



**Bloomberg
Philanthropies**  **DATA FOR
HEALTH INITIATIVE**

CRVS country report

Colombia: A strategy to improve the registration and certification of vital events in rural and ethnic communities

September 2018





Resources available from the University of Melbourne, Bloomberg Philanthropies Data for Health Initiative

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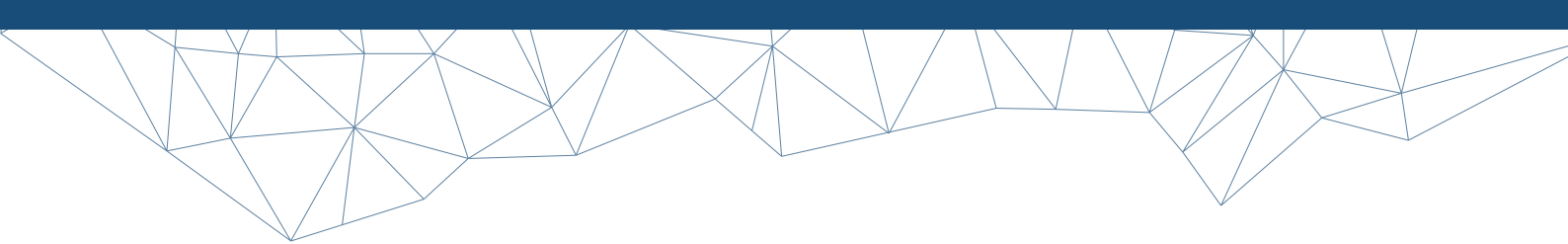
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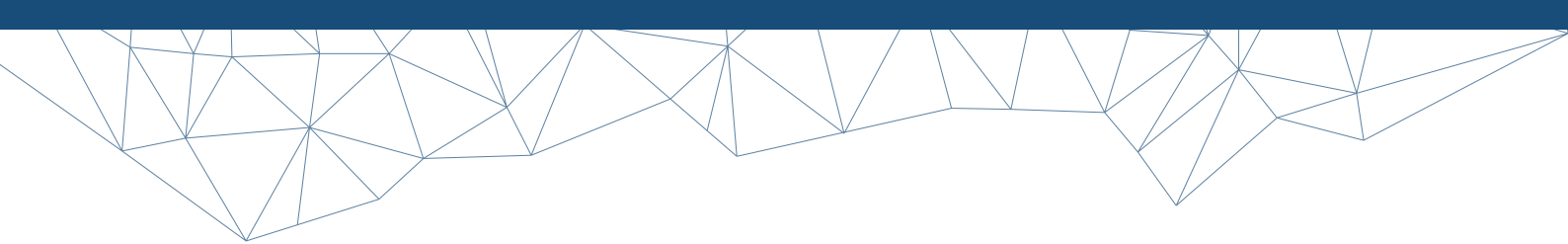
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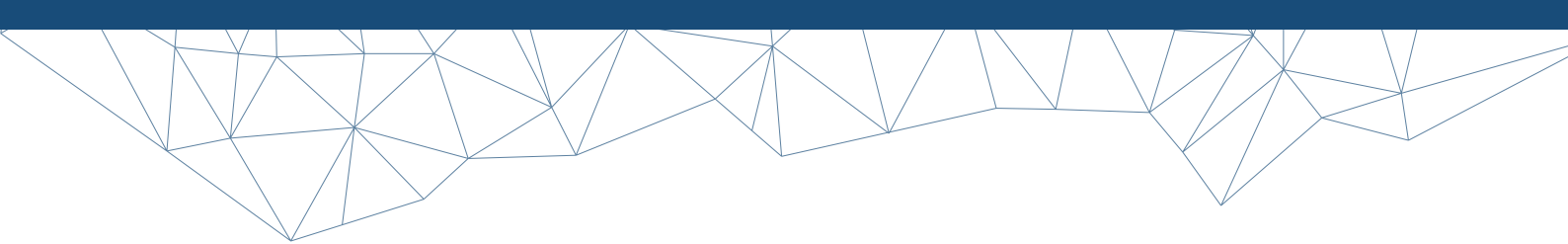


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Abbreviations

COD	cause of death
CR	civil registration
CRVS	civil registration and vital statistics
D4H	Data for Health
DANE	Departamento Administrativo Nacional de Estadística
INML-CF	Instituto Nacional de Medicina Legal y Ciencias Forenses
MMDS	Mortality Medical Data System
MoH	Ministry of Health
MSPS	Ministerio de Salud y Protección Social
RNEC	Registraduría Nacional del Estado Civil
RUAF-ND	Registro Único de Afiliados – Nacimientos y Defunciones
VA	verbal autopsy
VS	vital statistics



A strategy to improve the registration and certification of vital events

This *CRVS country perspective* outlines the strategy for strengthening the civil registration and vital statistics (CRVS) system in Colombia. This strategy is based on improving the capture of vital events and the quality of vital statistics data. In collaboration with government partners, Colombia prioritised three categories of CRVS interventions as part of the Data for Health Initiative, namely improving vital event registration in rural and ethnic communities, strengthening the management and quality of vital statistics, and optimising CRVS information systems and their interoperability.

This paper details Colombia’s strategy to increase the registration and certification of vital events in rural municipalities and ethnic communities. Key parts of this intervention involve:

- Developing a proactive search system to improve capture of vital events through mobile notification
- Subsequently applying automated verbal autopsy to determine probable cause of community-based deaths.

Background

Country context

Civil registration and vital statistics system

Improving the quality of vital statistics

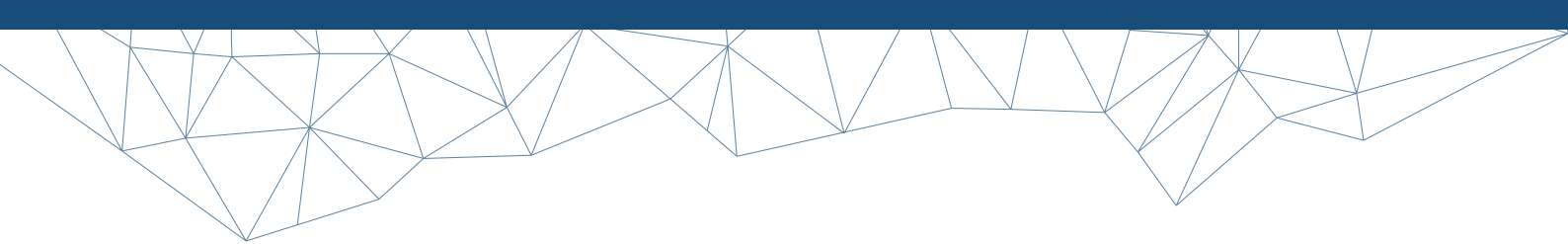
CRVS system-strengthening activities as part of D4H

Improving vital event registration in rural and ethnic communities

Strengthening the management and quality of vital statistics

Optimising CRVS information systems and their interoperability

Moving forward



Background

Country context

Colombia is organised into departments, municipalities, and districts.

Colombia is on the northern tip of South America (**Figure 1**). Its ethnically diverse population of approximately 49.8 million people spreads across six distinct geographic regions.¹ Colombia is organised territorially by Departamentos (departments), municipalities, and districts. Although it is a middle- to upper-income country, 98 per cent of Colombia’s rural population falls into the lowest quintiles of wealth within the country.² Rural populations face the negative effects of poverty, coupled with restricted access to health and social sector services.³ These factors make the need for effective resource allocation all the more critical.

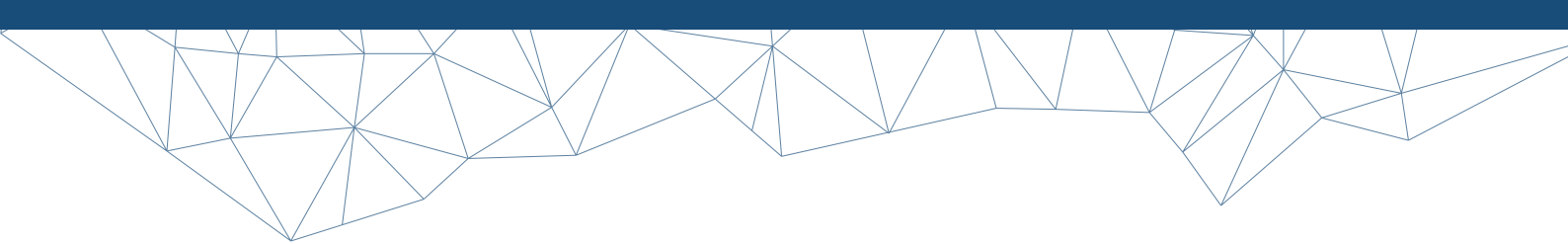
For the Government of Colombia to invest in health and development according to its people’s needs, it must have accurate information on its population’s health status. This information must be produced by a strong civil registration and vital statistics (CRVS) system (**Box 1**). A well-functioning CRVS system captures data on vital events such as births and deaths, and produces consistent, reliable vital statistics. The Government can then use these data to develop informed, cost-effective health policy, planning and monitoring activities, which will maximise the health and wellbeing of Colombia’s population.^{4,5}

Figure 1: Map of Colombia



Source: Adapted from Operation World, available at operationworld.org/files/ow/maps/lgmap/colommap-md.png

1 Departamento Administrativo Nacional de Estadística (DANE). Reloj de Población. 2018. Available at: www.dane.gov.co/reloj
2 The World Bank. The World Bank Country Data: Colombia. Overview. 2018. Available at: data.worldbank.org/country/colombia
3 Marmot M. Social determinants of health inequalities. *The Lancet* 2005; 365(9464):1099-1104.
4 Setel et al. A scandal of invisibility: making everyone count by counting everyone. *The Lancet* 2007; 370(9598):1569-1577.
5 Mikkelsen et al. A global assessment of civil registration and vital statistics systems: monitoring data quality and progress. *The Lancet* 2015; 386(10001):1395-1406.



Box 1: Civil registration and vital statistics snapshot

Civil registration is the continuous, permanent, compulsory and universal recording of vital events – including births, deaths, marriages, divorces and adoptions – and their characteristics in a population, according to law.⁶ Civil registration and vital statistics systems generate vital statistics using the information contained in individual civil registration records. Such statistics include:

- Numbers and rates of births
- Key characteristics of births, such as births by sex, location and maternal age
- Numbers and rates of deaths
- Deaths by key characteristics such as age, sex, location and cause of death.

There are four major stakeholders in the Colombian CRVS system and they work together to register vital events and produce vital statistics.

Civil registration and vital statistics system

The Colombian CRVS system comprises four principal stakeholders:

1. Registraduría Nacional del Estado Civil (RNEC), which oversees civil registration, national identification and electoral rolls
2. Instituto Nacional de Medicina Legal y Ciencias Forenses (INML-CF), which medically certifies deaths due to an external cause
3. Departamento Administrativo Nacional de Estadística (DANE), which is the national statistics office that processes and produces vital statistics data
4. Ministerio de Salud y Protección Social (MSPS), which oversees the health sector’s medical certification of vital events.

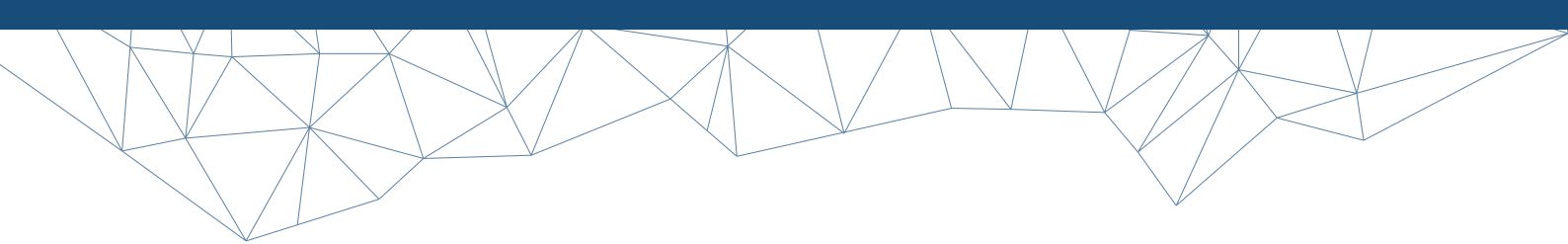
These four institutions work with other stakeholders in the CRVS system, and coordinate certification and registration of vital events and production of vital statistics. This is done via inter-ministerial technical committees at all levels of government, and the overarching Comisión Intersectorial de Gestión de las Estadísticas Vitales (Intersectoral Commission for the Management of Vital Statistics), the latter of which was created by Presidential Decree in 2002. These committees coordinate the collection and distribution of birth and death certificates, and implement procedures to improve registration quality and completeness.

In 1998, the CRVS system was defined as two independent subsystems: the Civil Registration (CR) subsystem and the Vital Statistics (VS) subsystem. The CR subsystem gives legal recognition to registered births and deaths. The VS subsystem collects information on births and deaths certified by the health sector, and channels this information to DANE. DANE then produces and disseminates official statistics on these vital events.

The antecedent form issued as part of a birth or death certificate establishes the link between the civil registration and vital statistics subsystems.

For the RNEC to register a vital event, a health institution or legal medicine unit must complete an antecedent form, issued as part of a birth or death certificate. Once completed, these forms are given to the family of the newborn or the deceased. The family uses the form to register the event at an RNEC or notary office. This form is also needed to obtain a burial or cremation licence, and it establishes the link between the CR and VS subsystems.

⁶ United Nations Department of Economic and Social Affairs (Statistical Division). Principles and recommendations for a vital statistics system, revision 3. New York, USA: United Nations; 2014.



Improving the quality of vital statistics

In 2005, Colombia introduced an initiative to improve coverage and completeness of the CR subsystem using modern technologies. As a result, most births and deaths are now certified by medical personnel and certified online. In 2014, the health sector notified more than 95 per cent of all births and deaths in the country to the VS subsystem. Physicians or licensed health professionals notify births and deaths that involve contact with the health sector. If the death is violent or caused by an external event, or if an initial cause of death (COD) is in doubt, physicians from INML-CF complete the death certificate. For births and deaths that do not involve contact with the health sector, RNEC officials and notaries complete the certificates. To complement the modernisation of the notification process described above, a core International Classification of Diseases (ICD) coding group within DANE aims to improve COD coding.

In 2008 and 2009, MSPS implemented a web-based information system for health facilities to certify live births and deaths online – the Registro Único de Afiliados – Nacimientos y Defunciones (RUAF-ND). Completeness of birth certification has been improving, from around 77 per cent in the early 2000s to 95 per cent in 2015, whereas death certification completeness has risen to about 86 per cent in 2015.

CRVS system strengthening activities as part of the Data for Health Initiative

Colombia is part of the Data for Health (D4H) Initiative, funded by Bloomberg Philanthropies and the Australian Government Department of Foreign Affairs and Trade (DFAT). D4H is working with 16 countries and two cities to:

- Increase the registration of births and deaths.
- Improve the quality of COD information at hospitals.
- Apply verbal autopsy (VA) to better understand probable COD in communities.
- Produce high-quality datasets and data analysis skills for policy and program analysis.

Colombia has a strong CRVS system, which registers around 95% of births and 86% of deaths.

To address issues of quality and completeness of vital statistics, the D4H Initiative is providing Colombia with technical assistance to strengthen its CRVS system. Colombia's strategy consists of three categories of systems-building interventions:

1. Improving the completeness and quality of vital events certified in rural populations and ethnic groups
2. Strengthening the management and quality of VS at national and subnational levels
3. Optimising CRVS information systems and their interoperability.

Improving the completeness and quality of vital events certified in rural and ethnic communities

Background

Although overall certification completeness is high, there are disparities between urban and rural populations, particularly for death certification. In 2016, rates of completeness of death certification were 25 and 26 per cent lower in rural areas as opposed to urban (**Table 1**). This difference is even more apparent among children under-five years old – an estimated 6 in every 10 children under-five who die in rural areas are missing from Colombia's mortality data. Moreover, the Government faces difficulties recording deaths among indigenous communities due to cultural practices and barriers, including customs such as burying the deceased without reporting the death.

Table 1: Key mortality statistics, Colombia, 2016

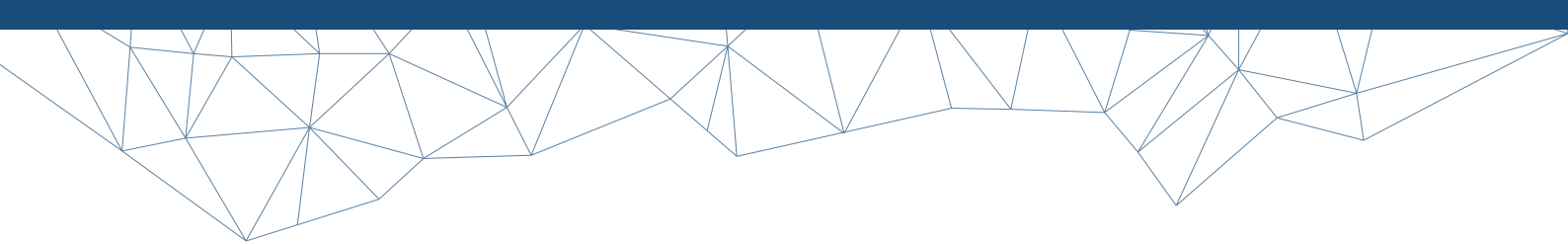
Statistic	Rural	Urban
Completeness of death certification – males	68.2%	92.9%
Completeness of death certification – females	61.2%	87.3%
Under-5 mortality rate – CRVS system of Colombia (per 1000 births)	9.5	10.2
Under-5 mortality rate – 2015 Demographic and Health Survey (per 1000 births)	22.0	14.0

A major focus of the D4H workplan for Colombia is to increase registration and certification of vital events in rural municipalities and ethnic communities, as these populations have the lowest rates.

Consequently, D4H is supporting Colombia to implement a strategy to increase registration and certification of vital events in rural municipalities and ethnic communities. In February 2017, an inter-stakeholder group was established to provide technical advice on the implementation of this intervention. The group is comprised of staff from the Public Health Institute of Javeriana University, the Demography Post-graduate unit of Externado University, the Instituto Nacional de Salud (National Health Institute), DANE and MSPS. The Strategy is planned to be implemented for one year in 14 demonstration municipalities, which were selected because of political will and presence of ethnic communities. These municipalities also fit the criteria of:

- More than 70% of the population living in rural areas
- More than 20,000 inhabitants
- A crude death rate of less than 3.5 per 1000 population.

After ensuring that the strategy is effective, by early 2019, the Ministry of Health (MoH) plans to scale-up the intervention to other rural municipalities.



The strategy

Information on births and deaths occurring between 2014 and 2017 that were recorded at health facilities were reviewed to identify those not entered in RUAF-ND and, of these, those that were also not included in the DANE database. This was done by linking all databases available in the local hospital using a specially-designed Microsoft Excel program developed by DANE, and included data from the:

- Public Health Surveillance System
- Hospital discharges system
- Mortuary and autopsies performed
- Expanded program of immunisation (EPI) system
- Birth attendance book.

A software program was designed to link databases containing information on births and deaths, to ensure all vital events were being captured.

Hospitals have been trained to continue this exercise each month, so that no vital event occurring in the hospital or known to the hospital is left out of RUAF-ND. Overall, the system will allow for delayed reporting – that is, birth and death events that have occurred outside of the timeframe to be included in DANE, and those not included in RUAF-ND, will now be counted. This will correct previous levels of underreporting.

To date, a web-based platform for receiving SMS messages and paper-based reports has been designed. Each municipality will have local managers – the public health surveillance officer in charge at the local health authority and the nurse coordinator of rural ancillary nurses – who will be able to view all cases reported to the platform. The managers will then assign each case to an ancillary nurse or health promoter in charge of the area to verify the event and, if confirmed, the nurse/promoter will plan a visit and collect birth or death information. The Departamento health authority and MoH will also have access to the platform. All verbal autopsies will be integrated into the online VS subsystem, and DANE will code the probable COD. These deaths will form part of Colombia's regular statistics reports.

The steps of the web-based platform are detailed in **Annex 1. Box 2** summarises the features of this intervention.

Box 2: Features of the intervention

Overall, this intervention involves development of a proactive search system to improve the capture of vital events through mobile notification, and subsequent application of automated VA to determine probable COD for community-based deaths in rural populations. The strategy comprises the following actions:

- Use a mechanism to detect vital events in the community and report to a web-based platform through a free SMS
- Verify these reports according to assigned geographic area in the municipality (done by local health authorities/facilities)
- Manage the information received until it is included in the RUAF-ND (done by responsible health staff)
- Use the automated VA (SmartVA) platform to collect information on deaths in the community via tablets, including recording the respondents' free narratives
- Supervise and monitor the VA quality, completeness and timeliness
- For deaths for which SmartVA collects the information, have a physician assign a probable COD in the local health facility using Autoanalyze, based on the probable causes that SmartVA provides, the respondents' recorded narratives and the clinical records if available
- Have an analysis unit confirm the probable COD
- Integrate the confirmed probably CODs into the VA database
- Analyse VA cause-specific mortality fraction by municipality, distribution compared with existing mortality data for that municipality in the previous year and current year, rural national data and national data.

Strengthening the management and quality of vital statistics at national and subnational levels

Strengthening the management of vital statistics

Currently, there is confusion about the relationships between CRVS institutions and how their functions interconnect to form the overall system. This results in duplicated efforts, inefficiently used resources and siloed databases. As such, the D4H Initiative is supporting Colombia's stakeholders to identify weaknesses in its CRVS system, rectify fragmented business processes and improve data sharing. This needs a review of existing CRVS legislation, followed by drafting of new legislation with a systems approach. With the support of D4H, stakeholders in Colombia are using enterprise architecture process mapping to illustrate the relationships between CRVS institutions (**Box 3**), and developing a legal and regulatory framework to improve system processes and data flow.

Box 3: What is process mapping?

A process map is a visual snapshot of the end-to-end activities, stakeholders and requirements of a civil registration and vital statistics (CRVS) system. When undertaking a process mapping exercise for CRVS systems strengthening, countries should aim to create process maps for:

- Births in the community
- Deaths in the community
- Births in a health facility
- Deaths in a health facility.⁷

Improving quality of vital statistics

Along with process mapping and developing a legislative framework, the Government is committed to improving the quality of vital statistics through improved stakeholder capacity. The D4H Initiative is thus helping to build capacity in:

- The application of ANACONDA to assess the quality of vital statistics data at national and subnational levels (**Box 4**)
- DANE's estimation of completeness of vital events registration at the national and subnational levels
- The development of training programs and decision support tools for medical certification of CODs.

Box 4: What is ANACONDA?

ANACONDA is built on a set of standard demographic and epidemiological concepts that underlie mortality data quality. It provides a 10-step logical evaluation framework.⁸ First, it overviews the input data and applies some simple checks to the mortality data. Then, it assesses the quality of COD data and computes an overall index of mortality data quality, the VSPI(Q). All the computational steps are automated and straightforward.

By regularly applying this assessment tool and carefully interpreting the outputs, country governments can better understand:

- How reliable the input data from their routine CRVS systems are.
- What the probable biases or errors are.
- Progress in improving the quality of mortality and cause of death data.
- Where and what kind of interventions are most urgently needed to further strengthen their existing systems.

7 de Savigny D, Cobos Muñoz D. Understanding CRVS systems: the importance of process mapping. CRVS development series. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2017.

8 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.

An important part of improving the quality of vital statistics is building capacity among staff in technical areas such as estimating the completeness of registration and data analysis and interpretation.

Representatives from each major stakeholder and department held a national workshop in late 2017. Participants were trained in using ANACONDA to analyse data at national and subnational levels, with the aim of enabling these stakeholders to analyse data using ANACONDA at least every year. The workshop focused on teaching staff to collect data and critically appraise it, identify any errors and gaps, and amend existing data collection processes as needed.

To address completeness of vital events registration, which has been hovering around the same level for the past five years, the D4H Initiative held a national workshop. Major stakeholders at national and subnational levels participated. Staff were trained in methods for more accurately estimating registration completeness.

Strengthening death certification practice involves training physicians in how to fill out death certificates and accurately identify underlying causes of death, including using methods such as VA (and automated VA platforms) to obtain COD information. When Colombia started its partnership with the Initiative, it had no continuing education requirements for the medical certification of cause of death for physicians. The MSPS, however, required tertiary hospitals to train physicians.

The D4H Initiative began developing an online medical certification training course for medical students, residents and physicians, as well as supporting materials such as pocketbooks, posters and infographics for hospitals and community health centres. The online course and supporting materials were piloted in major tertiary hospitals in the capital city of Bogotá. After making any necessary changes, the course and materials will be rolled out in various phases to other large hospitals in which a high proportion of deaths (and deaths due to ill-defined causes) occur.

Optimising CRVS information systems and their interoperability

Strengthening information flow among stakeholders

To improve VS quality in Colombia, the Government must ensure that the information systems of its key stakeholders are interoperable. Although birth and death information are exchanged between DANE and MSPS through RUAF-ND, other sources of information are not yet integrated with RUAF-ND, which means that VS contain discrepancies. As such, the RUAF-ND is being re-engineered, and the Office of Communication and Information Technology at the MSPS is planning to release an optimised version.

Introducing Iris automated coding to replace the Mortality Medical Data System

A centralised group of coders and technicians at DANE use the Mortality Medical Data System (MMDS), Colombia's well-established automated coding system. MMDS rejects less than 25 per cent of the deaths recorded in DANE (which are therefore coded manually). To continue building on Colombia's strengths, the Initiative is supporting the adoption of Iris automated coding (**Box 5**). Adoption of Iris is a system-level change consistent with international standards for COD coding, and will improve the speed, consistency and quality of coding by using standardised ICD rules. Moreover, the introduction of Iris will be complemented by coder training to improve manual coding skills, all of which will contribute to improved quality of COD data.

Colombia has introduced Iris, an automated coding software, to improve the quality and timeliness of its mortality statistics.

Box 5: What is Iris?

Iris is an automated, interactive mortality coding system, which codes multiple causes of death and selects the underlying cause of death for statistical tabulation. The system is based on the International Form of Medical Certificate of Cause of Death recommended by the World Health Organization (WHO), and causes of death are coded according to the ICD-10 and the mortality classification rules of WHO.

Iris has two purposes:

1. To provide a system where the language-dependent aspects are separated from the software and stored in database tables and can be easily modified for national purposes.
2. To improve international comparability.⁹

In March 2017, representatives from DANE and MSPS attended an Iris workshop in Brazil, and were trained to use Iris software and to code death certificates. A former DANE engineer was hired as a full-time consultant responsible for overseeing and implementing Iris. The National Institute of Statistics (INE) of Spain has provided assistance including sharing the medical dictionary and Spanish translation of updates to the ICD-10, which were used as an example for creating a Colombian Iris dictionary. DANE coders and MoH staff attended additional training in May, and DANE has started a trial-period using Iris to code the 2017 data.⁹

Moving forward

Like other countries seeking to better the health of their people, Colombia has taken critical steps towards strengthening its CRVS systems. Although it has faced challenges in making sure its entire population is accounted for – which includes registering vital events like births and deaths in rural and ethnic communities – key stakeholders have made significant strides in improving the coverage and quality of VS in rural populations and ethnic groups. Improving the management and quality of VS at the national and subnational levels required forming several strategies, from business process mapping to training in medical certification of COD, all of which the Government has started to implement. Optimising CRVS information systems and introducing Iris automated coding constitute the third of three major interventions, and the CRVS stakeholders' ongoing collaboration will be instrumental to building on the country's successes.

⁹ University of Melbourne. Topic 6 – CRVS tools: Iris ICD coding tool. CRVS Knowledge Gateway: Learning Centre. Available at: <https://crvsgateway.info/iris-ICD-coding-tool--397>



Annex 1 Web-based platform for registering and certifying vital events

Detection

Vital events are expected to be identified from several community sources:

- Community leaders
- Religious leaders
- Police officers
- Notaries
- Traditional birth attendants
- Community health workers.

The local health authorities will ensure this step by reaching out to these community sources. This outreach will inform the sources about the relevance of reporting these events, the existing mechanisms and who will receive the information.

Reporting

A 1-year free short code SMS package is currently available (the Ministry of Health plans to fund this once the project is over). An SMS may be sent from any mobile operator in Colombia to the number 899933 with the message: Name of Municipality#place#vital event reported#date#person/family in which event occurred. A paper form with the same information can also be distributed to community organisations, in case there is no mobile access or the community finds it easier to use paper. The form will be delivered to the local health authority.

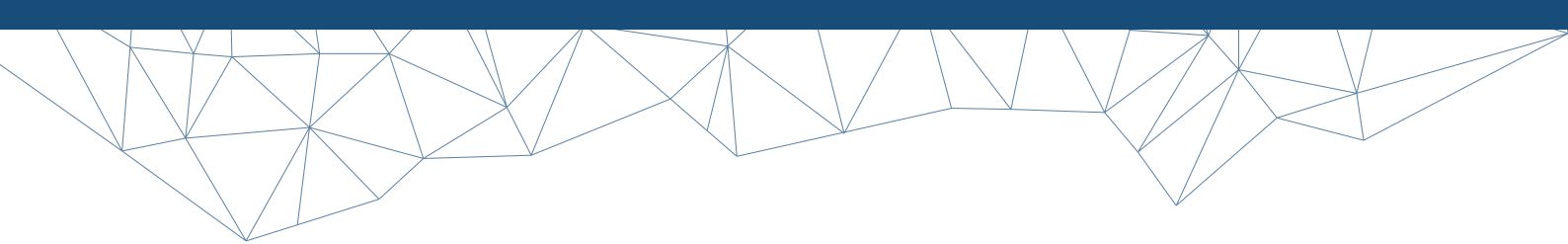
Receipt of report

The SMS reports will be sent to designated mobile phones (held by the local health authority, the local hospital community health coordinator, the surveillance officer in charge at the Departamento Health Authority, and the Ministry of Health [MOH]). The reports will also be sent to a management platform where the variables are introduced. The mobile phone number from which the report was sent will also be recorded. The name of the municipality will be used to identify which local staff to forward the message to, and only these staff will be able to access the platform using their username and password. The message sender will receive an automatic response acknowledging receipt or asking for clarification if the message was not in the correct format. Standardisation of all potential errors in spelling and forms of reporting the information has been considered and applied for the system receiving and forwarding the message.

Validation

The responsible local manager (nurse coordinator of rural ancillary nurses or surveillance officer at the local health authority) of the interviewers trained (ancillary nurses or health promoters) will assign the case to an interviewer according to the geographical area they cover in regular extra rural visits. The interviewers will then validate the information to confirm:

- That the event took place
- The contact information
- Whether the live birth or death had a medical certificate and is therefore already in the online system (the Registro Único de Afiliados – Nacimientos y Defunciones [RUAF-ND]).



Collecting live birth and death information with a tablet

Once the event has been confirmed, a certificate number will be assigned to the case according to the type of event. Trained health staff will plan a visit to the household during their usual rounds in the rural community where the event occurred. If the event was a live birth, the information for the live birth certificate will be entered into the tablet. If the event was a death, the health staff member will use the SmartVA questionnaire and then record the open narrative. All external CODs will be reported to the corresponding authority for further investigation and will no longer be part of the regular death certification process.

Supervision and monitoring of the strategy

At the local level, the local manager will supervise their respective staff, in regard to:

- Follow-up of assigned cases
- Completeness of the information collected
- Performance while interviewing family members for verbal autopsy (VA)
- Timeliness
- Results.

A public health surveillance officer at the Departamento Health Authority will supervise local managers. The MoH will oversee the entire strategy in the demonstration districts.

Assigning probable cause of death: first review

Smart VA autoanalyze will process all VAs collected during a defined period (which will vary according to municipality and agreements with the local hospitals). The designated trained physician will assign a probable cause, choosing from one to three probable causes of death (CODs) that the SmartVA algorithm generates. The physician will listen to the narrative, review the signs and symptoms, and review clinical records if they are available. Based on these, they will assign a probable COD from those generated by the algorithm or a different one based on their own criteria.

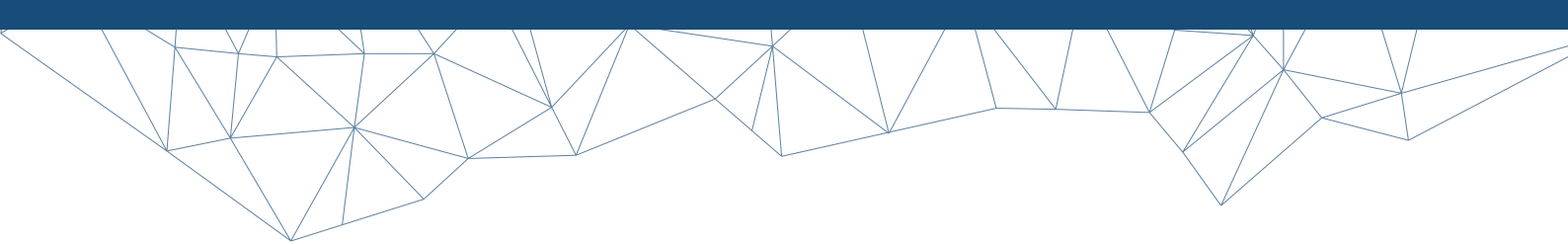
Assigning probable cause of death: second review

All VAs that have a probable COD assigned by a physician will be discussed and reviewed by an analysis unit either at the municipality or the Departamento using all the information available for each case.

A final probable COD will be assigned. An 'undetermined' COD will be accepted if no specific cause is identified at this time.

Entering the death certificate into the online reporting system (RUAF-ND)

Currently, death certificates have fields for certifiers to indicate if the basis for establishing the cause of death was due to autopsy, clinical records, specific tests, or interviews with family members or other witnesses. This last option will be used to indicate if a probable COD was assigned using automated VA.



Using the management platform

A web-based platform has been designed to receive the SMS messages and allow paper reports to be added. In each municipality, the public health surveillance officer in charge at the local health authority and the local managers will be assigned a user ID and password. The Departamento Health Authority and MoH will also have access to the platform.

When logging onto the platform, the local managers will be able to see the cases that have been reported with all available information, according to the area where the event occurred (sub-municipality area). They will assign the case to the ancillary nurse/health promoter in charge of the area for verification and, if the event is confirmed, to plan a visit. At the visit, deaths will be recorded on a tablet using SmartVA, and births will be recorded using the designated format.

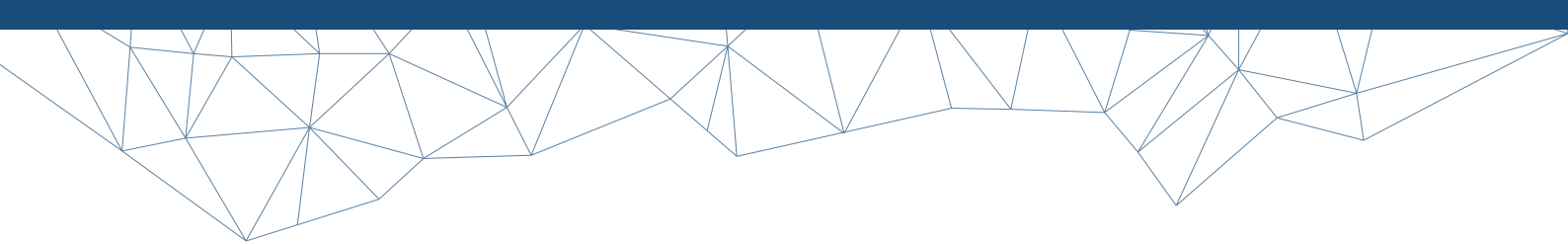
The steps of 'report', 'case assignment', 'verification', 'performance of VA', 'assigning COD' and 'entering into the vital statistics online system' will have identifiers attached to them. These identifiers are date, responsible person (name and ID), observations if any and status at the end of the step.

Creating a verbal autopsy database and integration into the Vital Statistics Office

As a temporary measure, all VAs will be saved in multiple locations, including local, Departamento and MoH computers.

Officials are discussing the possibility of uploading the information to a central server, and whether the server should be web based or in the MoH.

All VAs are expected to be integrated into the online Vital Statistics System. DANE will code probable CODs and these deaths will form part of the regular statistics reports. They will be identifiable by the variable indicating how the COD was established (that is, through interview with family) and may be analysed separately if needed.



Related resources and products

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Library

crvsgateway.info/library

CRVS country overview: Colombia. CRVS summaries.

Guidance for assessing and interpreting the quality of mortality data using ANACONDA. CRVS resources and tools.

Improving registration: best-practice guidelines. CRVS summaries.

Improving vital statistics for informed policy: the importance of data quality. CRVS development series.

Intervention: Automated verbal autopsy. CRVS summaries.

Intervention: Improving registration practices. CRVS summaries.

Intervention: Medical certification of cause of death. CRVS summaries.

Intervention: Mortality coding. CRVS summaries.

Understanding CRVS systems: the importance of process mapping. CRVS development series.

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Learning Centre

crvsgateway.info/learningcentre

Topic 1: Introduction to CRVS.

Topic 4: Cause of death in CRVS.

Topic 6: CRVS tools – ANACONDA mortality data quality assessment tool; Iris automated coding tool.

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Courses

crvsgateway.info/courses

Analysis of Causes of (National) Deaths for Action.

Estimating the completeness of birth and death registration.

ICD-10 coding.

Medical certification of cause of death.

SmartVA.

The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

Civil Registration and Vital Statistics partners:



For more information contact:

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