

Community and hospital based death registration with cause of death – Progress of Data for Health Initiative in Bangladesh

Professor Dr Abul Kalam Azad
Director General of Health Services
Bangladesh
profakazad@gmail.com

Introduction

Registering death with Cause of Death (CoD) is part of Civil Registration and Vital Statistics (CRVS) System. We know why birth and death registration and vital statistics produced out of them are important. The Convention on the Rights of the Child stresses for registering every child immediately after birth. The SDG target 16.9 calls for providing legal identity for all, including birth registration. A birth certificate creates several rights such as right to health care, nationality, schooling, passport, property ownership, voting, formal employment, or access to banking services. A death certificate provides to family members right to inherit property, business, financial entitlements, insurance benefits, etc. The birth and death registration records help in producing timely vital statistics. Cause of deaths data also help in producing important vital statistics to understand the diseases and injuries likely to make most premature deaths with a view to undertake major policy decisions for prevention of such early deaths and saving valuable lives.

In Bangladesh, fresh initiatives for revitalizing CRVS system has been established few years back. In 2012, there was an assessment of CRVS system in Bangladesh undertaken by the Management Information System of the Directorate General of Health Services (DGHS). Weaknesses were identified, and recommendations were made. In 2014, there was a CRVS country case study with WHO's technical assistance. Following that a Whole of Government Approach engaging all relevant ministries and agencies was initiated through creating a CRVS National Steering Committee with the Cabinet Secretary of the Government as the Chair with a view to create a momentum in improving national CRVS system.

Subsequently the Data for Health (D4H) Initiative of the Bloomberg Philanthropies of the United States and University of Melbourne in Australia came into a collaboration to improve the birth and death registration components of the CRVS with special emphasis in cause of death identification, recording and analysis. This report is based on the progress of timely recording of data for deaths with cause of death under D4H.

The problem

From the crude death rate and population size of Bangladesh, an estimated 900,000 persons die annually. The DGHS gets reports on little over 100,000 deaths occurring in the public hospitals under the Ministry of Health (MoH). Deaths in the homes and private health facilities remain largely unreported to DGHS. DGHS makes a cause of death analysis based on the data it receives from the public hospitals, which is practically not a representation of the whole country particularly due to missing of data from large majority of deaths being taken place in homes of people. Given the crucial need of registration of deaths with cause of death data as described above, the D4H collaborative project has set two objectives:

1. To introduce verbal autopsy to determine Cause of Death in the community, where there is no medical doctor; and

2. To introduce medical certification of Cause of Death in hospitals, where there is medical doctor, through use of International Form of the Medical Certificate of Cause of Death.

Introduction of verbal autopsy to determine Cause of Death in community

In Bangladesh, at national level, there is little empirical data on patterns and trends in causes of death among adults. Data on infant, child and maternal mortality are derived from household surveys but these do not provide information on other causes of death. The only source of information on cause-specific mortality is estimation by global agencies/academics such as WHO, UNAIDS and IHME.

The recently reported declines in fertility and child mortality rates (neonates, infant and under5) are indicative of emerging demographic and epidemiological transitions in Bangladesh. Monitoring these developments will require improved data on trends in major causes of death in adults and children. Given that most deaths occur in the community where there is no ICD (International Classification of Diseases) compliant certification and coding of death, the implementation of verbal autopsy (VA¹) techniques is an essential strategic intervention for Bangladesh.

Introduction of VAs requires an understanding of staff (interviewer) capacity to collect the data, the identification of supervisors, and the development of procedures appropriate to local health systems. Given the good number of health assistants under the DGHS who provide domiciliary health service in rural areas of Bangladesh, it appeared that they would be the appropriate workforce to collect VA data. Fortunately, ICT based system exists to collect data directly into tablet device using an electronic VA questionnaire form of a software called SmartVA. Google has developed a toolkit called ODK (Open Data Kit) to develop electronic questionnaire form and upload into ODK server for further processing. In the ODK server, using computer algorithm, probable cause of death can be determined from the raw VA data.

The progress of ICT deployment in Bangladesh health system is quite fascinating. The health assistants already have tablet computers which they can use for VA data collection. However, Bangladesh health system uses a world-renowned open source software called DHIS2, for which Bangladesh is known as the world's best and largest deployment.

Therefore, under D4H, it has been decided that SmartVA will be integrated with DHIS2 and a ODK server will be installed in Management Information System Data Center of DGHS. To exchange data between the Birth and Death Registration Information System (BDRIS), which maintains the CRVS electronic data along with registration number of birth and death, it has also been decided to create an electronic solution so that the DHIS2 system in DGHS and BDRIS in MOLGRD can talk to each other and exchange required data.

A pilot project is ongoing in Kaliganj sub-district of Gazipur district to develop an institutionalized system of verbal autopsies so that causes of all deaths occurring in the community can be captured. The health assistants of DGHS are being used. Sixty interviewers and supervisors have been trained to conduct SmartVA. This health workforce

¹ Verbal autopsy (VA) is a method of determining individuals' causes of death and cause-specific mortality fractions in populations without a complete vital registration system. Verbal autopsies consist of a trained interviewer using a questionnaire to collect information about the signs, symptoms, and demographic characteristics of a recently deceased person from an individual familiar with the deceased.

has already shown promising success. Given this initial result, the activities have been scaled up in a number of sub-districts.

Following progress has been made so far:

- Piloting is ongoing in 13 sub-districts which include Kaliganj sub-district where the VA pilot was started;
- 66 health officials were trained as master trainers;
- 530 interviewers and supervisors were trained in 11 sub-districts;
- ODK server has been installed at MIS-DGHS and which is receiving VA data;
- National Mortality Technical Working are performing data monitoring and quality checks;
- SOP has been prepared for field workers for birth and death notification and registration;
- Interviewers conducted about 6,500 VAs in 10 sub-districts (Figure-1);

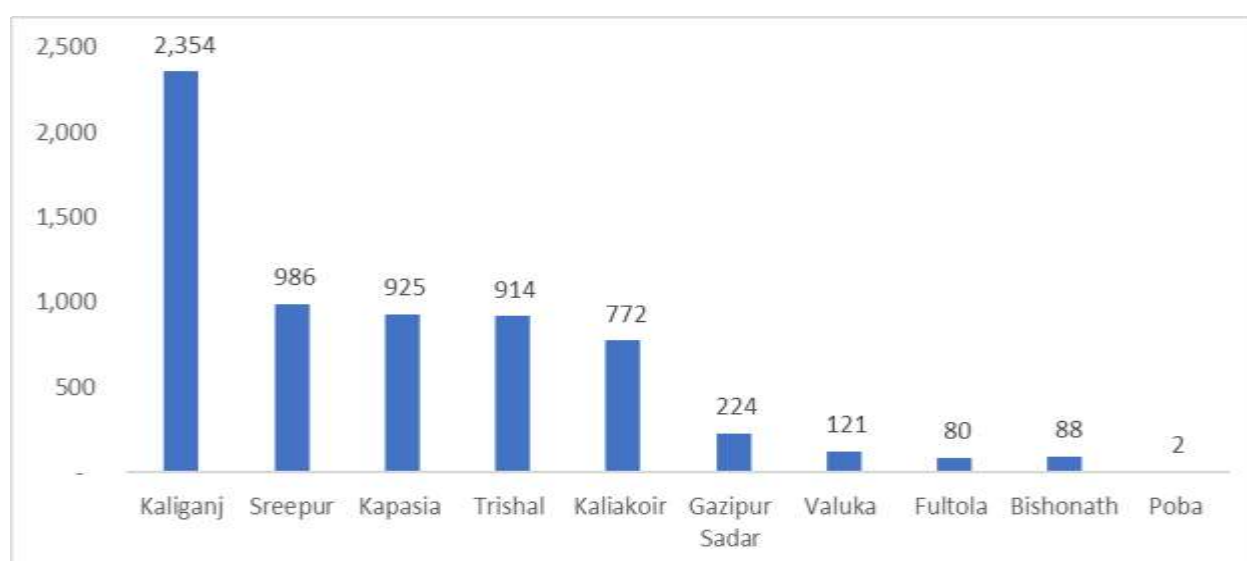


Figure 1. Distribution of number of verbal autopsies done by sub-district

- MoH undertook initiative to include VA activities in community health workers' job description;
- Number of death notification & registration increased significantly in intervention areas;
- MOHFW will train 600 more interviewers and supervisors and will scale up Smart VA in 13 sub-districts in 2017-18.

Case-specific mortality analysis

An analysis of causes of death derived from verbal autopsy data of 5,454 deaths was done. The deaths belonged to 5,183 adults (12 to >60 years; 95.3%), 157 children (29 days to 11 years; 2.7%) and 114 neonates (0 to 28 days; 2.0%).

Figure-2 shows that among adults aged 12 to 60+ years, three major causes of deaths are stroke (25%) followed by ischemic heart diseases (22%) and chronic respiratory airway obstructive diseases (17%).

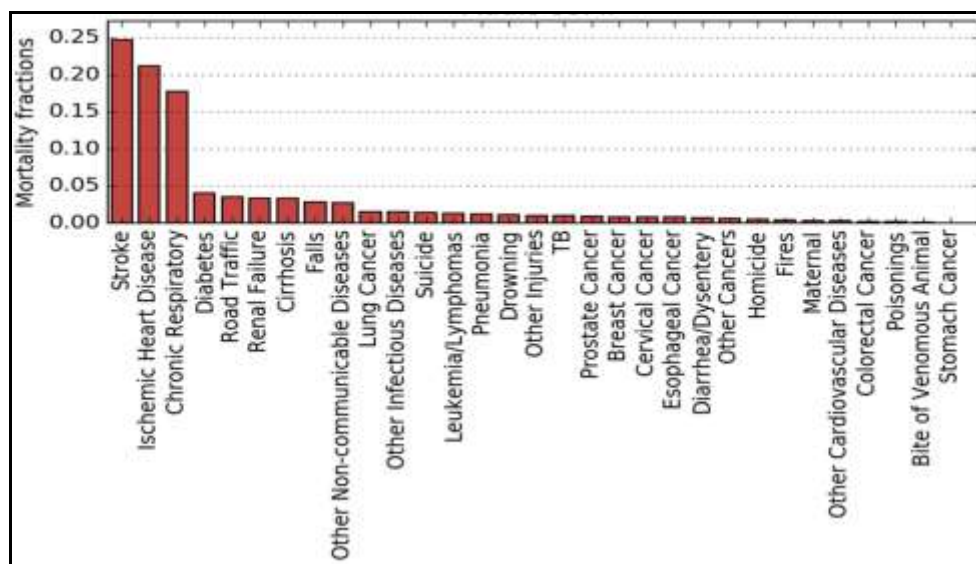


Figure 2. Case-specific Mortality Fractions in adults (age 12 to >60 years; n=5,183)

Figure-3 shows that among the children aged 29 days to 11 years, the major causes of deaths are drowning (25%), child-specific cardiovascular diseases (18%), child-specific cancers (15% and pneumonia (10%).

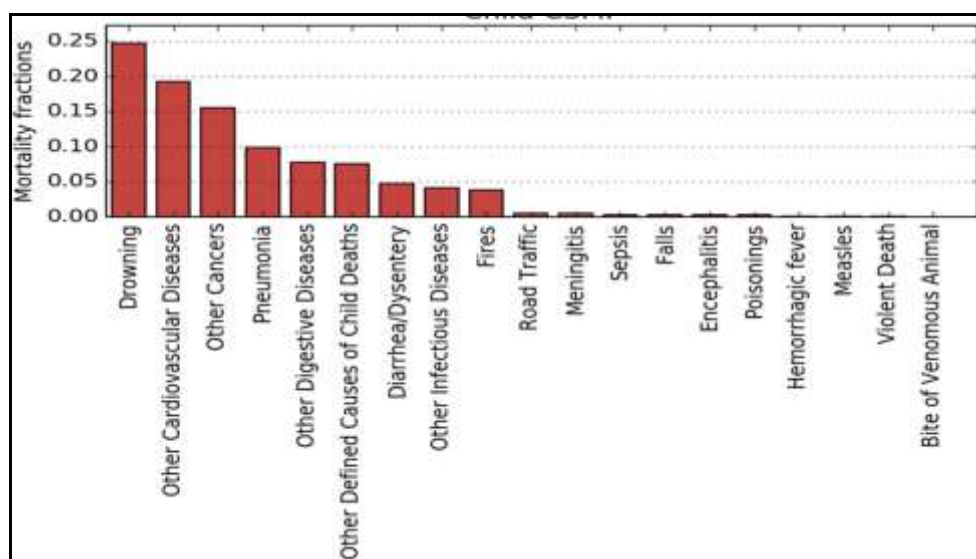


Figure 3. Case-specific Mortality Fractions in children (age 29 days to 11 years; n=157)

Figure-4 shows that among the neonates (age 0 to 28 days), the major causes of deaths are pneumonia (33%), birth asphyxia (21%), meningitis/sepsis (21%), preterm delivery (13%) and congenital malformation (10%).

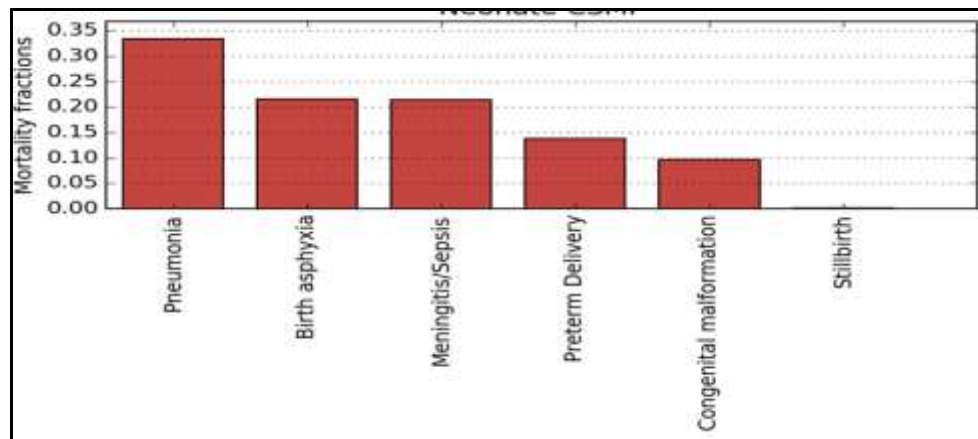


Figure 4. Case-specific Mortality Fractions in neonates (age 0 to 28 days; n=114)

The observation above can be very useful for national and local health planning for preventing premature deaths.

Introduction medical certification of Cause of Death in hospitals through use of International Form of the Medical Certificate of Cause of Death (MCCoD)

As mentioned above, only one out of nine deaths in Bangladesh is reported to DGHS. The source of these reported deaths are public hospitals. However, the cause of death in these reported deaths are done based on morbidity coding, not mortality coding.

Mortality statistics should be performed based on the underlying cause of death, which is the disease or injury that initiated the sequence of events leading directly to death. High quality MCCoD is essential to generate good quality national mortality statistics. This cannot be achieved in the absence of a structured and ongoing program of advocacy, education and training of medical professionals at all levels. This must not only be targeted at future physicians during medical school, but also should continue to be targeted at junior and senior physicians throughout their professional life.

For mortality coding with a view to extract quality reliable data on cause of death, it requires to use International Form of Medical Certificate of Death. Earlier attempts to introduce such forms in few Bangladeshi government hospitals were not effective, due primarily to weak institutional support. It is assumed that a policy instruction is needed to introduce medical certification of cause of death in hospitals which will then drive the hospitals to use the International Form of Medical Certificate of Death.

Under the D4H project, a fresh initiative has been undertaken to introduce International Form of Medical Certification of Cause of Death (MCCoD) in Bangladesh. In doing so, physicians and allied staffs are being trained in different hospitals. A WHO recommended software called Startup Mortality List (SMoL) module has been incorporated with the DHIS2 of DGHS. Similarly, data exchange system between DHIS2 and BDRIS is also being developed.

The SMoL generates a short version of ICD coding. The WHO developed SMoL in 2015, which is a simplified list of broad cause of death fully in line with the ICD-10 structure. It contains 107 causes and 17 sub-categories. To facilitate the use of SMoL, WHO in collaboration with the University of Oslo have developed a module in the DHIS2 software.

The SMoL appears as accessible and realistically applicable and scalable in Bangladesh. The advantage of SMoL is that it informs setting public health priorities and tracking progress towards national and international health targets and goals. This list is designed to be a first step towards standardized reporting of causes of death in low-resource settings where capacities to code causes of death to ICD 3- or 4-digits are lacking.

To facilitate introduction of medical certification of deaths in hospitals of Bangladesh, one National Mortality Technical Working Group (NMTWG) and several hospital-based Mortality Technical Working Groups have been constituted under D4H. Initially MCCoD was implemented in four hospitals, namely, Sir Salimullah Medical College Hospital, Dhaka; Shaheed Suhrawardy Medical College Hospital, Dhaka; Shaheed Tajuddin Ahmed Medical College Hospital, Gazipur; and Kaliganj Upazila Health Complex, Gazipur. Later it was decided to scale in 8 medical college hospitals and 12 sub-district hospitals.

By this time, the CRVS Secretariat of Cabinet Division under D4H support trained 1,200 physicians in Dhaka Medical College Hospital; Management Information System (MIS) of DGHS trained 240 physicians in Sylhet MAG Osmani Medical College Hospital. Earlier D4H helped to produce 20 master trainers. There is plan for producing other master trainer through expatriate who are given training abroad. The trained persons already completed 2,500 medical certificates of cause of death data of which have been entered in SMoL module of DHIS-2.

In another move, Centre for Medical Education (CME) and Bangladesh Medical and Dental Council (BMDC) made good progress to include topics on Cause of Death in undergraduate medical curriculum.

Case-specific mortality analysis of hospital-based death data

The data of cause of deaths collected from hospitals and entered in SMoL module have not been analyzed yet. Therefore, findings could not be shown here.

Conclusion

The Sustainable Development Goals 2030 emphasized on realization of human rights for every citizen in any country. Provision of legal identity for all including birth registration is therefore included in SDG target 16.9. The establishment of effective national CRVS system remains in the core of enforcing human rights in respective national setting. While limited resource available in any country will have to be judiciously used for attaining the highly aspirational SDG targets within dateline, knowing the causes of death of citizens in all age and sex groups nationally, sub-nationally and locally is of paramount importance to make the most appropriate health plan and to prevent all avoidable premature deaths within the country's limited resource. In the Asia-Pacific Region under a CRVS initiative by UN-ESCAP with endorsement of all Member-States there are two targets about registration of deaths with cause of deaths. These are: (i) By 2024, at least 50% of deaths occurring without a medical practitioner will have their causes of deaths coded through verbal autopsy in line with international standards; and (ii) By 2024, 80% of deaths will be registered within a year and have a medically assigned cause of death; and all deaths occurring in health facilities will have a medically certified cause of death assigned according to international standards. Bangladesh has shown initial success in registering both community and health facility based deaths along with cause of deaths in accordance of international standards. Technical assistance from D4H has been instrumental in this success. It is hoped that with the whole of government approach led by CRVS National Steering Committee, Bangladesh will be able

to achieve the national, regional and global targets of CRVS including death registration with cause of death.
