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# **Verbal Autopsy in the Regional Action Framework:**


Towards RAF target 3.1.

Operational procedures, practices and  
innovations.

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Civil Registration and Vital Statistics in Asia and the Pacific  
17-19 September 2019





✧ “Over 100 countries, representing more than two-thirds of the world’s population, do not have systems for civil registration and vital statistics that produce reliable data on causes of death. Without these data, countries and their development partners are working in the dark, throwing money into a black hole.”

✧ Dr Margaret Chan, WHO Director-General at the Measurement and Accountability for Results in Health Summit, Washington, DC, USA 9 June 2015. <https://www.who.int/dg/speeches/2015/health-measurement-summit/en/>



# Global demand for cause-of-death information



# SDG-related cause-of-death targets & indicators



3.1 Reduce maternal mortality

3.2 Reduce under 5 and neonatal mortality

3.3 End epidemics of AIDS, TB, Malaria and NTDs

3.4 Reduce premature mortality from NCDs

3.6 Reduce deaths due to road traffic accidents

3.9 Reduce deaths from hazardous chemicals, pollution, etc.

8.8 Safe working environments

11.5 Reduce deaths from disasters

16.1 Reduce deaths from violence and homicides



# To know why people die we information on:

- ◆ Number of deaths
- ◆ By age
- ◆ By sex
- ◆ By date of death
- ◆ By place of death
- ◆ By manner of death (circumstances that result in death):
  - ◆ natural (disease);
  - ◆ unnatural (accident, homicide, suicide);
  - ◆ undetermined.
- ◆ By medical cause of death
  - ◆ Medical certification of cause of death by a physician
  - ◆ Medico-legal enquiry
  - ◆ Verbal autopsy for health outside health facilities



# Sources of cause-of-death information

- ◆ Physician completes **medical certificate of cause of death (MCCD)** according to international standards.
- ◆ Pathologist (specialized medical doctor) performs a **clinical autopsy** (if cause cannot be determined through MCCD alone).
- ◆ Coroner requests **forensic autopsy** as part of a medico-legal enquiry (mainly for unnatural deaths).
- ◆ **Verbal autopsy** performed when death occurs outside of a health facility and without the attention of a medical practitioner. This is the only method for ascertaining cause of death when medical expertise is not available.



# What is Verbal Autopsy (VA)?

- ◆ A non clinical method of gathering information about symptoms and circumstances of a death to determine cause.
- ◆ Consists of conversations or interviews with persons familiar with the deceased to elicit description of events, signs and symptoms prior to death.
- ◆ Structured interviews are analysed by health professionals (physician certified VA) or, increasingly, using automated algorithms to assign probable cause(s) of death.



# Impetus for development of verbal autopsy

- ◆ A majority of the 60 million annual global deaths take place outside of a health facility and without the attention of a medical practitioner.
  - ◆ Bangladesh: ≈900,000 deaths annually; 15% in health facilities; 85% outside health facility without the attention of a medical practitioner who can complete the MCCD.
  - ◆ Until 2018, the WHO MCCD was not used in Bangladesh hospitals
  - ◆ There was no reliable cause of death information for the country
- ◆ VA can generate information on causes of deaths for non-facility deaths and enable government stakeholders and scientists analyse disease patterns and direct public health policy decisions.





# Verbal autopsy is a well-tested technique

- 1989: VA workshop at Johns Hopkins School of Public Health.
- 1999: WHO standard VA for infant/maternal deaths.
- VA in health and demographic surveillance sites (HDSS) and sample “registration” systems (SRS, India, Indonesia\*)
- 2005: WHO technical consultation to address complex VA landscape (multiple questionnaires, cause-of-death lists),
- 2007: WHO VA standards: questionnaires for neonates, 4 weeks to 14 years and 15 years and above.
- 2016: Harmonization of instruments: SMARTVA, WHO 2016 ; VA cause-of-death list consistent with ICD;
- Automated diagnostic algorithms to assign cause of death
- Routine VA implementation in the context of CRVS

\* These systems should be called “sample enumeration systems” as the deaths identified are not registered in the civil registration system



# What verbal autopsy is ....

- A way of determining causes of death for deaths outside health facilities and without the attention of a medical practitioner.
- A method for ascertaining a statistically probable COD at the individual level.
- A means of generating plausible, population-level data on cause of death distributions (cause-specific mortality fractions) that can be assigned into broad ICD codes.
- A stimulus for improving the identification, notification and civil registration of community deaths.

# What verbal autopsy isn't

- Designed to generate a COD that is legally equivalent to medical certification of cause of death at the individual level.
- A replacement for medical certification of cause of death by a physician. VA-assigned cause is not included in the individual death certificate.
- Able to generate the detailed COD categories contained in the ICD-10.
- Intended to be administered to all deaths outside of a health facility. Instead, VA can be performed on a nationally representative sample of deaths, e.g. all deaths in a selected administrative area.



# Integrating VA and CRVS systems: core principles

- ◆ All deaths are registered in the CRVS system with information on age and sex, and date and location
- ◆ All deaths in health facilities are registered and have cause of death assigned through medical certification of cause of death (MCCD)
- ◆ A representative sample of deaths taking place outside of a health facility and without the attention of a medical practitioner have underlying cause of death determined through verbal autopsy in line with international standards.
- ◆ Dependent on collaboration between health and CRVS



# Integrating VA into CRVS

CHW

- CHW records death particulars during routine monthly household visit
- Supervisor checks details, removes duplicates

CHW

- Details of the deaths (date, location, age, sex) notified to the civil registrar.
- CHW makes appointment for follow up visit to family

CRO

- Civil registrar registers fact of death with age and sex

CHW

- CHW conducts verbal autopsy interview using tablet

CHW

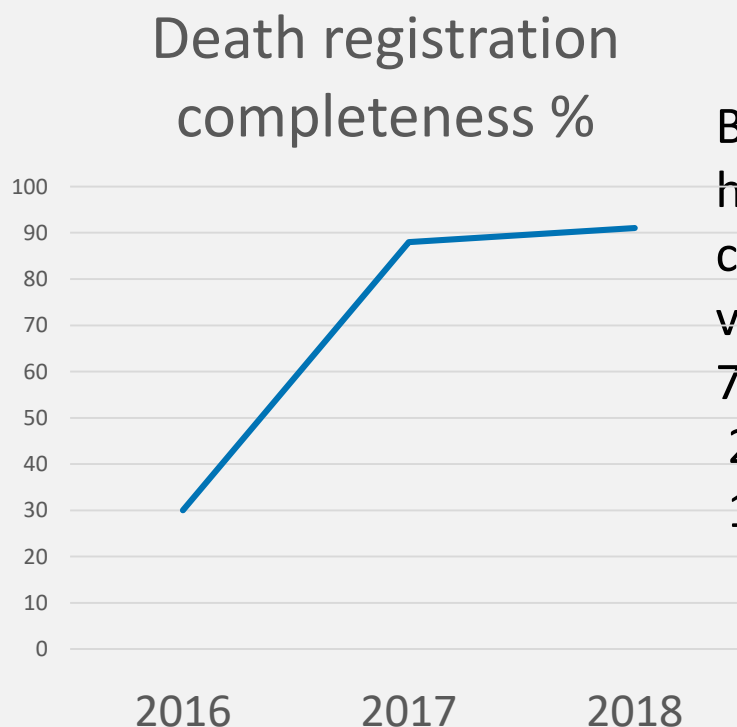
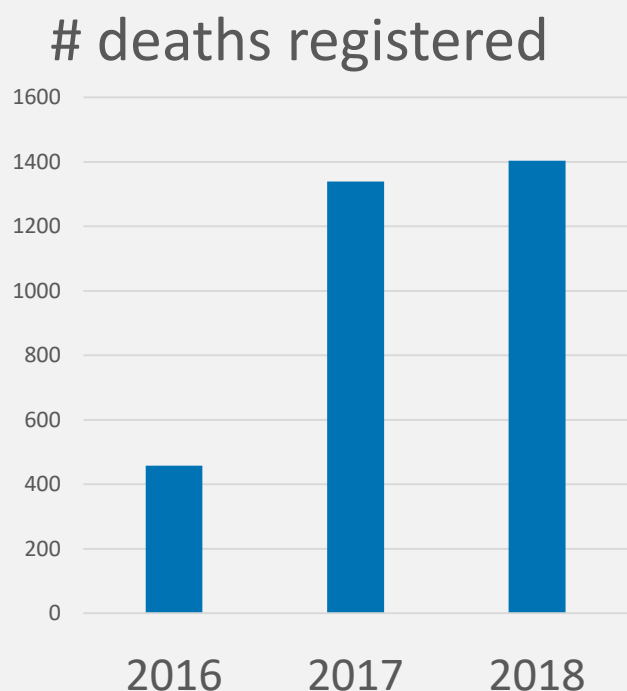
- CHW uploads completed VA interview to central server for analysis using automated algorithms to determine probable cause of death

MOH  
NSO

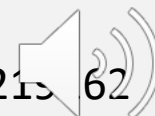
- Statistics on mortality by age, sex and cause shared with MoH and NSO
- Information on individual cause of death not shared with CHW, family or CRO.



# Deaths registered and registration completeness in Kaliganj, Bangladesh, 2016



By end 2018,  
health assistants had  
conducted 7837  
verbal autopsies:  
7424 adults,  
239 children and  
174 neonates.



# VA in context



A large blue circle on the left contains the text 'TOTAL DEATHS'. A blue arrow points from the right side of this circle to the right. Inside the arrow is the text 'Deaths registered by age & sex but no usable cause of death'.

TOTAL DEATHS

Deaths registered by age & sex but  
no usable cause of death

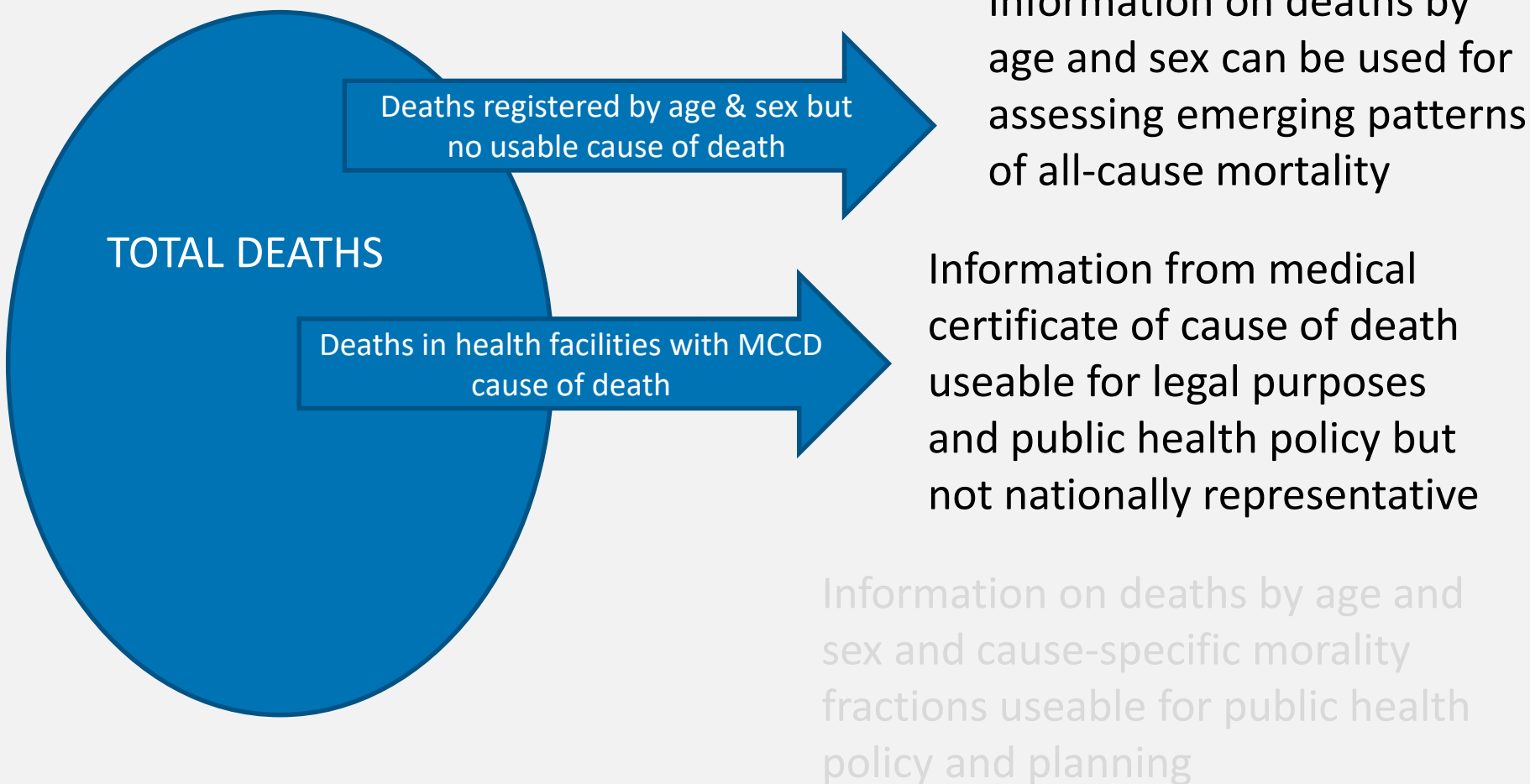
All deaths registered by age and sex. Data on deaths by age and sex can be used for assessing patterns of all-cause mortality

Information from medical certificate of cause of death useable for legal purposes and public health policy but not nationally representative

Information on deaths by age and sex and cause-specific mortality fractions useable for public health policy and planning



# VA in context



# VA in context

TOTAL DEATHS

Deaths registered by age & sex but  
no usable cause of death

Information on deaths by age and sex can be used for assessing emerging patterns of all-cause mortality

Deaths in health facilities with MCCD  
cause of death

Information from medical certificate of cause of death useable for legal purposes and public health policy but not nationally representative

Non facility deaths registered with  
cause determined using VA

Information on deaths by age, sex and cause-specific mortality fractions useable for public health policy and planning are generated from a nationally representative sample of registered deaths.





# VA implementation guidance & tools



GLOBAL HEALTH ACTION, 2017  
VOL. 10, 1272882  
<http://dx.doi.org/10.1080/16549716.2017.1272882>



Taylor & Francis  
Taylor & Francis Group

STUDY DESIGN ARTICLE

OPEN ACCESS

## Integrating community-based verbal autopsy into civil registration and vital statistics (CRVS): system-level considerations

### CRVS VA Costing & Budgeting Tool

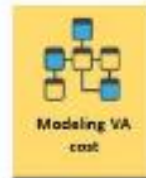
V 1.0



Start Budgeting  
VA activities



Start Costing  
VA activities



Modeling VA  
cost



About this



Guideline to  
the tool

SWISS TPH



VA = verbal autopsy

Bloomberg  
Philanthropies



DATA FOR  
HEALTH INITIATIVE

### Sampling Strategies for National Scale CRVS Verbal Autopsy Planning:

### A Guidance Document and Sample Size Calculator Tool

#### Part A: Principles and Strategy

Draft 2.16

21 March, 2018

Review Version - Not for further circulation



Swiss TPH



Vital  
Strategies



<https://crvsgateway.info/file/9773/2594>

# CRVS Regional Action Framework

## Target 3E

- By 2024, at least ... per cent of deaths taking place outside of a health facility and without the attention of a medical practitioner have their underlying cause of death code determined through verbal autopsy in line with international standards.
- Targets of 50% or 80% of community deaths with VA proposed prior to country experience of the implementation of VA in CRVS systems.



# UNESCAP Regional Action Framework monitoring guidelines

- “Rather than aiming for 100 per cent, the ideal target for this indicator should be high enough to ensure that verbal autopsies are conducted on a sample of a sufficient size to be representative of deaths that occur in the absence of a medical practitioner.

## AGREE

- Countries with poor coverage of death registration could combine VA with sample vital registration (registration of vital events for a nationally representative sample) to produce vital statistics on the major causes of death.”

## FURTHER CLARIFICATION

- Aim should be universal death registration, MCCD for all deaths in the presence of medical care, and VA for a nationally representative of deaths.



# VA integrated into the RAF


## [RAF target 1.D]

 Universal registration of deaths

## [RAF target 3D]

 MCCD for all hospital deaths

## [RAF target 3E]

 By 2024, the national CRVS strategy includes the introduction of VA on a nationally representative sample of deaths taking place outside of a health facility and without the attention of a medical practitioner.



# Strategies for achieving target 3E

- ◆ Community-based workers identify all deaths taking place outside of a health facility and without the attention of a medical practitioner and notify them to CRO for registration.
- ◆ Countries introduce VA on a nationally representative sample of deaths taking place without the attention of a medical practitioner.
- ◆ VA cause of death distributions are analyzed alongside data on causes of death from medical certification of deaths occurring in health facilities to produce a national overview of mortality and causes of death.



*“Not every mystery involves a dead body, but every dead body is a mystery. .... Death is an assassin with infinite aliases, and the question of what kills us is tremendously complex. We ask it with clinical curiosity and keen it in private grief; we pose it rhetorically and inquire specifically; we address it to everyone from physicians to philosophers to priests.*

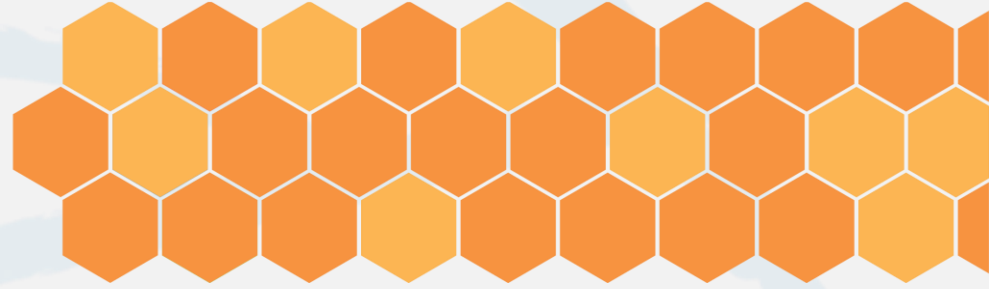
*Why do we die?”*

Source: Final Forms: What Death Certificates Can Tell Us, and What They Can't. Kathryn Schulz. Dept. of Public Health, The New Yorker, April 7, 2014.





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**Thank you.**



# Using registered deaths by age and sex to track AIDS-related mortality

