

Strengthening Civil Registration and Vital Statistics (CRVS) Systems

GUIDE 4



Implementing **Verbal Autopsy** in the CRVS System



Preface

About the Strengthening CRVS Systems Guides

The Strengthening CRVS Systems Guides provide best-practice guidance for specific aspects of the a civil registration and vital statistics (CRVS) system. Drawn from international standards and concepts, the guides provide users with practical and operational advice and strategic planning support for targeted CRVS system improvements.

Verbal Autopsy (VA)

CRVS systems are concerned with the legal registration of vital events, and the collection and statistical analysis of data related to these vital events in the population. A well-functioning CRVS system, among other tasks, registers all births and deaths, issues birth and death certificates, and compiles and disseminates birth and death statistics, including cause of death information, for policymaking.

To allow for accurate cause of death data collection, analysis, interpretation and use for deaths occurring away from medical care, cause of death data can be collected using VA. VA is a structured questionnaire administered to the caregivers of a recently deceased individual to obtain information about the symptoms experienced prior to the death. The collected data is analyzed and interpreted to determine the probable cause of death for the deceased individual. This guide provides operational best-practices for the improvement and maintenance of VA within the CRVS system. The efforts described in this guide will help to strengthen the quality and completeness of cause of death data.

Structure of the Guides

This guide begins with an infographic that locates the specific topic of the guide within the context of the overall CRVS system with key principles highlighted. Following this, an implementation framework presents success factors. These factors are broken down into implementation tasks which are grouped into the following intervention area: A) Governance & Processes; B) System & Workforce Capabilities; C) Quality Assurance; and D) Data Analysis, Interpretation & Use. For each task the reader can find references to published key resources for further learning and application.



GUIDES

The Strengthening CRVS Systems Guides have been developed for the following topics:

- 1 Civil Registration of Births and Deaths
- 2 Medical Certification of Cause of Death
- 3 International Classification of Diseases Mortality Coding
- 4 **Verbal Autopsy**

Target Audience

The target audience of the guides includes, but is not limited to, decision-makers, planners, and other managers at the Civil Registration Office, the Ministry of Health, and the National Statistics Organization in countries aiming to improve their CRVS system and/or to maintain a high quality system. The guides further aim to support members of high-level interagency CRVS coordination committees or other decision-making bodies concerned with the governance of the CRVS system.

The guides assume the reader has a good understanding of CRVS systems. For readers who would like more introductory and background information about CRVS systems please see:

- Principles and Recommendations for a Vital Statistics System published by the UN Statistics Division (unstats.un.org/unsd/demographic/standmeth/principles/m19rev3en.pdf).
- WHO Resource Kit “Strengthening civil registration and vital statistics for births, deaths and causes of death” (apps.who.int/iris/handle/10665/78917).
- CRVS Knowledge Gateway of the Bloomberg Philanthropies Data for Health Initiative (crvsgateway.info/).
- Training Course on Civil Registration and Vital Statistics Systems of the National Center for Health Statistics of the US CDC (cdc.gov/nchs/isp/isp_fetp.htm).
- eLearning Course on Civil Registration and Vital Statistics (CRVS) Systems of the World Bank Group (olcstage.worldbank.org/content/civil-registration-and-vital-statistics-systems-advanced-level-facilitated-1).

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VERBAL AUTOPSY IN THE Civil Registration & Vital Statistics System

CRVS Systems must be:

- Continuous
- Compulsory
- Universal
- Permanent
- Confidential

Key functions of CRVS systems:

- Provide proof of legal identity
- Produce vital statistics

Types of Vital Events

Vital Events Proper

Live Births, Fetal Deaths,
Deaths with
Cause of Death

Dual Events

Annulments, Divorces,
Marriages, Judicial
Separations

Vertical Events

Adoption,
Recognition,
Legitimation

GUIDE 1



Civil
Registration
of Births
& Deaths

Place of Occurrence of the Death

Death in Presence
of Physician



Death in Absence
of Physician



GUIDE 2



Medical
Certification of
Cause of Death
(MCCD)

GUIDE 3



International
Classification
of Diseases
(ICD) Mortality
Coding

GUIDE 4

YOU ARE HERE



**Verbal
Autopsy
(VA)**

Verbal autopsy (VA) consists of an interview with family members or caregivers of the recently deceased person using a structured questionnaire to obtain information about the signs and symptoms experienced by the deceased prior to the death. The information collected is analyzed using computer algorithms (automated verbal autopsy) or by physicians to determine the most likely cause of death.

Verbal Autopsy (VA)

A system of VA integrated into the CRVS system will produce high-quality cause of death information for deaths that were not attended by a physician and should be used to inform evidence-based decisions on population health policies.

KEY PRINCIPLES

Make death registration universal

All deaths, including those occurring in the community, should be registered with the civil registry. Community-based or other health care workers can help identify deaths and act as informants to the civil registrar independent of the availability of cause of death. Through close collaboration between the health sector and civil registration system, the burden on families to register deaths can be reduced.

Use a holistic approach to determine cause of death

VA should be used to obtain causes of death for community deaths, within the context of broader efforts to improve death registration, and strengthen the CRVS system overall.

Implement the WHO standard MCCD form

The standard international MCCD form should be adapted and used uniformly and consistently for all deaths attended by a physician in order to maintain structured reporting of cause of death. For death occurring in the absence of a physician, VA may be used to determine the cause of death.

Use the standard WHO VA questionnaire

VA data should be collected based on international standards set forth by the WHO, using the most up-to-date version of the WHO VA questionnaire.

Establish governance structures in the CRVS system

Necessary governance structures should be fully operational and ensure coordination in the CRVS system; these structures should also oversee activities related to cause of death information.

Provide routine training on VA

The skills of designated VA interviewers and other stakeholders should be strengthened through institutionalized training.

Establish a system for quality assurance and data use


A quality assurance and improvement system should continuously monitor the quality VA-derived cause of death data, and that data should be analyzed and interpreted for use in the health and other sectors.


Use VA data at the population level


Causes of death derived from VA do not have the legal status of those derived from MCCD. Therefore, VA-derived causes of death should not be disclosed to individuals nor be included in death certificates issued by the civil registrar. The value of VA-derived causes of death is to generate population-level statistics.

Implementation Framework for VA in the CRVS System

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Intervention Area A:

Governance & Processes

Governance structures coordinate stakeholders to support cause of death data collection using VA for deaths which were not attended by a physician. Relevant processes are optimized and integrated into the CRVS system to produce high-quality cause of death data for decision-making.



SUCCESS FACTOR A1

Appropriate Governance Structures

PURPOSE

To ensure functional structures, system coordination and management of mortality and cause of death processes and data in the CRVS system.

OUTPUT

Terms of reference for applicable governance committees specifying roles and responsibilities, constitution, and frequency of meetings, among other points.

Governance committees meet and function as intended.

REFERENCES

- 1 Vital Strategies (2020). Guidance for Civil Registration and Vital Statistics (CRVS) Governance Mechanisms. <https://www.vitalstrategies.org/resources/guidance-for-civil-registration-and-vital-statistics-governance-mechanisms/>
- 2 University of Melbourne, (2018). CRVS coordinating committee. <https://crvsgateway.info/CRVS-coordinating-committee-330>
- 3 Vital Strategies – Bloomberg Philanthropies Data for Health Initiative. 2021. Strengthening CRVS Systems Guide for Medical Certification of Cause of Death.
- 4 Vital Strategies – Bloomberg Philanthropies Data for Health Initiative. 2021. Strengthening CRVS Systems Guide for International Classification of Diseases Mortality Coding.

IMPLEMENTATION TASKS



Ensure functioning of a High-Level Interagency CRVS Coordination Committee with responsibility for high-quality cause of death data

- In line with its core functions, responsibilities, reporting, and composition (1,2), this committee should provide policy oversight, approval and evaluation of activities related to the collection of high-quality cause of death data for deaths in the CRVS system. This should include considerations for MCCD (3), ICD mortality coding (4), and, as applicable, the use of verbal autopsy.
- As applicable, the committee should endorse and support proposed system improvements.



Ensure functioning of a CRVS Technical Coordination Committee

- In line with its core functions and responsibilities (1), the technical coordination committee should include in its mandate the provision of strategic guidance and oversight for the implementation of interventions that maintain, improve and promote the production and use of high-quality VA data for public health decision-making.
- The technical coordination committee should be the primary sponsor for VA improvement activities and commission work as needed. The input of a mortality and cause of death technical working group should be sought, and the technical coordination committee should receive regular updates on progress and results of VA implementation efforts.

**SUCCESS FACTOR A1 (CONT'D)** **Ensure functioning of a Subject Specific Technical Working Group, where needed**

- The working group should be responsible for developing detailed work plans, including ensuring adequate capacity for VA and developing quality assurance mechanisms. The work plans should include targeted activities, responsibilities and timelines.
- This working group should coordinate with other subject matter experts such as a Collaborating Center of the WHO Family of International Classification (WHO-FIC) which includes a VA Reference Group.
- The technical working group should closely monitor VA data quality, and develop, as well as monitor, the implementation of corrective measures.
- In addition to a national level group, hospital-based groups or subnational groups may be needed (or the corresponding responsibilities should be included into the terms of reference of any such groups currently existing).



SUCCESS FACTOR A2

Strong CRVS Legal and Regulatory Framework

PURPOSE

To ensure that the CRVS legal framework mandates a system and process for high-quality cause of death data collection using MCCD whenever possible, with provisions for the application of VA where physician-determined cause of death is not possible.

OUTPUT

Best-practice CRVS legal framework with provision for implementation of VA for deaths where MCCD is not possible.

REFERENCES

- 5 Department of Economic and Social Affairs of the United Nations, Statistics Division (2014). Principles and recommendations for a vital statistics system, revision 3. https://unstats.un.org/unsd/demographic-social/Standards-and-Methods/files/Principles_and_Recommendations/CRVS/M19Rev3-E.pdf.
- 6 Vital Strategies – Bloomberg Philanthropies Data for Health Initiative. 2021. Strengthening CRVS Systems Guide for Civil Registration of Birth and Death.
- 7 Schwid, A., Frederes, A., Bronson, G., Abouzahr, C., de Savigny, D., Schwartz, S., Chanley, J., Bratschi, M., Setel, P. (2017). Civil registration and vital statistics (CRVS) legal and regulatory review tools and methodology. Bloomberg Philanthropies Data for Health Initiative, Vital Strategies, GHAI, Centre of Excellence. <https://www.vitalstrategies.org/resources/crvs-legal-regulatory-review/>
- 8 United Nations Statistics Division. 2019. Guidelines on the Legislative Framework for Civil Registration, Vital Statistics and Identity Management. https://unstats.un.org/unsd/demographic-social/Standards-and-Methods/files/Handbooks/crvs/CRVS_GOLF_Final_Draft-E.pdf.

IMPLEMENTATION TASKS



Review and revise the CRVS legal and regulatory framework to support the possibility of VA for deaths where MCCD is not possible

- The legal and regulatory framework should ensure the civil registration of all deaths independent of the availability of cause of death data, i.e. a cause of death should not be required to register a death with the civil registry (5, 6).
- The legal and regulatory framework should mandate MCCD and ICD mortality coding for all deaths that are attended by a physician, or other authorized medical provider (i.e. certifier of cause of death) (3, 5).
- The CRVS legal and regulatory framework should provide for the implementation of VA in settings outside of health facilities where physicians are not available to medically certify the cause of death (6).
- Rules and regulations related to methods for obtaining cause of death information should be aligned with international best practice (7, 8).
- The CRVS legal framework should prioritize and indicate which deaths require an MCCD and define how the cause of death may be obtained for deaths without an MCCD, i.e. use of VA for deaths that are not attended by a physician.
- The legal framework should define when to refer a death to the medicolegal system or when to request a post-mortem/autopsy (e.g. dead on arrival) (7, 8).
- The CRVS legal framework should indicate where a VA may be conducted (7, 8). For example, VA may be conducted if no physician or other certifier of cause of death has seen the deceased, except in the case of an unnatural or suspicious death. All unnatural or suspicious deaths should be referred to the medicolegal authorities (i.e. medical examiner, coroner, ect.) or investigation.
- The legal and regulatory framework should note the lack of legal status for causes of death determined through VA.
- The legal and regulatory framework should draw attention to the imperative of confidentiality of cause of death determined using VA at the individual and family level.
- Where no legal and regulatory framework exists, the technical working group should propose and define approaches to apply VA to address local needs. This should be done in concert with legal experts, the CRVS governance structures, and also other stakeholders. CRVS governance structures should work towards the development of a CRVS legal and regulatory framework.



SUCCESS FACTOR A3

Strategy for VA in the CRVS System

PURPOSE

To establish a VA implementation system taking into consideration the desired purpose, coverage and scale.

OUTPUT

VA system in place that provides the desired information.

REFERENCES

- 9 Ministry of Health Republic of Kenya. 2019. Kenya Verbal Autopsy Standards & Guidelines. <http://www.health.go.ke/wp-content/uploads/2019/11/Kenya-Verbal-Autopsy-Standards-Guidelines-2019.pdf>

IMPLEMENTATION TASKS



Implement VA using the approach most suited to local needs

- Independent of the availability of cause of death information, every death should be registered with the civil registry.
- VA should supplement the cause of death data already available for statistical purposes, and the approach used to collect VA data (see below) should be chosen after assessing the specific mortality patterns and quality of available cause of death data in the country. The technical working group should decide which, if any, approach of VA may be useful given local circumstances.
- The technical working group should ensure the integration and coordination of VA within the larger cause of death data collection system. The technical working group should also ensure comparability between and consistency of the collected information. To promote such harmonization and coordination, the technical working group along with other stakeholders, should issue a policy document regarding the national VA standard (9).
- In settings where every death is assigned an MCCD, there may be instances that require further investigation. For example bodies that are brought-in dead, may have few or no medical records, meaning that they should be investigated further to obtain informative cause of death data. In cases where there is an ill-defined cause of death or non-informative medical records, VA can be a useful approach to investigate these deaths.
- If VA is applied to investigate deaths with ill-defined causes, the criteria for which deaths should be investigated and at which level of coverage (e.g. sample or population) will need to be defined.
- For routine application of VA as part of the CRVS system, community-based health workers (rather than physicians) or people in other similar roles who work closely with communities, could conduct the VAs. The workload, skills and reporting structure of these staff must be evaluated before they are assigned the task of carrying out VAs.
- Supervisory staff should be identified; line supervisors of the interviewers may be well placed to carry out this role.
- VA should be included as part of the selected staff's officially designated tasks in their job description and/or scheme of service.



SUCCESS FACTOR A3 (CONT'D)

Implement VA at the appropriate level of coverage

- As VA data is used at the population level for statistical rather than legal purposes, it is not necessary to conduct VA for every death. Rather, VA in the CRVS system should be applied to a sample that will provide representative information at the desired level (e.g. regional).
- The appropriate sample should be derived by local sampling experts and in collaboration with the national statistics organization. The sampling should account for factors such as: the expected proportion of deaths not attended by a physician, the desired representativeness of disaggregation(s), and the frequency of rare causes (e.g. maternal deaths), which are to be determined using VA. A VA sampling tool with documentation can be used as an aid in this task (10). Sampling efforts should be led by government stakeholders and should be consistent with relevant geographic and administrative areas of the country.

Implement international standard WHO VA questionnaire

- WHO provides a standard VA questionnaire (11), which should be adapted for the local context. This might include translation and the inclusion of specific sociodemographic variables that are of interest to the local setting.
- Questions related to the conditions experienced by the deceased leading up to the death should not be altered when customizing the questionnaire to the local context, as this may have unpredictable consequences on the performance of diagnostic algorithms that are to be used for assignment of the most likely cause of death.
- Translations of the VA questionnaire should undergo cognitive testing in local settings prior to VA implementation, and any adaptations made for the local context should be tested. The translation should take into consideration the target population to ensure comprehension in the populations where VA is to be applied. Additionally, “dictionaries” of terms used in the questionnaire for field workers to explain terms to the target population in a standardized fashion, may be used. WHO provides resources on translation and adaptation of the VA questionnaire (11).
- Geographic information should be added into the questionnaire in a standardized fashion (e.g. using the administrative units of the civil registry and / or the District Health Information Software 2 (DHIS2) geographical units).

REFERENCES

- 10 Bloomberg Philanthropies Data for Health Initiative (2018). Sampling strategies for representative national CRVS verbal autopsy planning: A guidance document and sample size calculator tool. Part A: Principles and strategy. Draft 2.4. <https://crvsgateway.info/file/6690/2085>
- 11 World Health Organization. [no date]. 2016 WHO Verbal Autopsy Instrument. <https://www.who.int/healthinfo/statistics/verbalautopsystandards/en/>
- 12 Get ODK Inc. 2020. ODK. getodk.org.
- 13 University of Melbourne. 2020. CRVS technical guide Guidance for interpreting VA results. <https://crvsgateway.info/file/11243/3231>.
- 14 WHO VA Reference Group. [no date]. WHO Verbal Autopsy Reference Group. <https://www.swisstph.ch/en/about/eph/household-economics-and-health-systems-research/whova/>.
- 15 University of Melbourne (2020). Introducing verbal autopsies into CRVS systems: Guiding principles. <https://crvsgateway.info/file/16605/52>.



SUCCESS FACTOR A3 (CONT'D)

- To effectively enable linkage with the civil registration system, the death registration number or equivalent unique number issued for each death by the civil registry, or unique personal ID number of the deceased, should be assigned to each VA interview and captured as part of the data collection for each VA (15).
- To facilitate data collection and analysis, VA data should be collected electronically. The WHO VA standard questionnaire is available in the format of an XLS Form (11) and can be implemented for electronic data collection using the ODK (12) tools. The local adaptation of the VA questionnaire needs to be implemented in the XLS Form provided by WHO (11). Instructions on the modification of the XLS Form have also been made available (14).



Select method(s) for assigning VA cause of death

- While there is not currently a single, standard recommended method for assigning cause of death from VA, the WHO VA instrument is compatible with multiple automated methods and with physician-certified VA. It is important to note that different algorithms may generate different cause-specific mortality fractions and may differ in the proportion of deaths assigned to ill-defined causes. Ultimately, the relevant country stakeholders need to select a cause of death assignment method that best suits their needs.
- As desired or required (e.g. if the proportion of ill-defined causes of death is high), physician-certified VA (PCVA) can be used to help interpret the findings. PCVA is more time consuming and costly compared to the use of automated cause of death assignment. On the other hand, PCVA can have some advantages; physicians can review the interview responses holistically and can also make use of the information provided in the open narrative section of the questionnaire. Comparison between PCVA and algorithms can provide confidence to the local applicability of the algorithms.
- If analysis using a computer algorithm is selected, PCVA should be used to assess outliers, unexpected, or unusual causes of death (e.g. self-harm among children or hemorrhagic fever).
- Preference regarding the cause of death list used by the algorithms and/or other characteristics of the available algorithms for cause of death assignment are valid reasons to choose one method over the other (13).
- The WHO VA Reference Group provides information about VA and about the algorithms commonly used with the WHO VA questionnaire (14).
- The OpenVA Pipeline can be used to automatically process cause of death assignment of VA data collected using ODK and transfer it to a central database such as DHIS2 (14).

**SUCCESS FACTOR A3 (CONT'D)****Engage with local communities to raise awareness about the use and process of VA**

- Gaining the understanding of the community is very important for the implementation of VA. The support, engagement and cooperation of the community are critical for the VA system to succeed. It is important that the role of VA and that of field personnel performing data collection is understood by the community. Community awareness raising and sensitization should focus on the importance of registering deaths with the civil registry and the process of conducting a VA to determine cause of death data in general.
- The staff assigned to collect VA data and their supervisors should have a strong relationship with the community. If front line health workers or other community-based agents are carrying out the VAs, their existing relationship to the local communities can facilitate the collection of VAs. However, the successful implementation of VA is contingent on the community understanding and supporting this additional role of local health staff.
- Engaging community leaders and other influential community members is an important part of sensitizing the community about VA.



SUCCESS FACTOR A4

Integrated VA Data Management and Processes

PURPOSE

To ensure that efficient VA practices are in place which integrates VA into the CRVS system and the data are processed, analyzed, interpreted, and used.

OUTPUT

System is in place for VA data collection and processing within the CRVS system.

REFERENCES

- 16 Economic Commission for Africa. 2021. CRVS Systems Improvement Framework. <https://www.vitalstrategies.org/resources/crvs-systems-improvement-framework/>
- 17 De Savigny, D., Riley, I., Chandramohan, D., Odhiambo, F., Nichols, E., Notzon, S., AbouZahr, C., Mitra, R., Muñoz, C.D., Firth, S., Maire, N., Sankoh, O., Bronson, G., Setel, P., Byass, P., Jakob, R., Boerma, T., Lopez, A.D. (2017). Integrating community-based verbal autopsy into civil registration and vital statistics (CRVS): system-level considerations. *Global Health Action*, 10(1). <https://doi.org/10.1080/16549716.2017.1272882>

IMPLEMENTATION TASKS



Establish efficient processes for the application of VA in the CRVS system

- The VA system should have clearly defined goals, objectives and standard operating procedures, and these procedures should be fully institutionalized within the agencies that are supporting them.
- The VA system documentation should clearly outline roles and responsibilities of the relevant stakeholders for data collection and analysis, and the onward transmission of data to the civil registration authorities, the national statistics office, or other stakeholders in the CRVS system.
- The subject specific working group should assess and re-design current processes for VA, ensuring necessary linkages within the CRVS system.(16, 17).
- Once VA data analysis is complete, a process should be in place to ensure that the final cause of death data is shared with the relevant authorities (such as the National Statistics Office and the Ministry of Health, as applicable) in a timely manner for the production of vital statistics and for the implementation, monitoring and evaluation of health intervention programs.
- Agreements on roles, responsibilities, and processes should be reflected in standard operating procedures, which can be used as a basis for training, monitoring and evaluation, and quality assurance.
- Established processes must include quality assurance measures.



Link civil registration and VA processes

- Processes should be in place to ensure the registration of community deaths. Strengthening the link between the health sector (often with agents in communities) and the civil registration sector will facilitate such processes.
- Processes for the notification and registration of deaths occurring outside of health facilities should be evaluated to ensure that VA implementation is linked to the process for the civil registration of the deaths. For the implementation of VA in CRVS, VAs should be carried out on deaths that have been registered with, or at least declared to, the civil registration authority.
- The process for the civil registration of relevant deaths should be adjusted to trigger a VA at the appropriate step in the civil registration process, i.e. VA interviewer or supervisor is informed by the stakeholders in the death registration process that the VA can be planned. For the applicable deaths, VA can then be scheduled to allow for mourning and other related traditions.



Intervention Area B:

System & Workforce Capabilities

Human resources, information technology (IT) and other capabilities are in place to produce cause of death data using VA for deaths that are not attended by a physician.



SUCCESS FACTOR B1

Adequately Funded the VA System

PURPOSE

To plan for and ensure availability of all necessarily financial resources to implement the VA system.

OUTPUT

All necessary financial resources are available to maintain the VA data collection system.

IMPLEMENTATION TASKS



Develop budget and secure financial resources needed to maintain the VA system

- Plan and budget necessary financial resources to establish and maintain the VA system. This should consider aspects such as human resources, information technology systems, training and implementation needs.

SUCCESS FACTOR B2

VA Data Collection Standard Operating Procedures and Manuals

PURPOSE

To ensure that VA data collection, supervision, processing, management and analysis are carried out in a standardized fashion.

OUTPUT

Standard operating procedures and manuals for all relevant staff are available and in use.

IMPLEMENTATION TASKS



Develop standard operating procedures for VA processes from data collection to analysis and use of the information

- Standard operating procedures and manuals should be developed for all cadres of staff involved in VA data collection, transmission, analysis, management, quality assurance, supervision and dissemination. WHO has issued guidance and standard procedures for the WHO VA instrument (18-20).
- Manuals, guides and supporting materials should be developed based on the context of local VA application in a country.
- Manuals should include training materials and field guides for interviewers, master trainers and supervisors, as well as job aids to facilitate implementation (e.g. interviewer checklist).
- Standard operating procedures and manuals should be made readily available to the relevant staff for use and reference.

REFERENCES

18 World Health Organization (2017). Verbal autopsy standards: Manual for the training of interviewers on the use of the 2016 WHO VA instrument. V1.0. WHOVA2016 Implementation support package. <http://www.who.int/healthinfo/statistics/verbalautopsystandards/en/>

19 World Health Organization (2017). Verbal autopsy standards: Manual for the training of master trainers and supervisors on the use of the 2016 WHO VA instrument. V1.0. WHOVA2016 Implementation support package. <http://www.who.int/healthinfo/statistics/verbalautopsystandards/en/>

20 World Health Organization (2017). Verbal autopsy standards: VA field interviewer manual for the 2016 WHO VA instrument. V1.5.2. WHOVA2016 Implementation support package. <http://www.who.int/healthinfo/statistics/verbalautopsystandards/en/>



SUCCESS FACTOR B3

Human Resources for the VA System

PURPOSE

To ensure personnel involved in VA data collection and processing are trained and supported to ensure efficient VA practices.

OUTPUT

Trained human resources for VA implementation.

IMPLEMENTATION TASKS



Train interviewers for VA data collection

- Interviewers should be trained on the entire VA process, including the process for the civil registration of death, communication techniques to engage with the family of the deceased, the VA questionnaire and key ethical principles for VA data collection.
- Interviewer training should cover standard operating procedures for the VA process.
- VA data collection should be a formal part of the interviewer job description and should consider the additional workload including for example setting-up the VA and traveling to the family to carry out the VA.
- Training for the cadre of VA interviewers, should be institutionalized at existing relevant training institutions to ensure long-term sustainability of VA. Initially, on-the-job training of interviewers can also be provided.
- Recommendations regarding the profile, criteria for VA interviewers, and checklist for training and manuals have been published (18, 20).
- Plans should also be developed for regular scheduled training and re-training as needed to accommodate staff turnover and/or implementation issues.



Train VA supervisors on VA data collection and quality assurance and monitoring

- Supervisors have key roles in reviewing the field performance of interviewers, providing on-site support and troubleshooting advice, ensuring the adequate distribution of workloads, and assisting interviewers with their responsibilities to collect quality data.
- Supervisors should accompany interviewers on selected VA interviews as a quality control mechanism and to provide feedback.
- Training for the cadre of VA supervisors, should be institutionalized at existing relevant training institutions to ensure long-term sustainability of VA. Initially, on-the-job training of supervisors can also be provided.
- VA supervisors with advanced training and experience in conducting VAs can also be considered to act as master trainers for VA interviewers.
- Recommendations regarding the profile, criteria for VA supervisors and checklist for training and manuals have been published (19).

**SUCCESS FACTOR B3 (CONT'D)****Train relevant staff on VA-related IT, statistics and other relevant skills**

- If electronic data collection is used for VA data collection, central level and peripheral staff, need to be trained on the use and maintenance of the relevant IT tools. These may include tools such as ODK (12). The staff identified should ideally have some prior experience with electronic data collection alternatively, a staff member proficient in the use and maintenance of the electronic platform and devices, may need to be hired.
- A VA data manager should ensure that the collected data is processed and prepared for analysis. General data management principles apply, and staff in this role should have experience with data management. The data manager should manage data quality control protocols (e.g. within the openVA Pipeline (21)) and the preparation of data for analysis.
- Relevant staff at the central level and peripheral levels, where required, will need training on any algorithm selected for cause of death assignment (14). A strong understanding of statistics and data analysis will be required to manipulate and analyze the data from the algorithms. Training requirements will depend on the algorithm used.

REFERENCES

- 21 OpenVA Team. [no date]. Open VA Pipeline. https://github.com/verbal-autopsy-software/openva_pipeline.



SUCCESS FACTOR B4

Infrastructure and Other System Resources for VA

PURPOSE

To ensure that the necessary infrastructure for the implementation of VA is available.

OUTPUT

Infrastructure and other system resources are in place to collect, manage, process and analyze VA data.

REFERENCES

22 University of Melbourne, Bloomberg Philanthropies Data for Health Initiative (n.d.). How do I download and install ODK collect? <https://crvsgateway.info/file/7624/2368>

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24 OpenVA team. [no date-ongoing development]. openVA app. https://github.com/verbal-autopsy-software/openVA_App

25 Odhiambo Collins Ochieng. 2019. VA Tool. https://github.com/homabay2016va/VATOOL_Demo

IMPLEMENTATION TASKS



Maintain necessary IT infrastructure for VA

- Electronic data collection using ODK requires procurement of tablets or smartphones and the configuration of these devices (22). WHO publishes its VA questionnaire in a format that is suitable for use with ODK (11), however, other electronic data collection platforms may also be used.
- If possible, tablets with mobile phone capability and SIM cards should be procured to allow for direct exchange between the data collection tools and the central level server. If upload through the internet is not possible, completed VAs can be retrieved using manual steps.
- ODK can be used offline for data collection. Collected VAs can be uploaded to the central server once an internet connection is available.
- Information on the ODK suite of tools (12) and guidance on the configuration and preparation of tablets or smartphones for data collection have been published (21).
- To promote confidentiality of information, it is recommended that interviewers are given designated data collection devices, rather than using their personal devices.
- A central level server should be maintained to receive the collected data.
- A VA manager tool (25) is available and can be used to monitor collection of VA data in real time.
- The openVA software package (22) can be used to process the VA data collected using ODK to assign a cause of death to each VA. A graphical user interface version of the openVA software package is available (23).
- Data will need to be transferred for analysis and inclusion in vital statistics following the assignment of the cause of death to each VA. Additional software may be needed for this data transfer. The OpenVA Pipeline can be used to facilitate the transfer of VA determined causes of death to DHIS2 (21).



Intervention Area C:

Quality Assurance

A structured and routine quality assurance system ensures the highest possible quality of cause of death information obtained using VA for deaths not attended by a physician.



SUCCESS FACTOR C1

Supportive Supervision System for VA Data Collection

PURPOSE

To ensure that the VA data collection processes are followed and the quality of the VA-derived cause of death data is monitored and continuously improved.

OUTPUT

Supportive supervision system in place for VA data collection processes.

REFERENCES

26 University of Melbourne (2018). Challenges associated with automated VA training and rollout. <https://crvsgateway.info/file/16909/47>.

IMPLEMENTATION TASKS



Hold regular supervision and feedback meetings with VA interviewers

- Meetings should be used to review progress on the assigned VA cases and discuss problems and difficulties the interviewers face. Tools should be available for supervisors to track pending VAs and VA interview assignments.
- Meetings can also be used to coordinate with the VA data management team to discuss possible issues with the questionnaire and how the interviewees interpret questions.
- Group meetings provide a valuable opportunity to share experiences and learn from peers and are also opportunities for capacity building.
- Meetings can also be used to train interviewers on how they can provide grief counseling and other support to the family.



Plan accompanied interviews to observe VA interviews and assess interviewers' performance

- Supervisors should evaluate each interviewer to ensure appropriate interview conduct (26).
- Supervisors should provide individualized feedback and discuss the interviewer's performance to support improvement.
- WHO provides information on detailed supervisory procedures including a "Accompanied Supervision Checklist" that countries should adapt to evaluate interviewers' performances.



SUCCESS FACTOR C2

Routine Quality Assurance System for VA

PURPOSE

To ensure that the quality of the collected VA data is assured on a regular basis.

OUTPUT

Quality assurance system for the assessment of collected VA data.

IMPLEMENTATION TASKS



Conduct routine plausibility and consistency checks of the collected VA data

- A designated data manager at the central level, or other level depending on where data analysis takes place, should be responsible for reviewing the VA dataset for quality and cleaning the data, as needed.
- Standardized procedures for data management, checking and cleaning, can detect sources of systematic variation. Routine checks should be conducted. Routine checks may occur monthly during the initial roll out and quarterly thereafter.
- Data managers should be provided with a standard data management and data assessment checklist for routine checks of inconsistent and implausible data. Checks should detect non-logical or contradictory response patterns, missing or incorrect demographic or identifying information provided about the deceased or the interviewer, and issues with the metadata for each VA (e.g. time taken to carry out the VA).
- As much as possible, the data quality checks should be automated (e.g. in the openVA Pipeline (21)).
- Errors detected in the data should be logged and a report compiled to inform corrective measures. Measures may include feedback to interviewers or improvements to the questionnaire (e.g. adding a clarifying hint or ensuring that data entry constraints are correct) or changing the procedures used for data collection (e.g. different supervisory support requirements).
- Data managers should compile a list of VA interviewers producing a high volume of inconsistent and implausible data that can be shared with VA supervisors as feedback on interviewers' performances.
- In the case that many errors can be attributed to particular interviewers, their performance should be reviewed.

**SUCCESS FACTOR C2 (CONT'D)****Apply corrections and adjustments to the VA data**

- VAs that do not pass the quality control steps should be moved to a separate file for further analyses to determine if the VA data should be used to determine the cause-specific mortality fraction for the population. This sorting may also be automated to facilitate data management.
- Coordination and communication channels between data managers and VA supervisors are necessary to enable the correction of collected data and so that interviewers learn from the process.



Intervention Area D:

Data Analysis, Interpretation & Use

A system is in place for VA data to be analyzed, interpreted and used by decision-makers.



SUCCESS FACTOR D1

Application of Cause of Death Assignment Methods

PURPOSE

To select and use the locally appropriate cause of death assignment method and compile the cause-specific mortality fraction for the population.

OUTPUT

Cause of death assignment method in use.

IMPLEMENTATION TASKS



Obtain cause-specific mortality fractions from VA using the selected cause of death assignment method

- Before data can be processed by a cause of death assignment method, collected VA data should be checked for quality.
- Batch analysis using automated cause of death assignment software can be done by downloading data from the server and processing it through the computer software such as openVA (23). The openVA Pipeline (21) can be used to automatically run the cause of death assignment method(s).
- Comparisons between the most commonly used automated cause of death assignment methods have been published (13).
- Depending on the algorithm used, cause-specific mortality fractions are produced from: individual records (InterVA and SmartVA-Analyze); considering the population cause of death distribution (InSilicoVA); or incorporating additional data (SmartVA-Analyze algorithm with the use of Global Burden of Disease data to redistribute undetermined cases of death) (13, 14).
- The cause-specific mortality fraction must be interpreted in consideration of the VA approach and strategy used.
- VAs can also be analyzed with the help of physicians. Such a process should involve a small number of physicians reviewing and coding many VAs, with each VA independently coded by two physicians. Disagreements need to be reassessed with the input of a third physician where needed. The identity and basic information (e.g. age, sex, specialization) of the physician who completed the coding should be noted to be able adjust for physician bias, as applicable.
- Physician certification of VA may be combined with the application of automated cause of death assignment methods. For example, physicians may review and code the VAs which are classified as undetermined by the algorithm, a sample of all VA, or VAs that result in rare and unexpected causes (e.g. hemorrhagic fever in areas where this is not expected).



SUCCESS FACTOR D2

Analysis, Interpretation, Dissemination and Use of VA-Derived Cause of Death Data

PURPOSE

To analyze, interpret, disseminate and use the VA-derived cause of death data in the form of vital statistics and for the purpose of policy making

OUTPUT

VA-derived cause of death data available to policy-makers and included in vital statistics.

REFERENCES

- 27 University of Melbourne. (2020). CRVS technical guide Guidance for interpreting VA results. <https://crvsgateway.info/file/11243/3231>
- 28 Vital Strategies, United Nations Economic Commission for Africa, United Nations Economic and Social Commission for Asia and the Pacific, and Statistics Norway. (2020). Production of a Vital Statistics Report: Guide. <https://www.vitalstrategies.org/resources/production-of-a-vital-statistics-report/>.

IMPLEMENTATION TASKS



Produce regular vital statistics reports

- Tabulations with disaggregated VA-derived causes of death by age, sex and geographic location should be presented in reports accompanied by metadata, graphs, maps and descriptions to allow for the interpretation of the VA data.
- As part of the presentation of VA-derived cause of death data, the plausibility of the VA data should also be evaluated and reported on (26).
- VA-derived causes of death data should be presented separate from cause of death data for death with MCCD.
- Where MCCD and VA data are of reasonable quality such as in areas with high levels of accuracy and completeness, consolidation to a common cause list based on groups or ranges of ICD codes should be considered.
- When consolidating data, it is important that countries clearly indicate the source of cause of death data (e.g., MCCD versus VA-derived) and carefully consider how the consolidated data from different sources should be combined (27).
- Frequent errors identified in the data, possible sources of bias, and corrective measures to improve the situation should be highlighted.
- It should be ensured that resources are available to complete reports on a regular basis and on a timely schedule, to facilitate effective use of the mortality data in program planning, operation, and evaluation (28).

**SUCCESS FACTOR D2 (CONT'D)****□ Disseminate and use vital statistics reports for decision- and policy-making**

- Print and online data reports describing population health and specific health topics through disaggregation, trends, and/or comparisons should be published. Reports should include specific recommendations for action.
- Processes should be in place for organizational leadership to regularly review and respond to data and ensure capacity to assess, analyze and interpret data across departments and programs.
- VA-derived cause of death data should be used for priority setting, resource allocation, program design and evaluation, legislative and regulatory initiative development, and policy advocacy.
- There should be a feedback mechanism in place to routinely inform community members on the findings from VA application. This could either be part of the health campaigns, or as education sessions during special clinics at facilities, such as for example

Bloomberg Philanthropies
Data for Health Initiative

The Data for Health Initiative, supported by Bloomberg Philanthropies and the Government of Australia, is providing technical assistance to over 25 low- and middle-income countries worldwide to improve public health data systems. The CRVS Program, focusing on improving civil registration and vital statistics, is one of four Initiative components; the other three components focus on data use, developing new tools for noncommunicable disease risk factor surveillance, and strengthening cancer registries. Collaborating institutions in the Initiative are: Vital Strategies, U.S. Centers for Disease Control and Prevention, the Johns Hopkins Bloomberg School of Public Health, the World Health Organization, and the Global Health Advocacy Incubator.

Draft for Consultation: for feedback please email crvsinfo@vitalstrategies.org.
Thank you very much for your support.