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Guidance for Civil Registration and Vital Statistics Performance Measurement and Data Quality Monitoring: A Framework for Effective Implementation

Version 3.0

A practical approach to establishing country-owned and led, user-oriented CRVS performance and data quality monitoring systems.

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Abbreviations

ACDC	Africa Centres for Disease Control and Prevention
BPM	Business Process Mapping
CRVS	Civil Registration and Vital Statistics
DCL	Data-Centered Leadership
DHIS-2	District Health Information Software Version 2
DIKW	Data Information Knowledge Wisdom (Framework)
DNRPC	Department of National Registration, Passports and Citizenship (Zambia)
GSO	General Statistics Office (Viet Nam)
ICD	International Classification of Diseases
IDIF	Forensic research institute (Bolivia)
IT	Information Technology
MCCD	Medical Certification of Cause of Death
MSA	Medical Service Administration (Viet Nam)
NCHI	National Centre for Health Information (Viet Nam)
NGO	Non-Governmental Organization
SEDES	Departmental Health Services (Bolivia)
SERECI	Civil Registry (Bolivia)
SIAHV	Sistema de Información de Atención en Salud (Health Care Information System)
SICE	Integrated medical records system in hospitals (Bolivia)
SNIS-VE	National Health Information System - Epidemiological Surveillance (Bolivia)
SOP	Standard Operating Procedure
TWG	Technical Working Group
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization
ZNPHI	Zambia National Public Health Institute
ZAMStats	Zambia Statistics Agency

Purpose

Well-functioning civil registration and vital statistics (CRVS) systems record all vital events, issue legal documentation, and generate timely, reliable statistics—including cause-of-death data. Vital statistics provide high quality data which is essential for public health and social development policy and planning. Established CRVS systems offer accurate and timely population data, aiding policymaking and resource allocation.

As countries strive to improve their CRVS systems through system strengthening interventions, there should be a focus on performance measurement for system management and improving data quality for use. Measuring the performance of the system provides a baseline, helps set targets, measures progress, and assists with monitoring the performance of the system on an ongoing basis to ensure a continuous data improvement cycle. This is usually of most benefit when there are plans to assess and improve the CRVS systems. This document has been developed to facilitate, create and refine CRVS performance and data quality monitoring systems. The document allows countries to use globally acceptable methods and tailor monitoring frameworks to suit their context. It should be read alongside the "CRVS Systems Improvement Framework" (1). The document is aimed at being practical, actionable, and aligned with the country's needs and context. It is designed to complement existing assessment tools (e.g., Ten Milestones etc.), by moving from one-time assessments to continuous, country-owned monitoring and use of data. It uses examples from three countries (Bolivia, Viet Nam and Zambia) that piloted these methods and contributed toward the case studies used in this guidance document.

This framework is guided by two complementary approaches:

User-Oriented "Decision-First" approach (2, 3): Prioritizes the decisions that stakeholders need to make, ensuring data collection and monitoring efforts are directly aligned with real-world information needs and drive practical action.

Systems Thinking approach (4, 5): Promotes a holistic end to end understanding of the CRVS system. It supports countries to identify systemic challenges such as delays, inefficiencies, or fragmentation, and collaboratively identify performance gaps and opportunities for improvement across the entire CRVS workflow.

Who should use this guide?

This document is designed for national CRVS technical working groups responsible for leading monitoring efforts. It assumes familiarity with the national CRVS context and experience in stakeholder engagement.

While the primary audience is national CRVS technical working groups, the guide is also relevant for civil registration authorities, ministries of health, national statistics offices, and development partners supporting CRVS strengthening. Countries without an established TWG can adapt the steps to existing coordination mechanisms or use the guide to help establish one.

The implementation process

The implementation of a CRVS performance and data quality monitoring system is not a one-size-fits-all effort. It requires thoughtful planning, inclusive engagement, and alignment with country-specific needs, priorities, and institutional capacities. This guidance proposes a phased, step-by-step process that is both structured and flexible-designed to be adapted to different CRVS contexts and levels of system maturity. Each step builds on the previous one to ensure that monitoring systems are technically sound, stakeholder-driven, and embedded within routine operations. Countries may adapt the sequence depending on the system maturity. The process emphasizes ownership, practicality, and sustained use of data for system learning and improvement.

The implementation process follows seven key steps:

1. Engage Key Interest Groups
2. Define the CRVS Priority Area(s) and Scope of Monitoring
3. Map Relevant Stakeholders in the CRVS System
4. Assess Stakeholder Decision-Making and Information Needs
5. Identify Indicators for Monitoring Performance and Data Quality
6. Implement Data Collection for CRVS Monitoring
7. Transform Data into Action

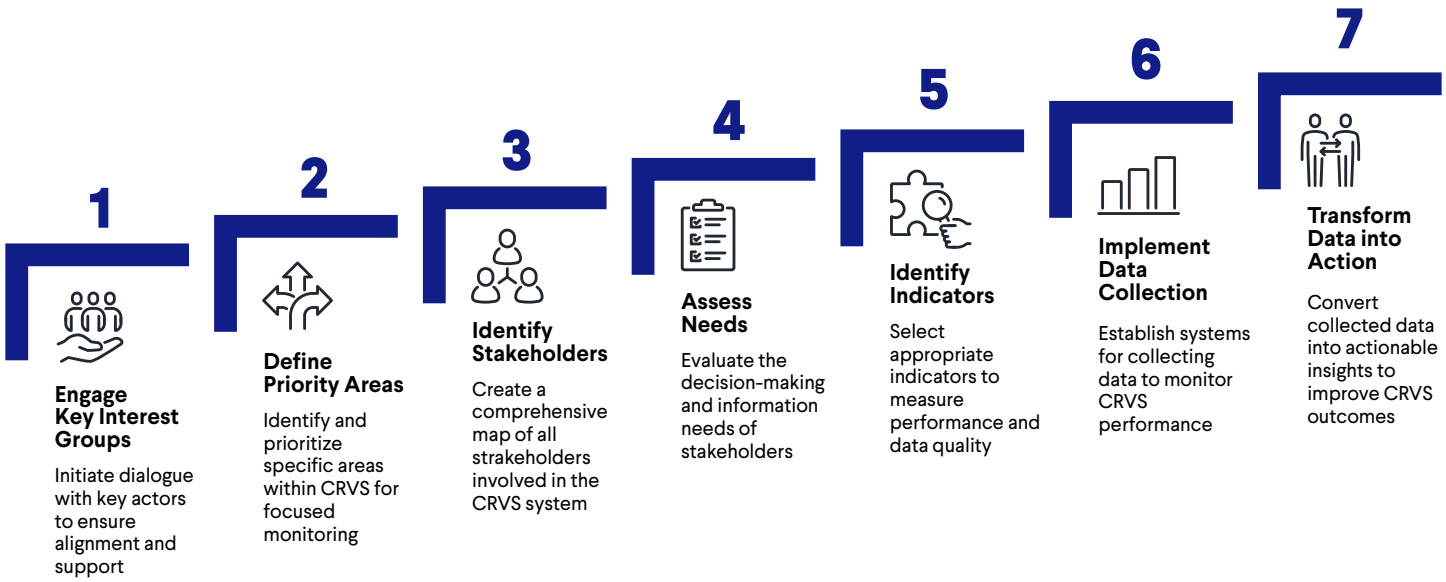

Figure 1. Overview of the implementation process for CRVS performance measurement and data quality monitoring

It is likely that elements of these key steps are already implemented in the CRVS system (e.g., as part of efforts to develop or implement that national CRVS strategic plan) and the guidance provided here can be used in complement to these efforts to establish and implement the CRVS performance and data quality monitoring system.

Phase 1: Engage Key Interest Groups

Effective preparation begins with strong engagement of key interested actors. Early and ongoing involvement of key actors helps build ownership, clarify expectations, and foster long-term commitment to the monitoring initiative.

By the end of phase 1 you will have:

- ☐ Technical working group responsible for coordinating and overseeing the monitoring initiative
- ☐ A shared understanding of the actor's roles and engagement strategy

The first step in this phase is to establish or identify an existing technical working group (TWG) which can be responsible for overseeing and coordinating the monitoring activity. This group should be composed of representatives from across the CRVS system. The composition and size of the TWG will depend on the scale and complexity of the activity. Members should ideally include the following voices and perspectives who:

- Are actively engaged in implementation or management of the current CRVS system
- Have extensive knowledge of the processes and workflows
- Represent different levels of the system (e.g., national, subnational and local including those who are not well represented such as women, disability groups)
- Represent the main stakeholders (e.g., health sector, medicolegal death investigation system, civil registration, national statistics offices, civil society organizations)
- Are appointed and empowered by relevant authorities in the system

Membership of these committees should aim for gender equity and balance.

As indicated above, the role of group may be absorbed by an existing committee in the CRVS system such as, for example, the Interagency CRVS Technical Coordination Committee.

The TWG initiates communication with identified key actors to discuss the objectives, expected benefits and time commitment of the monitoring activity. Sharing relevant success stories or lessons learnt from other countries can help demonstrate the relevance and value of the initiative.

These discussions should also highlight the role of high-quality civil registration data in decision-making and explore stakeholders' specific priorities and desired outcomes. A well-structured, inclusive engagement strategy, rooted in end-user needs, is essential to ensure the monitoring system is both practical and sustainable.

Phase 2: Define the CRVS priority area(s) and scope of monitoring

This foundational step requires countries to clearly articulate the specific area(s) of their CRVS system they wish to monitor. Please note that countries may like to monitor more than one CRVS area.

By the end of phase 2 you will have:

- ☐ A decision on prioritized area for CRVS monitoring (e.g., "completeness of death registration")
- ☐ A defined scope of monitoring for each level of the system (i.e., national, provincial, or facility-level)

Objectives

To identify each component of the CRVS system requiring performance or data quality monitoring, and to clearly define the scope and context of monitoring activities for each level of the system. Please note that some countries may choose to monitor more than one CRVS function (e.g., death registration and cause-of-death data). Focusing on a well-defined CRVS priority area ensures that monitoring efforts are **targeted, feasible, and aligned with national priorities**.

Approach

1. Clarify the priority area: Review CRVS processes to identify one or more areas requiring monitoring, guided by the 10 CRVS milestones (6) and as outlined in the CRVS Systems Improvement Framework (7). Prioritize the identified CRVS processes (e.g., death registration, medical certification of cause of death (MCCD), CRVS governance) that align with national priorities or are recognized as having the most acute implementation challenges. Choosing a priority area may include identifying critical gaps or opportunities that, if addressed, would significantly improve the completeness, quality, and/or use of vital statistics. Note that existing priorities may be identified in the national CRVS strategic plan or other relevant documents and such priorities should be absorbed into this step.
2. Understand the context: Conduct a review of documentation relevant to the selected CRVS priority area. This may include legal frameworks, national policies, previous assessments, and business process maps where available. These resources are essential for understanding how the selected CRVS function operates within the broader system, how data flows between institutions, which actors are involved at different stages, and where bottlenecks or challenges exist. Existing assessments and the national strategic plan for CRVS may provide much of this context.

3. Define the scope: Countries should weigh available resources, institutional capacity, and data availability to ensure that the chosen scope is both practical and impactful. Countries might find it helpful to phase monitoring priorities over time, for example, beginning with death registration, then expanding to birth registration or cause of death, so as not to over-extend resources in early phases. While it may not be practical to design and implement a monitoring and data quality system at all levels all at once, planning for the use of data and for the production of that data to be used at each level is part of a holistic, systems approach to this effort. Any previously identified priorities and areas of monitoring (e.g., in the national strategic plan for CRVS) should be included in the scope.

Phase 3: Identify relevant stakeholders

CRVS systems are inherently multi-sectoral. This step involves a structured identification of all actors engaged in, or impacted by, the selected priority area.

By the end of phase 3 you will have:

- ☐ A validated stakeholder list outlining producers, users, and beneficiaries related to the CRVS priority area
- ☐ Clear documentation of stakeholder's roles

Objectives

To identify key stakeholders within the selected CRVS priority area and **clarify their roles** and **goals** and ensure that the monitoring framework reflects the needs of CRVS data producers and users, and beneficiaries on operational and performance indicators. The focus is primarily on the producers and users of CRVS data.

Approach

Identify relevant stakeholders: Use document review and expert input to create a preliminary list of stakeholders (See Figure 2 CRVS stakeholders in Bolivia). Categorize stakeholders into three key groups.[1] Please note that stakeholders can fall into multiple groups, since they may hold more than one role.

Producers of Information: These are the entities responsible for generating and managing CRVS information. They ensure that data on vital events (e.g., births, deaths, marriages) are collected, processed, and made available. Key actors include civil registration authorities, health facilities, medical professionals, forensic specialists, and statistics bureaus.

Users of Information: These are entities that utilize CRVS data to inform policy decisions,

1 Health Metrics Network & World Health Organization. (2008). *Framework and standards for country health information systems* (2nd ed.). World Health Organization.

design programs, deliver services, conduct research, or uphold legal rights. Key actors include government ministries and agencies, national identity and population registration authorities, development partners, academic and research institutions, and civil society organizations. These stakeholders use both aggregated and individual-level data. Aggregate data supports policies, planning, and research—by government agencies, development partners, civil society, and academia. Individual-level data enables access to services such as vaccinations, education, and social protection, and supports legal identity systems.

Beneficiaries of Information: Beneficiaries are the individuals and communities who directly benefit from improved CRVS systems, either through access to services or legal rights. These include residents, vulnerable and under-represented populations (e.g., women, indigenous population groups), communities, researchers or public health programs.

This is best achieved through a consultation workshop with representatives from key stakeholders (for example, as a session for the national CRVS steering committee). The recommended agenda points for the workshop include:

- Validating a list of stakeholders
- Clarifying the role of each stakeholder in CRVS data production or use
- Understanding the specific objectives and expectations related to CRVS performance monitoring
- Identifying existing collaboration mechanisms and opportunities for strengthening partnerships
- Assessing the availability of aggregate data or currently used indicators (for reporting), if any

Note for the facilitator: This meeting can take place online or in person. If conducting online, then it is best to use software such as Miro board or Padlet to enable discussions.

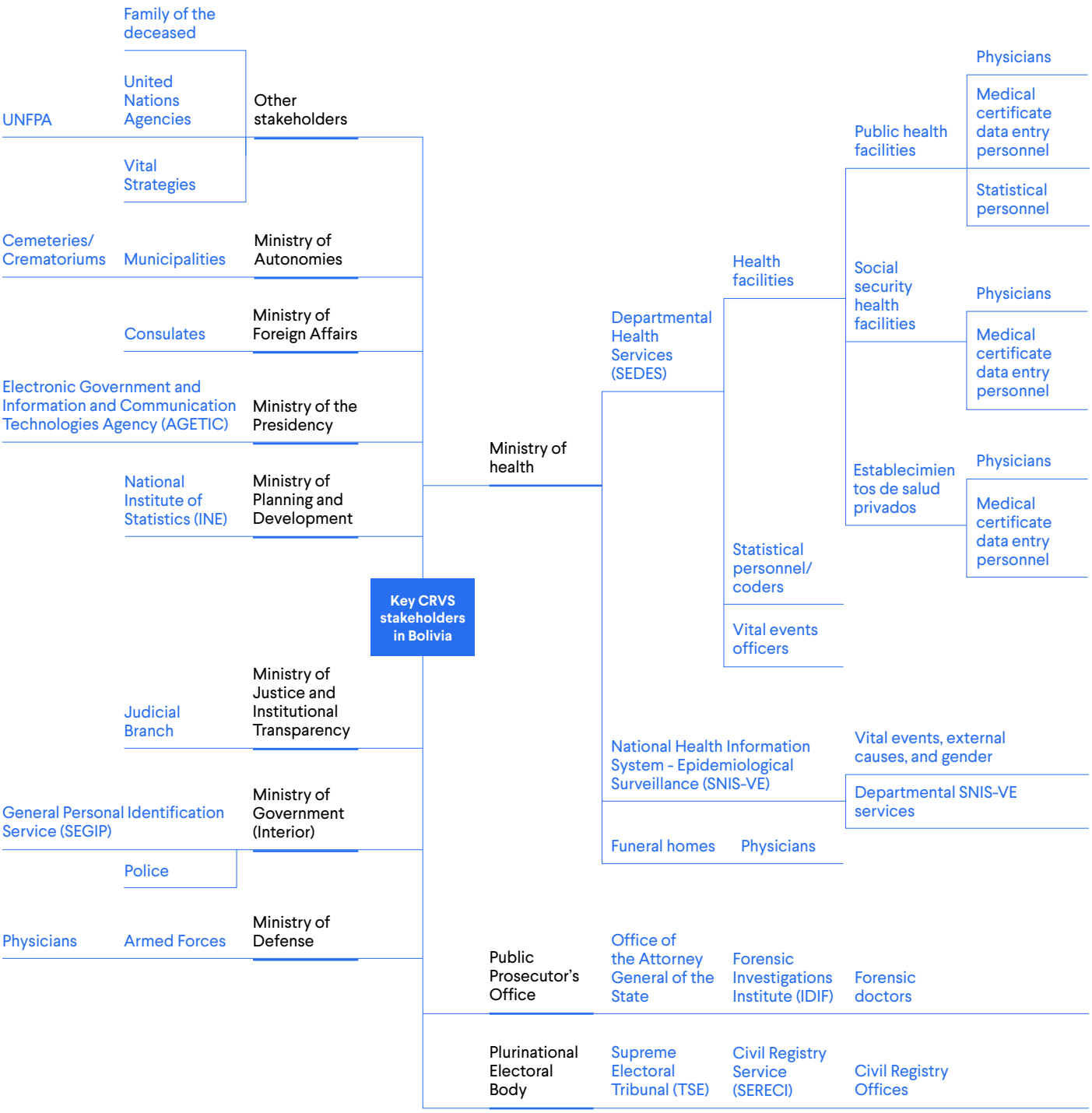

Figure 2. Stakeholder mapping in Bolivia

Phase 4: Understand stakeholder decision-making and information needs

By the end of phase 4 you will have:

- ☐ A list of stakeholder decision-making needs and data use patterns
- ☐ A list of strategic and operational decisions, linked to data requirements
- ☐ A decision space diagram for stakeholders

Once stakeholders are identified, it is critical to understand the **decisions they make, when they make them, and what information they require**. This step shifts the focus from systems inputs to using monitoring to inform action.

Objectives

To identify how stakeholders use CRVS data to inform decisions—both strategic and operational—and uncover critical gaps in data availability, relevance, and quality that hinder effective decision-making.

Approach

This step applies a "decision-first" lens to guide stakeholder consultations, focusing on four interrelated aspects of the decision-making to ensure monitoring efforts are aligned with relevant needs. Details of the four aspects are provided below. The aspects should be explored through structured, participatory discussions—in either face-to-face workshops or virtual **consultations**, depending on feasibility. A simple logic model can be used to identify the key problem, inputs, outputs (short term), outcomes and impact (for longer term).

Before the workshop, share the agenda including discussion topics with the participants. This will enable them to prepare for the workshop and aid in productive discussions.

1. Decision Authority and Influence (Decision space)

Explore the **decision space** in which stakeholders operate:

> **Who holds decision-making power** in different parts of the system? How do they engage with data producers and users? How are they engaged in system improvement efforts?
>
> **What constraints** (legal, political, institutional, financial) limit their ability to act?
>
> **How well are different aspects of the identified CRVS priority area functioning** in terms of governance and decision-making?

This helps ensure that monitoring results reach the right decision-makers and are actionable within the system's institutional boundaries. To support this process, a structured "*decision*

space" analysis tool can be used to assess the authority and influence of each institution across six key functional areas:

1. Technical capacity for medical certification and registration
2. Administrative process improvement
3. Legal framework and standardization
4. Coordination
5. Quality of certification and registration
6. Funding and resources

Figure 3 illustrates how this tool was applied in Zambia, using the decision space approach to map the perceived decision-making authority of CRVS actors across six domains (8). The figure highlights varied roles and levels of authority among stakeholders.

A copy of the decision space analysis tool (Excel format) is available in *Appendix 1. Decision Space template* for adaptation and use in other country contexts.

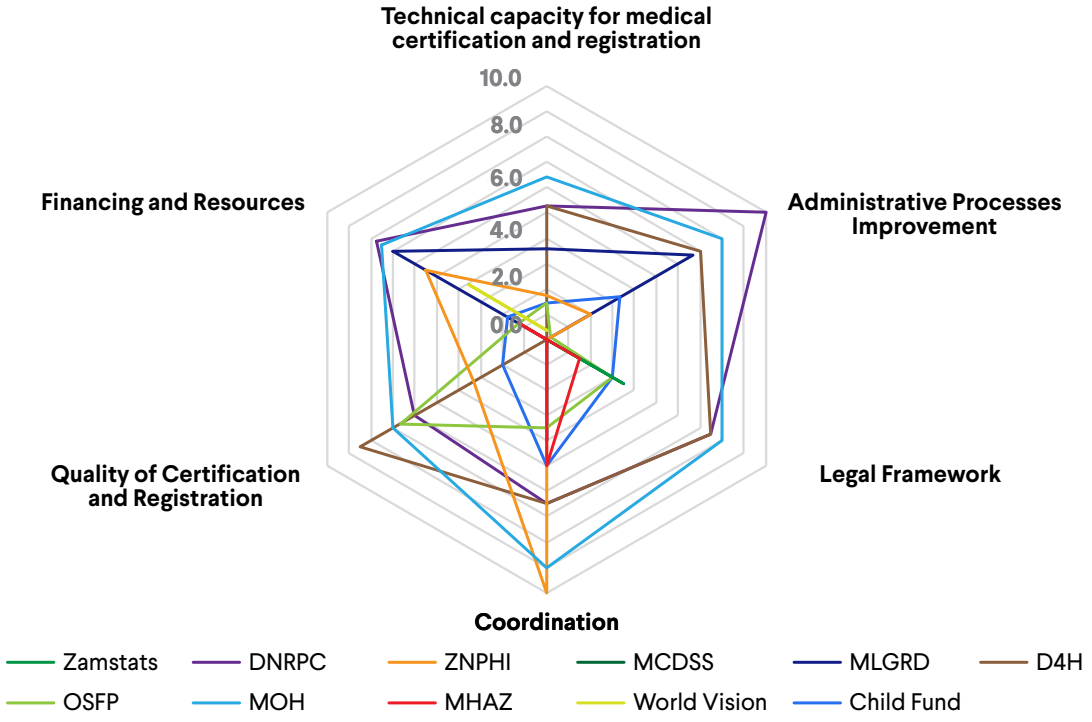

Figure 3: Decision space approach to map the perceived decision-making for CRVS in Zambia

2. Decision-Making Context

Identify the main decisions that stakeholders make in relation to the CRVS priority area. These may be:

Strategic (high-level) decisions: These decisions define the strategic vision, priorities, and allocation of resources to achieve the system's objectives. They typically involve political leaders and government officials responsible for policy development; experts, technicians, and advisory bodies also play an important role in their formulation.

Operational decisions: These are day-to-day decisions, made in the short term by mid-level or lower management positions to optimize workflow, resource allocation, and problem solving, ensuring that the activities carried out align with the strategic direction.

Understanding decision types helps align the monitoring system to different data use needs. Please see the example described in Table 1.

3. Information Needs

Identify the specific types of CRVS data the stakeholders need to inform their decisions. This includes:

Type of indicator data: Registration completeness, timeliness, cause-of-death data, error rates, etc.

Level of disaggregation: By age, sex, geography, facility, etc.

Frequency of use: Real-time, monthly, quarterly, annual.

Resource allocation: To address performance or data quality issues.

4. Data Gaps and Constraints

Identify where the current system falls short in supporting decision-making. Stakeholders should be encouraged to reflect on the data gaps based on the types of decisions they make. Check for availability, need, quality and access to data. Use the following prompts to understand gaps in access to and availability of quality data.

Data need: What specific data is needed to support decision-making?

Availability: Does the data exist and is it complete and up to date? Are there important data gaps or missing variables?

Access: Can stakeholders who need the data obtain it? Is it shared in a timely and usable format? Are there any legal or technical barriers to access the data?

Quality: Is the data accurate, consistent, and produced in a timely manner? What quality control measures are in place?

Figure 3 illustrates the perceived decision-making authority of CRVS actors across six functional domains. The figure highlights varied roles and levels of authority, emphasizing the need for improved coordination between different government departments.

Tips for conducting consultations with stakeholders.

This consultation should include the people identified to hold decision-making powers.

Whether held in-person or virtually, design the consultation to encourage open dialogue and practical reflection. Use these guiding questions and add prompts and examples when needed:

1. What types of decisions do you make related to the CRVS priority area?
2. What CRVS data do you currently use to support those decisions?
3. What CRVS data do you wish you had to support those decisions?
4. How frequently do you need that information?
5. What are the most critical data gaps or challenges you face in decision-making?
6. What influences your decisions (e.g., regulations, resource constraints, leadership)?
7. Are there barriers (e.g., legal, financial, technical) that limit your ability to act on data?
8. How do you assess the quality and reliability of the data you use?

Use facilitation tools such as breakout groups, or online whiteboards to capture inputs. Document all the information thoroughly from each user group. See example below (Table 1).

Table 1: Example Output Table: Mapping Stakeholder Needs

Stakeholder	Decision	Decision Type	Information Needed
Head of Department (Doctor)	Develop standard operational procedures	Operational	Training needs, MCCD quality
District Health Officer	Plan health interventions, request budget	Strategic	Quality of ICD coding, leading causes of premature mortality
Medical Records Department	Ensure reporting accuracy	Operational	Accuracy of data entry, frequency of coding errors
Civil Registration Office	Adjust the number of registration offices	Operational	Completeness and timeliness of birth and death registrations

Note that this is an example only and does not cover all possibilities.

Phase 5: Identify relevant indicators for monitoring

By the end of phase 5 you will have:

- ☐ A curated and standardised set of performance and data quality indicators, aligned with national priorities and stakeholder needs
- ☐ A documented linkage between indicators and specific stages or functions within the CRVS process
- ☐ A shared understanding among stakeholders of the system's performance expectations and monitoring framework, and frequency of planned data production and use

Effective CRVS performance monitoring is not about tracking every data point. It's about monitoring the right points in the process that affect quality, timeliness, completeness, and usability of information. This step ensures that countries can focus their efforts where they matter most, using indicators that directly support decisions and policy action.

Objectives

To identify critical points within the CRVS process where performance and data quality should be monitored, and to select focused, decision-relevant indicators that enable meaningful oversight, accountability, and continuous improvement.

Approach

This phase involves a structured process, and a range of tools and methods may be used to support this process, adapted to the specific context and technical capacity of the country.

1. Identification of monitoring points within the CRVS process

The first task is to analyze the business processes of the selected CRVS priority area to determine where performance monitoring or quality assurance is most needed. Monitoring points typically correspond to:

- Key decision or handover points in the CRVS process
- Stages where data quality is at risk (e.g., delays, errors, loss of information)
- Areas of stakeholder concern or known system underperformance

To support this assessment, countries may use various methods:

Business Process Mapping (BPM): A structured visual tool that outlines each step in the CRVS process, identifies actors involved, and highlights dependencies and potential bottlenecks. This is the preferred option (9, 10).

Narrative process descriptions and workflow: Where BPM is unavailable, written summaries can describe sequential activities, data flows, and responsible institutions.

Figure 4 presents an example from Bolivia, where a participatory approach was used to engage stakeholders in reviewing the existing medical certification of cause-of-death process and pinpointing key stages for performance and data quality monitoring. Stakeholders identified critical points in the workflow where delays, information loss, or quality issues were most likely to occur, providing a focused basis for selecting relevant monitoring indicators.

Note that business process maps may have already been developed as part of ongoing CRVS systems improvement efforts.

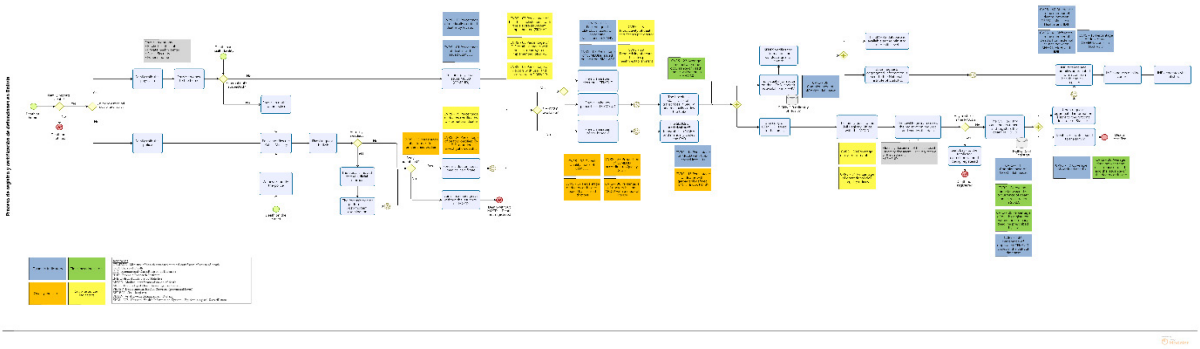

Figure 4. Monitoring points for assessing medical certification of cause-of-death process in Bolivia, using Business Process Map (A high-resolution version of this figure is available in Appendix 2.)

Regardless of the method, the purpose is to pinpoint stages in the CRVS processes where performance should be assessed, and where monitoring would support targeted improvements. Countries are encouraged to prioritize a limited number of "essential indicators" (5-7 per priority area) to avoid over-burdening data systems.

If needed, a simple logic framework can be developed to visualize the implementation process by listing the inputs (resources needed), activities, outputs (direct result of the activities), outcomes (short to medium term effects) and impact (long term change). Please see the CRVS system improvement framework for further details on the use of logic frameworks (1).

Countries can also use Data-Centered Leadership (DCL) guidance for focusing on the right metrics , which offers a practical framework to ensure indicators are evaluative, high quality, and cover both internal processes and external conditions, helping assess whether CRVS performance is fully captured.

2. Selection of relevant indicators

Following the identification of monitoring points, the next step is to select a set of indicators that can meaningfully assess system performance and data quality. Indicators should be:

- Corresponding to the selected CRVS priority area and within the scope of the monitoring initiative
- Directly relevant to stakeholder decision-making needs (as identified in Phase 4)
- Aligned with existing national CRVS frameworks

The indicator selection process may draw upon multiple resources, including:

- Existing national or subnational performance monitoring frameworks (e.g., as outlined in the national CRVS strategic plan),
- The CRVS indicator compendium (see Appendix 3. Global Compendium of Indicators for Civil Registration and Vital Statistics Performance Measurement and Data Quality Monitoring (.xlsx))
- Targeted consultations or facilitated workshops with stakeholders to identify additional indicators or fill observed gaps

3. Documentation and validation of the indicators

Each selected indicator should be clearly documented, with explicit reference to the corresponding process step, data source, and frequency of reporting (See *Appendix 4. Consolidated indicators template (.xlsx)*). Clarify the source of each numerator and denominator and which institution would be responsible for the indicator. For indicators that are not included in *"the Compendium"* (Appendix 3), or for indicators adapted to the country context, consolidate the selected indicators into the proposed structured framework that defines the data source, method of collection, reporting frequency and level of disaggregation for each indicator.

Once the indicators have been identified, consult with relevant stakeholders to ensure their applicability and usefulness. Consider *"SMART"* criteria or the "*CRVS Performance Metrics"* criteria (11-13). For a structured format to document indicators against these criteria, refer to Appendix 4.

According to the SMART criteria, a well-formulated indicator should be:

- **Specific** – Clearly defines what is to be measured and avoids ambiguity
- **Measurable** – Quantifiable or able to be assessed through defined methods
- **Achievable** – Realistic given the available resources and constraints
- **Relevant** – Directly linked to the objective it aims to measure
- **Time-bound** – Specifies the timeframe within which the result should be achieved

The CRVS-specific performance metrics criteria provide a structured framework to guide the selection and evaluation of performance and data quality indicators that are well-suited to the CRVS environment:

- **Relevance:** Measures indicators that will be used in the management of the civil registration system and production of required vital statistics
- **Accuracy:** Clearly reflects what it is intended to measure
- **Reliability:** Provides consistent results when measured repeatedly
- **Sensitivity:** Detects changes in the underlying phenomenon
- **Meaningfulness:** Is understandable and useful for stakeholders
- **Measurability:** Can be quantified with a clear unit of measure
- **Traceability:** Data can be consistently measured over time
- **Feasibility:** Can be collected efficiently within time and resource constraints and from routine sources of performance and data quality monitoring already in place or to be implemented
- **Disaggregation:** Can be broken down into relevant sub-groups or areas (e.g., sex, geography including urban/rural)
- **Sufficiency:** Adequately measures intended changes or milestones

Phase 6: Implement data collection

By the end of phase 6 you will have:

- ☐ A context-specific data collection plan for CRVS monitoring with clear institutional roles
- ☐ Initial data sets available for performance review

Once indicators have been identified and validated, the next critical step is to initiate data collection. This involves setting up or strengthening the data infrastructure, assigning institutional responsibilities, and ensuring that the collection process is feasible, sustainable, and integrated into existing CRVS operations.

Objectives

To operationalize a country-led mechanism for the regular and systematic collection of data for CRVS performance and quality indicators.

Approach

This step translates the selected indicators into operational practice by establishing clear mechanisms for **data collection:**

1. Finalize the data collection framework

Countries may choose to collect the data electronically through their routine systems (dashboard) or an Excel spreadsheet. The chosen approach should align with available infrastructure, technical capacity, and the intended use of the data to ensure consistency, accessibility, and ease of analysis.

2. Develop a data collection plan

Prepare an implementation plan for rolling out the data collection framework. This includes identifying the institutions and individuals responsible for data compilation, setting realistic timelines (e.g., quarterly, biannual, or annual reporting cycles), and integrating CRVS monitoring tasks into existing sectoral workflows and existing data systems (e.g., within a dashboard).

This plan should be owned and coordinated by the national CRVS technical working group or equivalent body, with strong leadership from key institutional stakeholders. The DCL program's MADE framework provides practical guidance to strengthen data collection plans by focusing on four elements: selecting the right *metrics*, defining *analysis* methods, *dissemination* of data to the right users, and ensuring structured *engagement*.

3. Operationalize data collection

Where possible, use existing data streams rather than establishing new data collection systems. The collection of the necessary data should ideally be included in the routine system and, therefore, there would be no need for additional data collection. Where data collecting

systems need strengthening, aim to embed these into routine systems so that these processes are sustainable. Local offices and registration points compile and report data to central coordinating bodies on a defined schedule. Where necessary, training sessions are delivered to ensure field-level staff understand indicator definitions, data tools, and reporting procedures. First-round data collection provides a baseline for review and refinement of the system.

A clear reporting line should be developed showing how data flows from local registration points to subnational offices, and up to the national level, with clear accountability at each stage.

4. Establish quality control and feedback mechanisms

To ensure reliability, include standard quality assurance practices in the process. These may involve routine data validation (e.g., cross-checks, comparisons with health or administrative data), the use of standardized procedures for addressing discrepancies, and mechanisms for escalating unresolved data issues. Feedback loops between national and subnational levels enable responsive system adjustments, promote accountability, and reinforce stakeholder ownership.

Phase 7: Transform data into action

By the end of phase 7 you will have:

☐ A shared understanding of how CRVS monitoring data can inform planning, prioritize system improvements, and strengthen accountability across institutions

Once CRVS data collection is in place, the next step is to ensure that this data drives meaningful change. This phase focuses on transforming performance and quality indicators into actionable insight through structured analysis, collaborative review, and use in planning and policy. It draws on global best practices, particularly the *WHO SCORE "Enable Data Use for Policy and Action"* approach, which emphasizes the need to interpret, disseminate, and act on information at all levels of the system(14). CRVS data, when properly collected and used, can drive policy reform, improve service delivery, and protect vulnerable populations.

Objectives

To promote the effective use of CRVS data for decision-making, system evaluation, and continuous improvement, strengthening the CRVS systems and interconnected agencies (e.g., health, law) through evidence-based action.

Approach

1. Apply the DIKW Framework

To support effective data use, countries may consider applying the Data, Information, Knowledge, Wisdom (DIKW) framework (15). This model (see Figure,) illustrates how data can transform into actionable insights and strategic decisions.

Data: Collected through the CRVS monitoring system

Information: Organized and structured through reporting processes

Knowledge: Gained by analyzing trends and patterns across indicators

Wisdom: Applied through policy and system-level decision-making

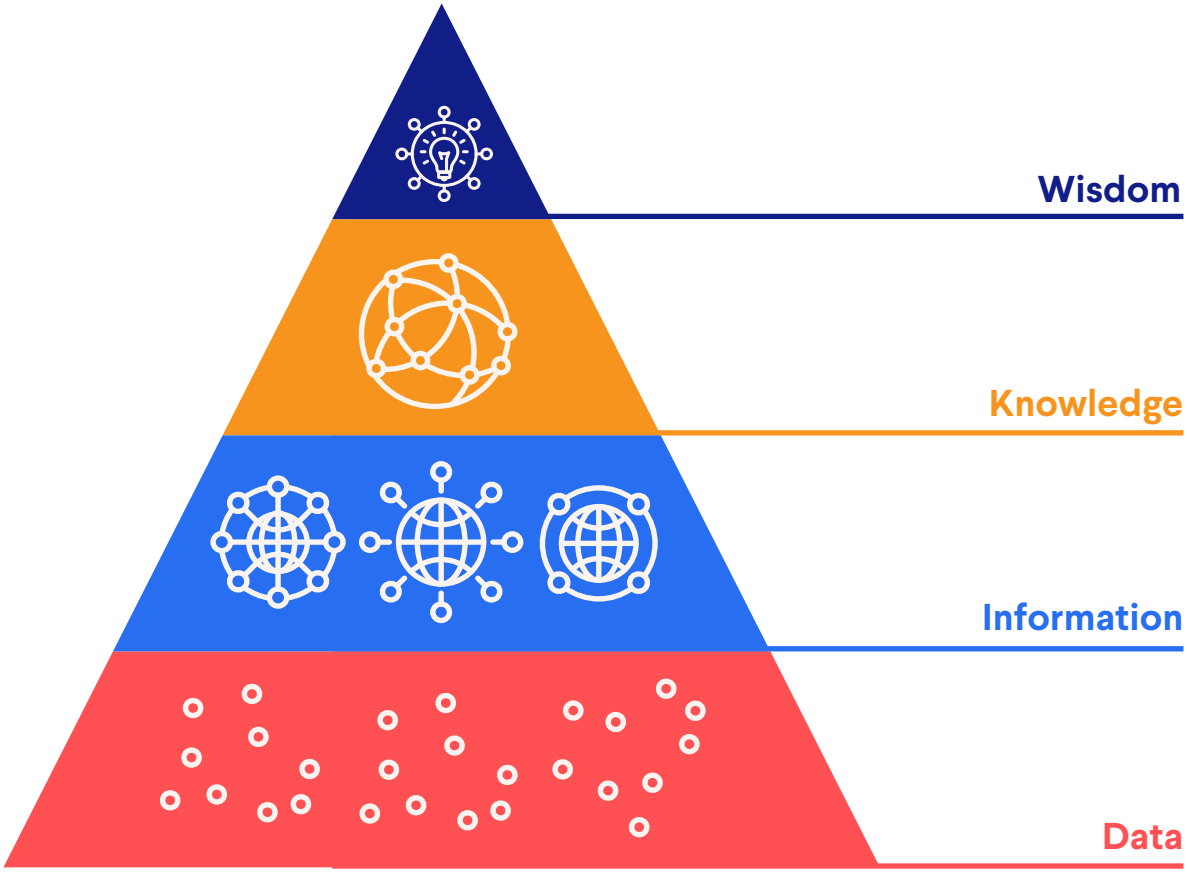

Figure 5: Data, Information, Knowledge, Wisdom (DIKW) framework (15).

The DIKW framework complements the SCORE principle of building data use capacity, moving from technical reporting to system-wide insight. This is an iterative process, as the wisdom gained through the application of knowledge can drive the need for new data collection and further information processing, restarting the cycle.

2. Engage stakeholders in review and action planning

Ideally, governments should integrate CRVS system monitoring into their routine operational activities. It is vital to institute regular reviews, an action tracking matrix and a designated lead institution responsible for following up on agreed actions. As countries begin implementing CRVS monitoring, it is beneficial to use performance monitoring results to convene regular review sessions with both national and subnational stakeholders.

These sessions support:

- Joint interpretation of CRVS performance findings by data producers (e.g., registrars, health officers) and data users (e.g., policymakers, planners)
- Identification of key gaps and priority actions
- Documentation of follow-up steps, timelines, and accountability structures

Embedding CRVS data use into formal planning, budgeting, and policy cycles helps institutionalize accountability and sustain system performance gains.

3. Data-Centered Leadership (DCL) for CRVS Managers

Collecting the right indicators is only the first step. TWGs can use the DCL approach to CRVS monitoring frameworks to translate data findings into actionable recommendations. DCL has a structured process for interpreting the data, drawing well-grounded conclusions, and defining concrete actions. This practical three-step framework is summarized in Figure 6. The detailed guidance on each step is included in the DCL program.

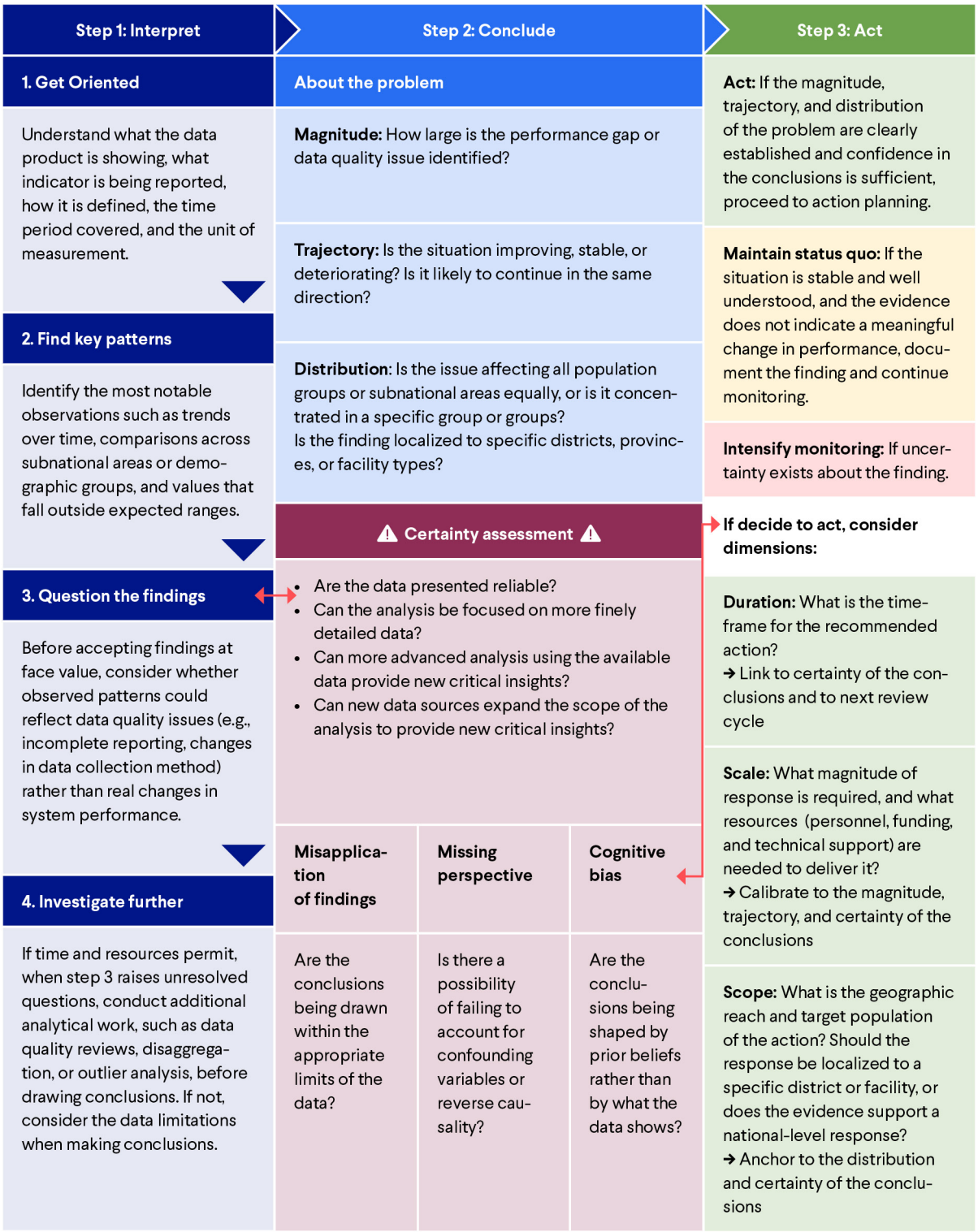

Figure 6: Monitoring CRVS results using the DCL framework

a. **Interpret:** moving from tables and figures to actionable insights requires managers to systematically work through four steps of data interpretation cycle (get oriented, find patterns, question the data, investigate further), before drawing conclusions
b. **Conclude:** Drawing conclusions means articulating what the findings mean by combining what the data shows with contextual knowledge. Conclusions can be built across the dimensions of magnitude, trajectory and distribution of the problem or the solution, then assessed for certainty before acting, since acting on a data artefact can misdirect resources and erode confidence in the monitoring system
c. **Act:** based on the certainty assessment, the review session reaches one of three determinations: act if confidence is sufficient, intensify monitoring if a data gap needs closing first, or maintain the status quo if the situation is stable. Where action is warranted, the session defines parameters for implementation of intervention/solution, its duration, scale, and scope

The DCL program mentors CRVS managers to develop a short-term CRVS monitoring systems improvement project. The implementation of the project provides an opportunity to practice the competencies for improving CRVS monitoring systems.

TWG members and review session facilitators should move through these steps systematically when presenting and discussing monitoring results. Documenting parameters in the action-tracking matrix, alongside named responsible institutions and follow-up dates, closes the loop between data interpretation and accountable implementation at the next review cycle. Refer to Appendix 8 for more details on DCL program.

Case studies from pilot countries

Contextual understanding of the three countries

Bolivia

The government of Bolivia is engaged in a broad initiative to enhance its CRVS system, aiming to improve data coverage and quality and establish it as a reliable foundation for national decision-making. This involves a multi-sectoral team including INE (Statistics), SERECI (Civil Registry), SEGIP (Police), IDIF (Forensic services), the nine SEDES (MoH), and SUIS (Planning, Epidemiology, and Health Services Directorates). In Bolivia, according to the National Health Information System (SNIS-VE), despite efforts to improve performance of the CRVS system, death registration coverage remained at 61% in 2022, and only 56% of deaths had a medical death certificate with cause of death information.

Viet Nam

The Government of Viet Nam launched its CRVS Action Plan in 2015 with the goal to complete legal documents governing CRVS, provide guidance for the enforcement of the legal documents, improve infrastructure and modernize CRVS methods and build adequate human resources to support the Action Plan. Approximately 90% of all deaths are registered in Viet Nam. Approximately 86% of deaths occur at home or in the community, often without medical supervision. The government of Viet Nam is supporting digitization of MCCDs across the 1,600 hospitals and health facilities, thereby centralizing the process of ICD coding to improve data quality. Given the current use of both paper-based and electronic Medical Certification of Causes of Death (MCCD), the proportion of electronically registered MCCD forms remains relatively low, at 0.05%.

Zambia

In Zambia, despite the efforts, registration completeness remains relatively low, marginally increasing from about 9.3% in 2015 to 19.3% in 2018 for births and from 5% in 2015 to 19.6% in 2018 for deaths, respectively. The CRVS challenges include low coverage of birth and death notifications and registration as well as limited institutional linkages to notify vital events for possible registration and certification. Another critical challenge is the lack of a continuous training program for registrars and notifying agents, such as those not directly under the CRVS authority but play a pivotal role in vital event capture; these include local authorities such as municipal councils and Ministry of Health officials as well as the Judiciary.

In this section you can find a brief country report. For the complete country report, refer to *Appendix 5. Bolivia Case Study, Appendix 6. Vietnam Case Study, Appendix 7. Zambia Case Study*.

Case study: Bolivia

Aim: This project, led by the Ministry of Health, aimed to define key performance and data quality indicators to support routine monitoring of the CRVS system, with a particular focus on improving the availability of high-quality cause-of-death data for informed decision-making.

Findings: Stakeholders' roles and responsibilities are illustrated in the figure below. Discussions revealed that, despite clearly defined roles, the CRVS system in Bolivia operates in a fragmented manner, with coordination mechanisms still underdeveloped.

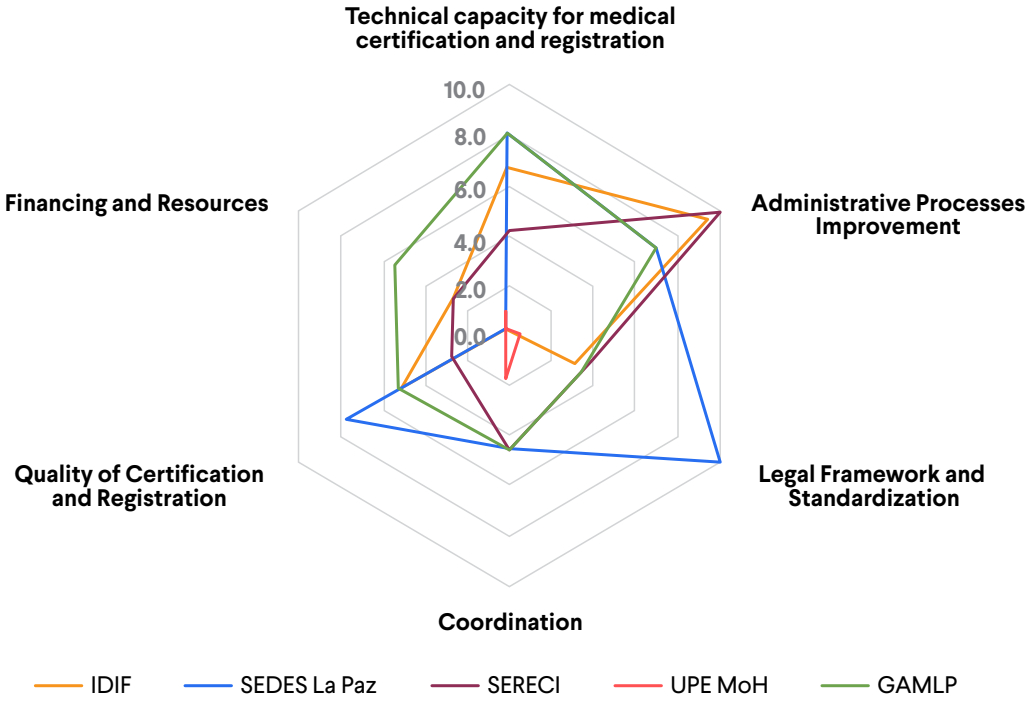

Figure 7. Decision space among actors in Bolivia's CRVS system.

- The Civil Registry records approximately 60%–70% of expected deaths, indicating significant under-registration.
- The Health Ministry's data system (SIAHV2.0) captures fewer deaths than civil registration and is not yet scaled to all health facilities; community deaths are often missing.
- Lack of data harmonization across institutions limits the completeness and utility of vital statistics; no shared essential dataset exists.
- The Ministry of Health does not routinely analyze cause-of-death data.
- The National Institute of Statistics lacks disaggregated data and faces bureaucratic delays in accessing data.
- The Forensic Research Institute uses its own certification procedures and has shown resistance to adopting the standardized national MCCD form, though transition efforts are underway.
- Forensic "pending" causes of death are rarely updated in official systems.
- The legal deadline of 24 hours for death registration hinders compliance.

- Delays in police response and lack of morgue facilities impede proper certification of non-natural deaths in some regions.
- Coding quality control is primarily conducted at the SEDES level, with urban areas performing better than rural ones.

Monitoring the Process with Indicators: Bolivia has selected 32 indicators for inclusion in the pilot phase.

Table 2. Indicator monitoring list for Bolivia's CRVS system with a focus on medical certification

Indicator	Institution/ data source	CRVS domain	Performance domain	Disaggregation level
Percentage of deaths with issued CEMEUD	MoH (SIAHV2)	Medical certification	Quantity	Sex, age group, department, issuing institution of the CEMEUD
Percentage of CEMEUDs issued online from SIAHV2.0	MoH (SIAHV2)	Medical certification	Quantity	Sex, age group, department, issuing institution of the CEMEUD
Percentage of health establishments with the electronic system implemented, by year	MoH (SIAHV2)	Medical certification	Cost/ resources	Department, subsector
Percentage of doctors with user and password in SIAHV2.0	MoH (SIAHV2-SIREFRO)	Medical certification	Cost/ resources	Department, institution subsector
Completeness of SERECI databases (= coverage of deaths registered in the SERECI database)	SERECI - INE	Registration	Quantity	Sex, age group, department
Percentage of medical certificates with cause of death coded in ICD	MoH (SIAHV2)	Cause-of-death coding	Quantity	Sex, age group, department, subsector
Percentage of duplicated CEMEUD codes in SIAHV2.0	MoH (SIAHV2)	Quality control	Quantity	Sex, age group, department, subsector
Percentage of deaths certified by IDIF as natural deaths	IDIF	Medical certification	Cost/ resources	Sex, age group
Average time between the occurrence of death and its validation in SIAHV2.0	MoH (SIAHV2)	Notification	Timeliness	Sex, age group, department, subsector
Percentage of deaths registered within the ordinary deadline prescribed by law	SERECI	Registration	Timeliness	Sex, age group, department
Productivity of death certificates per doctor	MoH (SIAHV2)	Medical certification	Cost/ resources	Department
Coverage civil registry offices	SERECI	Registration	Cost/ resources	Department
Global Quality Index of CEMEUD	MoH	Medical certification	Quality	Sex, age group, department, subsector
Percentage of doctors issuing death certificates with a medical license	MoH	Human resources / Medical certification	Quality	Department, subsector
Percentage of autopsies for unidentified persons	IDIF, MoH	Medical certification	Quality	Sex, age group, department
Difference in the number of deaths from external causes between SERECI, Ministry of Health and IDIF	IDIF, MoH	Medical certification	Quantity	Sex, age group, department

Case study: Viet Nam

Aim: This project, led by the Ministry of Health, aimed to define key performance and data quality indicators to support routine monitoring of CRVS system with focus on availability of high-quality cause-of-death data for informed decision-making.

Findings: Stakeholder roles and responsibilities were clarified, as was the process flow and progress with digitization of the MCCD system. The CCD system operates in a fragmented manner, with very little uptake of the eMCCD system and parallel systems for ICD-coding at hospitals and at MSA. The coordination mechanisms between hospitals and MSA is still under-developed. Figure 7 illustrates the perceived decision-making authority of CRVS actors across six functional domains.

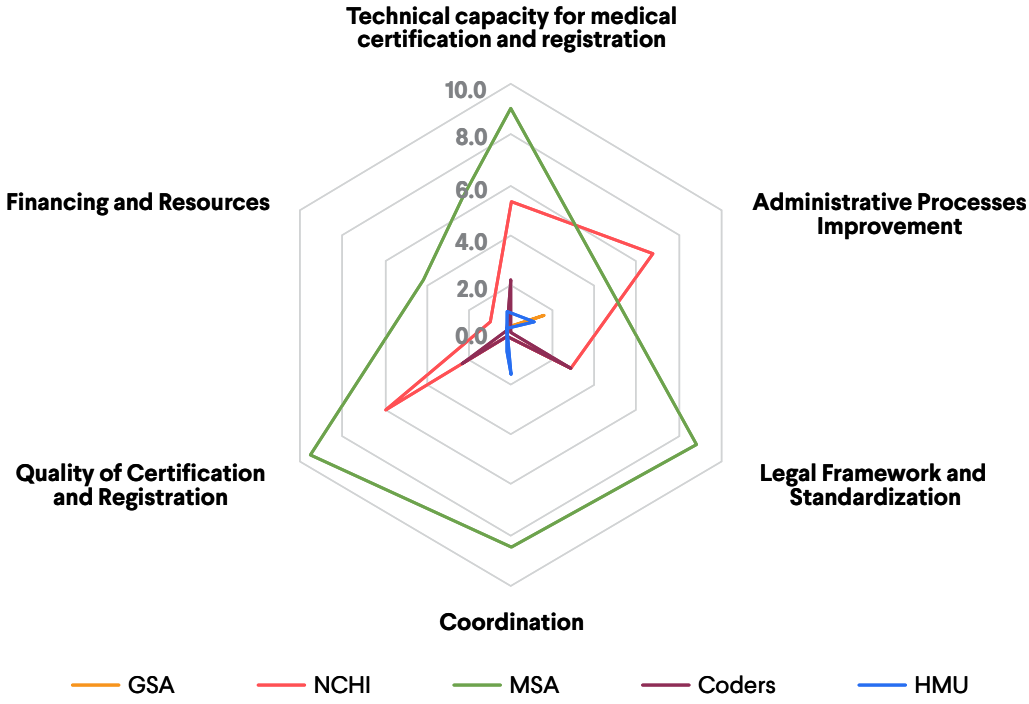

Figure 8. Decision space among actors in Viet Nam CRVS system.

- General Statistic Office registers ~90% of expected deaths. However, discrepancies remain between the MoH, GSO and DHIS-2 datasets, underscoring the need to designate one official source or denominators in national reporting. Viet Nam published its first vital statistics report covering the period 2021–2024, in April 2025.
- Viet Nam has multiple sources of cause-of-death data. For instance, the National Centre for Health Information collects data through DHIS-2, which includes both facility and non-facility deaths while MSA has access to facility deaths
- Data sharing between MSA and NCHI is ongoing. Data is not shared across CRVS institutions.
- While cause-of-death data was used heavily during the pandemic, there is no routine analysis of cause-of-death data at the Ministry of Health.
- CRVS stakeholders are eager to utilize digitized MCCD data from the eMCCD system for

monitoring and evaluation. However, since only a portion of hospitals (700 out of 1,600) currently use the system, the available data (numerator) remains limited. To ensure meaningful progress tracking and data quality improvement, it was recommended to establish clear timelines and a roadmap for the nationwide transition to the eMCCD system.

Monitoring the process with indicators: Viet Nam has selected 10 indicators to monitor MCCD data for the pilot phase.

Table 3. Indicator Monitoring List for Viet Nam's CRVS system with focus on facility cause-of-death data

Indicator	Numerator	Source	Denominator	Source	Institution
Percent of deaths in health sector with medically certified cause of death in previous 12 months	eMCCD forms	From eMCCD (MSA)	Form 14 + death notification (from annual report)	MSA	MSA
Out of all total deaths in the country, what percentage has a medically certified cause of death? Disaggregated by age and sex	Number of MCCDs from eMCCD	From eMCCD (MSA)	Total deaths from NSO	NSO	
Out of all registered deaths in the country, what percentage has a medically certified cause of death? Disaggregated by age and sex	Number of MCCDs from eMCCD	From eMCCD (MSA)	Total registered deaths	MOJ	MSA
Percent of medically certified deaths with ill-defined and unusable cause of death in previous 12 months. Disaggregated by age and sex	Number of MCCD with ill-defined and unusable cause of death	From eMCCD (MSA)	Total MCCDs	From eMCCD (MSA)	MSA
What proportion of health facilities with medical certification are included in the digital reporting system? (Percentage of all health facilities) Please provide a percentage from 0 to 100 (disaggregate data by province and health center/hospital)	Health facilities with MCCD uploaded in the system	From eMCCD (MSA)	Number of health facilities implementing MCCD	From annual reporting	MSA
Percent of MCCD forms with one or more errors corrected to include complete metadata in the previous 12 months	MCCD forms with one or more errors corrected	From eMCCD (MSA)	MCCD forms with one or more errors	From eMCCD (MSA)	MSA
Percent of MCCDs completed with zero errors in the previous 12 months	MCCDs completed with zero errors	From eMCCD (MSA)	MCCDs completed	From eMCCD (MSA)	MSA
What proportion of death certificates do not indicate the interval between onset of disease and death?	Number of death certificates that do not indicate the interval between onset of disease and death	From eMCCD (MSA)	Total MCCDs	From eMCCD (MSA)	MSA
Percent of hospitals completing quarterly reviews of a sample of MCCD forms using the rapid assessment tool in the previous 12 months	Number of hospitals completing review of MCCDs with rapid assessment tool	Annual report	Number of hospitals with MCCDs	Annual report	MSA
Percent of hospitals using the international Medical Certificate of Cause of Death (MCCD) for certification in the previous 12 months, by province	Hospitals using the MCCD		Total number of hospitals in country		

Case study: Zambia

Aim: This project, led by the government of Zambia in collaboration with Vital Strategies, Africa CDC and Swiss Tropical and Public Health Institute, aimed to define key performance and data quality indicators to support routine monitoring of the CRVS system with focus on birth and death notification and registration and cause-of-death assignment for informed decision-making.

Findings: Several stakeholders from the national CRVS system attended the virtual consultations and face to face workshop. While the death notification and registration were the main priorities identified, stakeholders were interested in including indicators to monitor birth registration and causes of death. The figure below illustrates the decision space among various actors across six functional domains in the Zambian CRVS system.

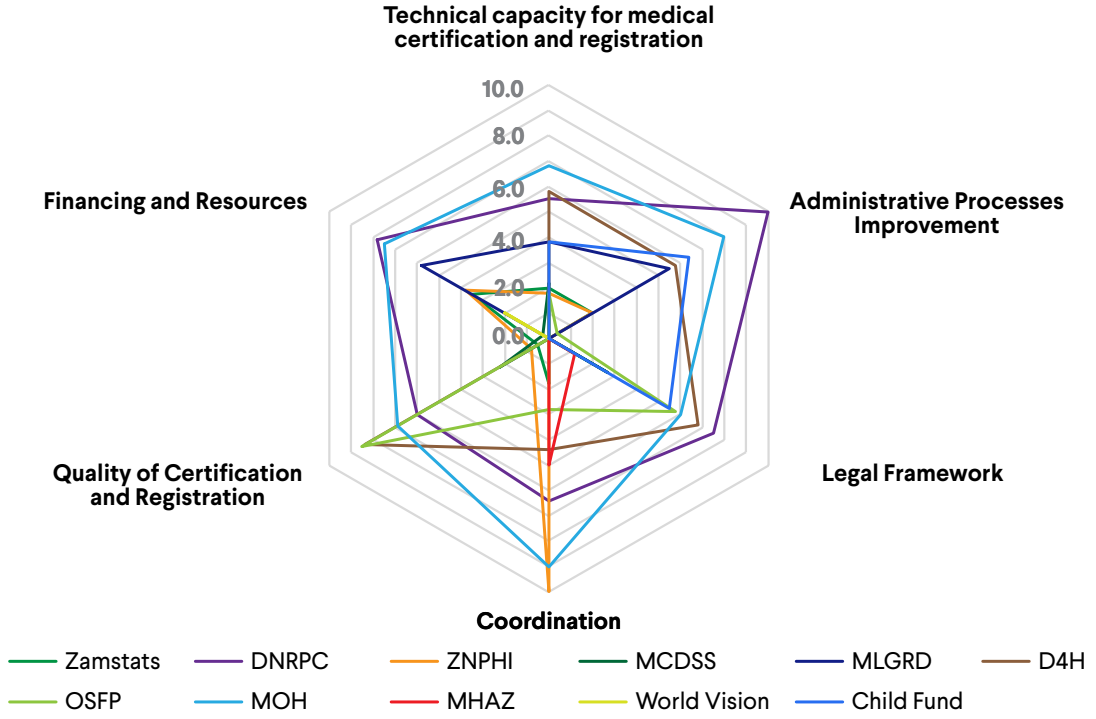

Figure 9. Decision space among actors in Zambia CRVS system.

- The national TWG on CRVS was well represented at the meeting.
- Each stakeholder's roles and responsibilities were clarified within the CRVS system.
- The group reached a good understanding of the scope of work of the stakeholders enabled. assignment of the selected indicators to the relevant institutions for monitoring.
- Stakeholders did not effectively present the indicators they are currently monitoring or the associated data sources relevant to CRVS. As a result, the selection of indicators was largely based on those provided in the CRVS monitoring guidance document. Further consultations should be held to ensure Zambia's TWG validates county-specific priorities rather than only adopting generic indicators.

Monitoring the process with indicators: The workshop participants identified 26 indicators for birth registration, death notification and registration and cause of death.

Table 4. Indicator Monitoring List for Zambia CRVS system.

	Indicator	Numerator	Source of information	Denominator	Source of information	Frequency of Data Collection	Institution Responsible for Monitoring	Disaggregation
Birth Notification	% births notified within 30 days of occurrence	Total Number of births notified within 30 days of occurrence	DNRPC	Total number of expected births within 30 days	DNRPC	Monthly	DNRPC	Sex, province, district
	% late births notification in the previous 12 months	Total number of notifications within 1 month to 12 months in the previous 12 months	DNRPC	Total number of late birth notifications	DNRPC	Monthly	DNRPC	Age, sex, location
	% delayed birth notifications in the previous 12 months	Total number of notifications after 12 months in the previous 12 months	DNRPC	Total number of delayed birth notifications	DNRPC	Monthly	DNRPC	Age, sex, location
	% births occurring in health facilities notified to CR in the previous 12 months	Number of facility births notified within 12 months	DNRPC	Total Number of births in health facilities	ZamStats, MOH	Monthly/ quarterly/ annually	DNRPC	Separately for each sex, nationality, province, district
Death Notification	% deaths occurring in health facilities notified to CR in the previous 12 months	Number of facility deaths notified within 12 months	DNRPC	Total Number of Deaths in Health Facilities	ZamStats, MOH	Monthly/ quarterly/ annually	DNRPC	Separately for each sex, age, nationality, and province
	% current death notifications in previous 12 months	Total number of notifications within 30 days of the previous 12 months	DNRPC	Total number of current deaths notifications	DNRPC	Monthly	DNRPC	Age, sex, location
	% late death notifications in previous 12 months	Total number of notifications between 1 month to 3 months in the previous 12 months	DNRPC	Total number of late death notifications	DNRPC	Monthly	DNRPC	Age, sex, location
	% delayed death notifications in previous 12 months	Total number of notifications after 3 months in the previous 12 months	DNRPC	Total number of delayed death notifications	DNRPC	Monthly	DNRPC	Age, sex, location
	% deaths recorded by the coroner's system notified to CR in the previous 12 months Separately for Sex	Total number deaths notified by the coroner's system in previous 12 months	Coroner's office	Total number of deaths received by the coroner's system in previous 12 months	Coroner's office	Monthly/ quarterly/ annually	DNRPC	

	Indicator	Numerator	Source of information	Denominator	Source of information	Frequency of Data Collection	Institution Responsible for Monitoring	Disaggregation
Birth Registration	Number of births registered within a year	NA	INRIS	NA	INRIS (Based on the count)	Monthly/ quarterly/ annually	DNRPC, MOH and ZAMSTATS	sex
	% births registered within 30 days	Number of registered births within 30 days	INRIS	Number of notified births within 30 days	Notice of birth copies	Monthly	DNRPC	
	Sex ratio of birth registration completeness, Total	Number of births registered within a year by sex	INRIS	Total number of births expected to occur in a year by sex	DHIS2	Continuous, Routine,	MOH	sex
Death Registration	Number of deaths registered within a year	NA	INRIS	NA	INRIS (Based on the count)	Monthly/ quarterly/ annually	DNRPC, MOH and ZAMSTATS	sex, place of birth, district
	% deaths registered within 30 days of occurrence	Number of registered deaths within 30 days	INRIS	Number of notified deaths within 30 days	Notice of deaths copies	Monthly	DNRPC	sex, place of death, district
Registration	Proportion of hospitals or other health facilities with registration officers on the premises	Number of hospital facilities with registration officers on the premises	DNRPC and MOH	Total number of health facilities in the country	DNRPC and MOH	Annually	DNRPC and MOH	
Registration	Number of corrections made per 100 registration records	Number of corrections made per registration record	DNRPC and MOH	100 registration records	DNRPC	Continuous, Routine	DNRPC	
CoD	% medically certified deaths within 30 days of occurrence	Number of medically certified deaths within 30 days of occurrence	DNRPC	Total Registered deaths in Zambia in same year	ZAMSTATS	Monthly/ quarterly/ annually	DNRPC	total sex health facility outside health facility MLDI system
CoD	% medically certified deaths with ill-defined cause of death	Number of ill-defined causes of death reported on MCCD	DNRPC	Number of medically certified deaths in Zambia in one year	DNRPC	Monthly/ quarterly/ annually	DNRPC	Sex, Health facility, Age, District
CoD	% deaths recorded by the coroner system with medically certified cause	Number of coroner certified deaths	Coroner's office	Total number of non-medically certified deaths	DNRPC/ ZAMSTATS/ MOH/ ZNPHI	Monthly/ quarterly/ annually	DNRPC/ ZAMSTATS/ MOH/ZNPHI	Sex, Age, Location, Socioeconomic status

	Indicator	Numerator	Source of information	Denominator	Source of information	Frequency of Data Collection	Institution Responsible for Monitoring	Disaggregation
CoD	% hospitals completing quarterly reviews of a sample of MCCD forms using the rapid assessment tool	Number of hospitals completing quarterly reviews of a sample of MCCD forms using the rapid assessment tool	MOH/ZNPHI	All health facilities	MOH/ ZNPHI	Monthly/ quarterly/ annually	MOH/ZNPHI	Level of Health facility, District, Province
CoD	% MCCDs without errors	Number of MCCDs without errors	MOH/ZNPHI	Number of MCCDs completed	MOH/ ZNPHI	Monthly/ quarterly/ annually	MOH/ZNPHI	Facility, District, Province
CoD	% coroner cases with a standardized autopsy report	Number of coroner cases with standardized autopsy reports	Coroner's office/ DNRPC	Number of coroner cases	Coroner's office	Monthly/ quarterly/ annually	Coroner's office	District, Province
CoD	% non-medically supervised deaths with a Verbal Autopsy	Number of non-medically supervised deaths with verbal autopsy	ZNPHI/MOH	Number of non-medically supervised deaths	DNRPC/ ZAMSTATS	Monthly/ quarterly/ annually	ZNPHI	District, Province, Urban, Rural, Sex, Age, Socioeconomic status
CoD	% new medical practitioners trained in MCCD	Total number of new medical practitioners trained in MCCD completion	ZMA/MOH/ ZNPHI	Total number medical practitioners graduating	HPCZ	Annually	ZNPHI	Profession, District, Tertiary Institution
CoD	% in-service medical practitioners trained in MCCD	Total number of in-service medical practitioners trained in MCCD completion	ZNPHI/ZMA/ MOH	Total number of eligible in-service medical practitioners in Zambia	MOH	Annually	ZNPHI	Profession, District, Health Facility
CoD	Development of electronic MCCD tool	Electronic MCCD tool developed	ZNPHI/MOH			One off	ZNPHI	

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Appendices

Appendix 1. Decision Space template (.xlsx)

Appendix 2. Bolivia Business Process Map.png

Appendix 3. Global Compendium of Indicators for Civil Registration and Vital Statistics Performance Measurement and Data Quality Monitoring (.xlsx)

Appendix 4. Consolidated indicators template (.xlsx)

Appendix 5. Bolivia Case Study

Appendix 6. Viet Nam Case Study

Appendix 7. Zambia Case Study

Appendix 8. Data-Centered Leadership for CRVS Manager Overview

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Updated on May 28, 2026