

Summary: Improving the quality of mortality statistics in Sri Lanka

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Building the case to improve Sri Lanka's mortality statistics

Reliable and timely cause of death data is vital for informed, evidence-based health policy and planning purposes. In Sri Lanka, despite the country's sound civil registration and vital statistics (CRVS) system with completeness rates close to 100%, the overall quality of mortality statistics is poor.

There are two main reasons why Sri Lanka's cause of death data is of poor quality. Firstly, out of around 130,000 deaths reported annually, close to half occur outside hospitals i.e. at home or in the community.¹ These deaths are not medically certified by a doctor, but by coroners and registrars of births and deaths. Secondly, most doctors working in health facilities have not been trained in proper medical certification of cause of death, contributing to the high proportion of poorly specified and unusable cause of death data. For instance, it was found that 16% of doctors at a Sri Lankan hospital misclassified the underlying cause of death and frequently used ill-defined terms and abbreviations, which led to confusion and poor coding.^{2,3,4}

These challenges, along with the slow collection and processing of cause of death data, have resulted in between 30 to 40 percent of the national mortality statistics of Sri Lanka being coded to 'garbage'. Garbage codes (also referred to as insufficiently specified and unusable codes) have no use in informing public health policy, as the related underlying cause of death is too vague, or simply impossible.⁵ Garbage codes bias the true pattern of mortality in a country, as it is unlikely they would be equally or proportionally distributed across the disease categories used in analysing cause of death data. Hence, the data will

not represent the true health status of the population. A high-level government imperative for CRVS improvement in Sri Lanka forms a key part of the country's commitments to participate in the CRVS Decade for Asia and the Pacific 2015-2024,⁶ and to achieve the Sustainable Development Goal (SDG) agenda by year 2030. Given the current concern across government departments to meet the SDGs, especially SDG 3, Ensure healthy lives and promote wellbeing for all at all ages, Sri Lanka will need accurate mortality data from a strong CRVS system to monitor the 17 health indicators related to the SDGs.⁷

Improving the quality of mortality data

Sri Lanka's commitment to CRVS system-strengthening has been significantly enhanced by its involvement in Data for Health (D4H), a 16 country and two-city initiative for CRVS systems strengthening and capacity building. On joining D4H (in December 2015) technical support via the University of Melbourne has become available to improve the quality of death certification through two innovative ways. Firstly, by introducing automated verbal autopsy (VA) to ascertain the cause of death of people dying in the community; and secondly, by up-skilling Sri Lanka's doctors in correct medical certification practices through training and use of electronic tools that will assist them to improve the accuracy of their medical certification (and thus the overall quality of cause of death data generated in hospitals). This project is led within the country by the Ministry of Health (MoH) and Registrar General's department (RGD) with support from the Health Informatics Society of Sri Lanka (HISSL).

1 Ministry of Health Sri Lanka. Annual Health bulletin Sri Lanka 2015. Colombo: Ministry of Health; 2017.

2 Fonseka WP. A Study in the Quality and Coverage of Death Registration in a District of Sri Lanka. Colombo: Postgraduate Institute of Medicine; 1996.

3 Dharmaratne SD, Jayasuriya R L, Perera BY, Gunasekara EM, Sathasivayyar A. Opportunities and Challenges for Verbal Autopsy in the National Death Registration System in Sri Lanka: past and future. *Population Health Metrics* 2011; 9:21

4 Rampatige R, Gamage S, Peiris S, Lopez AD. Assessing the reliability of causes of death reported by the vital registration system in Sri Lanka: Medical records review in Colombo. *Health Information Management Journal*.

5 Mikkelsen L, Richards N, Lopez AD. *Redefining 'garbage codes' for public health policy*: Report on the expert group meeting, 27–28 February 2017. CRVS technical outcome series. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2018.

6 <http://www.getinthepicture.org/>

7 Brolan C, Richards N, Sorchick R. *Why the SDG agenda needs strong CRVS systems*: CRVS development series. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2018.

Implementing automated verbal autopsy

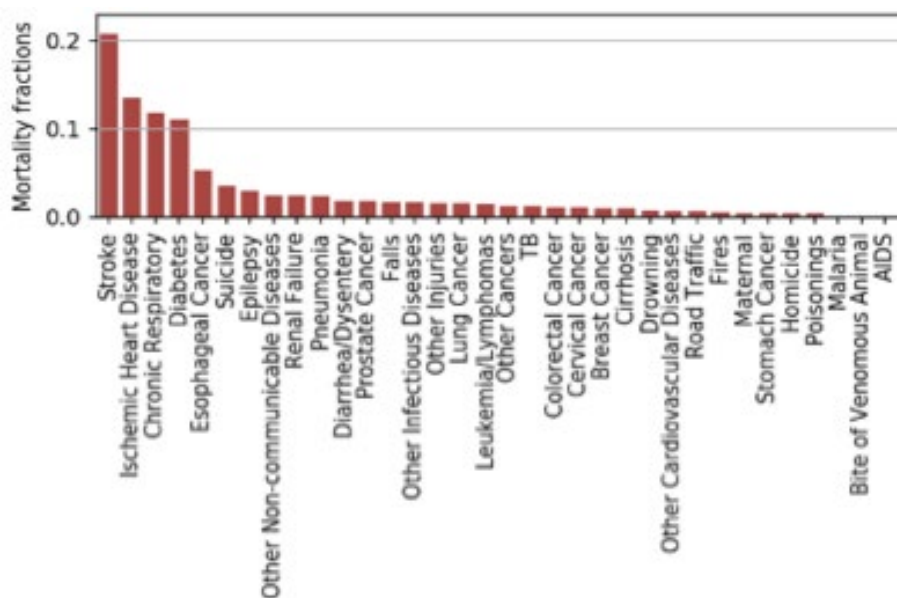
Verbal autopsy is a method for collecting information about an individual's signs and symptoms prior to their death from their family or next of kin, and interpreting these to diagnose the likely or most probable cause of death.⁸ The principal purpose of a VA is to describe the cause composition of mortality through the estimation of cause-specific mortality fractions (CSMFs). Verbal autopsy also serves as a cost-effective tool for filling the gaps in mortality data. Studies suggest that VA can provide population-level COD data similar in quality and reliability to medical certification of death by doctors in hospitals.⁹

SmartVA is an automated VA tool developed by the Institute for Health Metrics and Evaluation (IHME), University of Washington.¹⁰ It consists of a validated questionnaire to conduct a 15 - 25 minute structured interview with family members of the deceased on signs, symptoms and events prior to death. Data are entered on Android smart-phones or tablets during an interview, sent to a central server, and assigned a probable underlying cause of death through the use of a computer algorithm ('Tariff').

The districts of Colombo, Kurunegala, and Jaffna were selected to field-test SmartVA. Public health midwives (PHMs) were selected to be the VA interviewers adhering to their existing domiciliary care-based model. Close to 150 PHMs were trained in VA data collection using SmartVA. To support PHMs in locating households with deaths, a new link was established between the additional District Registrars and the Medical Officer of Health, allowing for the transfer of names and addresses of households with deaths monthly.

After translation and adaptation of the VA questionnaire, 286 SmartVA interviews were completed in the pre-test phase. The evaluation of these showed that usable causes of death were obtained for 82% deaths (Figure 1), compared to only 30% in the data currently collected through the Registrar Generals' Department for home deaths. Application of SmartVA in Sri Lanka therefore has the potential to significantly improve the quality of cause of death information for community deaths.¹¹

Figure 1 Cause specific mortality fractions, pre-test phase, Sri Lanka, 2017



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

9 Hernández B, Ramírez-Villalobos D, Romero M et al. Assessing quality of medical death certification: concordance between gold standard diagnosis and underlying cause of death in selected Mexican hospitals. *Population Health Metrics* 2011; 9:38.

10 University of Melbourne. SmartVA: Technical user guide (V1.0). CRVS resources and tools. Melbourne, Australia; Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2017.

11 Community deaths referred to the Coroner were not included as part of VA implementation.

Improving medical certification of cause of death

Five hospitals¹² were selected to field-test the hospital-based training in medical certification of cause of death. Eighteen ‘master trainers’ and over 400 physicians were trained in medical certification. Evaluation of the content and accuracy of a sample of medical certificates in the five pilot hospitals in a six-month period found an average of 30% improvement in error-free certification.¹³

A manual for Sri Lankan doctors on how to correctly certify a death to ICD-10 standards using the new B33 Form (death declaration) was also developed and an interactive educational mobile app or ‘CoD App’ was launched by the Ministry of Health. The CoD App is an easy-to-use tool that doctors can refer to when they are certifying a death. The CoD App will be cost free for doctors to download from the Ministry of Health’s website. Once downloaded, internet connection is not necessary for the CoD App to be accessed and re-used.

Moving forward: Next steps

The second phase of the D4H initiative will continue to target improving cause of death data quality by scaling-up both interventions that have been evaluated and have been shown to work well. In addition, training in the use of two electronic tools will be provided. One will assess the accuracy and completeness of mortality and cause of death data by checking for potential errors and inconsistencies;¹⁴ and the other assesses the quality of the death declaration. Both can be used for monitoring progress of the two interventions.

Steps will also be taken to engage with Sri Lanka’s medical schools to explore the most effective way to improve the curriculum on certification for medical students. The technical working group is working on scaling-up SmartVA beyond the three pilot districts and to expand the medical certification training to 25 large hospitals. Solutions will also have to be found to make the training sustainable for both doctors and PHMs. The support of the Sri Lankan Medical Association for these innovative interventions is important.

Overall, interventions such as SmartVA and targeted training and support in medical certification have the potential to support the Government of Sri Lanka in developing effective health policies, through producing reliable mortality statistics.

12 Lady Ridgeway Children’s Hospital, Colombo South Teaching Hospital, Colombo North Teaching Hospital, Kurunegala Teaching Hospital and Homagama Base Hospital.

13 Rampatige R, Gamage S, Richards N, et al. Assessing the quality of death certificates: Guidance for the rapid tool. CRVS resources and tools. Melbourne, Australia; Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, The University of Melbourne; 2018.

14 For more information on ANACONDA, see Mikkelsen L, Lopez AD. Guidance for assessing and interpreting the quality of mortality data using ANACONDA. CRVS Resources and tools. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2017.



Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka

For more information contact:

CRVS-info@unimelb.edu.au
crvsgateway.info

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