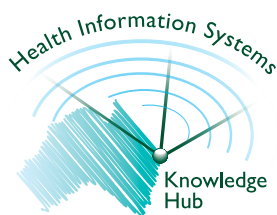


Strengthening health information systems in the Asia-Pacific region

Aims, objectives and contributions of the Health Information Systems Knowledge Hub at the University of Queensland, 2008-2013

Health Information Systems Knowledge Hub

Story of the HIS Knowledge Hub • October 2013



School of Population Health
University of Queensland

*Strengthening health systems
in Asia and the Pacific through
better evidence and practice*

An AusAID funded initiative

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About this series

This research has been funded by AusAID. The views represented are not necessarily those of AusAID or the Australian Government.

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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Published by the Health Information Systems Knowledge Hub,
School of Population Health
The University of Queensland
Public Health Building, Herston Rd, Herston Qld 4006,
Australia

Please contact us for additional copies of this publication, or send us feedback:

Email: hishub@sph.uq.edu.au

Tel: +61 7 3346 4732

Fax: +61 7 3365 5442

www.uq.edu.au/hishub

Edited by Econnect Communication

Design by Biotext, Canberra, Australia

Background

In June 2008, the Australian Government broadened its investment in development aid by purposefully engaging the Australian university sector in strategic health systems research, with a particular focus on the Asia-Pacific region. The 'Knowledge Hubs for Health' initiative was established under multi-year agreements with the Australian Agency for International Development (AusAID) to generate knowledge and evidence and to build expertise to facilitate more informed health policy decision-making. The four hubs were expected to draw on their extensive research networks to generate knowledge and were encouraged to collaborate with international development partners to broaden the reach and impact of their products.

The **Health Information Systems Knowledge Hub** (HIS Hub) was established at the University of Queensland. Its remit was to improve the evidence base to strengthen health information system (HIS) policies and practice across the Asia-Pacific region as a key component of the broader agenda to strengthen health systems. As earlier work by the Health Metrics Network (HMN) had demonstrated¹, a HIS encompasses a diverse array of data inputs and components, including surveys, censuses and administrative data from health facilities; and the registration, certification, compilation and analysis of births, deaths and causes of death in populations.

The latter are widely regarded as the cornerstone of any HIS; yet, as the HMN assessments repeatedly showed, vital statistics on births, deaths and causes of death are the weakest component of HIS wherever they have been evaluated. Given that the most fundamental goal of any health system must be to avoid premature death, it is clearly critical that governments reliably understand who is dying in their country, at what rate, at what ages, and from what causes. To address this and other key information deficits, the HIS Hub has purposefully focused our efforts on strengthening the civil registration system: that part of the HIS that is responsible for generating this information in a timely manner.

More broadly, we have produced over **100 health information products** that are intended for use by various audiences and stakeholders across the region. Most of these products are available from the HIS Hub website. They include **37 working papers, six toolkits, four action guides, 17 documentation notes, three policy briefs, three stories of change, one masters-level dissertation** and 33 peer-reviewed papers and abstracts. A complete list of these knowledge products is given in Appendix 1. We also convened seven short courses (see Table 1) on the functions and components of a HIS and on building analytical capacity to assess the quality of data, particularly from vital registration systems, to help build essential HIS capacity in countries.

Table 1 HIS Hub short courses 2009–2013

2010	Making better use of existing datasets for health policy	Apia, Samoa
2010	Health information systems short course	Brisbane, Australia
2011	Maximising the utilisation of existing datasets	Suva, Fiji
2011	Health information systems short course	Brisbane, Australia
2012	Health information systems short course	Suva, Fiji
2012	Effective communication for evidence-based decision-making	Suva, Fiji
2012	Civil registration and vital statistics short course	Brisbane, Australia

¹ Health Metrics Network (HMN) 2008, *Framework and Standards for Country Health Information Systems. Second Edition. World Health Organization, Geneva.*

One of our primary goals was to embed our products into the regional activities of major development partners, particularly HIS Hub tools and guidelines designed for immediate use by countries to reduce critical information gaps. To achieve this goal, our partnership strategy was to capitalise on the relative strengths of different partners: our academic sector partners for creating knowledge; and a number of multilateral organisations for their wide and effective dissemination networks which we were able to use to apply the knowledge when providing direct technical assistance to countries. These multilateral organisations included the World Health Organization (WHO), the United Nations (UN), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA), and the Secretariat of the Pacific Community (SPC).

Under the overarching goal of improving population health outcomes through HIS strengthening, we focused on three broad objectives: (i) to develop products that are both relevant for regional policy dialogue and have the potential to influence policy change, (ii) to create accessible, user-friendly guidelines and tools, and (iii) to build health information capacity in the region, particularly in the critical analysis of data quality, which is generally overlooked when building individual and institutional capacity for health systems reform.

1. Strengthening regional HIS policy dialogue

A primary goal of the HIS Hub was to increase the critical, conceptual and strategic analysis of key health information issues relevant to the Asia-Pacific region. To this end, we selected fundamental conceptual issues that deserved greater focus in HIS policy debates, either because they were not being given appropriate consideration in regional policy dialogue, or because current practice should be contested. For example, we commissioned analyses of key HIS challenges and perspectives around important contemporary health and HIS issues such as **measuring effective health coverage** (Murray 2009), the appropriate **role of health surveys** in a HIS (Lozano et al. 2009) and **measuring health inequalities** (Gakidou & Fullman 2012). Each of these products was designed to inform policy debates about optimising the role of HIS in supporting health system reform. On a more practical and operational level, we commissioned research on systems to strengthen HIS,

such as on the feasibility of **mHealth technologies** (Marshall et al. 2013) and the **use of SMS to improve vital registration** (Kabadi et al. 2013) as well as research on developing and applying innovative methods to implement verbal autopsies to improve cause-of-death reporting in countries without adequate vital registration systems (Riley et al. 2013).

2. Evidence-based guidelines and tools

Based on careful consideration of key gaps in country HIS, we created and disseminated guidelines and standards to help countries develop critical HIS capacity among technical officers and ministries. These tools, which we published jointly with global health development partners such as the WHO and the HMN, have been translated into several UN languages (French, Arabic, Russian) and widely applied by many national governments to determine a 'roadmap' and develop a prioritised strategic plan to strengthen their HIS. The most widely used **tools and guidelines** have been our rapid and comprehensive assessment tools for **civil registration and vital statistics (CRVS) systems**:

- **Rapid assessment methods for vital statistics systems** (Mikkelsen & Lopez 2010)
- **Improving the quality of birth, death and cause-of-death information: guidance for a standards-based review of country practices** (Mikkelsen & Lopez 2010)

We also developed a **death certification handbook** for physicians (Rampatige et al. 2012), and a generic guide to help countries introduce the International Classification of Diseases (ICD) into their routine CRVS systems to **improve medical certification of cause of death** (Wijesekera & Gamage 2013). In addition to providing guidelines for countries to **assess and strategically plan CRVS system improvements** (Mikkelsen 2012), we published a comprehensive **CRVS resource kit** (AbouZahr et al. 2013), conveniently compiling all available knowledge resources that countries may need to implement their CRVS-strengthening plans.

3. Building capacity, strengthening engagement and exercising leadership for HIS

Recognising that knowledge products alone are unlikely to produce national-level policy change, we purposefully fostered key relationships with regional stakeholders such as the WHO, the HMN, the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), SPC, UNICEF, UNFPA, country governments and health departments to accelerate the national application of our products. Further, in response to an identified regional need, we developed and delivered the first **short course on global civil registration and vital statistics** and three **short courses on health information systems**.

Since 2009, the HIS Hub has acted as the secretariat of the **Pacific Health Information Network (PHIN)**, which provides a mechanism for networking, support, information sharing and training for people working as health information professionals in the Pacific. This initiative takes full advantage of the HIS leadership role that an independent academic institution can provide and was particularly welcomed by countries. In June 2013, we hosted the first Pacific Health Leadership Forum in HIS, attended by multi-sectoral stakeholders from several Pacific countries. Another example of our leadership role for HIS in the region was our establishment of the **Brisbane Accord Group (BAG)** – a consortium of regional partners² working together to coordinate, facilitate and support investments in CRVS systems in the Pacific. Subsequently, the work of the BAG was strongly endorsed by the Pacific Health Ministers Meeting (2–4 July 2013) and has been successfully integrated into the Ten Year Pacific Statistics Strategy 2011–2020 led by SPC.

One of our key strategies was to seek strong and productive collaborative relationships with leading institutions in Australia with related interests in developing HIS capacity in the region. This led to a close partnership with the Australian Bureau of Statistics (ABS), focused on joint CRVS-strengthening activities in the Asia-Pacific region. Through the formal secondment of ABS staff to the HIS Hub, this relationship also built capacity within ABS for applying and further developing HIS Hub tools, methods and critical data approaches.

² UQ, SPC, WHO Western Pacific Regional Office (WPRO), Australian Bureau of Statistics, PHIN, UNICEF, UNFPA, University of New South Wales, Fiji National University, Queensland University of Technology

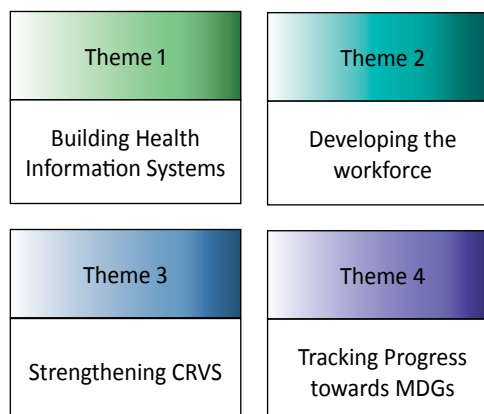
HIS Hub rationale and development of the work plan

The HIS Hub was created in part because of the need to strengthen the evidence base for Australian development investments in the region, but also to provide a forum for debate about key HIS development priorities, including opportunities to influence HIS practice directly. In this regard, our approach has departed from the usual policy-to-practice paradigm, where ‘best practice’ in a HIS is assumed to follow on from research or policy debate about options and priorities in a sequential fashion. Rather, we have sought first to define ‘best practice’ through research and consultation with our expert networks, and have then worked with development partners to implement change in HIS practice in countries, potentially leading to a change in policy. An example of this comes from Tuvalu where, after sending two senior doctors to attend HIS Hub training on correct cause-of-death certification practices, the Ministry of Health introduced a new death certificate based on the WHO ‘gold standard’ template.

Following consultation early on with our **Technical Advisory Group (TAG)**, four priority research themes were identified for the HIS Hub upon which annual work plans and AusAID contracts were based. In our first year, 2008, the work plan focused on creating infrastructure and developing/recruiting human resources. Based on this foundation, in 2009 we progressed to focus on consolidating and synthesising knowledge of the state of HIS in the region, aiming to generate evidence for how best to improve our function, utilisation, cost-effectiveness and sustainability. Our 2010 work plan built on this momentum, with a more comprehensive focus on working in-country with our partners to advance health information capacity, including a stronger focus on local capacity development and training. A key component of this strategy was providing extensive support to PHIN as the regional professional network for health information education, training and development. Our 2011 work plan had a specific focus on the principles of aid effectiveness and the Compact Agreement for Pacific Countries—namely, country leadership, mutual accountability and responsibility and harmonisation of activities. Our 2011–12 work plan built on established HIS Hub products to ensure that key knowledge gaps, capacity and dissemination were effectively addressed. Our final work plan, 2012–13, aimed to integrate overarching activities and consolidate investments, with an emphasis on responding to AusAID’s demand that we tailor our products to meet the needs of our stakeholders and audiences, both academic and non-academic.

Research themes

Focusing on HIS, we consolidated our program of work into four key thematic areas: (i) building HIS, (ii) developing the workforce, (iii) strengthening vital statistics and cause-of-death reporting, and (iv) tracking progress towards Millennium Development Goals (MDGs).³ We chose these four themes given their central role in building critical knowledge and capacity for health system strengthening. Over time, the importance of some themes, such as CRVS, has increased because of our deliberate attempts to align the HIS Hub program with the resurgence of global and regional interest in this area. This momentum for CRVS-strengthening was catalysed by our strategic partnership with HMN, particularly as the extent and severity of knowledge gaps became apparent, and countries became more aware of CRVS development needs.



³ In response to emerging health needs in the region, such as monitoring non-communicable diseases, this theme was later expanded to tracking progress towards other global development goals as well as the MDGs.

Plan and approach

From the outset, we have actively engaged with countries, regional networks and development partners to synthesise and generate knowledge about priorities for HIS in the region. This approach was based on strategic considerations that recognised the relative strengths and mandates of each partner and it has given us opportunities to cultivate communities of practice, as well as to collaboratively develop, modify and disseminate tools and approaches that support countries to make better decisions about HIS investments and management.

Our most significant learning that has come from this purposeful partner engagement policy is that effective engagement with development partners, NGOs and the academic sector to rapidly improve country HIS is not only possible but beneficial to all partners. It is also apparent that, to succeed, collaborative networks require leadership, vision and technical excellence in HIS. We have been well placed to provide these inputs, given the evidence-based, flexible and non-political focus of the academic sector which has allowed us to engage more effectively with development partners, regional networks and countries and to adapt to changing priorities and opportunities.

Communication and engagement

Our mission was to generate and synthesise knowledge and become a strategic leader in regional HIS strengthening. We established working partnerships with agencies and institutions that could help generate new knowledge. Part of this approach was to position the HIS Hub globally, with technical partners such as the WHO, and with partners who would be the end users of our tools and knowledge, using them to improve and strengthen policy for developing health systems. Through these strategic relationships we successfully implemented joint research, workforce development and training opportunities, as reflected in the list of our outputs (Appendix 1).

One of our key strengths has been our considerable convening power, founded on well-developed relationships with leading academics, institutions, development partners and countries. Furthermore, we have encouraged regional coordination of capacity development by acting as the secretariat of **PHIN** and by providing technical assistance to countries to

undertake our rapid and comprehensive assessments of their CRVS systems and develop realistic, strategic CRVS development plans. We have worked side by side with countries on their information systems strengthening, consistent with our philosophy of functioning as both a regional technical and knowledge resource for countries.

We have trained in-country health staff and policymakers to be able to make informed decisions about their own systems and, in particular, have focused on developing the confidence and competence of country HIS officers to assess data quality and thus promote the wider use of health information by countries for country planning. Staff have received training in our tools and guidelines and, with the HIS Hub as a partner, countries have been supported in the process of effecting change. As a consequence, awareness of the benefits of having reliable and timely health information has been raised in countries, as have the advantages of having a functional HIS.

Our success

Countries and development partners are seeking leadership and guidance about priority investments in HIS as it becomes more evident that reliable and timely data are needed to guide health system responses. This is reflected by the extensive use made of HIS Hub products⁴, the demands from countries for targeted products and the fact that the HIS and CRVS training courses we provided have been over-subscribed and have received very positive evaluation and feedback from students. With our technical support and knowledge products, regional staff should now be much better equipped to carry out their tasks, to raise the profile of health information on the health development agenda, to champion it, and to argue more effectively for greater and specific investments to support HIS strengthening as a critical component of national health systems reform.

⁴ For example, one **working paper** (No. 04) has been downloaded over 1500 times; one **video testimonial** has been watched 195 times; and one **PowerPoint presentation** has been downloaded over 600 times

Key lessons learnt

1. Knowledge hubs can effectively contribute to the health systems strengthening agenda in a variety of ways, ranging from creating targeted research and knowledge products (including tools and guidelines), stimulating policy debate, identifying gaps and bottlenecks to improve HIS practices, and building capacity in countries to challenge perceived wisdom and to more critically appraise HIS products.
2. Knowledge products that are tailored for specific audiences need to be effectively translated using media and methods that more effectively engage senior decision-makers; effective communication strategies are critical if knowledge is to be absorbed.
3. Our existing relationships with global institutions and our formidable convening power have been key enablers in embedding our products in the work plans and goals of regional and global development partners, thus indirectly influencing policy dialogue in countries.
4. Our knowledge development and brokering has been crucial for countries to see the advantage of changing practice and improving their HIS.
5. Our leadership role has been critical for providing vision and leadership for countries and regional partners seeking to strengthen their HIS and their practices in the Asia-Pacific region.

Appendix 1

Knowledge products produced by the HIS Hub, University of Queensland, 2008–2013

Working papers	
Working papers are the HIS Hub's principal knowledge products. Easily accessible, they collectively form a lasting repository of knowledge generated by the HIS Hub. Working papers are intended to stimulate debate and promote the adoption of best practice for HIS in the region.	
Theme 1 - Building health information systems	
Item no.	
1	Murray CJL. Assessing health systems performance using information on effective coverage of interventions. HIS Hub Working Paper No. 03, School of Population Health, University of Queensland, Brisbane, 2010
2	Mikkelsen L, Lopez AD, Whittaker M, Lozano R, MacIntyre M, Mokdad A, et al. Improving the quality and use of health information systems: essential strategic issues. HIS Hub Working Paper No. 05, School of Population Health, University of Queensland, Brisbane, 2009
3	Adair T, Lopez AD, Whittaker M, Lozano R, Mokdad A, MacIntyre M, et al. Role of health surveys in national health information systems: best use scenarios. HIS Hub Working Paper No. 06, School of Population Health, University of Queensland, Brisbane, 2010
4	Lum On M, Bennett V & Whittaker M. Issues and challenges for health information systems in the Pacific. HIS Hub Working Paper No. 07, School of Population Health, University of Queensland, Brisbane, 2010
5	Aung E & Whittaker M. Preparing routine health information systems for immediate health responses to natural disasters. HIS Knowledge Hub Working Paper No. 12, School of Population Health, University of Queensland, Brisbane, 2010
6	Lewis D, Hodge N, Gamage D & Whittaker M. Understanding the role of technology in health information systems. HIS Knowledge Hub Working Paper No. 17, School of Population Health, University of Queensland, Brisbane, 2011
7	Davies P, Hodge N, Aumua A, Malik A & Lee Y. Conceptualising the information needs of senior decision makers in health. HIS Knowledge Hub Working Paper No. 18, School of Population Health, University of Queensland, Brisbane, 2011
8	Whittaker M & Buttsworth M. A framework to guide HIS investments: what needs to be synthesised for senior health decision-makers. HIS Knowledge Hub Working Paper No. 22, School of Population Health, University of Queensland, Brisbane, 2012
9	Marshall C, Lewis D & Whittaker M. mHealth technologies in developing countries: a feasibility assessment and a proposed framework. HIS Knowledge Hub Working Paper No. 25, School of Population Health, University of Queensland, Brisbane, 2013
10	Murray CJL & Mokdad A. Integrated surveillance systems: getting the most out of the health information system. HIS Knowledge Hub Working Paper No. 27, School of Population Health, University of Queensland, Brisbane, 2013
11	Soto E, Nguyen K, Dettrick Z, Hodge A & Lopez AD. An economic evaluation of data collection methods for vital statistics. HIS Knowledge Hub Working Paper No. 28, School of Population Health, University of Queensland, Brisbane, 2013
12	AbouZahr C. Assessing and monitoring the performance of health information systems: metrics and models. HIS Knowledge Hub Working Paper No. 29, School of Population Health, University of Queensland, Brisbane, 2013
Theme 2 - Developing the workforce	
13	Aung E, Rao C & Walker S. Teaching cause-of-death certification: lessons from international experience. HIS Knowledge Hub Working Paper No. 04, School of Population Health, University of Queensland, Brisbane, 2010
14	Walker S, Rampatige R, Wainiqolo I & Aumua A. Improving cause-of-death certification practices in the Pacific: findings from a pilot study of the WHO web-based ICD training tool. HIS Knowledge Hub Working Paper No. 16, School of Population Health, University of Queensland, Brisbane, 2011
15	Adair T. Improving the use of demographic and health surveys as a source of health information. HIS Knowledge Hub Working Paper No. 21, School of Population Health, University of Queensland, Brisbane, 2011

16	Whittaker M, Mares R & Rodney A. Mapping health information system competencies for health workers in low- and middle-income countries. HIS Hub Working Paper No. 30, School of Population Health, University of Queensland, Brisbane, 2013
Theme 3 - Strengthening CRVS	
17	Mikkelsen L & Lopez AD. Improving the quality of birth, death and cause-of-death information: guidance for a standards-based review of country practices. HIS Hub Working Paper No. 01, School of Population Health, University of Queensland, Brisbane, 2010
18	Mikkelsen L & Lopez AD. Rapid assessment of national civil registration and vital statistics systems. HIS Hub Working Paper No. 02, School of Population Health, University of Queensland, Brisbane, 2010
19	Mikkelsen L. Assessing the quality of vital statistics systems: lessons from national evaluations in Sri Lanka and the Philippines. HIS Hub Working Paper No. 08, School of Population Health, University of Queensland, Brisbane, 2009
20	Mikkelsen L. Rapid assessment of vital statistics systems: evaluation and application of the WHO/HIS Hub tool in 26 countries in the Asia-Pacific region. HIS Hub Working Paper No. 10, School of Population Health, University of Queensland, Brisbane, 2010
21	AbouZahr C, Mikkelsen L, Rampatige R & Lopez A. Mortality statistics: a tool to improve understanding and quality. HIS Knowledge Hub Working Paper No. 13, School of Population Health, University of Queensland, Brisbane, 2010
22	Rampatige R, Mikkelsen L, Gamage S & Peiris S. Promoting the periodic assessment of the quality of medical records and cause of death data: lessons learned from a medical records study in Sri Lanka. HIS Knowledge Hub Working Paper No. 14, School of Population Health, University of Queensland, Brisbane, 2010
23	Schmider A. Advocating for civil registration: guide to developing a business case for civil registration. HIS Knowledge Hub Working Paper No. 15, School of Population Health, University of Queensland, Brisbane, 2010
24	AbouZahr C, Lopez AD, Mikkelsen L, Rampatige R, Schmider A, Upham S, et al. Strengthening practice and systems in civil registration and vital statistics: a resource kit. HIS Knowledge Hub Working Paper No. 19, School of Population Health, University of Queensland, Brisbane, 2012
25	Mikkelsen L. Strategic planning to strengthen civil registration and vital statistics systems: guidance for using findings from a comprehensive assessment. HIS Knowledge Hub Working Paper No. 23, School of Population Health, University of Queensland, Brisbane, 2012
26	Mikkelsen L. Improving civil registration and vital statistics: lessons learnt from the application of HIS Hub tools in Asia and the Pacific. HIS Knowledge Hub Working Paper No. 24, School of Population Health, University of Queensland, Brisbane, 2012
27	Kabadi G, Mwanyika H & de Savigny D. Innovations in monitoring vital events: mobile phone SMS support to improve coverage of birth and death registration – a scalable solution. HIS Knowledge Hub Working Paper No. 31, School of Population Health, University of Queensland, Brisbane, 2013
28	Riley I, Serina P, Hernandez B, Freeman M, Praveen D, Tallo V, et al. Symptom recall and the diagnostic accuracy of verbal autopsies. HIS Knowledge Hub Working Paper No. 34, School of Population Health, University of Queensland, Brisbane, 2013
29	Naidu S, Buttsworth B & Aumua A. Strengthening civil registration and vital statistics systems in the Pacific: the Fijian experience. HIS Knowledge Hub Working Paper No. 35, School of Population Health, University of Queensland, Brisbane, 2013
30	Gouda H, Lehmann D & Riley I. Measurement of cause-of-death in Papua New Guinea populations using a locally developed verbal autopsy instrument: 1970–2001. HIS Knowledge Hub Working Paper No. 36, School of Population Health, University of Queensland, Brisbane, 2013
Theme 4 - Tracking progress towards MDGs and other global development goals	
31	Goater S, Derne B & Weinstein P. Critical issues in the development of health information systems to support environmental health policies and programs: a case study of Ciguatera. HIS Knowledge Hub Working Paper No. 09, School of Population Health, University of Queensland, Brisbane, 2009
32	AbouZahr C. Making sense of maternal mortality estimates. HIS Knowledge Hub Working Paper No. 11, School of Population Health, University of Queensland, Brisbane, 2010

33	Gakidou E & Fullman N. Monitoring health inequalities: measurement considerations and implications. HIS Knowledge Hub Working Paper No. 20, School of Population Health, University of Queensland, Brisbane, 2012
34	Percival T, Langridge F & Stowers L. Keeping promises, measuring results: implications for maternal and child health in the Pacific. HIS Knowledge Hub Working Paper No. 26, School of Population Health, University of Queensland, Brisbane, 2013
35	Whittaker M, Bergquist R & Buttsworth M. Strengthening control of neglected tropical diseases in the Asia-Pacific region: implications for health information system priorities and strategies. HIS Knowledge Hub Working Paper No. 32, School of Population Health, University of Queensland, Brisbane, 2013
36	AbouZahr C, Aumua A, Gilks C, Gouda H, Hodge N, Lopez AD, et al. Strengthening health information systems for preventing and controlling non-communicable diseases in the Pacific. HIS Knowledge Hub Working Paper No. 33, School of Population Health, University of Queensland, Brisbane, 2013
37	Rampatige R, Mikkelsen L, Prado B, Riley I & Lopez AD. Assessing the reliability of hospital-based cause-of-death statistics: evidence-based guidelines for country application. HIS Knowledge Hub Working Paper No. 37, School of Population Health, University of Queensland, Brisbane, 2013

Documentation notes	
Documentation notes describe the methods and findings of HIS Hub activities in partner countries. The series also reports on work in progress, particularly for large or complex initiatives, or on specific components or aspects of projects that may be of more immediate relevance to stakeholders.	
Theme 1 - Building health information systems	
Item no.	
1	Lum On M, Bennett V & Whittaker M. Health information systems in the Pacific: a case study of Vanuatu. HIS Hub Documentation Note No. 03, School of Population Health, University of Queensland, Brisbane, 2010
2	Lum On M, Fao F & Whittaker M. Wallis and Futuna: a descriptive mapping of health information systems. HIS Hub Documentation Note No. 04, School of Population Health, University of Queensland, Brisbane, 2010
3	Malik A. Establishing the health information needs of Ministries and Ministers of Health: findings from a literature review. HIS Knowledge Hub Documentation Note No. 05, School of Population Health, University of Queensland, Brisbane, 2010
4	Davies P, Hodge N & Skiller L. Analysing parliamentary questions to determine the information needs of senior decision-makers in health. HIS Knowledge Hub Documentation Note No. 14, School of Population Health, University of Queensland, Brisbane, 2011
5	Buttsworth M & Rao C. Prioritising data sources to strengthen health information systems in the Asia-Pacific region. HIS Knowledge Hub Documentation Note No. 17, School of Population Health, University of Queensland, Brisbane, 2013
Theme 2 - Developing the workforce	
6	Adair T. Making better use of existing datasets to strengthen the evidence base for health policy: report on a training workshop in Samoa, October 2010. HIS Knowledge Hub Documentation Note No. 06, School of Population Health, University of Queensland, Brisbane, 2010
7	Adair T. Building the evidence base for health policy: guidelines for understanding and utilising basic health information. HIS Knowledge Hub Documentation Note No. 13, School of Population Health, University of Queensland, Brisbane, 2011
8	Adair T. Training the HIS workforce in Fiji to maximise the utilisation of existing datasets. HIS Knowledge Hub Documentation Note No. 15, School of Population Health, University of Queensland, Brisbane, 2011
Theme 3 - Strengthening CRVS	
9	Gamage S, Rampatige R, Samarakoon J, Ranadheera S, Mikkelsen L & Aung E. Assessing the production, quality and use of national vital statistics: a case study of Sri Lanka. HIS Hub Documentation Note No. 01, School of Population Health, University of Queensland, Brisbane, 2009

10	Aung E, Cajita J, Hufana L, Lopez AD, Morante L, Mikkelsen L, et al. Assessing the production, quality and use of national vital statistics: a case study of the Philippines. HIS Hub Documentation Note No. 02, School of Population Health, University of Queensland, Brisbane, 2009
11	Carter K, Taylor R & Lopez AD. Routine mortality and cause-of-death reporting and analysis systems in seven Pacific island countries. HIS Knowledge Hub Documentation Note No. 08, School of Population Health, University of Queensland, Brisbane, 2010
12	AbouZahr C, Mikkelsen L & Lopez AD. Monitoring vital events resource kit: rationale, outline and development plan. HIS Knowledge Hub Documentation Note No. 09, School of Population Health, University of Queensland, Brisbane, 2010
13	Riley I, Freeman M, Praveen D, Tallo V, Joshi R, Sanvictores D, et al. Symptom recall and the diagnostic accuracy of verbal autopsies. HIS Knowledge Hub Documentation Note No. 11, School of Population Health, University of Queensland, Brisbane, 2010
14	Carter K, Cornelius M, Taylor R, Ali S, Rao C, Lopez AD, et al. An assessment of mortality estimates for Fiji, 1949–2008: findings and life tables. HIS Knowledge Hub Documentation Note No. 12, School of Population Health, University of Queensland, Brisbane, 2010
15	Upham S, Mikkelsen L, AbouZahr C, Rampatige R & Lopez AD. Development of a resource kit for strengthening practice and systems in civil registration and vital statistics: strategy and process. HIS Knowledge Hub Documentation Note No. 16, School of Population Health, University of Queensland, Brisbane, 2011
Theme 4 - Tracking progress towards MDGs and other global development goals	
16	Health Information Systems Knowledge Hub, The University of Auckland, Tongan Ministry of health. Pacific Child Health Indicator Project. HIS Knowledge Hub Documentation Note No. 07, School of Population Health, University of Queensland, Brisbane, 2010
17	Goater S. Integrating existing datasets to manage key health priorities: the case of mosquito-borne disease. HIS Knowledge Hub Documentation Note No. 10, School of Population Health, University of Queensland, Brisbane, 2010

Peer-reviewed papers and abstracts	
Documentation notes describe the methods and findings of HIS Hub activities in partner countries. The series also reports on work in progress, particularly for large or complex initiatives, or on specific components or aspects of projects that may be of more immediate relevance to stakeholders.	
Theme 1 - Building health information systems	
Item no.	
1	Rampatige R & Abusayeed MH. Low cost health information technology to improve the quality of cause of death certification data. Sri Lanka Journal of Bio-Medical Informatics 2012; 3: 34–39
2	Hodge N. What are health information systems and why are they important? Pacific Health Dialog 2012; 18(1): 15–19
3	Lum On M, Bennett V & Whittaker M. Issues and challenges for health information systems in the Pacific. Pacific Health Dialog 2012; 18(1): 20–24
4	Hufanga S & Hodge N. The Pacific Health Information Network: progressing HIS in the region. Pacific Health Dialog 2012; 18(1): 35–38
5	Lewis D, Hodge N, Gamage D & Whittaker M. Understanding the role of technology in health information systems. Pacific Health Dialog 2012; 18(1): 144–154
6	Hodge N. Annual reports in the Pacific: transforming data into information and knowledge. Pacific Health Dialog 2012; 18(1): 207–214
7	Mikkelsen L, Horstmann F & Ridley J. Building knowledge and capacity: training programs of the Health Information Systems Knowledge Hub. Health Information Management Journal 2013; 42(1): 15–16
8	Aung E & Whittaker M. Preparing routine health information systems for immediate health responses to disasters. Health Policy and Planning 2013; 28(5): 495–507

Theme 2 - Developing the workforce	
9	Aung E, Rao C & Walker S. Teaching cause-of-death certification: lessons from international experience. <i>Postgraduate Medical Journal</i> 2010; 86(1013): 143–152
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11	Adair T. Building the evidence-base for health policy: guidelines for understanding and utilising basic health information. <i>Pacific Health Dialog</i> 2012; 18(1): 53–62
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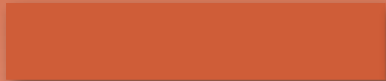
Policy Briefs	
Policy briefs translate research knowledge into policy and practice advice. They also include clear recommendations for action for policymakers in the region..	
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1	Investing in health information systems. HIS Knowledge Hub Policy Brief No. 02, School of Population Health, University of Queensland, Brisbane, 2013

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Stories of change	
Stories of change highlight the policy impact of Hub activities in the Asia-Pacific region	
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1	The Pacific Health Information Network – a mechanism for change through collaboration, capacity building and advocacy. HIS Knowledge Hub Story of Change No. 02, School of Population Health, University of Queensland, Brisbane, 2013
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The Knowledge Hubs for Health are a strategic partnership initiative funded by the Australian Agency for International Development

