this endeavor.

# Related work-in-progress

## Data quality tool

All countries that have scored low in the Rapid Assessment have invariably also scored low on questions related to quality of cause-of-death data and data quality in general. Many of the improvement actions that countries will need to do depend closely on better certification of the cause of death and application of the ICD. However, some significant improvements can be rapidly achieved by applying a new tool on Assessing Data Quality that is currently being developed by the HIS Hub in collaboration with WHO. The tool which basically is an Excel spreadsheet with algorithms embedded in it only demands that countries enter annual population data and cause of death data by age and sex. Various indicators are then calculated automatically from the raw data and compared with predicted values based on modeling of the epidemiological transition built up from over 60 years of mortality statistics collected by WHO. For some of the data, the tool produces simple graphics and visual aids which are helpful for noting trends and disclosing abnormalities. The tool should be finalized before the end of the year and will be made available to countries by the Hub.

## Vital statistics advocacy tool

Work done by the Hub and its partners in the Asia-Pacific region suggests that one of the greatest impediments to improving vital statistics systems is the lack of understanding in many countries of the policy value of reliable vital statistics data. Most countries have some form of civil registration which provides basic registration services to their citizens. However, the collected information is not always compiled for statistical purposes and instead critical information on fertility and mortality levels is obtained from costly surveys and censuses. As a result, little money in these countries goes into improving the civil registration system which could provide this information, and much more on an annual basis, and do so also for small local areas.

Together with the Australian Bureau of Statistics (ABS) the HUB has recently begun work on developing a tool to more readily specify the “business case” for improving civil registration and vital statistics systems. ABS has a long experience in developing business cases for statistics and has produced a six step approach for vital statistics which will be further developed and made available as a tool for countries. The idea is that a lead agency such as a National Statistics Office by following the detailed guidelines and engaging with other stakeholders can develop a convincing business case to government for civil registration improvements. A first draft of the “business case” tool was recently discussed at an inter-regional forum in Bangkok in June 2010, hosted by ESCAP.

## Methods to improve cause-of-death data

Cause of death (COD) information is the cornerstone of any health information system and is, or should be, widely used to inform policy debates and guide health priorities and resource allocation. In many countries in the region, however, COD data are not available for health planning or are of such poor quality that they cannot be used. Countries undertaking the comprehensive assessment of their systems may discover some poor cause of death practices in their systems they were unaware of. They may also not know of available methods and measures that can be feasibly implemented to provide them with more reliable data and critical information on health status required for planning.

A fundamental contributor to this widespread under appreciation of the importance and value of reliable cause of death statistics is the fact that medical students are often not trained in public health issues nor how to certify the cause of death according to the International Classification of Diseases (ICD) published by WHO. The Hub is currently working on the production of simplified curricula with clinical guidelines for physicians to teach them how to correctly and usefully certify the cause of death according to ICD. This work is being done in collaboration with the National Institute of Health Science in Sri Lanka and the Fiji School of Medicine.

The lack of understanding of the importance of cause of death data often means that even when deaths are medically certified in hospital, it is not correctly done or information is missing on the form so that the coding of the cause of death according to the ICD is difficult or impossible. It is therefore strongly recommended that countries occasionally evaluate the quality of their hospital certification practices. A study is currently being undertaken by the Hub in Sri Lanka to determine the accuracy of cause of death certification by the physicians in hospitals and to describe the adequacy of the medical records kept by hospitals to support cause of death certification. The sample covers deaths that occurred during the period 2006-2008. Based on an independent clinical review of these medical records a new cause of death certificate is prepared. After coding, the cause of death from this review (“gold standard”) is compared to the cause of death reported by the civil registration system. The percentage agreement between the two causes of death (original and re-diagnosed) was only about 20%. A misclassification table will be prepared based on the study findings to identify the main diseases and /or injuries which were wrongly classified. The results of the study and the methods used will be written up and will all be reported in the Hub’ Working Paper Series. This should serve as a useful knowledge resource for other countries to undertake similar evaluations of the quality of their data on hospital deaths.

In many developing countries only deaths that occur in hospitals are medically certified as to the cause of death. As a result little is known about the majority of deaths that take place in the community if the country has not established a demographic surveillance system in some areas or even better, has introduced a sample registration system with verbal autopsy[[2]](#footnote-2)that is nationally representative. For these countries with very weak civil registration and vital statistics systems the Hub plans to develop a “cause-of-death resource kit”, which will provide them with the latest developments/thinking about interim mortality measures and registration approaches that will allow them to derive policy relevant information on causes of death in their populations, pending attainment of fully functioning civil registration systems.

# Implementing tools and research

The funding agreement between AusAID and the University of Queensland clearly states that the role of the Hub is to create knowledge, which can lead to the strengthening of HIS in the Asia Pacific region, not to implement the knowledge in countries. Hence, countries needing funding or technical assistance for implementing any of the Hub’s tools and products should address their request directly to AusAID or other development partners of the Hub, e.g. WPRO, SPC, UNESCAP, ADB.

Both UNESCAP and WPRO have listed the improvement of vital statistics as a priority in their work programme and jointly hosted a *Forum on the improvement of vital statistics and civil registration in Asia Pacific* in June 2010. The main objectives of the Forum were to:

* Bring key national agencies together to establish consensus regarding interagency improvement on vital statistics;
* Gather information about the status of countries’ civil registration and vital statistics systems;
* Inform participants about the tools, resources and technical expertise available to assist countries in improving their vital statistics;
* Map out the main components of a regional programme to improve vital statistics in the region.

Sixteen countries participated in the meeting together with several international agencies. For the HIS Hub, WHO and ABS it was a welcome opportunity to present all their vital statistics tools to the countries and to get feedback on those that are under development. The participants at the Forum decided to present to ESCAP’s Committee on Statistics an “Outcome Statement” on the urgent need to improve civil registration and vital statistics systems in the region. It is expected that the Committee on Statistics will endorse this statement in December 2010 when they meet and bring it to the attention of ESCAP’s Governing Body, the Commission.

The Outcome Statement specifically requests ESCAP secretariat to:

* Convene a high-level meeting of decision makers to raise awareness and increase commitment to improving civil registration and vital statistics;
* Establish a regular forum aimed at promoting the exchange of experiences as well as information on strategies and plans to strengthen civil registration and vital statistics systems;
* Take a lead role in partnership with regional knowledge hubs and technical agencies in developing and disseminating standards, tools and guidelines for civil registration and vital statistics;
* Collaborate closely with partner agencies to coordinate support and mobilize global, regional and country resources;
* Enhance its capability and capacity to respond to countries’ request for technical assistance and support in their efforts to improve their civil registration and vital statistics systems; and
* Together with countries serve as a regional monitoring centre for progress with civil registration and vital statistics systems.

# Relevance to the Pacific

All governments need reliable statistics to assist them to identify problems and needs, track progress and evaluate the impact of interventions. The importance of reliable vital statistics cannot be overstated; national data on births, deaths, causes of death and migration provide basic but essential population information to inform suitable and targeted government policies to enhance development.

Although most Asia Pacific countries do not currently benefit from adequate vital statistics, recognition of the urgent need to do so is increasing. In February 2009, at ESCAP’s inaugural Committee on Statistics – attended by the region’s heads of National Statistical Offices, country delegations emphasized the critical importance of accurate and complete vital statistics for policy and planning and decided to prioritize vital statistics in their work plan. Similar concerns in other regions of the world have led to regional workshops on civil registration and vital statistics in Africa, the Middle East and Latin America.

The fact that very few Pacific Island countries have civil registration systems that register all births and deaths seems suggests that it would be in the interest of most countries in the Pacific to take advantage of opportunities to strengthen their systems. This can be done by taking part in ongoing initiatives or, in collaboration with regional agencies and development partners, develop an improvement plan specifically tailored to suit small countries with diverse and dispersed populations. A number of tools are currently available, which, with minor adjustments, can be applied in Pacific countries to specifically assist them to improve the region’s vital statistics.

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1. Documentation Note Series 2009 No. 1 Assessing the Production, Quality and Use of National Vital Statistics: A Case Study of Sri Lanka

No. 2 Assessing the Production, Quality and Use of National Vital Statistics: A Case Study of the Philippines

Working Paper Series 2009 No 8 Assessing the Quality of Vital Statistics Systems: Lessons from National Evaluations in Sri Lanka and the Philippines [↑](#footnote-ref-1)
2. Verbal autopsy is a structured interview with caregivers or family members of households after death occurs which is used to determine the probable cause or causes of death in populations where most deaths occur outside health facilities, and where direct medical certification is rare. [↑](#footnote-ref-2)