Verbal autopsy: Essential Resource Kit for countries

When people die at home or in areas without physicians, obtaining reliable information about these deaths, including the cause of death (COD), is extremely difficult. The causes of these deaths, which typically constitute the vast majority of deaths in lower- and middle-income countries, therefore largely go unrecorded by civil registration and vital statistics (CRVS) systems and hence cannot inform the development of effective public health policy and programs. While medical certification of COD by trained physicians is best-practice for countries to follow, in many places, there are no physicians available to medically certify deaths. In these cases, verbal autopsy (VA) is the only practical solution for gathering policy-relevant information on the leading causes of death. VA first requires the collection of information about an individual's signs and symptoms before death from their family or next of kin, and then interpreting these responses to diagnose the most probable COD for an individual. Automated computer algorithms are available to diagnose the COD from the pattern of responses on the VA questionnaire without the involvement of physicians. These algorithms have been shown to be just as reliable as physicians in diagnosing the COD, and are much cheaper, quicker, and easier to implement whilst ensuring standardisation of diagnostic practices across populations.

While there is a large and growing body of literature on VA, this Resource Kit has been prepared with the objective of providing countries with an essential set of tools and materials to help implement automated VA.

The Resource Kit is intended to help countries achieve three broad outcomes:

1. Prepare national CRVS systems for VA implementation
2. Embed IT support to collect, manage and assign causes of death from VA interviews
3. Improve community cause of death information using standard VA tools and guidelines.

Underpinning each of these outcomes is a set of resources containing *empirical evidence and country examples.*

How to use this Resource Kit:

This Kit contains all of the key resources countries need for VA implementation and data interpretation. It provides the key tools and guidance materials to help countries: a) prepare CRVS systems for VA implementation; b) embed the necessary IT systems to facilitate VA rollout; and, c) perform VAs and compile and interpret results for use by public health planners and decision-makers. It is recommended that countries review the resources in the order provided, starting with Outcome 1.

Resources listed under 'Empirical evidence and country examples' provide real-world examples and evidence to support the application of the methods, tools and strategies referenced in this Kit.

Two categories of resources are provided for each outcome: (1) *Key resources*, which are vital to understanding the basic principles required to achieve each outcome, and (2) *Recommended resources*, which provide further detail, and build on the key resources.

This Resource Kit provides countries with a list of essential resources to begin planning for and implementing VA. Additional resources can be found on the CRVS Knowledge Gateway, at: https://crvsgateway.info/resources. Information on available in-country training to support VA implementation and data interpretation can be found at: https://crvsgateway.info/training.

Outcome 1: Prepare national CRVS systems for VA implementation

The introduction of VA will provide policy-makers with, often for the first time, reliable information on the causes and patterns of mortality for deaths which occur without medical certification. However, implementing VA and integrating the data into CRVS systems can be a complex process, requiring a number of important considerations. *This set of resources provides countries with an introduction to VA as part of a CRVS system. It covers the reasons why VA is important for understanding causes of community deaths, the systems-level requirements for implementing VA, and the key challenges associated with automated VA training and roll-out.*

Outcome 2: Embed IT support to collect, manage and assign causes of death from VA interviews

Once a country's CVRS system has been appropriately prepared for the implementation of VA, including a clear understanding of how COD data generated through VA will be integrated into a consolidated dataset including hospital deaths as well, IT systems and processes can be embedded to facilitate VA roll-out. *This set of resources includes the essential materials necessary for countries to establish appropriate IT support mechanisms for VA implementation, delivery, and generation of COD information.*

Empirical evidence and country examples

These resources provide real-world examples of VA interventions in countries, presenting evidence to support the application of strategies and tools provided in Outcomes 1-3.

Outcome 3: Improve community cause of death information using standard VA tools and guidelines

Once a country's CRVS system has been prepared, and IT systems established, VA tools can be applied to begin capturing COD information on community deaths. These data then need to be compiled and interpreted. *This set of resources provides all the tools and guidelines necessary for planning and implementing automated VA. Download links to the two most frequently used VA tools (SmartVA and WHO2016) are provided, as well as associated materials for implementation. These resources also include guidelines and tools for interpreting VA mortality and COD data.*

Expected outcome: Vastly improved availability and quality of mortality data on community deaths for more representative and relevant public health policy-making and planning

Verbal autopsy: Resource list

Outcome 1: Prepare national CRVS systems for VA implementation

Automated verbal autopsy [384KB]
Describes the process of using handheld devices for all verbal autopsy activities

Introducing verbal autopsies into CRVS systems: Guiding principles [682KB]
Documents the merits of automated VA diagnostic methods and provides guidance for countries intending to implement VA as a routine part of their CRVS system

Integrating community-based verbal autopsy into CRVS: System-level considerations [1.66KB]
Provides recommendations for integrating VA processes into CRVS systems

Using verbal autopsy to measure the causes of death: the comparative performance of existing methods [2.31MB]
Assesses the diagnostic accuracy of several alternative automated diagnostic algorithms and compares them with the diagnostic accuracy of physicians using a large gold standard dataset

Action guide on automated VA training and rollout [480KB]
Outlines seven key tasks and challenges countries should consider when implementing automated VA

Challenges associated with automated VA training and rollout [878KB]
Provides hints and guidance for countries planning to implement VA on digital tablets or smartphones

VA Costing Tool [6.60MB]
A useful tool that helps planners and managers estimate the likely costs of implementing VA

VA Costing Tool: User guide [1.48MB]
Instructions for planners and managers to use the VA Costing Tool

Outcome 2: Embed IT support to collect, manage and assign causes of death from VA interviews

SmartVA: Technical user manual [4.58KB]
Guidance intended for technical support personnel for the implementation of automated VA methods

SmartVA Auto-Analyse: User guide [2.31MB
Instructions for physicians to install and run SmartVA Auto-Analyse Version 2.15. Particularly helpful in countries where physicians are required to certify community deaths

Introduction to SmartVA for Physicians [581KB]
Overview of SmartVA for Physicians (also known as SmartVA Auto-Analyse), and description of how the tool was implemented in the Philippines

SmartVA-Analyze [tool and supporting documents]
Tool for producing COD estimates at individual and population levels from VA interview data

How do I install and use SmartVA? [828KB]
Instructions for installing and using the SmartVA-Analyze software for analysis of VA data

How do I download and install ODK Collect? [1.25MB]
Describes how to install ODK Collect onto a tablet

Outcome 3: Improve community cause of death information using standard VA tools and guidelines

SmartVA: Interviewer's manual [1.08MB]
Provides generic information for VA interviewers on how to conduct VA interviews systematically

SmartVA: Facilitator's guide [1.08MB]
Provides guidance to assist those responsible for training VA interviewers and supervisors

Guidelines for interpreting verbal autopsy data [4.33KB]
Describes the five steps to follow when interpreting and presenting VA data

Verbal Autopsy Interpretation, Performance and Evaluation Resource (VIPER) [11.6MB]
A Microsoft Excel tool to assist countries to understand COD data generated by VA and to judge their plausibility and accuracy

IHME/PHMRC (SmartVA) instrument [PHMRC Shortened Questionnaire]
Standardised VA questionnaire developed by the Population Health Metrics Research Consortium (PHMRC). Designed for analysing electronic VA data using a single diagnostic method (Tariff 2.0)

WHO 2016 VA instrument [2016 VA instrument and support package]
WHO 2016 version of the VA questionnaire. Designed for collecting VA data that can be analysed by multiple VA diagnostic algorithms

Empirical evidence and country examples

Automated verbal autopsy: from research to routine use in civil registration and vital statistics system [1.10MB]
Describes the application of SmartVA in Myanmar, Papua New Guinea, Bangladesh and the Philippines

Introducing routine verbal autopsy as part of the CRVS system in Rwanda [838KB]
This report assesses the sustainability of VA implementation in Rwanda. It describes the challenges in death notification and registration, and assesses the plausibility of mortality data generated through VA

Analysis of causes of death in Myanmar using verbal autopsies [3.10MB]
Describes the implementation of VA in Myanmar, generating the first ever set of community COD data in the country