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DATA FOR HEALTH INITIATIVE

CRVS Fellowship profile

Introducing automated verbal autopsy in Nepal

June 2020

Resources available from the University of Melbourne, Bloomberg Philanthropies Data for Health Initiative

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These resources outline the context, training approach, course content and course objectives for the suite of CRVS trainings delivered through the Bloomberg Philanthropies Data for Health Initiative. Each course focuses on a specific CRVS intervention or concept, and is designed to support countries to strengthen their CRVS systems and data.

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The CRVS Fellowship Program aims to build technical capacity in both individuals and institutions to enhance the quality, sustainability and health policy utility of CRVS systems in Fellows' home countries. *Fellowship reports* are written by Fellows as a component of the program, and document, in detail, the research outcomes of their Fellowship. *Fellowship profiles* provide a summary of Fellows' country context in relation to CRVS, an overview of the Fellowship experiences, the research topic and the projected impact of findings.

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Published by the University of Melbourne, Civil Registration and Vital Statistics Improvement, Bloomberg Philanthropies Data for Health Initiative.

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Made possible through funding from Bloomberg Philanthropies
www.bloomberg.org

Suggested citation

Mehata, S., and Sharma, D. *Fellowship profile: Introducing automated verbal autopsy in Nepal*. CRVS Fellowship reports and profiles. Melbourne, Australia: Civil Registration and Vital Statistics Improvement, The University of Melbourne, Bloomberg Philanthropies Data for Health Initiative; 2020.

Fellowship profile: Introducing automated verbal autopsy in Nepal

From September to October 2019, Suresh Mehata from the Ministry of Health and Population and Dibakar Sharma from the Health Directorate in Nepal undertook a Civil Registration and Vital Statistics (CRVS) Fellowship at the University of Melbourne (UoM), learning how to introduce automated verbal autopsy (VA) to the routine death registration system in Nepal. This profile provides an overview of country context in relation to CRVS, and documents Suresh and Dibakar's personal experiences and outcomes and the broader impact their Fellowships might have on strengthening CRVS in Nepal.

Country context

The Government of Nepal is embarking on efforts to improve its civil registration and vital statistics (CRVS) system. A strong CRVS system is the best source of data on births, deaths, and causes of death (CODs), and these data are crucial for decision-makers seeking to develop effective health policy and programs.[1,2] Nepal aims to strengthen its CRVS system in order to ensure that everyone is counted in the civil registration system, and that the vital statistics generated reflect communities' needs and health outcomes across the country.[3]

A landlocked country in South Asia, Nepal has a population of about 28 million people.[4] Nepal's diverse topography can be divided into three ecological belts, including a northern mountain belt containing the Himalaya mountain range, a middle belt of hills and valleys, and a third belt in the southern part of the country featuring a tropical climate.[5] The country is divided into seven provinces and 77 administrative districts, as seen in **Figure 1**.[5]

1 Cobos Muñoz, D., Sant Fruchtman, C., Renggli, S., deSavigny, D. CRVS innovations: Assessing the performance of CRVS systems. CRVS technical outcome series. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2019.

2 Mukut MAA. Fellowship report: Evaluation of the 'Kaliganj Model' for proactive birth and death notification and registration. CRVS Fellowship reports and profiles. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2019.

3 Setel, P., Macfarlane, S., Szreter, S. et al, on behalf of the Monitoring of Vital Events (MoVE) Writing Group. A scandal of invisibility: making everyone count by counting everyone. *The Lancet* 2007; 370:1569-1577

4 The World Bank. Nepal country data. The World Bank Group; 2020. Available from https://data.worldbank.org/country/nepal

5 CBS. Nepal in Figures. Kathmandu, Nepal: Central Bureau of Statistics; 2019. Available from http://opendatanepal.com/organization/central-bureau-of-statistics

Figure 1. Map of Nepal

Source: Nations Online Project, Nepal Political Map, 2020. Available from https://www.nationsonline.org/oneworld/map/nepal-administrative-map.htm

The CRVS system of Nepal

The Government of Nepal established a civil registration system in 1977 – a system that was established in order to provide certificates of vital events (births, deaths, marriage, divorce, and migration) to all of the country's citizens.[6] At the central level, the Ministry of Home Affairs (MOHA) is the key organisation responsible for CRVS.[6] In accordance with the Birth, Death, and Other Personal Events (Registration) Act of 1976, vital events must be registered within 35 days of occurrence, and is free of cost within this timeframe.[6]

2015 saw the introduction of an online registration system to some Local Registrars' offices in Nepal, and now, more than one-third of the 6,743 Local Registrars' offices in the country use online civil registration processes, with the remaining offices still using paper-based registrations.[6] In order to register a death using the online registration system, a family member of the decedent completes an information form for using the Vital Event Registration and Social Protection-Management Information System (VERSP-MIS).[6] The family member will then receive an auto-generated token number via SMS, and will then visit the Local Registrar's office, where the Local Registrar will validate and register the death and issue a death certificate.[6]

Local municipalities that do not use the online system, however, send monthly reports on deaths to the Central Registrar Office, which is responsible for compiling data on offline and online recorded deaths and publishing annual reports on death registration.[6]

6 Mehata, S., and Sharma, D. Introduction of automated Verbal Autopsy in the Routine Death Registration System to generate reliable cause of death data in sub-national and national levels in Nepal. Unpublished; 2019.

Improving mortality data

As of 2020, completeness of death registration is estimated to be around 65%.[6] Moreover, around 71% of all deaths in Nepal occur in the community, meaning that these deaths do not have a medically certified cause of death (COD) (see **Box 1**).[6] In addition, even for deaths that do occur in Nepalese hospitals, many lack COD data or are assigned improper CODs.[6,7] Given this context, verbal autopsy (VA) can serve as a vital resource for the production of accurate mortality statistics in the country (**Box 2**).

Box 1. What is medical certification of cause of death (MCCOD)?

When a patient dies in a hospital or health facility, a medical certificate of COD should be completed.[8] The medical death certificate is usually completed by a physician who attended to the patient or a physician who is familiar enough with the patient's medical history to confidently ascertain the COD.[9] To certify a death, the physician must first identify the disease or injury leading directly to death, and then trace back the sequence of events to determine the underlying COD.

Box 2: What is verbal autopsy (VA)?

Verbal autopsy (VA) is a method for collecting information about an individual's signs and symptoms before their death from their family or next of kin, and interpreting these to diagnose the likely or most probable COD.[10]

The VA process consists of three steps:

1. Setting up an interview by a trained VA staff member at home (or another appropriate place)
2. Conducting a structured interview to collect information on signs and symptoms of illnesses and events that the deceased had before death
3. Interpreting the interview data to diagnose the most probable COD.[11]

Because physician-certified VA can be time-consuming and costly, automated methods of analysing VA questionnaire data have been developed.[12] These methods often use a digital tablet and have several advantages over paper-based VA questionnaires, from reducing data entry errors to speeding up the interview process.[12]

In Nepal, health staff such as female community health volunteers (FCHVs) are well-positioned for conducting VA. The FCHV program was started in 1988 by the Ministry of Health and Population (MOHP) in order to link communities with health services, and FCHVs are now an established source of health information in communities and vice versa.[6]

7 Registration DoNIaC. Civil Registration and Vital Statistics Survey, 2019. Kathmandu, Nepal.: Department of National Identification and Civil Registration, Ministry of Home Affairs, Government of Nepal

8 The University of Melbourne. Strategies for improving the quality of cause of death data in hospitals, CRVS best-practice and advocacy. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2017.

9 Lomas HD, Berman JD. Diagnosing for administrative purposes: some ethical problems. Social Science and Medicine 1983; 17:241-244.

10 de Savigny et al. Integrating community-based verbal autopsy into civil registration and vital statistics (CRVS): system-level considerations. *Global Health Action* 2017; 10:1272882.

11 Senanayake CH. Fellowship profile: Country-specific adaptation of a SmartVA DHIS2 integration module for Sri Lanka. CRVS Fellowship reports and profiles. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, the University of Melbourne and Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka; 2019.

12 University of Melbourne. Challenges associated with automated VA training and rollout, CRVS best-practice and advocacy. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, The University of Melbourne; 2018.

The CRVS Fellowship project

Suresh Mehata is the Chief of the Monitoring and Evaluation (M&E) section at the MOHP. His duties involve integrating M&E mechanisms into existing programs and evaluating the impacts of such programs. Drawing on data for key health indicators, Suresh aims to translate such data into national M&E strategies for the country.

Dibakar Sharma is a Demographer and Statistics Officer at the Health Directorate in Nepal, working in the Gandaki Province of Pokhara. As his role is based around statistics, Dibakar is responsible for updating health-related data throughout all 11 districts in his province. In addition to monitoring the quality of these health data and disseminating annual reports, Dibakar supervises assistant health workers at the urban municipality level.

Having worked in the health sector for several years, Dibakar and Suresh were posted in different locations in Nepal in order to take lead roles in the scale-up, monitoring, and quality assurance of CRVS systems in Nepal. Both Dibakar and Suresh were able to learn about VA during the CRVS Fellowship. Their time in Melbourne involved developing a pilot for the introduction of automated VA into the routine death registration system in order to generate reliable national and sub-national COD data. Plans for this pilot include the use of SmartVA, an automated VA tool, in order to conduct over 5,000 VA interviews in 15 selected districts – data that will allow for the estimation of major COD patterns in Nepal. This pilot will be the first time that automated VA will be used in Nepal, and the resulting COD data will be instrumental for decision-making.

Reflections: take-home lessons

The importance of sharing country experiences

Suresh and Dibakar both emphasised the importance of sharing knowledge. Speaking to other staff and Fellows during their time in Melbourne allowed them both hear about other countries with similar CRVS challenges, and particularly which strategies could be employed to address such challenges.

SmartVA can be a feasible alternative to physician-certified VA

A key lesson that both Suresh and Dibakar agreed on was the utility of SmartVA in contexts where physicians could not be present to medically certify a death. They highlighted the robustness of SmartVA, stating that Nepal should prioritise the introduction of such methods in order to capture community deaths that may otherwise go unreported.

A strong registration system will ensure that everyone is counted

Finally, Suresh and Dibakar commented on the need for stakeholder collaboration to work towards a complete CRVS system that does not let a birth or death go unregistered. 'Communities that are marginalised are at risk of going unseen and uncounted by the CRVS system',[13] Suresh remarked, 'and systems for capturing birth and death data must therefore be strengthened so that no one is excluded.'

Benefits for CRVS system development in Nepal

The CRVS Fellowship provided Suresh and Dibakar an excellent opportunity to refine their plans for improving Nepal's COD data. Having received technical guidance from colleagues at the University of Melbourne, Dibakar and Suresh were able to fine-tune a pilot program for introducing VA into 15 districts in Nepal. If VA is rolled out in selected districts and eventually scaled up nationwide, the Government of Nepal will be able to capture a greater proportion of community deaths, and the accuracy of the resulting COD data will improve. Decision-makers in Nepal will thus have access to reliable and timely mortality statistics and can use such evidence to develop sound health policy and programs.

13 For more information, see: Setel, P., et al. A scandal of invisibility: making everyone count by counting everyone. *Lancet* 2007; 370(9598):P1569-1577.

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Australian Government
Department of Foreign Affairs and Trade

The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

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CRICOS Provider Code: 00116K

Version: 0620-01