

# Strengthening mortality data for health policy and planning: the Bloomberg Data for Health Initiative in Latin America

*Fortalecimento dos dados de mortalidade para políticas e planejamento de saúde: a Iniciativa Bloomberg para a Saúde na América Latina*

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Accurate information on mortality and causes of death is essential for program and policy development and monitoring in health, and other sectors. The most reliable source for death data is a well-functioning Civil Registration and Vital Statistics (CRVS) system; however, the CRVS systems are underdeveloped in Latin America, with varying levels of incompleteness between and within the countries<sup>1,2</sup>. The Bloomberg Data For Health Initiative (D4H) identified four Latin American countries with functional CRVS systems, which lacked the capacity for providing high-quality mortality information with accurate causes of death for different reasons, including the inability to capture community deaths. These countries, Brazil, Peru, Ecuador and Colombia, joined the Initiative at various times. Their governments had a common desire to strengthen their CRVS systems by using evidence-based interventions to enable the timely flow of high-quality mortality information for the development of health policies and practices. A key outcome for D4H was that technical interventions should be collaboratively driven and ultimately sustainable by government partners.

Brazil has a relatively high Vital Statistics Performance Index (VSPI)<sup>1</sup> and high completeness rate of death registration. However, deaths with an ill-defined underlying cause, or coded to non-specific causes (unusable or garbage codes), represented 33% of all deaths in 2013<sup>3</sup>. This high burden of garbage codes reflected the percentage of deaths occurring outside health facilities, the nature of the geography in some parts of the country that isolated rural populations from physicians who could certify cause of death, and poor medical certification practices in some areas. To address these

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issues, the Brazilian government, in collaboration with the Bloomberg Data for Health Initiative, implemented four interventions to generate the needed evidence to improve the efficiency and accuracy of an already well-performing system, namely: supporting the introduction of a short-form instrument for capturing Verbal Autopsy (VA) information; strengthening the investigation system for Causes of Death (CODs) focusing on garbage codes; developing an interactive smart phone app to support physician certification of COD; and introducing automated coding with IRIS.

The length of WHO 2007 Verbal Autopsy instrument, requiring about 50 minutes, was identified as creating a burden for both interviewers and respondents during its use in Brazil. In response, the introduction of a short-form instrument was proposed to capture verbal autopsy information with a 25-minute interview. Importantly, the data collected using this short form questionnaire (Smart VA) was to be compared with gold standard diagnoses obtained from conventional autopsy to ensure that quality of data was not compromised by a shorter application time. The Brazilian Ministry of Health decided to switch to the more time-efficient Smart VA method for data collection based on the evidence collected across more than 3,000 VAs, thus enabling more deaths occurring outside health facilities to be assigned to an accurate cause of death.

Improvements in medical certification of cause of death (MCCOD) through the development and use of a smart phone app comprised a part of the investigation into garbage codes, which is the topic of another paper in this special issue. In summary, since the D4H Initiative began, substantial improvements have been made to the certification of cause of death in both facilities and community.

The remaining three Latin American countries faced similar challenges in recording deaths occurring outside health facilities and in producing high-quality cause-of-death information. The Peruvian Ministry of Health (MINSA) had the achievement of a marked improvement in the quality of cause of death and of a reduction in the estimated 30% of unusable or garbage codes among its top priorities<sup>4,5</sup>. The significant proportion of about 30% of deaths occurring outside health facilities, geographic barriers to certify COD for rural populations, poor quality of medical certification of COD and absence of a formal coding system contribute to poor quality of mortality data. D4H in Peru offered training, innovative tools, and influenced a significant change in the quality and completeness of national mortality data through the implementation of Sistema Informático Nacional de Defunciones (SINADEF). Peru established a national CRVS coordinating committee, which strengthened the cooperation between the appropriate stakeholders. Improved governance was an extremely crucial outcome of the strategy; the technical committee oversaw the introduced interventions and worked together with D4H, ensuring continuous evaluation of the CRVS system. The committee also took responsibility for future interventions.

The greatest achievement for Peru was the launch of SINADEF, an electronic system of death registration, which has been extremely effective. The Peruvian government plans to continue raising awareness and training on medical certification of COD and SINADEF

among medical staff in all 26 regions, improving death certification and notification practices. Other electronic solutions have been implemented based on the successful national roll-out of SINADEF such as the SmartVA elearning platform and the automated coding tool, the IRIS. Peru has driven such interventions by establishing a strong and well-educated workforce, analyzing interventions, and developing exciting tools that can be sustainably used and maintained.

Similar challenges were faced in Ecuador and Colombia, countries whose geographic barriers and relatively large percentage of deaths in the community suggested that much information was being lost due to the inexistence of a strategy to detect and register vital events occurring in rural, ethnic and dispersed communities. Both Ecuador and Colombia joined the D4H Initiative relatively late, allowing limited time to develop and implement technical interventions. This is the reason why these initiatives were tightly focused on providing as much information and assistance as possible, and on establishing an evidence base allowing the countries to consider how best to take such interventions forward. Ecuador needed to make significant changes to increase the capture of vital events, with just over 80 per cent of deaths registered in 2016. The interventions selected focused on proof-of-concept and foundational activities to validate the chosen CRVS improvement method for the Ecuadorian context. A group of physicians employed by the national statistics office, INEC, supervised the implementation of best-practice medical certification within Ecuadorian health facilities as tutors and master trainers of medical certification of cause of death (MCCOD) .

Other activities such as introducing a mobile app for medical certification support and training in reducing garbage codes also provided opportunities for improvements in mortality data. Ecuador also implemented an automated verbal autopsy pilot in three regions of the country using Smart VA to assess how useful this method is in collecting data on the approximately 25% of deaths occurring outside health facilities.

Although Colombia has a relatively high VSPI<sup>1</sup>, no reliable estimates of deaths in rural and remote areas were found, and about 22% of deaths have an unusable or garbage code as the underlying cause of death in areas in which deaths are certified by a physician. As a high priority for Colombia, a strategy focusing on development and implementation of a proactive search system was proposed as a way of improving the capture of vital events and quality of COD data (Rural Vital). This was based on the development of a software program designed to link databases that involved implementing practices such as mobile notification and Smart VA for Physicians to capture events in rural and dispersed populations. After further rollout and testing, this intervention can be adopted across all regions of the country, allowing Colombia to collect more complete higher-quality information. A review of all MCCOD training materials led to the development of a new training course, which included an eLearning element and supported the implementation of the automated ICD coding tool, IRIS.

The focus of D4H has been firmly on cooperation with government stakeholders, assisting them in improving their CRVS systems by providing high-quality evidence-based technical assistance that will lead to sustainable change. Table 1 shows a summary of achievements in these four countries.

Table 1. Summary of D4H achievements in four Latin American countries.

Country	Summary
Brazil	<ul style="list-style-type: none"> <li>• The Ministry of Health has mandated the use of Smart VA, which takes less than half the time of the WHO instrument and yields causes of death that are comparable with gold standard autopsy diagnosis.</li> <li>• More than 2,600 physicians have been trained in MCCOD through face to face training in 60 cities.</li> <li>• An additional 11,400 physicians have been trained using the Brazil-developed Smart Phone App.</li> <li>• An investigation of garbage codes examined more than 80,000 deaths to which a garbage code had been allocated as the underlying COD. Changes in the classification of COD resulted in an 18% improvement in 60 prioritized cities.</li> <li>• The garbage code investigation has been institutionalized by the Ministry through the development of a manual and protocol for the investigation of hospital deaths.</li> <li>• Introduction of automated coding through IRIS.</li> </ul>
Peru	<ul style="list-style-type: none"> <li>• More than 7,000 physicians trained in MCCOD and SINADEF, which is capturing almost 80% of annual deaths with 38% reduction in certificate error rates.</li> <li>• Government plans to roll out training on MCCOD and SINADEF in all regions of Peru.</li> <li>• Development of Smart VA eLearning platform to assist physicians in rural and remote areas in accurately recording COD.</li> <li>• Introduction of automated coding through IRIS.</li> </ul>
Ecuador	<ul style="list-style-type: none"> <li>• 5,123 (15 per cent) of physicians from 158 health units were trained in medical certification of COD between May and December 2018.</li> <li>• REVIT-death introduced as an online death registration system and more than 5,000 physicians trained in its use.</li> <li>• Piloting Smart VA in three regions to evaluate the tool in this context before undertaking a further, more comprehensive study.</li> </ul>
Colombia	<ul style="list-style-type: none"> <li>• Development of the Rural Vital intervention as a way of improving death notification in rural and remote areas with more than 400 deaths notified.</li> <li>• Smart VA for Physicians implemented in 12 municipalities and regarded by local physicians as a highly useful tool.</li> <li>• Development of MCCOD training materials and implementation of IRIS.</li> </ul>

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