



Strengthening Civil Registration and Vital Statistics Systems through Innovative Approaches in the Health Sector

Guiding Principles and Good Practices

Report of a technical meeting

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Executive summary

Stimulated by the imperative of demonstrating results and accountability in health, there has been an upsurge in health sector interventions to track vital events – notably births and deaths and their causes – in order to understand the dimensions of problems such as maternal and under five mortality and to develop and monitor interventions to address them. The health sector is not only a beneficiary of complete and reliable civil registration and vital statistics (CRVS) systems, but can also make a substantial contributor to the recording of events in a CRVS system.

A central aim of the civil registration system is to formally register and certify all births and all deaths^{*}. Yet in many countries, not all vital events are registered or included in vital statistics. Health sector programmes, services and interventions can be leveraged for notification of births and deaths, increased registration and certification and improved recording of causes of death. Innovative approaches, especially using ICT, are being applied in projects around the world. The health sector therefore recognizes that it has a role to play in not only contributing to, but in improving CRVS systems.

In support of this, WHO, in collaboration with Canada, UNICEF, USAID and the World Bank, organized a technical meeting to share experiences and explore the potential of health sector innovation for strengthening CRVS systems.

- Attended by more than 60 participants, and with presentations from many countries and regions, the objectives of the meeting were to share evidence and experiences about the potential of health sector innovations to contribute to CRVS strengthening in countries and to agree on a common strategy to maximize the benefits of health sector investments.
- It was recognized that emerging methods and innovations in the health sector offer opportunities for modernizing CRVS systems.
- The outcome of the meeting was a set of contemporary principles and good practices that can be used to identify where health sector innovations can support CRVS systems overall, recognizing that high levels of health service coverage can be used to directly benefit the notification and registration of vital events.

This paper describes key areas in which health innovations can contribute to CRVS systems strengthening and lays out good practices against which health sector activities should be assessed. The target audience is international and national stakeholders involved in health innovations –focused on births, deaths and causes of death – that have the potential to strengthen national CRVS systems.

However, health is not the only agency with critical interests in CRVS systems, and ongoing success will depend on coordinated action among sectoral stakeholders and a “systems” approach that tackles the organizational, technical and behavioral determinants of CRVS performance and the synergies emerging from interactions among them. Health sector investments need to be made as part of multisectoral, holistic approaches that are nationally owned, scalable, sustainable and cost-effective and that build upon and contribute to country CRVS systems.

* Civil registration is defined as the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events (live births, deaths, marriages and divorces) and other civil status events pertaining to the population as provided by decree, law or regulation, in accordance with the legal requirements of each country. Records of vital events from civil registration are the critical source of vital statistics. (United Nations United Nations Department of Economic and Social Affairs (2013) UN Principles and Recommendations for a Vital Statistics System Revision 3 DRAFT April 2013 http://unstats.un.org/unsd/demographic/standmeth/principles/unedited_M19Rev3en.pdf)

Core principles

Four core principles were identified that should guide health sector actions to improve CRVS systems:

- I. **Health sector and CRVS interactions are based on principles of mutuality and partnership and supportive of country ownership and leadership:** Health platforms and relevant innovations are leveraged in ways that contribute to system-wide development of CRVS and are attuned with existing CRVS systems and the culture and history of the country.
- II. **Innovations in tracking maternal, newborn and child health contribute to strengthening and modernizing CRVS systems:** Health platforms and innovations are used to improve tracking of maternal, newborn and child health, and are closely linked to the notification, registration and certification of relevant vital events by the authorities and to the compilation of vital statistics.
- III. **Deaths are reported in a complete and timely manner, including accurate recording of causes of death:** All deaths occurring in health facilities are medically certified by a trained physician, using the international form of the death certificate and including the underlying cause of death (CoD), and are notified to the registration authorities. Deaths that cannot be medically certified are notified to the registration authorities and verbal autopsy used to determine probable cause of death.
- IV. **Health sector activities contribute to improved vital statistics for policy, planning and programming:** Health sector innovations and data collection are designed to improve the availability and quality of vital statistics and are utilized to support improvement also in the broader context of the national CRVS system. The aim is to produce, disseminate and use nationally representative statistics on births and deaths disaggregated by age, sex, cause of death, and by geographic and administrative levels.

Principles and good practices for health sector contributions to CRVS systems

For each of the four core principles, a number of examples of good practices in health sector innovations were identified. The good practices are summarized in Box 1 and described in more detail in the body of this report. Note that some good practices may be common to several principles, for example, the need for cross-sectoral linkages.

I. Health sector and CRVS interactions are based on principles of mutuality and partnership and supportive of country ownership and leadership.		
Principles and action areas	Good practice characteristics	
1 Relevant health-sector actions and innovations are implemented in ways that contribute to system-wide development of CRVS	1.1	<i>Collaboration:</i> Health sector actions are developed and implemented in collaboration with country stakeholders.
	1.2	<i>Coordination:</i> The health sector participates in an effective country-led coordination mechanism that brings together key stakeholders across multiple sectors.
	1.3	<i>Advocacy:</i> The health sector plays a role in political mobilization and community advocacy for CRVS.
	1.4	<i>Context:</i> Health sector activities are developed through analysis of business processes and implemented in ways that take account of cultural, legal, regulatory and institutional frameworks and capacities.
	1.5	<i>Capacities:</i> Health sector activities support capacity building, including technical, financial and managerial capacities, and institutional development, both within the health sector and beyond.
	1.6	<i>Scalability and sustainability:</i> Health innovations for CRVS are country-owned, appropriate, scalable and sustainable.

II. Innovations in tracking maternal, newborn and child health contribute to strengthening and modernizing CRVS		
Principles and action areas	Good practice characteristics	
2	Modern CRVS systems are strengthened by drawing on health sectors platforms, and by using innovations in tracking maternal, newborn and child health (MNCH)	2.1 <i>Health facilities:</i> All births and maternal and child deaths occurring in public and private facilities are recorded and notified to the relevant authorities in a complete, secure, timely and accurate manner. Registration points are placed in or near health facilities.
		2.2 <i>Linkages:</i> MNCH innovations maximize the potential of existing health delivery platforms and points of contact and referral with families both within and outside of health facilities, such as immunization, maternal, and newborn and child health care. Pregnancy surveillance registers link with health information and civil registration systems in order to maximize the likelihood of capturing all vital events.
		2.3 <i>Systemic approaches:</i> Systems-wide approaches are applied to the introduction of innovations for tracking MNCH, taking into account the legal, socio-cultural, and institutional context and business processes in order to maximize sustainability and country ownership.
		2.4 <i>Awareness and capacity building for health workers:</i> Investments are made in training and continuing education for health staff about birth and death registration.
		2.5 <i>Incentives for individuals and families:</i> In collaboration with other sectors, incentives are introduced to encourage individuals and families to register vital events.
		2.6 <i>Partnerships:</i> MNCH innovations work with all partners to ensure that hard-to-reach and marginalized populations benefit from recognition and registration.
		2.7 <i>Outreach:</i> MNCH innovations aim for complete, timely and accurate notification to the relevant registration authorities of births and deaths occurring in health facilities and also harness the network of health care providers and agents in the formal and non-formal health sectors such as community health workers and traditional birth attendants.
		2.8 <i>Intersectoral action:</i> MNCH innovations reach out to non-health actors such as religious authorities, funeral organizations, teachers, community leaders and businesses.
		2.9 <i>Access to benefits:</i> Innovations in MNCH tracking to increase vital events notification and registration bring benefits to individuals and families in terms of improved rights and access to care, social protection and education, and entry to national identity systems.
		2.10 <i>ICT:</i> The introduction of MNCH innovation is based on analysis of business processes and address defined needs. Interventions involving ICT are developed with sustainability and scalability in mind and support interoperability and capacity development in countries.
		2.11 <i>Data use:</i> Data on fertility and morality generated through MNCH activities are shared with the vital statistics system and used to inform local and national level public policy and planning, as well as used for quality audit.

III. Deaths are reported in a complete and timely manner, including accurate recording of causes of death

Principles and action areas	Good practice characteristics
<p>3 All deaths in health facilities are medically certified by a trained physician using ICD and notified to the registration authorities. Deaths that occur outside health facilities and that cannot be medically certified are notified to the registration authorities and verbal autopsy used to determine probable cause of death.</p>	<p>3.1 <i>Legislative and regulatory framework and standards:</i> Legislation on death and cause of death reporting and recording is established and enforced and based on ICD standards and lists. Operational guidance on reporting and recording of deaths and causes of death is available and disseminated.</p> <p>3.2 <i>Networking:</i> The health sector works with community members such as health workers, TBAs, teachers, religious authorities and traditional leaders to identify and notify deaths and support family members in registering the event and obtaining certificates. There is advocacy to the general public about the public health importance of registering deaths.</p> <p>3.3 <i>Business Process:</i> A clear business process describes who can certify death and causes of death, ensure reliable coding, and share and analyze information while maintain confidentiality.</p> <p>3.4 <i>Advocacy and training for physicians:</i> Interventions are in place to increase awareness among physicians of death-certification practices and improve skills during medical training. Quality assurance procedures include regular validation of cause-of-death certification in hospitals.</p> <p>3.5 <i>Mortality coding:</i> Electronic tools are used for recording and coding of causes of death according to ICD rules; a cadre of trained coders is established with the skills to utilize electronic coding tool to ensure reliable classification of causes of death according to ICD rules.</p> <p>3.6 <i>Identifying deaths at the community level:</i> Strategies are developed to link relevant local stakeholders (health, registrars and others such as funeral directors or burial services) in order to improve the recording, notification and ascertainment of cause of death. A multi-sectoral and collaborative approach is implemented to capture information about as many of these deaths as possible.</p> <p>3.7 <i>Verbal autopsy:</i> Verbal autopsy techniques are used for determining causes of death among non-facility deaths using networks of key informants. However, where medical certification of cause of death can be obtained, this should take priority. Where verbal autopsy is required, verbal autopsy could be performed for either all non-facility deaths, or a representative sample, depending on population size.</p> <p>3.8 <i>Data use:</i> Data on patterns and trends in mortality by age, sex and cause are used to inform local and national level public policy and planning, as well as used for quality audit.</p>

IV. Health sector activities contribute to improved vital statistics for policy, planning and programming

Principles and action areas	Good practice characteristics
<p>4 Health sector innovations are designed to improve the availability, quality and use of nationally representative statistics on births and deaths disaggregated by age, sex, cause of death, and by geographic and administrative levels.</p>	<p>4.1 <i>Legal framework:</i> Ensuring that health sector innovations for producing vital statistics take place within the context of the national legal frameworks that include clearly defined roles and responsibilities for vital statistics, including protection of confidentiality of individual data as well as transparency and sharing of aggregated statistics for policy and planning purposes.</p> <p>4.2 <i>Capacity development:</i> Addressing the need for capacity development at all levels of the vital statistics and health information systems (HIS), including training and skills building as well as lessons learnt from efforts to scale up CRVS system improvements. Capacity development activities should be institutionalised in order to ensure sustainability over the long term.</p> <p>4.3 <i>Partnerships and collaboration:</i> Creating functional collaborative arrangements across health, statistics, and other data systems in order to create synergies and share practices and information, for example, incorporating data collection and management practices used in surveillance and sample registration systems into the CRVS system. Creating secure and confidential linkages between HIS and other health sector data systems with CRVS. Using all data collection opportunities in the health sector (e.g. surveys) to generate information on registration coverage (death registration coverage in particular).</p> <p>4.4 <i>Standards:</i> Adhering to internationally recognized minimum indicators and tabulations and standardizing forms across health facilities.</p> <p>4.5 <i>Data analysis and quality:</i> Making use of innovative techniques for statistical analyses in order to maximize the value of available data, enhance data quality, and take account of missing data and biases. Taking a proactive role in collecting, compiling and producing statistics, especially in health facilities. Promoting the use of multiple data sources to produce vital statistics in settings where available data are of limited quality.</p> <p>4.6 <i>Improving design:</i> Focusing household surveys on monitoring coverage of services, individual behaviors and risk factors, and using interim methods for measuring mortality such as surveys and censuses as complementary to rather than substitutes for CRVS. Implementing health and demographic surveillance in ways that support the broader CRVS system and that provide analytical value to vital statistics.</p>

1. Introduction

Recent years have seen a growing momentum to strengthen country civil registration and vital statistics (CRVS) systems.[†] In part, this is fuelled by awareness of the important legal and socio-economic benefits that accrue to individuals who have documentary evidence of their identities and family relationships.^{1 2 3} It is also driven by the need for reliable and timely data needed for tracking global goals such as the Millennium Development Goals (MDGs) and the post-2015 development agenda.^{4 5}

This need is particularly acute in the health sector in which there are insistent demands for accountability and results. For example, in 2011 the Commission on Information and Accountability for Women's and Children's Health established a framework for global reporting, oversight and accountability on women's and children's health.^{6 7} The Commission calls upon countries to establish systems for registration of births, deaths and causes of death, acknowledged to be the most effective and efficient source of data for monitoring progress, especially with regard to under-five and maternal mortality.⁸

2. Purpose of the meeting

New demands for accountability and results in health have stimulated an expanded and more proactive health sector engagement in CRVS, involving innovative approaches to identify and notify vital events at community level and higher policy-level interventions to address CRVS issues in a systemic way. Several initiatives are underway to enhance the role of the health sector by introducing innovative approaches to improve the identification, reporting and registration of births and deaths and causes of death in facilities and at community level. These health sector investments need to be made in ways that build upon and contribute to country CRVS systems and that recognize the importance of multisectoral, holistic approaches that are nationally owned, scalable, sustainable and cost-effective. In support of this, WHO, in collaboration with Canada, UNICEF, USAID and the World Bank, organized a technical meeting to share experiences and explore the potential of health sector innovation for strengthening CRVS systems. Specifically, the objectives of the meeting were to:

- Share the evidence and potential of health sector innovations as they contribute to CRVS strengthening in countries;
- Agree upon common strategy to maximize the benefits of health sector investments for CRVS strengthening.

[†] Civil registration is defined as the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events (live births, deaths, marriages and divorces) and other civil status events pertaining to the population as provided by decree, law or regulation, in accordance with the legal requirements of each country. Records of vital events from civil registration are the critical source of vital statistics. (United Nations United Nations Department of Economic and Social Affairs (2013) UN Principles and Recommendations for a Vital Statistics System Revision 3 DRAFT April 2013.

http://unstats.un.org/unsd/demographic/standmeth/principles/unedited_M19Rev3en.pdf

The meeting provided an opportunity to summarize lessons learnt and produce a list of good practice principles that can function as a checklist for assessing the extent to which health sector innovations are supportive of CRVS systems overall. The target audience for this checklist is international and national stakeholders involved in health innovations –specifically focused on births, deaths and causes of death – that have the potential to strengthen national civil registration and vital statistics systems (CRVS).

Participants at the meeting were drawn from ministries of health and other country ministries and agencies, academia and research institutes, UN agencies and regional commissions, development partners and banks, donors, funds and foundations. Presentations were arranged around four themes for CRVS improvement: contributions of the health sector to CRVS development; innovations in maternal, newborn and child health; strengthening mortality and cause of death information; and generating and using vital statistics from CRVS and related systems (see Agenda, Annex I). A discussion paper, *Potential and Principles for Health Sector Actions to Strengthen Civil Registration and Vital Statistics Systems*, provided initial ideas to guide the meeting discussions (Annex II).

3. Role of the health sector in CRVS

The health sector has long been recognized as a contributor to CRVS.⁹ Its role is often described in terms of the activities of health institutions, which act as informants of occurrence of births and deaths, and enable the certification of causes of death by physicians. Information collected by health institutions are part of the delivery of health care is crucial in generating health statistics to guide public health policy and planning.¹⁰ Systems in many countries also use these health data and records to underpin the CRVS system processes, especially birth and death registration.

- CRVS systems can be thought of as comprising the following key stages:
- Recording of the occurrence of vital events (births, deaths, etc.) and associated characteristics;
- Notification of the occurrence of vital events to individuals and families and to the appropriate registration authorities;
- Formal registration of vital events through the civil registration system;
- Issuance of certificates of birth, death, causes of death to family members and relevant authorities;
- Compilation, analysis and interpretation of vital statistics based on the information generated through registration and certification;
- Archiving of individual records for future use.

The potential role of health sector action varies at each stage, as shown visually in Figure 1. The health sector role depends on country legal, institutional, and sociocultural circumstances. For example, in many countries, the registry office is located within health facilities in order to facilitate immediate registration of vital events. In some instances, the health sector is legally mandated to register births and deaths and deliver certificates. Recent innovations in mobile technologies offer opportunities to greatly strengthen aspects of CRVS systems, especially in relation to the recording of the occurrence of vital events at community level and notification to the registration authorities. Many of these innovations are being introduced through the health sector, both in facilities, and through the network of community health workers and informal health workers. Adherence to good practice principles as these innovations are introduced will help ensure that innovations reinforce the CRVS system as a whole rather than remaining isolated, stand-alone interventions.

Figure 1. Schematic description of different sector involvement in aspects of the CRVS system

	Health sector	Civil registration authorities	Statistical Offices	Individuals and families	Communities and community leaders
Promotion and community mobilization for registration of vital events					
Recording of the occurrence of vital events (births, deaths, etc.) and associated characteristics;					
Notification of the occurrence of vital events to individuals and families and to the appropriate registration authorities;					
Registration of vital events formally through the civil registration system;	If legally mandated				
Issuance of certificates of birth, death, causes of death to family members and relevant authorities;					
Compilation, analysis and interpretation of vital statistics based on the information generated through registration and certification;					
Archiving of individual registration records for future use records for future use.					

4. Challenges and opportunities for health sector engagement in CRVS

Along with the national registration authorities and statistical offices, the health sector is an important player through its role in producing information about vital events – births and deaths – that occur in health facilities and its key responsibility for generating information on causes of death. This role is not confined to health facilities however; the health sector is linked to communities through health posts, outreach clinics and community health workers. This stable, complex and functional network provides a mechanism for reaching individuals and families, for example through provision of maternity and infant/child care, and services for the detection and treatment of diseases such as malaria, HIV/AIDS, and tuberculosis, and recording vital events such as births and deaths. The health network is therefore a significant contributor to, as well as beneficiary of, a functioning CRVS system.

The potential to harness this health network for the benefit of CRVS is vastly enhanced by the emergence of new information and communication technologies such as mobile devices for the rapid notification of vital events, and electronic methods to speed up data transfer and compilation, analysis and dissemination. The health sector can also contribute through health administrative data, which can be used to support improvement in both civil registration and vital statistics.

Experiences and results

Presentations and discussions during the meeting described experiences and challenges in introducing activities to improve the identification and notification of births, deaths and causes of death and to strengthen the functioning of the country CRVS system. Some of the themes emerging from the discussion were specific to health action for CRVS. Others addressed challenges of CRVS strengthening more broadly. In a wide-ranging discussion, key issues in relation of health involvement in CRVS included:

- Working collaboratively across sectors, for example across health, child protection, social protection, national identity systems, education, governance, democracy, humanitarian action, judiciary, and statistics;
- The importance of making the case for the value of CRVS systems across health programmes, including those focused on specific health challenges (maternal, neonatal and under-five mortality, HIV/AIDS, noncommunicable diseases etc.) and those that address health systems issues such as universal health coverage (UHC);
- Making more effective use of community health workers to strengthen notification of registration, especially births, for example through SMS;
- Harnessing agents such as TBAs and pharmacists for notification of vital events;
- The importance of using the opportunity of birth notification/registration to improve access to health interventions;
- The potential to use opportunities such as child health days, measles/polio immunization campaigns to communicate, advocate and mobilize mothers for improved registration and linking to mobile registration;
- Synergizing data available from CRVS and HIS systems, supporting the use of the birth certificate as a foundational document for other administrative mechanisms such as health cards; and linking CRVS and HIS databases, bearing in mind the need to manage confidentiality and data security;
- Using all contacts between individuals and families and the health sector to improve the registration of vital events, for example, by leveraging immunization, antenatal and postnatal care, maternal, newborn and child health activities for increased notification and registration of vital events;
- Harnessing both formal and informal networks in health and other sectors such as education for the notification of vital events;
- Generating real time and small area data, for example using the development of maternal mortality surveillance and information systems as drivers for the development of CRVS;
- Empowering health workers to understand their roles in CRVS and developing their capacities, including in relation to cause of death ascertainment;
- Evaluating and demonstrating the potential of sample registration and verbal autopsy (SAVVY) to strengthen CRVS systems and generate data on births, deaths and causes of death at national and local levels.

Discussion

There was considerable discussion on the challenges of embedding the broader relevance for CRVS strengthening, including:

- The need to make a strong advocacy case to national authorities on the importance of CRVS, including how the costs will be offset through improved national planning;
- The importance of country ownership and leadership and the important role played by country champions for CRVS;
- The importance of supporting holistic national strategies and clarifying roles and responsibilities among national agencies and development partners;
- The need to explicitly link actions for CRVS to demands for evidence based decision-making and accountability, globally, nationally and at community level;
- How to position interest in the statistical outputs of the CRVS system within the broader context of systemic efforts to build sustainable CRVS;
- How to bring about the legal and regulatory changes required to improve the performance of CRVS systems;
- The importance of establishing sound legislative frameworks within which to link CRVS improvement and national identity management systems;
- How to work with communities to overcome barriers and enhance understanding of the purpose and potential benefits of registration of vital events;
- Understanding the impact – including unintended effects – of incentives for birth and death registration and of penalties for late registration or non-compliance;
- How to strengthen the notification of births and deaths, for example by reaching out to the health sector, community leaders, funeral authorities, religious institutions;
- The importance of analyzing the business processes in different parts of the CRVS system and how these can be meshed more effectively.

Based on the overview of the role of the health sector in CRVS and the themes emerging from the group and plenary discussions, this paper presents a set of guiding principles for health sector contributions to CRVS systems.

5. Principles and good practices for health sector contributions to CRVS systems

The global increase in initiatives to strengthen various aspects of CRVS is unprecedented both in range and in the number of activities planned or underway. Evidence presented at the meeting showed contemporary regional, multi-partner initiatives supporting CRVS in countries. These initiatives are by no means confined to the health sector but also involve institutions working in areas such as governance, justice, legal identity, human rights, child protection, security and statistics.

In this modern context, a fundamental principle for health sector engagement involves acknowledgement of this rapidly evolving and complex, multi-sectoral context and the positioning of health action in ways that are both supportive of CRVS and beneficial to the health sector. Meeting participants agreed that the health sector can contribute to CRVS strengthening in four main areas:

- Supporting the system-wide development of CRVS.
- Introducing innovations in tracking maternal, newborn and child health.
- Reporting and reliably recording causes of death.
- Compiling, analysing and disseminating vital statistics for policy and programming.

Health sector action in each of these four areas should be based on an initial situation assessment undertaken in close collaboration with country stakeholders and should be integrated into national CRVS development strategies and plans. Tools for such multi-sectoral situation assessments and planning are available and have been widely tested and implemented.^{11 12 13 14 15}

This paper elaborates overall guiding principles for each of these action areas and describes key characteristics of related activities. These are described in the following section and summarized in Box 1 above, which can serve as a good practice checklist.

I. Health sector and CRVS interactions are based on principles of mutuality and partnership and supportive of country ownership and leadership.

The key principle is that health sector platforms and relevant innovations are implemented and leveraged in ways that contribute to system-wide development of CRVS and are attuned with existing CRVS systems and the culture and history of the country.

In support of this, the health sector should participate in multi-sectoral assessment of the functioning of the national CRVS. It should be an active partner in the development, implementation and monitoring of country CRVS action plans that are based on sound analysis and understanding of business processes, contextual issues and developed in a transparent, participatory process with multi-stakeholder endorsement. The aim is not to stymie the introduction of new approaches and technologies, but, rather, to ensure that these are relevant and appropriate to local contexts, cost-effective and scalable and sustainable over the long term. Good practices include the following:

Collaboration: Developing and implementing health sector actions in collaboration with country stakeholders (including the NSO and civil registration authorities), donors and development partners.

Coordination: Participation by the health sector stakeholders in an effective country-led coordination mechanism that brings together key stakeholders across multiple sectors and oversees the development and implementation of national CRVS plans.

Advocacy: Ensuring that the health sector contributes to political mobilization and advocacy for CRVS and harnesses its network of community workers and outreach to help build community awareness of the benefits of CRVS.

Context: Introducing innovations with attention to business processes and developing and implementing health sector activities in ways that take account of cultural, legal, regulatory and institutional frameworks for CRVS.

Capacities: Building country capacities, including technical, financial and managerial capacities. Ensuring that health sector activities support capacity and institutional development, both within the health sector and beyond.

Scalability and sustainability: Designing health innovations to be country owned, appropriate, scalable and sustainable. Health innovations should add value to existing programmes and include a research, monitoring and evaluation component that supports and draws upon country health information and statistical systems.

II. Innovations in tracking maternal, newborn and child health contribute to strengthening and modernizing CRVS systems

The key principle is that health innovations to improve tracking of maternal, newborn and child health are leveraged and closely linked to or integrated with the notification, registration and certification of vital events by the relevant authorities and to the compilation of vital statistics.

Innovation is not just about automation but also about doing things in different ways, reaching out to communities, overcoming social and cultural barriers, building capacities among health care professionals. MNCH innovations comprise both the introduction of new information and communication technologies (ICT) such as mobile devices for recording vital events, but also new ways of doing things and innovative approaches that do necessarily involve technologies. The aim of innovations in MNCH tracking is to leverage and maximize the potential of existing health delivery platforms and points of contact with families, such as immunization, maternal, newborn and child health care as well as management of other diseases and conditions. Health actions may seek to strengthen various elements of CRVS, from notification and recording of vital events (specifically births, deaths and causes of death), to formal registration by the designated authorities, the delivery of certificates to individuals and families and the compilation, dissemination and use of vital statistics. The role of the health sector will differ at each stage, playing a primary, proactive role in the identification and notification of vital events to the registration authorities, and a more supportive, secondary role in the delivery of certificates, for example focusing on encouraging or helping families to register events and collect birth and death certificates. Good practices include the following:

Health facilities: Ensuring that all births and maternal and child deaths occurring in facilities are recorded and notified to the relevant authorities in ways that protect the confidentiality and security of information. The positioning of registration activities in or close to the point of delivery should be encouraged to monitor both births, newborn and maternal deaths. Special efforts are needed to ensure the notification and registration of vital events occurring in private health care facilities.

Linkages: Building links across health programmes to maximize the potential of existing health delivery platforms and points of contact with families, such as immunization, maternal, and newborn and child health care, in order to increase the notification, registration and certification of vital events. Linking pregnancy surveillance registers with health information and civil registration systems maximizes the possibility of capturing all vital events. Where the law allows, positioning civil registration activities in hospitals and maternity units for immediate notification and registration can reduce barriers to registration.

Systemic approaches: Applying a systems-wide approach to the introduction of innovations for tracking MNCH, taking into account the legal, socio-cultural, institutional context, business processes and system architecture in order to maximize sustainability and country ownership. Health innovations are designed for institutionalization and scalability within CRVS systems and take account of CRVS system architecture as they are developed and implemented.

Awareness and capacity-building for health workers: Investing in training and continuing education about CRVS and birth and death registration for health staff involved in programme monitoring and longitudinal follow-up can improve the identification and recording of vital events and help incentivize health workers. MNCH health personnel should be made aware of the importance of registration of births.

Incentives for individuals and families: Introducing incentives, in collaboration with other sectors, to encourage for individuals and families to register events. Research should be carried out to identify and address context-specific barriers to timely registration of vital events such as child naming traditions. Strategies such as 'birth registration days' or 'child health days' can help raise community awareness. Information and communication materials should be created targeting communities and the general public.

Partnerships: Working with partners across the development spectrum, including social protection and humanitarian assistance, in order to enhance equity and ensure that hard-to-reach and marginalized populations benefit from recognition and registration.

Outreach: Introducing health innovations that aim for complete and accurate notification to the relevant registration authorities of births and deaths occurring in health facilities. Ensure that innovations harness the widespread network of health care providers and agents in the formal and non-formal health sectors, for example, community health workers and traditional birth attendants.

Intersectoral action: Using innovative approaches to reach out to non-health actors such as religious authorities, funeral organizations, teachers, community leaders and businesses that can play a role in ensuring that all vital events are registered and individuals and families have access to certificates as and when needed.

Access to benefits: Using innovations in MNCH tracking both to increase vital events notification and registration and to bring benefits to individuals in terms of improved rights and access to care, social protection and education for individuals and families, and entry to national identity systems.

ICT: Ensuring that the introduction of ICT innovations in health – such a ‘e-health’ and ‘m-health’- are based on analysis of business processes, address defined needs and are considered for their contribution to modernizing CRVS systems. Interventions involving ICT should be developed with sustainability and scalability in mind and support interoperability and capacity development in countries. Health facilities should be linked to notification systems, for example through SMS, use of internet. ICT innovations should be designed to preserve integrity by managing data securely and confidentially and in accordance with country and international requirements.

III. Deaths are reported in a complete and timely manner, including accurate recording of causes of death

A key principle is that all deaths occurring in health facilities are medically certified by a trained physician using the international form of the death certificate and including the underlying cause of death (CoD), and notified to the registration authorities. The cause of death information should be coded to statistical categories according to the International Classification of Diseases (currently the 10th Revision).¹⁶ Deaths occurring in the community that cannot be medically certified should nonetheless be notified and/or registered and information collected on mortality by age and sex for the whole population. In these cases, innovations to conduct verbal autopsy to determine probable cause of death can be introduced and can also be used to help formally notify that a death has occurred.¹⁷

The two previous sections both stressed the importance of collaboration across sector and programmes in activities to strengthen CRVS. By contrast, the complete and reliable recording and certification of causes of death is to a great extent a health sector responsibility. This is particularly true for deaths that occur in health facilities or deaths in the community for which the deceased person received formal health care prior to death. For non-facility deaths, likely cause of death can be ascertained using verbal autopsy techniques. The health sector, through its wide network of community workers, is in a good position to identify such deaths and work with communities to ensure that they are registered through the responsible authorities. The health sector is primarily responsible for instigating and conducting verbal autopsy for community deaths. Collaboration with community leaders, funeral and religious authorities can increase the likelihood that all deaths are notified and registered. Good practices include the following:

Legislative and regulatory framework and standards: Establishing, updating and enforcing legislation on CoD reporting based on international standards, including stating clearly who can certify death by cause and promoting the use of the International Form of Medical Certificate of Cause of Death. Developing operational guidance materials on reporting and recording of deaths and causes of death.

Networking at community level: The health sector should work with community members such as health workers, TBAs, teachers, religious authorities and traditional leaders to identify and notify deaths and support family members in registering the event and obtaining certificates. There is advocacy to the general public about the public health importance of registering deaths.

Business Process: Establishing a clear business process describing who can certify death and causes of death, who can ensure reliable coding, and how the data are shared and analyzed while maintaining the confidentiality of personal information.

Advocacy and training for physicians: Taking action to increase awareness among physicians of death-certification practices and improve their skills, both during medical pre-service training (in collaboration with medical training institutions), during professional development and on-the-job. Quality assurance procedures should include regular validation of cause-of-death certification in hospitals.

Mortality coding: Introducing electronic tools for coding of causes of death according to ICD rules¹⁸ and establishing a cadre of trained coders to manage the electronic coding system to ensure reliable classification of causes of death according to ICD rules.

Deaths outside of facilities: Linkages should be established between relevant local stakeholders (health workers, registrars and others such as funeral directors or burial services) for the recording, notification and determining of cause of death for deaths that occur in the community or outside of health facilities. A multi-sectoral and collaborative approach is required to capture information about as many of these deaths as possible.

Identifying deaths at the community level: Strategies should be developed to link relevant local stakeholders (health, registrars and others such as funeral directors or burial services) in order to improve the recording, notification and ascertainment of cause of death. A multi-sectoral and collaborative approach is implemented to capture information about as many of these deaths as possible.

Verbal autopsy: Introducing innovative approaches for determining causes of death among community deaths, such as the application of verbal autopsy using standard international tools with automated determination of cause. This requires the development of a key informant system (persons closely involved with communities, such as community health workers, traditional birth attendants, teachers, village chiefs, religious leaders, etc.). In countries with small populations, verbal autopsy could be performed for all non-facility deaths. For large populations, verbal autopsy may be conducted on a nationally representative sample of all deaths occurring outside a health facility. However, where medical certification of cause of death can be obtained, this should take priority.

Data use: Ensuring that data on patterns and trends in mortality by age, sex and cause are used to inform local and national level public health policy and planning, as well as for quality audit and maternal/perinatal death reviews within facilities.

IV. Health sector activities contribute to improved vital statistics for policy, planning and programming

A key principle is that health sector innovations in vital statistics and data collection are designed to improve the availability and quality of statistics and used to support improvement within the broader context of the development of the national CRVS system as well as the health information system (HIS). The health sector has an important role to play in producing and disseminating nationally representative statistics on births and deaths disaggregated by age, sex, cause of death, and by geographic and administrative levels. Health sector innovations, including analytical innovations, may include the basic generation and compilation of data through the HIS, as well as data analysis, dissemination and use.

The health sector is a major user – and often the instigator – of various ‘interim’ approaches for generating statistics on fertility and mortality in settings in where CRVS systems are dysfunctional or weak. Methods include the use of direct and indirect demographic techniques in censuses and household surveys and the development of fertility and mortality surveillance strategies.¹⁹ The availability of these approaches has been of value from the perspective of monitoring health indicators but can potentially have the unfortunate effect of diverting attention away from the necessity of building sustainable CRVS for national use. None of these interim methods can offer an adequate replacement for a complete civil registration and vital statistics system. While each method has some advantages, none is able to replicate the key strengths of CRVS, namely universality in coverage, permanence and continuity, confidentiality, and archiving of records to enable retrieval by concerned individuals.

Health sector innovations should seek to achieve a better balance between the use of interim approaches for generating vital statistics in the short term and longer-term actions to support improvements in vital statistics derived from a functional civil registration system. Where possible, interim approaches should contribute to both the information need, and the recording of vital events. Good practices in health sector investments and innovations in relation to vital statistics include:

Legal framework: Ensuring that health sector innovations for producing vital statistics take place within the context of the national legal frameworks that include clearly defined roles and responsibilities for vital statistics, including protection of confidentiality of individual data as well as transparency and sharing of aggregated statistics for policy and planning purposes.

Capacity development: Addressing the need for capacity development at all levels of the vital statistics system and the health information system (HIS), including training and skills building as well as lessons learnt from efforts to scale up CRVS system improvements. Capacity development activities should be institutionalised in order to ensure sustainability over the long term.

Partnerships and collaboration: Creating functional collaborative arrangements across health, statistics and research in order to create synergies and share practices and information, for example, incorporating data collection and management practices used in surveillance and sample registration systems into the CRVS system where relevant and appropriate. Creating linkages between HIS and other health sector data systems with CRVS where appropriate. Using all data collection opportunities in the health sector (e.g. surveys) to generate information on registration coverage (death registration coverage in particular).

Standards: Adhering to internationally recognized minimum indicators and tabulations and standardizing forms across health facilities.

Data analysis and quality: Making use of innovative techniques for statistical analyses in order to maximize the value of available data and take account of missing data and biases. Taking a proactive role in collecting, compiling and producing statistics, especially in health facilities. Promoting the use of multiple data sources in order to produce vital statistics in setting where available data are of limited quality. Introducing analytical methods to enhance data quality.

Improving design: Focusing household surveys on monitoring coverage of services, individual behaviours and risk factors, and using interim methods for measuring mortality such as surveys and censuses as complementary to rather than substitutes for CRVS. Implementing health and demographic surveillance in ways that support the broader CRVS system and that provide analytical value to vital statistics.

6. The way forward

Current efforts to strengthen CRVS systems recognize that CRVS, by its nature, is multi-sectoral. Accordingly, functioning systems should draw on many sectors to record, register, compile and analyze all births, all deaths, and all causes of death.

While the important potential of CRVS systems in supporting and enabling more inclusive development has been recognized, efforts to strengthen them have in the past been characterized by ad-hoc and fragmented approaches that never became institutionalized and owned by country policy-makers as the underpinnings of good governance.

Emerging methods and innovations in the health sector offer opportunities for modernizing CRVS systems. This paper describes key areas in which health innovations can contribute to CRVS systems strengthening and lays out good practices against which health sector activities should be assessed.

However, health is not the only agency with critical interests in CRVS systems, and success will depend on coordinated action among sectoral stakeholders and a “systems” approach that tackles the organizational, technical and behavioral determinants of CRVS performance and the synergies emerging from interactions among them.

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